



# Forest Service

## Region 5

## Sequoia

Land and Resource Management Plan for the Sequoia NF

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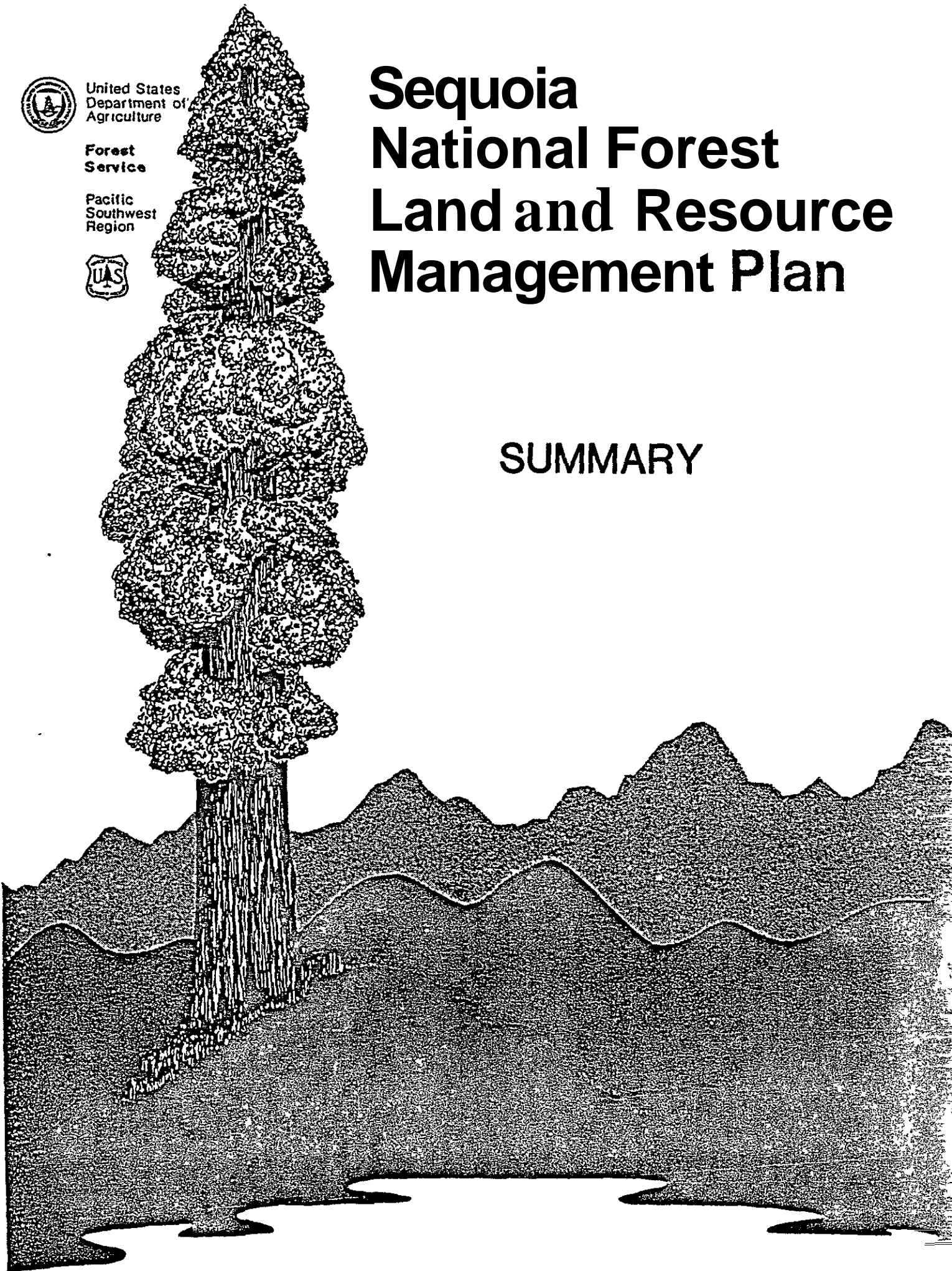
Forest  
Service

Pacific  
Southwest  
Region



# Sequoia National Forest Land and Resource Management Plan

## SUMMARY



**SUMMARY**

**FINAL ENVIRONMENTAL IMPACT STATEMENT**

Sequoia National Forest  
Land and Resource Management Plan

Type of Action: Administrative

Responsible Federal Agency: USDA, Forest Service

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Date of Transmission to Environmental Protection Agency and the Public:

Final : \_\_\_\_\_

A. PURPOSE AND NEED (FEIS, Chapter 1)

This Final Environmental Impact Statement (FEIS) describes the proposed action and alternatives for the management of the land and resources administered by the Sequoia National Forest. This proposed action is the basis of the National Forest Land and Resource Management Plan (Forest Plan), which is detailed in a separate document. For the purposes of disclosure under the National Environmental Policy Act (NEPA), the FEIS and Forest Plan are treated as combined documents.

Planning is conducted under the authority of the Multiple-Use and Sustained-yield Act of 1960 and the Forest and Rangeland Renewable



Resources Planning Act (RPA) of 1974, as amended by the National Forest Management Act (NFMA).

The area covered by this Plan includes lands within the National Forest System and Bureau of Land Management. The Forest boundary encompasses 1,173,200 acres, of which 1,119,045 are National Forest System lands.

The goal of the Forest Plan is to develop a fully integrated mix of management practices which provide for use and protection of Forest resources, satisfy guiding legislation, and address local, regional and national issues. The Plan directs the way the Forest will be managed for the production of goods and services in a way that maximizes long-term net public benefit in an environmentally sound manner.

Net public benefit is measured in three separate categories:

- 1) cash receipts such as from timber sales;
- 2) noncash benefits such as dispersed recreation; and
- 3) nonpriced benefits such as visual quality.

Present net value (PNV) is the portion of net public benefit comprised by the sum of cash receipts and noncash benefits minus the costs to produce them. Present Net Value on the Sequoia NF changes most in relation to the size of the timber and recreation programs, with noncash benefits constituting a substantial percent of the total PNV. Non-priced benefits are changed most in relation to the level of vegetative treatments, primarily timber harvest and prescribed burning (see Glossary and Appendix D).

Development of the Forest Plan began with public involvement efforts to determine public issues. Forest Service management concerns were also identified and combined with the public issues to form an integrated list of issues and concerns. These issues and concerns were used to guide the development of alternatives and their evaluation. The Forest issues, found in Chapter 1 of the FEIS, are primarily concerned with the major topics of:

- Wilderness Management and Further Planning Areas
- Land Ownership Adjustment
- Water Yield and Use
- Recreation
- Interpretive Services Opportunities
- Special Area Classifications
- Off-Highway Vehicle Management
- Timber Harvesting
- Giant Sequoia Management
- Fish and Wildlife Habitat
- Rangeland Management
- Roads and Trails Management and Maintenance
- Energy Production
- Streams and Wetland Management
- Plant and Animal Diversity.

As a result of public review of the Draft Environmental Impact Statement (DEIS) the following additional issues were identified:

- Pesticides
- Budget
- Visual Resources
- Wild and Scenic Rivers - Kings River, Segment 1

A proposed course of action and six alternatives to the proposal have been developed to address these planning issues. The alternatives are described in the next section.

B. ALTERNATIVES INCLUDING THE PROPOSED ACTION (FEIS, Chapter 2)

In response to planning questions, legislation, and regulations, a range of alternatives was initially developed and analyzed in the Draft Environmental Impact Statement (DEIS). Each alternative had a different management emphasis resulting in different levels of resource management. Forest-wide standards and guidelines served to assure quality land stewardship in all alternatives. The multiple-use nature of the alternatives provided a mix of outputs and insured that no single resource element was emphasized to the extent that another resource was excluded.

In response to public comment on the DEIS, several alternatives have been modified and three have been dropped. The Preferred Alternative responds to public input by considering a combination of even-aged and uneven-aged management, managing off-highway vehicle (OHV) use on designated roads and trails, and several other changes.

AMN and WFV Alternatives were also modified in timber management technique. The former is managed under uneven-aged principles exclusively; the latter is managed predominantly under uneven-aged principles. The Low Budget (LBU), Current, Economic Dispersed (CED), and Wilderness/Capital Investment Emphasis (WLI) Alternatives have been dropped from the set of alternatives considered in detail. Analysis of those alternatives is retained in Chapter 2 of the FEIS. Those options were dropped because, relatively speaking, they were no longer considered responsive to public issues. Finally, under each alternative, habitat for the management of spotted owls contains 66,000 acres which receive no scheduled timber harvest.

The Proposed Action, as described in the FEIS, is the basis for the Forest Plan which is published in a separate document. While the Proposed Action and its six alternatives are analyzed in the FEIS over a 50-year time period, the life of the Forest Plan is expected to range from 10 to 15 years. The additional analysis is included as a means of testing the long-term implications of each of the alternatives. It is not intended that the Proposed Action or any of these alternatives would be in effect for 50 years.

The alternatives considered in detail are described below.

#### PREFERRED ALTERNATIVE (PRF)

This alternative is the Proposed Action. It produces market and nonmarket close to 1980 RPA target levels. Timber harvest utilizing both even- and uneven-aged silvicultural prescriptions, livestock grazing, dispersed recreation, and ski area development are emphasized.

Annual timber harvest volume increases from 97 MMF in the first decade to 100.5 MMF in the fifth decade. About 30 percent of this volume will be harvested under uneven-aged principles of silvicultural management while the remainder will be harvested using even-aged management techniques. Harvest of preferred market species is emphasized. Livestock grazing remains relatively constant during first decade with fluctuations occurring in the annual grassland and chaparral ecosystems. Off-highway vehicles (OHV's) may be operated on designated roads and trails. Cross-country use of OHV's is prohibited. Besides Peppermint, two additional ski areas are to be studied for development over the long-term. About 12,500 acres of the BLM Rockhouse Wilderness Study Area are recommended for wilderness designation. The average annual budget for the first decade is \$20.0 million.

#### CURRENT ALTERNATIVE (CUR)

This alternative emphasizes production of timber and cattle over developed recreation and nonmarket resources. It is a continuation of present management direction.

Timber harvest volume remains constant at 94.4 MMF from the first to the fifth period. Livestock grazing remains constant during the planning period. Emphasis within recreation management is on maintenance of current recreational facilities at low standard levels. In addition to Peppermint, two additional ski areas are to be studied for development. Off-highway vehicles are restricted to roads and trails on some areas of the Forest. Other areas are open to cross-country travel. Further Planning Areas are not recommended for wilderness designation. The estimated yearly budget in the first decade is \$16.3 million.

#### 1980 RESOURCE PLANNING ACT PROGRAM ALTERNATIVE (RPA)

This alternative meets or exceeds the Sequoia National Forest share of the Resource Planning Act goals.

Timber harvest volume remains constant at 101.3 MMF from the first decade to the fifth. About 30 percent of this volume is harvested under uneven-aged principles of silvicultural management while the remainder will be harvested using even-aged management techniques. Livestock grazing use increases from current levels to 100,000 AUM's by the fifth decade. Emphasis within recreation management is on developed recreation. In addition to Peppermint, one additional ski area is to be studied for development. Off-highway vehicles are limited to designated roads and trails. About 12.650 acres of the BLM Rockhouse Wilderness Study Area are

recommended for wilderness designation. The average annual budget is approximately \$19.7 million.

#### AMENITY EMPHASIS ALTERNATIVE (AMN)

This alternative emphasizes high production levels of nonmarket resources, specifically wildlife and fish, dispersed recreation, visual quality and wilderness. Market resources including timber, range, and developed recreation are produced at economically efficient levels to support nonmarket resources.

Nonmarket resources are emphasized. Dispersed recreation areas are managed to encourage their use. Off-highway vehicle use is limited to designated roads and trails in order to reduce conflicts with other users. Winter snow use and equestrian uses are encouraged. The trail system is extended. In addition to Peppermint, one additional ski area is to be studied for development. All Further Planning Areas evaluated in this FEIS (127,000 acres) are recommended for wilderness designation. Nonconsumptive use of wildlife and fish receives priority over consumptive uses. Habitat improvement is concentrated outside conifer zones. About 43 MMBF of timber is harvested during the first decade, increasing to 54 MMBF by the fifth decade. Livestock grazing is reduced to about 55,000 AUM's in the first decade. The average annual budget for the first decade is \$14.7 million.

#### MARKET EMPHASIS ALTERNATIVE (MKT)

This alternative emphasizes high production levels of market resources, specifically timber, range, developed recreation. Nonmarket benefits are produced at economically efficient levels.

Timber, range and developed recreation are the priority resources. Harvest volume remains constant at about 126.5 MMBF per year from the first decade to the fifth. Livestock grazing increases to 75,000 AUM's. Emphasis is placed on developed recreation with management of dispersed recreation areas managed at low standard. Campgrounds are expanded and constructed. In addition to Peppermint, two additional ski areas are to be studied for development. The entire non-wilderness portion of the Forest is open for off-highway vehicle use. About 9,710 acres of BLM Rockhouse Wilderness Study Area are recommended for wilderness designation. Estimated yearly budget for the first decade is approximately \$24.3 million.

#### HIGH PRODUCTION EMPHASIS ALTERNATIVE (PRO)

This alternative meets the 1985 Regional high timber goals. It also produces other market resources at relatively high levels. Nonmarket benefits are produced at economically efficient levels.

Timber is the first priority market resource. Harvest volume remains constant at 133 MMBF per year from the first decade to the fifth. Livestock grazing increases to 76,000 AUM's. Emphasis is placed on developed recreation with management of dispersed recreation areas conducted at low standard. In addition to Peppermint, two additional ski areas are to be studied for development. Rivers are not recommended for designation under the Wild and Scenic River System. Areas are not

recommended for wilderness designation. Estimated yearly budget for the first decade is approximately \$24.6 million.

#### WILDLIFE, FISH AND VISUAL EMPHASIS ALTERNATIVE (WFV)

**This** alternative emphasizes high levels of recreational use associated with wildlife and fish, and visual quality. Management of other resources supports wildlife and fish goals and produces commodities at economically efficient levels.

The Piute and Scodies Mountains are managed for maximum wildlife recreational opportunities. Off-highway vehicle use is limited to reduce conflicts with wildlife. Equestrian use is encouraged. Trails and campgrounds are developed to meet hunting and fishing needs. Other than Peppermint, no additional ski areas are to be studied for development. Additional areas are not recommended for wilderness designation. Wildlife and fish habitat improvement is emphasized. Approximately 82 MMF of timber is harvested per year from the first decade through the fifth. Harvest unit size and location is limited by visual concerns. Livestock grazing is slightly reduced to 60,000 AUM's. The average annual budget during the first decade is approximately \$18.6 million.

### C. AFFECTED ENVIRONMENT (FEIS CHAPTER 3)

#### 1. GENERAL DESCRIPTION OF THE FOREST

The Sequoia NF is located at the southern end of the Sierra Nevada range within portions of Fresno, Tulare and Kern Counties. Elevations range from just under 1,000 feet on the western edge of the Forest on the Kings and Kern Rivers, to 12,432 feet on Florence Peak in the Golden Trout Wilderness.

Four major rivers drain the Planning Area. The Kings, Kaweah, and Tule Rivers flow almost due west through deep canyons in the western portion of the area. The Kern River drains the central and eastern portions of the Planning Area and is impounded at Lake Isabella.

The Kern River and its forks separates the southeastern portion of the Planning Area into distinct regions. Below Lake Isabella, the Kern River separates the Breckenridge Mountains from the Greenhorn Mountains. They are characterized by oak savanna at the low elevations, a chaparral zone, and a small area of conifer forest at the high elevations.

Upstream from Lake Isabella, the South Fork of the Kern River divides the Piute Mountains and Scodie Mountains from the Kern Plateau. The Piutes are similar to the Breckenridge Mountains but have a larger conifer forest zone. The eastern portion of the Piutes exhibits the desert influence, supporting Joshua trees and pinyon pine. The Scodie Mountains are a distinct desert mountain range with an extensive pinyon pine woodland.

The North Fork of the Kern River divides the Greenhorn Mountains from the Kern Plateau. The Greenhorns rise from the floor of the San Joaquin Valley with annual grassland and **oak** savanna at low elevations, a chaparral belt

at mid-elevations and a broad belt of conifer forests at higher elevations. The eastern side of the Greenhorn Mountains drops steeply into the Kern River Canyon.

The Kern Plateau region is across the upper Kern River from the Greenhorn range. This mountainous "plateau" is generally covered by mixed conifer forests with red fir at higher elevations. Subalpine trees and shrubs grow on the highest mountain tops.

The Tule River drains the northwest section of the Forest and is impounded on the valley floor at Lake Success. This area has annual grassland and oak savanna at low elevations, a steep chaparral belt at mid-elevations. The higher elevations are covered with mixed conifer forests with red fir and subalpine vegetation on the highest regions.

The northern unit of the Forest, the Hume Lake Ranger District, is isolated by administrative rather than geomorphic boundaries. This unit is bounded by the Sierra National Forest on the north and Sequoia and Kings Canyon National Parks on the south and east. The majority of the Hume Lake District is in the Kings River drainage. A portion of the southern part of the District is in the Kaweah River watershed. The vegetation of the Hume Lake District is similar to that of the rest of the Forest with annual grasslands and oak savanna at the lower elevations, chaparral at mid elevations and conifers at the higher elevations.

## 2. SOCIOECONOMIC ENVIRONMENT

The Sequoia NF's immediate sphere of influence includes Tulare and Kern Counties. Although a small portion of the Forest is within Fresno County, the Forest exerts negligible influence on that population.

Tulare County has a population of over 250,000. The median age is 28, yet those 65 or older account for 22 percent of the populace. The communities are generally rural in nature with agriculture dominating the County's economy. About one percent of the total employment comes from the timber industry.

Kern County has a population of over 400,000. The median age is 28.3 with 11 percent 65 or older. Somewhat more urbanized than Tulare County, the economy is centered on agriculture, oil, gas, and military bases.

Foothill communities in both Tulare and Kern counties located along access routes into the Forest are particularly affected by Forest management activities. Economics of these communities revolve around ranching, recreation and retirement annuities while the social groups consist of ranchers, retirees, young working families and second-home owners.

## 3. AIR QUALITY

Air quality has been deteriorating in the Planning Area from pollutants produced locally; but, primarily, from those generated in the San Francisco Bay area and transported to the Area by the prevailing winds. The Clean Air Act and State Pollution Control Standards have slowed this deterioration with the former assigning the Sequoia NF responsibilities to

protect the **air** quality related values of the ~~Dome~~ Land Wilderness. In addition, current management direction is to protect the area by prohibiting activities that would degrade the quality of the air.

#### 4. CULTURAL RESOURCES

The Forest occupies transition zones between desert cultures to the east and Central Valley cultures to the west. Yokuts, Kawaiisu, Tubatulabal, and Mono Indian groups all utilized portions of the Forest. In historic times, large scale giant sequoia logging, gold mining, ranching and farming brought new settlers into this area.

To date, approximately 20 percent of the Forest has been inventoried to evaluate properties in project areas. About 1,100 prehistoric and historic properties have been recorded. Of these, approximately 235 have been evaluated for significance, and roughly two-thirds of these were judged eligible for nomination to the National Register of Historic Places.

#### 5. DIVERSITY

On the Sequoia NF, several broad ecosystems can be described. These are the conifer forests, conifer woodlands, oak woodlands, and chaparrals. Within these ecosystems, there are inclusions of riparian zones, meadows and localized special components such as caves and talus slopes which provide important habitat for many species of fish and wildlife.

Management activities have altered the abundance, proportions, and distributions of seral stages existing in a given area. Most of the mixed chaparral vegetation has developed into older stages of mature to ~~overmature~~ dense brush fields. The oak woodland ecosystem has decreased in extent due to encroachment of conifers. The conifer forests have many stands with brush understories and regeneration areas of five to 40 acres.

#### 6. EARTH RESOURCES

- a. Soil Resource: Most of the soils on the Forest are developed from weathered granitic rock and range from deep to shallow. They have a thin surface layer, slightly developed subsoil horizons, and textures of coarse sandy loam with low moisture and nutrient holding capacities.
- b. Surface Water Resource: The majority of the Forest is in the headwaters of the Tulare Lake Basin which lies at the southern end of the San Joaquin Valley. The main rivers draining the Forest are the Kings, Tule and Kern. These rivers are impounded in reservoirs. The water is used for agriculture in the San Joaquin Valley. The Forest's average annual water yield is estimated to be 736,000 acre-feet.

The Forest Service presently uses less than one-tenth of one percent of the runoff for timber harvest (dust abatement), grazing (watering troughs), recreation and administrative sites (domestic uses). Past water quality monitoring has shown that the water on

the Forest has been of good quality except for short-term high bacteria and sediment concentrations.

- c. **Groundwater Resources:** Drinkable groundwater has been found within 305 feet of the earth's surface on the Forest and typically at the surface in the form of springs. Twenty-four wells and thirty-five springs provide water for campgrounds and administrative use sites.
- d. **Geologic Hazards:** In the past, seismic and volcanic activity have been minor. Only small earthquakes have occurred on the Forest since 1900. Landslide hazards also have not been very important.

## 7. ENERGY

- a. **Energy Production:** Hydroelectric generation is the primary form of energy production in the Forest. There are six hydroelectric plants currently in operation with a combined output of 87.6 Megawatts. Firewood for home heating use accounts for approximately 20,000 cords harvested annually.
- b. **Energy Conservation:** Energy conservation efforts have been directed towards the reduction of fuel usage by the Forest Service fleet and improving the efficiency of Forest Service buildings.

## 8. FACILITIES

- a. **Forest Transportation System:** The Sequoia National Forest transportation system consists of 29 bridges, 1,471 miles of Forest development roads, 1,033 miles of abandoned roads, and 383 miles of road under the jurisdiction of others. Approximately 44 percent of the Forest is unroaded.
- b. **Buildings, Utility Systems, and Other Facilities:** The Forest owns and operates approximately 136 buildings and related facilities which support the management of the Forest. These include offices, warehouses, residences, shops, and mess halls. Approximately 62 potable water systems and 124 waste water systems presently serve both recreation and administrative facilities. The Forest maintains and operates four heliports. Other facilities on the Forest include seven electric transmission lines greater than 66 KV. Two other energy projects lie on the Forest but include only diversion dams, conduits and part of one powerhouse.

## 9. FIRE AND FUELS MANAGEMENT

Geographic location, weather, vegetation, topography, access and human activity create a complex fire management situation in the Planning Area. The Sequoia NF has an average of 200 fires each year which burn an average of 10,305 acres. About 67 percent of the fires are caused by lightning. The balance are caused by Forest visitors, workers, and residents. The fire management organization's mission is to protect life, property, and wildland resources from wildfire.



Fuels management activities have consisted of construction and maintenance of fuelbreaks, burning of timber sale slash, and broadcast burning in both timber and brush fuels.

#### 10. FISHERIES, WILDLIFE AND SENSITIVE PLANTS

- a. Fisheries: Containing the southernmost native trout fisheries in the Sierra Nevada, the Forest has four "golden like" trout of the Kern River drainage and possibly some remnant native rainbow trout populations. Nonnative populations of rainbows, browns and brook trout, smallmouth and largemouth bass, green sunfish, and Sacramento perch occur. A total of 24 species of fish are known on the Forest.
- b. Wildlife: The variety of wildlife species is closely related to the diversity of habitats available. The Planning Area offers several broad ecosystems, each of which provides a variety of habitats for 85 species of mammals, 194 species of birds, 25 of reptiles and 11 of amphibians. Because of the losses of habitat outside the Forest due to urbanization, wildlife species are becoming more dependent upon the Forest to supply their life requirements.
- c. Sensitive Plants: The Sequoia NF contains over 2,000 species of plants, comprising over one-fourth of the State's flora. Of this total, 23 species are considered sensitive and are listed by the Regional Forester as requiring special management attention. At this time, no plants on the Sequoia NF are federally listed as threatened or endangered. Under the California Endangered Species Act, three species are listed as endangered. Under the California Native Plant Protection Act, three species are listed as rare.

#### 11. FURTHER PLANNING AREAS

Further Planning Areas are unroaded lands which are at least 5,000 acres or of any size if they are contiguous to an existing classified wilderness. These areas are evaluated and recommended for either wilderness or non-wilderness designation. Four National Forest areas (totalling about 91,460 acres) and one Bureau of Land Management area (35,560 acres) are evaluated in this document.

#### 12. HUMAN RESOURCES PROGRAM

In 1982, there were 1,065 individuals employed through Human Resource Programs on the Sequoia NF. Program participants have worked in a wide range of Forest operations including trail maintenance, meadow restoration, fire suppression and prevention, facilities and vehicle maintenance, timber stand improvement projects, drafting, data processing, clerical work, and warehousing.

### 13. INTEGRATED PEST MANAGEMENT

There is no indication of current "epidemics" occurring on the Sequoia National Forest. With the exception of the 1975-77 drought/insect/disease-related tree mortality, catastrophic mortality situations have not been encountered on the Forest within the last 10-15 years. Common pests on the Forest include: root diseases, White Pine Blister Rust, dwarf and true mistletoes, bark beetles, and pocket gophers.

### 14. LANDS

- a. Landownership Adjustments: There are approximately 54,000 acres of privately or State owned land within the boundaries of the Sequoia NF. It consists of many small, scattered parcels. Their effect on management activities, while locally intense, does not have the major effects common on other, less well-consolidated forests. Landownership adjustment is a long-range program and the Sequoia NF will only consider dealing with willing proponents.
- b. Land Line Location: There are over 700 miles of boundary line between public and private land located within and adjacent to the Sequoia National Forest. Encroachments onto Forest land from private land activities are an increasing problem. The management solution has been to embark on a 20-year project to mark and post all boundary lines.
- c. Rights-of-Way Acquisition: The Sequoia National Forest's rights-of-way program has concentrated on timber access roads. Existing Forest System roads and trails cross the land of over 30 private landowners without rights-of-way and total about 45 miles.
- d. Non-Recreation Special Uses: Use of approximately 2,150 acres of Sequoia National Forest is authorized by about 280 special-use permits. These permits allow occupancy and use by the private sector and local governments. Permits are for agricultural, industrial, public information, transportation, utilities, communications and water uses.

### 15. LAW ENFORCEMENT

Law enforcement is a concern because of the potential for injury to employees and visitors, and the potential for losses, damages and costs to the natural resources and property. In areas of highly concentrated recreation use (such as the Kern Canyon, Lloyd Meadows Road, and Coffee Camp), law enforcement problems occur. These include vandalism, theft and destruction of government property, wildland arson and occupancy trespass. There also has recently been an increase in the illegal use of National Forest System lands for the cultivation of marijuana.

### 16. MINERALS AND GEOLOGY

Geologically, the Forest is dominated by granitic rocks with small regions of metamorphic rocks. Volcanic rocks are rare. Mining activity is primarily associated with the metamorphic rocks. Currently there are about

five small mines in operation on public ~~or~~ private land within the Forest boundary.

Past mining activity has been mainly for gold, uranium, and tungsten. Combining the mineral potentials for these three minerals into a rating system, the Forest has about 170,000 acres of low, 670,000 acres of medium and 335,000 acres of very high/high overall potential.

Rock aggregate and decomposed granite are the most abundant forms of saleable mineral material for construction. Some hard rock granite is available for making aggregate; but the quality is not high.

Possible geothermal resources occur along the Kern Canyon, near Monache Meadows, at California Hot Springs, and along the eastern edge of the Forest. Oil and gas and other leasable mineral potential is low.

#### 17. NATIONAL NATURAL LANDMARKS

Eleven candidates were identified through the National Park Service theme studies. These are sites which potentially represent a particular niche in the ecological ~~or~~ geological character of the United States. Of these, four are within potential Research Natural Areas ~~or~~ Botanical Areas; and one is within an existing Botanical Area.

#### 18. OFFICE OF INFORMATION AND INTERPRETIVE SERVICES

The Office of Information and Interpretive Services provides an important communication link between Forest managers and the public. The Forest is within one hours drive of Fresno and Bakersfield and three and one-half hours drive of the Los Angeles Basin. Hispanics make up a large portion of the user group of the Western Foothills and Kern River. The Forest currently provides bilingual information programs and regularly contacts the Hispanic media.

Current management direction is as follows:

- 1) Provide opportunities for visitors and potential visitors to get basic information about the Forest;
- 2) Provide on-the-ground interpretation and visitor contact in areas of heavy use;
- 3) ~~Make~~ the Forest visitor's stay a more enjoyable and meaningful experience; and
- 4) Assist resource management objectives through public understanding.

## LIVESTOCK GRAZING

Grazing management programs on the Forest cover about **1.01** million acres of grassland, chaparral, and open forests. Of this total acreage, **171,000** acres are suitable for use by livestock. This large area is divided into approximately 55 allotments, located in three counties. Forty-seven paid permits are issued annually to permittees to graze about **69,000** Animal Unit Months (AUM's).

Current management activities include general administration and range improvement. General administration involves the inventory of range resources, the determination of grazing potentials, the designation of livestock grazing allotments, the granting of permits, and the inspection and administration of livestock grazing. Range improvement practices include fencing and water development, prescribed burning, brush control, thinning of timber stands, control of animal pests, draining, and fertilization.

## 19. RECREATION

The Planning Area offers a broad spectrum of recreational opportunities and settings for all seasons of the year. Principal outdoor recreation activities include camping, motorized travel, water-related activities, hiking, horseback riding, and resort recreation residence use. In **1982**, the Sequoia NF received nearly 2.5 million Recreation Visitor Days (36 percent occurred in developed sites and 64 percent in dispersed areas). Four percent of the recreation use was in designated wildernesses. Approximately **90** percent of the use originated from the southern California counties of Los Angeles, Riverside, San Bernardino, San Diego, and Santa Barbara. There is increasing demand for water-related and snow-related recreational opportunities as well as for dispersed motorized vehicle activities.

## 20. RESEARCH NATURAL AREAS

Research Natural Areas typify important natural ecological or geological types that have special unique characteristics of scientific interest or importance. There are no Research Natural Areas currently established on the Sequoia NF. Three areas are identified to represent the Jeffrey pine, red fir and giant sequoia target elements. One area has been identified as a potential candidate for the conifer woodland element. These areas are recommended for advancement to final establishment status.

## 21. SPECIAL INTEREST AREAS

Special Interest Areas (SIA's) are designated because of their unusual or outstanding scenic, cultural, scientific, natural or other unique characteristics which merit special attention and management. There are two existing SIA's on the Forest, the Bodfish Piute Cypress Botanical Area and the Packsaddle Cave Geologic Area. All five Botanical Areas analyzed in the FEIS are established.

## 22. URBAN INTERFACE

The urban interface is an area of human settlement on private land, contiguous to the Forest, and developed or potentially developable to a density comparable to conventional subdivisions. The Forest has identified several urban interface areas on the basis of visual resources and increased fire prevention and suppression needs. These include many of the communities within or near the Forest boundary.

## 23. VEGETATIONMANAGEMENT

- a. **Chaparral:** There are 245,700 acres classed as chaparral in the Planning Area. About 25 percent is Montane chaparral while the remainder is a mixed chaparral. Of this latter type, approximately 75 percent is in late or mature-to-decadent seral stages. The brush is dense, often virtually impenetrable, and has high dead-to-live fuel ratios.
- b. **Giant Sequoia:** Giant sequoia or Sierra redwood (Sequoiadendron giganteum) grows in mixed conifer forests on the western slope of the Sierra Nevada at elevations ranging from 5,000 to 8,000 feet. Thirty-eight groves (totaling approximately 13,200 acres) are scattered within the Forest. Current management direction is to preserve the species and individual old growth trees for public enjoyment .
- c. **Meadows:** The Forest currently has approximately 7,540 acres of mountain meadows ranging in size from about two acres to several hundred acres. These lie within the boundaries of the conifer ecosystem and represent less than two percent of that ecosystem's **gross** acreage. Mountain meadows are important for the production of livestock, maintenance of wildlife populations, the grazing of recreation and administrative stock. Meadows provide scenic vistas. Their timbered edges are favored campsites of Forest visitors. Also, meadows serve to filter sediment and bacteria from the water to provide clean water for human use and fish habitat.
- d. **Riparian Areas:** The riparian area includes as the aquatic ecosystem, riparian vegetation, 100-year floodplain and Streamside Management Zone. They are important to a number of Forest resources by providing water quality protection, fish and wildlife habitat, visual contrast, and a fire barrier. The hardwoods supply firewood and the softwoods provide timber. The water and meadows attract livestock. Recreation opportunities are intensely pursued along streams and in the flat areas adjacent to them.
- e. **Timber:** Of approximately 531,000 acres inventoried as containing conifers, 420.00 acres are classified as tentatively suitable for timber production. Under current management direction, the potential yield for the Forest is 95 million board feet per year. Timber is managed under the even-aged system, incorporating such harvest practices as clearcutting, shelterwood and selection methods. Modified even-aged practices are used where timber

production is not the dominant use, such as at recreation sites, visually sensitive areas or in critical wildlife habitat.

Regeneration of the forest is done by planting seedling trees or allowing natural seeding. In order to assure survival and tree growth, it is necessary to protect the seedlings from insects, disease, fire and competing vegetation.

- f. **Woodlands:** Woodlands on the Planning Area are divided into various *oak* and pinyon pine woodlands. Black *oak* woodlands lie between the mixed chaparral and conifer forests and are primarily located on the western slope of the Forest. They comprise about 45,900 acres on the Forest. Black *oak* is used for firewood and produces mast (acorns) and habitat for deer and other wildlife species.

The blue *oak* woodland occurs only on the western fringe of the Forest between the floor of the San Joaquin Valley and the mixed chaparral. This woodland has traditionally been used for range production due to the extensive annual grass understory and the proximity to cattle ranches in the Valley.

Live *oak* woodland generally occurs on steep, rocky slopes and covers 124,100 acres of the Sequoia NF. Live *oak* is an evergreen *oak* which grows in relatively pure stands. There has been little utilization of this woodland by wildlife, livestock, or recreationists.

Pinyon pine woodlands are found on the eastern portion of the Piutes and the Kern Plateau and on the Scodie Mountains. They cover approximately 100,600 acres of the Planning Area. Use of the area has been primarily by people who use off-highway vehicles, hunt, or gather pinyon nuts.

## 24. VISUAL RESOURCES

The Planning Area offers a wide range of scenic features that include desert-like, foothill, and mid-to-high elevation landscapes. Some of the outstanding visual attractions are the Kings River Canyon, the Little Kern River, Farewell Gap, the Needles, and Dome Rock. State Highways 180 and 190 have been designated as eligible as State Scenic Highways. Current estimates are that five percent of the Planning Area has an altered appearance.

## 25. WILD AND SCENIC RIVERS

The National Rivers Inventory of 1982 identified three rivers on the Sequoia NF which may be suitable for inclusion in the National Wild and Scenic River System. These rivers, the South Fork of the Kern River, the Kings River, and the South Fork of the Kings River, were considered in the planning process. In addition, the North Fork Kern River was identified for study as a possible candidate by an Amendment (PL 95-625, November 10, 1978) to the Wild and Scenic River Act. A final environmental statement was completed, the report was evaluated by the Office of Management and

Budget, and a recommendation was made by the President. Legislation designating all or portions of each of these rivers was enacted into law in November, 1987.

## 26. WILDERNESS

Five wildernesses comprised of 264.071 acres have been designated by Congress in the Sequoia NF. This is approximately 24 percent of the Forest. These are the Golden Trout, Dome Lands, Monarch, South Sierra, and Jennie Lakes Wildernesses.

### D. ENVIRONMENTAL CONSEQUENCES (FEIS. Chapter 4)

This is a brief summary of the key environmental consequences. The intent is to highlight the major consequences of the alternatives and the differences between them.

#### 1. SOCIOECONOMIC

Because of expanded economic and recreational opportunities under the PRF, MKT, and PRO Alternatives, all local groups except Native Americans would be better off. Native Americans would experience no change. Under the RPA and WFW Alternatives, ranchers would have fewer AUM's, but all other groups would be better off. Only recreational day users would be better off under the AMN Alternative. There is negligible change under the CUR Alternative.

#### 2. AIR QUALITY

The projected acreage that would be burned by wildfire, acreage burned by prescribed fire and a comparison of recreational visitor days (RVD's) in developed recreation are used to assess the consequences of the alternative. In each of six alternatives (PRF, AMN, MKT, PRO, RPA, WFW), there will be a steady increase, to a relatively high level, of developed recreation and wildfire. This will result in periodically reduced visibility and lowered air quality. In CUR, there will be a moderate increase, to a relatively low level, of developed recreation and wildfire. This will result in brief periods of lowered air quality.

#### 3. CULTURAL RESOURCES

The three key indicators of the direct and indirect effects of an alternative on cultural resources are acres of timber harvest, anticipated number of mineral operating plans, and miles of road construction and reconstruction. The AMN poses the lowest potential threat while the PRO poses the greatest potential threat. The MKT, falls somewhat below PRO in potential for adverse impact. The RPA, PRF, WFW, and CUR are in the middle-to-lower end of the mid-range in terms of their potential to adversely affect cultural resources.

#### 4. DIVERSITY

Timber management practices and the use of prescribed fire are the indicators which can influence diversity. In the chaparral and conifer

zones, diversity would increase slightly under PRF. In the CUR, chaparral would remain stable to moderately improved and the conifer would improve. Under RPA, species diversity in chaparral would increase to the greatest extent in the early stages: the conifer forest would remain about the same as the 1982 level. Diversity in chaparral would increase in the AMN, but the conifer would decline. For MKT and PRO, there would be an increase of total species diversity with a dramatic change in conifer to the young seral stages early in the planning period. Under WFV, species mix would increase in chaparral and diversity would be high in the conifer.

## 5. EARTH RESOURCES

- a. **Soil Productivity:** Indicators of potential effects on soil productivity are both positive (soil protection and improvement activities) and negative (soil disturbing activities). Due to moderate-to-low amounts of soil disturbances from timber harvest and/or moderate-to-high amounts of prescribed fire, maintenance of long-term productivity, with overall positive effects on the soil resource, is expected under the PRF, CUR, RPA, AMN, and WFV Alternatives.

The MKT and PRO Alternatives also have an overall positive effect on the soil resource. Due to the lower difference between the positive and negative effects over the first three decades, the long-term soil productivity will be lower than with other alternatives.

- b. **Water Yield:** Chaparral treatment and timber harvest are indicators of increases in water yield. At about three percent above present levels, Alternatives PRO and MKT show the greatest increases in water yield for the first decade. PRF follows with a two percent increase and RPA with a one percent increase in water yield. CUR, AMN, and WFV have negligible effects on water yield.
- c. **cumulative Watershed Effects:** Generally, management activities have similar effects on soil and watershed condition. For the purpose of this discussion, they will be considered together. Each of the alternatives has been designed to protect the basic soil productivity and to meet applicable water quality standards. However, implementation of the various alternatives produce differing impacts on soil and watershed condition. Equivalent Roded Acres (ERA's) are used to measure the Cumulative Watershed Effects of the amount and intensity of disturbance resulting under each alternative. The relationship of ERA's to the watershed threshold, or upper tolerance limit, may be used to compare the relative effects of the alternatives on soils and watershed.



CUMULATIVE WATERSHED EFFECTS  
AS A PERCENT OF EQUIVALENT ROADED ACRES CONSUMED BY VARIOUS ALTERNATIVE

DECADE	WATERSHED THRESHOLD	PRF	CUR	RPA	AMN	MKT	PRO	WFV
1	100	55	88	71	18	87	90	42
2	100	56	90	72	18	89	92	43
3	100	57	87	85	29	100	99	95
4	100	69	96	94	34	95	95	62
5	100	75	97	93	33	100	99	58

## 6. FISHERIES

The consequences of the alternatives are measured by the designation and treatment of the Streamside Management Zone, the amount of cumulative watershed disturbance, and the miles of potentially affected streams. The results show that in PRF, CUR, MKT, and PRO, the physical limiting factors are unchanged and native trout production will remain constant. For WFV, AMN, and RPA structural habitat improvements will result in a one to two percent increase in the pounds of trout produced.

## 7. WILDLIFE

Activities associated with the special management direction of each alternative are the indicators used to predict the availability of potential habitats used by the various species groups on the Forest.

The increase (+) or decrease (-) of potential habitat are listed for each species group in the following order: species associated with early successional stages, with late successional stages, and with mast production. By alternative, the projections show:

PRF +15%, -10%, -10%  
 CUR +10%, -10%, -10%  
 RPA +10%, -10%, -10%  
 AMN +10%, -05%, -02%  
 MKT +10%, -17%, -10%  
 PRO +12%, -25%, -15%  
 WFV +13%, -15%, -10%

## 8. FURTHER PLANNING AREAS AND BLM WILDERNESS STUDY AREA

The maximum potential for wilderness within the planning unit is approximately **392,000** acres. This includes all existing wildernesses and Further Planning Areas (including the BLM Rockhouse ~~WSA~~ which is immediately adjacent to the National Forest boundary and the existing Dome Land Wilderness). It does not include the Kings River area, which has since been allocated by Congress, or the Cypress area, which was addressed by the BLM.

## 9. WILDERNESS

Oat Mountain, Dennison. Moses, BLM Rockhouse. and Scodies, (totalling **127,020** acres) constitute the five Further Planning and Wilderness Study Areas evaluated for recommendation for inclusion in the National Wilderness Preservation System. *AMN* recommends that all five be included in that system. *RPA* recommends **12,650** acres of BLM Rockhouse; *PRF*, **12,500** acres of BLM Rockhouse; and *MKT*, **9,710** acres of BLM Rockhouse. Finally, *WFV*, *CUR* and *PRO* recommend no additional acres for wilderness designation.

In all alternatives, those Further Planning and Wilderness Study Areas not recommended for wilderness would be allocated to non-wilderness management. As such, they would lose some or all of their wilderness characteristics as more management practices are implemented. Recognizing that rugged terrain would limit many opportunities, uses possible in these areas include *OHV* and other dispersed recreation, timber management, wildlife and range habitat improvement, and measures to improve water yield.

## 10. LIVESTOCK GRAZING

Dispersed recreation and new road construction have the greatest effect on the grazing environment. Generally, forage production remains at current levels in *CUR*, *PRF* and *WFV*; increases in *MKT* and *PRO*; and decreases in *RPA* and *AMN*. The demand for forage is met in *PRF*, *CUR*, *WFV*, *MKT*, *PRO*; but demand exceeds supply in *RPA* and *AMN*.

## 11. RECREATION

The quality and opportunity for recreational experiences, and accessibility are compared to demonstrate the key differences between the alternatives. Except for *CUR* and *RPA*, demand for dispersed recreation will be met in all alternatives. Demand for developed recreation will be met in *AMN* and *MKT*. Opportunities for high quality dispersed recreation will occur in *PRF*, *RPA*, and *AMN*. Opportunities for high quality developed recreation will be available in *MKT*, *PRO* and *WFV*. Access to and through the Forest increases in every alternative.

## 12. VEGETATION

- a. **Chaparral:** The indicators which strongly influence chaparral are the use of prescribed fire, wildfire, grazing, and mechanical treatments. In *PRF*, *AMN*, *RPA*, *WFV*, and *CUR*, productivity and diversity increase until the fourth decade when they are maintained. About 40 percent will be in early successional stages. The *MKT* and *PRO* Alternatives show a decline in productivity and diversity through the fourth decade, then an increase in the fifth to near maximum production. Sixty percent is in early successional stages at the end of the fifth decade.
- b. **Giant Sequoia:** Acres of giant sequoia are allocated to one of three management categories, Intensive, Non-intensive, and Preservation. *PRF* establishes approximate acres for each grove and management category. These are: Preservation, 1600 acres:

Non-intensive, 7500 acres: and Intensive, 4100 acres. A Giant Sequoia Management Implementation Plan will be developed under NEPA procedures and incorporated into the Forest Plan as an amendment.

For the remaining alternatives, approximate acreages allocated to Preservation, Non-intensive, and Intensive management categories are as follows: WFV - 3,000, 9,000, and 1,000; CUR - 9,000, 3,000 and 1,000; RPA - 2,000, 10,000, and 1,000; MKT and PRO - 1,000, 11,000, and 1,000 acres; AMN - 6,000 and 1,000

- c. **Meadows:** Accelerated runoff from surrounding watershed lands can damage meadow ecosystems. Recreation facilities, vegetative manipulation, overuse by livestock, transportation systems, and recreation use can increase or concentrate runoff. These changes in runoff characteristics accelerate channel gullying which lead to ecosystem instability and reduced productivity.

Under PRF, CUR and WFV, the overall effect would vary from the present level of management to an improvement of condition. New road construction would decline by 20 percent, as measured on a miles of road per acre basis. This would result in less of an increase in gullying in meadows caused by roads. Under MKT and PRO, relatively little watershed restoration activity, compared to the large increases in road construction and moderate-to-large increases in water flow, would add to the overall likelihood of accelerated gully formation in meadows. As a result, plant productivity would be reduced.

AMN and RPA provide for the greatest watershed restoration activity among all alternatives. With Forest-wide OHV restriction and little or no increase in water flow, the likelihood of drainage pattern changes and gullying will be reduced substantially.

- d. **Riparian Areas:** Riparian areas are affected primarily by resource activities, such as timber harvesting, livestock foraging, recreation, and prescribed fire. The effects of these activities can be mitigated by protecting the characteristics of the stream and nearby land - the Streamside Management Zone.

For all alternatives, this protection is accounted for by considering **only** selective harvest in the Streamside Management Zone (SMZ). This selective harvest would treat five percent or less of the timber in the SMZ. A 100-foot distance from each side of the stream's edge will delineate the SMZ. This delineation accounts for approximately 12,850 acres of CAS land.

- e. **Oak Woodland:** Under all alternatives, small acreage treatments for the black and live oak types result in no change to slight increases in seedling establishment and diversity. Blue **oaks** would continue unchanged throughout the planning period.

- f. **Pinyon-Sage:** Prescribed fire use, firewood cutting, and OHV use influence diversity and habitat quality.

For PRF, CUR, RPA, WFV, MKT, and PRO, diversity would remain approximately unchanged during the planning period for the pinyon component. Habitat quality declines throughout the ecosystem due to increased soil compaction, soil loss, and overall degradation of habitat due to greater OHV use. For AMN, diversity would remain approximately unchanged.

- g. **CONIFER:** Three principle factors guide conifer management on the 420,000 acres of land estimated to be tentatively suitable for timber production: economic growth and yield, provisions for diversity, and maintenance of a healthy forest where timber harvest is not a primary objective. As management emphasis shifts between alternatives, the acres found suitable for timber production also shift. For example, the PRF has the greatest amount of suitable land with 345,000 acres. RPA, PRO, AND MKT follow with 330,000, 326,000, and 305,000 acres, respectively. The three alternatives that have the least are CUR, AMN, AND WFV with 298,000, 280,000, and 271,000 acres, respectively.

In addition to the number of suitable acres, the intensity of timber production shifts between alternatives. The PRO and MKT assign the greatest amount of land to Regulation Class I (the most intensive harvest classification) with the former 86 percent and the latter 81 percent of the suitable landbase. In descending order, the PRF and CUR place 64 and 62 percent in this class while RPA places 44 percent. Neither the AMN nor WFV assign acres to Regulation Class I.

Uneven-aged management is used exclusively in the AMN and on about 50 percent of the suitable landbase in the WFV. About 20 percent of the land used in PRF is managed under uneven-aged systems. The RPA applies uneven-aged management in the form of Regulation Class III on 30 percent of that alternative's suitable landbase. The remaining four alternatives (PRF, CUR, MKT, AND PRO) use even-aged management extensively on both Regulation Class I and II lands.

### 13. FACILITIES

The transportation system proposed under each alternative is developed in response to resource management demands. New construction is primarily related to timber management. Road closures are related to ability to maintain and the demand on the resources they access. Under MKT and PRO, expansion of recreation opportunities and increased emphasis on commodity production result in extension of the road system and an increase in road mileage available for public use. Under PRF, CUR and RPA, there would be relatively moderate road construction and road mileage available for public use. The AMN Alternative produces few new roads and road mileage available to the public is significantly increased. The WFV Alternative varies little from current levels and would have a moderate amount of roads available for public use.

#### 14. VISUAL RESOURCES

Timber management with associated road building produces the greatest changes to the natural character of the landscape. The AMN and WFV result in 100 percent of the Forest with the natural landscape character dominant. The PRF and RPA have 77 percent and 76 percent respectively, while CUR shows 71 percent. The two alternatives with the greatest impacts are MKT and PRO, resulting in 64 percent and 59 percent respectively of the natural landscape character dominant.

All alternatives, except AMN, have approximately 24 percent of the Forest land base in the Preservation VQO. The AMN has nearly 32 percent.

#### 15. WILD AND SCENIC RIVERS

Enactment of HR799 in November 1987, designated all but one segment of the Kings River as Wild and Scenic. Segment 1 and its surrounding area, the Kings River Further Planning Area, were designated as a Special Management Area. It will be managed according to a management plan which will be incorporated into the Forest Plan as an amendment. Separate legislation designated the North and South Forks of the Kern as Wild and Scenic.



United States  
Department of  
Agriculture



**Forest  
Service**

Pacific  
Southwest  
Region

# Sequoia National Forest Land and Resource Management Plan

## FINAL Environmental Impact Statement



FINAL ENVIRONMENTAL IMPACT STATEMENT

PACIFIC SOUTHWEST REGION

SEQUOIA NATIONAL FOREST

LAND AND RESOURCE MANAGEMENT PLAN

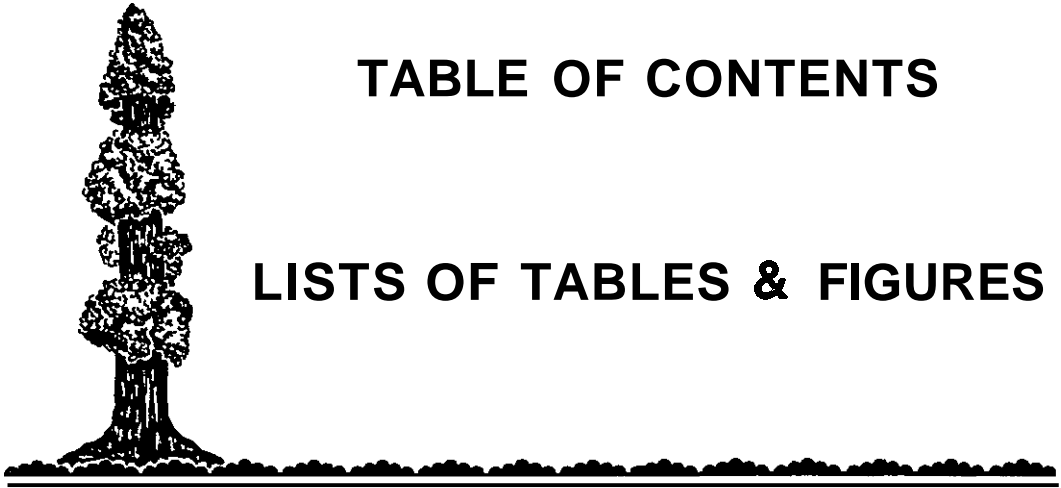
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ABSTRACT: This Final Environmental Impact Statement describes the proposed action and six alternatives, including a "no-action" alternative, for managing the land and resources of the Sequoia National Forest. The land area involved is 1,119,045 acres. The alternatives provide different mixes of integrated management prescriptions, resulting in different levels of outputs, goods, and services. The environmental consequences of the proposed action and alternatives are displayed.



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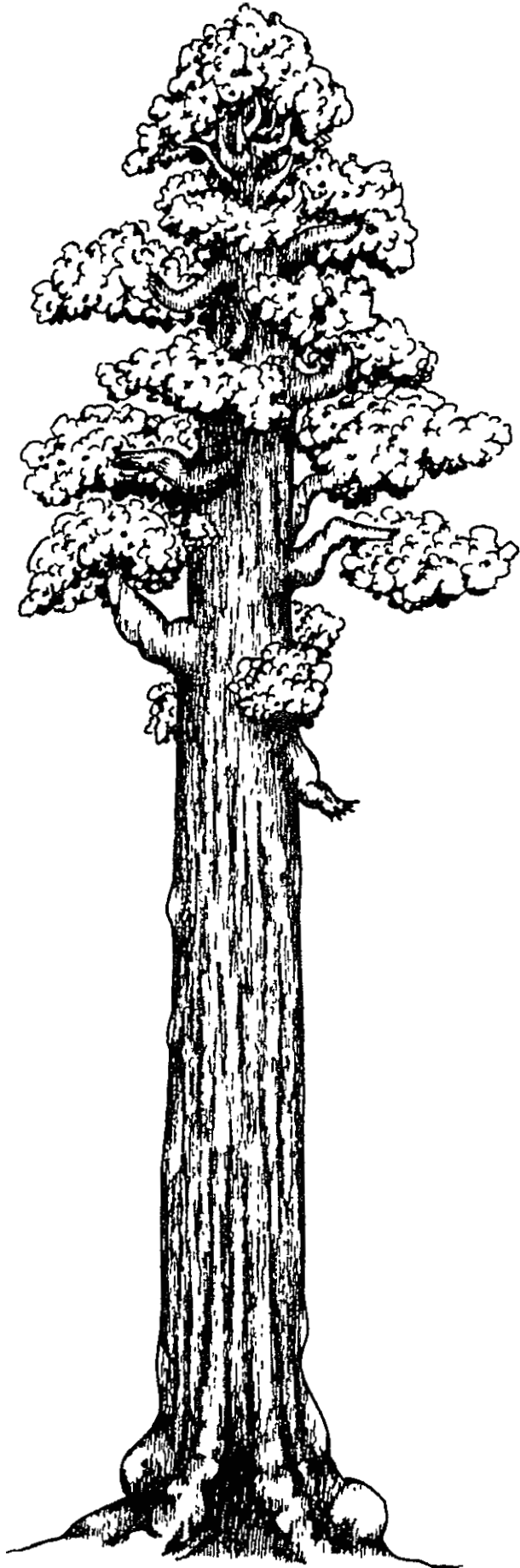


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## SUMMARY

SUMMARY

FINAL ENVIRONMENTAL IMPACT STATEMENT

Sequoia National Forest  
Land and Resource Management Plan

Type of Action: Administrative

Responsible Federal Agency: USDA Forest Service

Responsible Official: Paul F. Barker, Regional Forester  
Pacific Southwest Region  
USDA Forest Service  
630 Sansome Street  
San Francisco, California 94111

For Further Information Contact: James A. Crates, Forest Supervisor  
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Date of Transmission to Environmental Protection Agency and the Public:

Final: FEB 25 1980

A. PURPOSE AND NEED (FEIS, Chapter 1)

This Final Environmental Impact Statement (FEIS) describes the proposed action and alternatives for the management of the land and resources administered by the Sequoia National Forest. This proposed action is the basis of the National Forest Land and Resource Management Plan (Forest Plan), which is detailed in a separate document. For the purposes of disclosure under the National Environmental Policy Act (NEPA), the FEIS and Forest Plan are treated as combined documents.

Planning is conducted under the authority of the Multiple-Use and Sustained-yield Act of 1960 and the Forest and Rangeland Renewable

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Resources Planning Act (RPA) of 1974, as amended by the National Forest Management Act (NFMA).

The area covered by this Plan includes lands within the National Forest System and Bureau of Land Management. The Forest boundary encompasses 1,173,200 acres, of which 1,119,045 are National Forest System lands.

The goal of the Forest Plan is to develop a fully integrated mix of management practices which provide for use and protection of Forest resources, satisfy guiding legislation, and address local, regional and national issues. The Plan directs the way the Forest will be managed for the production of goods and services in a way that maximizes long-term net public benefit in an environmentally sound manner.

Net public benefit is measured in three separate categories:

- 1) cash receipts such as from timber sales;
- 2) noncash benefits such as dispersed recreation; and
- 3) nonpriced benefits such as visual quality.

Present net value (PNV) is the portion of net public benefit comprised by the **sum** of cash receipts and noncash benefits minus the costs to produce them. Present Net Value on the Sequoia NF changes most in relation to the size of the timber and recreation programs, with noncash benefits constituting a substantial percent of the total PNV. Non-priced benefits are changed most in relation to the level of vegetative treatments, primarily timber harvest and prescribed burning (see Glossary and Appendix D).

Development of the Forest Plan began with public involvement efforts to determine public issues. Forest Service management concerns were also identified and combined with the public issues to form an integrated list of issues and concerns. These issues and concerns were used to guide the development of alternatives and their evaluation. The Forest issues, found in Chapter 1 of the FEIS, are primarily concerned with the major topics of:

- Wilderness Management and Further Planning Areas
- Land Ownership Adjustment
- Water Yield and Use
- Recreation
- Interpretive Services Opportunities
- Special Area Classifications
- Off-Highway Vehicle Management
- Timber Harvesting
- Giant Sequoia Management
- Fish and Wildlife Habitat
- Rangeland Management
- Roads and Trails Management and Maintenance
- **Energy** Production
- Streams and Wetland Management
- Plant and Animal Diversity.

As a result of public review of the Draft Environmental Impact Statement (DEIS) the following additional issues were identified:

- Pesticides
- Budget
- Visual Resources
- Wild and Scenic Rivers - Kings River, Segment 1

A proposed course of action and six alternatives to the proposal have been developed to address these planning issues. The alternatives are described in the next section.

B. ALTERNATIVES INCLUDING THE PROPOSED ACTION (FEIS, Chapter 2)

In response to planning questions, legislation, and regulations, a range of alternatives was initially developed and analyzed in the Draft Environmental Impact Statement (DEIS). Each alternative had a different management emphasis resulting in different levels of resource management. Forest-wide standards and guidelines served to assure quality land stewardship in all alternatives. The multiple-use nature of the alternatives provided a mix of outputs and insured that no single resource element was emphasized to the extent that another resource was excluded.

In response to public comment on the DEIS, several alternatives have been modified and three have been dropped. The Preferred Alternative responds to public input by considering a combination of even-aged and uneven-aged management, managing off-highway vehicle (OHV) use on designated roads and trails, and several other changes.

The Amenity Emphasis (AMN) and Wildlife, Fish, Visual Resources (WFV) Alternatives were also modified in timber management technique. The former is managed under uneven-aged principles exclusively; the latter is managed predominantly under uneven-aged principles. The Low Budget (LBU), Current, Economic Dispersed (CED), and Wilderness/Capital Investment Emphasis (WLI) Alternatives have been dropped from the set of alternatives considered in detail. Analysis of those alternatives is retained in Chapter 2 of the FEIS. Those options were dropped because, relatively speaking, they were no longer considered responsive to public issues. Finally, all alternatives were modified to provide a network of 40 Spotted Owl Habitat Areas, well distributed across the known range of the species in the planning area.

The Proposed Action, as described in the FEIS, is the basis for the Forest Plan which is published in a separate document. While the Proposed Action and its six alternatives are analyzed in the FEIS over a 50-year time period, the life of the Forest Plan is expected to range from 10 to 15 years. The additional analysis is included as a means of testing the long-term implications of each of the alternatives. It is not intended that the Proposed Action or any of these alternatives would be in effect for 50 years. The Forest Plan will be revised at least every 15 years, or whenever conditions or demands have changed significantly.

The alternatives considered in detail are described below.

#### PREFERRED ALTERNATIVE (PRF)

This alternative is the Proposed Action. It produces market and nonmarket close to 1980 RPA target levels. Timber harvest utilizing both even- and uneven-aged silvicultural prescriptions, livestock grazing, dispersed recreation, and ski area development are emphasized.

Annual timber harvest volume increases from 97 MMF in the first decade to 100.5 MMF in the fifth decade. About 30 percent of this volume will be harvested under uneven-aged principles of silvicultural management while the remainder will be harvested using even-aged management techniques. Harvest of preferred market species is emphasized. Livestock grazing remains relatively constant during first decade with fluctuations occurring in the annual grassland and chaparral ecosystems. Off-highway vehicles (OHV's) may be operated on designated roads and trails. Cross-country use of OHV's is prohibited. Besides Peppermint, two additional ski areas are to be studied for development over the long-term. About 12,500 acres of the BLM Rockhouse Wilderness Study Area are recommended for wilderness designation. The average annual budget for the first decade is \$20.0 million.

#### CURRENT ALTERNATIVE (CUR)

This alternative emphasizes production of timber and cattle over developed recreation and nonmarket resources. It is a continuation of present management direction.

Timber harvest volume remains constant at 94.4 MMF from the first to the fifth period. Livestock grazing remains constant during the planning period. Emphasis within recreation management is on maintenance of current recreational facilities at low standard levels. In addition to Peppermint, two additional ski areas are to be studied for development. Off-highway vehicles are restricted to roads and trails on some areas of the Forest. Other areas are open to cross-country travel. Further Planning Areas are not recommended for wilderness designation. The estimated yearly budget in the first decade is \$16.3 million.

#### 1980 RESOURCE PLANNING ACT PROGRAM ALTERNATIVE (RPA)

This alternative meets or exceeds the Sequoia National Forest share of the Resource Planning Act goals.

Timber harvest volume remains constant at 101.3 MMF from the first decade to the fifth. About 30 percent of this volume is harvested under uneven-aged principles of silvicultural management while the remainder will be harvested using even-aged management techniques. Livestock grazing use increases from current levels to 100,000 AUM's by the fifth decade. Emphasis within recreation management is on developed recreation. In addition to Peppermint, one additional ski area is to be studied for development. Off-highway vehicles are limited to designated roads and



trails. About 12,650 acres of the BLM Rockhouse Wilderness Study Area are recommended for wilderness designation. The average annual budget is approximately \$19.7 million.

#### AMENITY EMPHASIS ALTERNATIVE (AMN)

This alternative emphasizes high production levels of nonmarket resources, specifically wildlife and fish, dispersed recreation, visual quality and wilderness. Market resources including timber, range, and developed recreation are produced at economically efficient levels to support nonmarket resources.

Nonmarket resources are emphasized. Dispersed recreation areas are managed to encourage their use. Off-highway vehicle use is limited to designated roads and trails in order to reduce conflicts with other users. Winter snow use and equestrian uses are encouraged. The trail system is extended. In addition to Peppermint, one additional ski area is to be studied for development. All Further Planning Areas evaluated in this FEIS (127,000 acres) are recommended for wilderness designation. Nonconsumptive use of wildlife and fish receives priority over consumptive uses. Habitat improvement is concentrated outside conifer zones. About 43 MMF of timber is harvested during the first decade, increasing to 54 MMF by the fifth decade. Livestock grazing is reduced to about 55,000 AM's in the first decade. The average annual budget for the first decade is \$14.7 million.

#### MARKET EMPHASIS ALTERNATIVE (MKT)

This alternative emphasizes high production levels of market resources, specifically timber, range, developed recreation. Nonmarket benefits are produced at economically efficient levels.

Timber, range and developed recreation are the priority resources. Harvest volume remains constant at about 126.5 MMF per year from the first decade to the fifth. Livestock grazing increases to 75,000 AM's. Emphasis is placed on developed recreation with management of dispersed recreation areas managed at low standard. Campgrounds are expanded and constructed. In addition to Peppermint, two additional ski areas are to be studied for development. The entire non-wilderness portion of the Forest is open for off-highway vehicle use. About 9,710 acres of BLM Rockhouse Wilderness Study Area are recommended for wilderness designation. Estimated yearly budget for the first decade is approximately \$24.3 million.

#### HIGH PRODUCTION EMPHASIS ALTERNATIVE (PRO)

This alternative meets the 1985 Regional high timber goals. It also produces other market resources at relatively high levels. Nonmarket benefits are produced at economically efficient levels.

Timber is the first priority market resource. Harvest volume remains constant at 133 MMF per year from the first decade to the fifth. Livestock grazing increases to 76,000 AUM's. Emphasis is placed on developed recreation with management of dispersed recreation areas conducted at low standard. In addition to Peppermint, two additional ski areas are to be studied for development. Rivers are not recommended for

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designation under the Wild and Scenic River System. Areas are not recommended for wilderness designation. Estimated yearly budget for the first decade is approximately \$24.6 million.

#### WILDLIFE, FISH AND VISUAL EMPHASIS ALTERNATIVE (WFV)

This alternative emphasizes high levels of recreational use associated with wildlife and fish, and visual quality. Management of other resources supports wildlife and fish goals and produces commodities at economically efficient levels.

The Piute and Scodies Mountains are managed for maximum wildlife recreational opportunities. Off-highway vehicle use is limited to reduce conflicts with wildlife. Equestrian use is encouraged. Trails and campgrounds are developed to meet hunting and fishing needs. Other than Peppermint, no additional ski areas are to be studied for development. Additional areas are not recommended for wilderness designation. Wildlife and fish habitat improvement is emphasized. Approximately 82 MMF of timber is harvested per year from the first decade through the fifth. Harvest unit size and location is limited by visual concerns. Livestock grazing is slightly reduced to 60,000 AUM's. The average annual budget during the first decade is approximately \$18.6 million.

### C. AFFECTED ENVIRONMENT (FEIS CHAPTER 3)

#### 1. GENERAL DESCRIPTION OF THE FOREST

The Sequoia NF is located at the southern end of the Sierra Nevada range within portions of Fresno, Tulare and Kern Counties. Elevations range from just under 1,000 feet on the western edge of the Forest on the Kings and Kern Rivers, to 12,432 feet on Florence Peak in the Golden Trout Wilderness.

Four major rivers drain the Planning Area. The Kings, Kaweah, and Tule Rivers flow almost due west through deep canyons in the western portion of the area. The Kern River drains the central and eastern portions of the Planning Area and is impounded at Lake Isabella.

The Kern River and its forks separates the southeastern portion of the Planning Area into distinct regions. Below Lake Isabella, the Kern River separates the Breckenridge Mountains from the Greenhorn Mountains. They are characterized by oak savanna at the low elevations, a chaparral zone, and a small area of conifer forest at the high elevations.

Upstream from Lake Isabella, the South Fork of the Kern River divides the Piute Mountains and Scodie Mountains from the Kern Plateau. The Piutes are similar to the Breckenridge Mountains but have a larger conifer forest zone. The eastern portion of the Piutes exhibits the desert influence, supporting Joshua trees and pinyon pine. The Scodie Mountains are a distinct desert mountain range with an extensive pinyon pine woodland.

The North Fork of the Kern River divides the Greenhorn Mountains from the Kern Plateau. The Greenhorns rise from the floor of the San Joaquin Valley

with annual grassland and oak savanna at low elevations, a chaparral belt at mid-elevations and a broad belt of conifer forests at higher elevations. The eastern side of the Greenhorn Mountains drops steeply into the Kern River Canyon.

The Kern Plateau region is across the upper Kern River from the Greenhorn range. This mountainous "plateau" is generally covered by mixed conifer forests with red fir at higher elevations. Subalpine trees and shrubs grow on the highest mountain tops.

The Tule River drains the northwest section of the Forest and is impounded on the valley floor at Lake Success. This area has annual grassland and oak savanna at low elevations, a steep chaparral belt at mid-elevations. The higher elevations are covered with mixed conifer forests with red fir and subalpine vegetation on the highest regions.

The northern unit of the Forest, the Hume Lake Ranger District, is isolated by administrative rather than geomorphic boundaries. This unit is bounded by the Sierra National Forest on the north and Sequoia and Kings Canyon National Parks on the south and east. The majority of the Hume Lake District is in the Kings River drainage. A portion of the southern part of the District is in the Kaweah River watershed. The vegetation of the Hume Lake District is similar to that of the rest of the Forest with annual grasslands and oak savanna at the lower elevations, chaparral at mid-elevations and conifers at the higher elevations.

## 2. SOCIOECONOMIC ENVIRONMENT

The Sequoia NF's immediate sphere of influence includes Tulare and Kern Counties. Although a small portion of the Forest is within Fresno County, the Forest exerts negligible influence on that population.

Tulare County has a population of over 250,000. The median age is 28, yet those 65 or older account for 22 percent of the populace. The communities are generally rural in nature with agriculture dominating the County's economy. About one percent of the total employment comes from the timber industry.

Kern County has a population of over 400,000. The median age is 28.3 with 11 percent 65 or older. Somewhat more urbanized than Tulare County, the economy is centered on agriculture, oil, gas, and military bases.

Foothill communities in both Tulare and Kern counties located along access routes into the Forest are particularly affected by Forest management activities. Economics of these communities revolve around ranching, recreation and retirement annuities while the social groups consist of ranchers, retirees, young working families and second-home owners.

## 3. AIR QUALITY

Air quality has been deteriorating in the Planning Area from pollutants produced locally: but, primarily, from those generated in the San Francisco Bay area and transported to the Area by the prevailing winds. The Clean Air Act and State Pollution Control Standards have slowed this

deterioration with the former assigning the Sequoia NF responsibilities to protect the **air** quality related values of the Dome Land Wilderness. In addition, current management direction is to protect the area by prohibiting activities that would degrade the quality of the air.

#### 4. CULTURAL RESOURCES

The Forest occupies transition zones between desert cultures to the east and Central Valley cultures to the west. Yokuts, Kawaiisu, Tubatulabal, and Mono Indian groups all utilized portions of the Forest. In historic times, large scale giant sequoia logging, gold mining, ranching and farming brought new settlers into this area.

To date, approximately 20 percent of the Forest has been inventoried to evaluate properties in project areas. About 1,100 prehistoric and historic properties have been recorded. Of these, approximately 235 have been evaluated for significance, and roughly two-thirds of these were judged eligible for nomination to the National Register of Historic Places.

#### 5. DIVERSITY

On the Sequoia NF, several broad ecosystems can be described. These are the conifer forests, conifer woodlands, oak woodlands, and chaparrals. Within these ecosystems, there are inclusions of riparian zones, meadows and localized special components such as caves and talus slopes which provide important habitat **for** many species of fish and wildlife.

Management activities have altered the abundance, proportions, and distributions of seral stages existing in a given area. Most of the mixed chaparral vegetation has developed into older stages of mature to overmature dense brush fields. The oak woodland ecosystem has decreased in extent due to encroachment of conifers. **The** conifer forests have many stands with brush understories and regeneration areas of five to 40 acres.

#### 6. EARTH RESOURCES

- a. **Soil Resource:** Most of the soils on the Forest are developed from weathered granitic rock and range from deep to shallow. They have a thin surface layer, slightly developed subsoil horizons, and textures of coarse sandy loam with low moisture and nutrient holding capacities.
- b. **Surface Water Resource:** **The** majority of the Forest is in the headwaters of the Tulare Lake Basin which lies at the southern end of the San Joaquin Valley. The main rivers draining the Forest are the Kings, Tule and Kern. These rivers are impounded in reservoirs. The water is used for agriculture in the San Joaquin Valley. The Forest's average annual water yield is estimated to be 736,000 acre-feet.

The Forest Service presently uses less than one-tenth of one percent of the runoff for timber harvest (dust abatement), grazing (watering troughs), recreation and administrative sites (domestic uses). Past water quality monitoring has shown that the water on

the Forest has been of good quality except for short-term high bacteria and sediment concentrations.

- c. **Groundwater Resources:** Drinkable groundwater has been found within 305 feet of the earth's surface on the Forest and typically at the surface in the form of springs. Twenty-four wells and thirty-five springs provide water for campgrounds and administrative use sites.
- d. **Geologic Hazards:** In the past, seismic and volcanic activity have been minor. Only small earthquakes have occurred on the Forest since 1900. Landslide hazards also have not been very important.

## 7. ENERGY

- a. **Energy Production:** Hydroelectric generation is the primary form of energy production in the Forest. There are six hydroelectric plants currently in operation with a combined output of 87.6 Megawatts. Firewood for home heating use accounts for approximately 20,000 cords harvested annually.
- b. **Energy Conservation:** Energy conservation efforts have been directed towards the reduction of fuel usage by the Forest Service fleet and improving the efficiency of Forest Service buildings.

## 8. FACILITIES

- a. **Forest Transportation System:** The Sequoia National Forest transportation system consists of 29 bridges, 1,471 miles of Forest development roads, 1,033 miles of abandoned roads, and 383 miles of road under the jurisdiction of others. Approximately 44 percent of the Forest is unroaded.
- b. **Buildings, Utility Systems, and Other Facilities:** The Forest owns and operates approximately 136 buildings and related facilities which support the management of the Forest. These include offices, warehouses, residences, shops, and mess halls. Approximately 62 potable water systems and 124 waste water systems presently serve both recreation and administrative facilities. The Forest maintains and operates four heliports. Other facilities on the Forest include seven electric transmission lines greater than 66 KV. Two other energy projects lie on the Forest but include only diversion dams, conduits and part of one powerhouse.

## 9. FIRE AND FUELS MANAGEMENT

Geographic location, weather, vegetation, topography, access and human activity create a complex fire management situation in the Planning Area. The Sequoia NF has an average of 200 fires each year which burn an average of 10,305 acres. About 67 percent of the fires are caused by lightning. The balance are caused by Forest visitors, workers, and residents. The fire management organization's mission is to protect life, property, and wildland resources from wildfire.

Fuels management activities have consisted of construction and maintenance of fuelbreaks, burning of timber sale slash, and broadcast burning in both timber and brush fuels.

#### 10. FISHERIES, WILDLIFE AND SENSITIVE PLANTS

- a. Fisheries: Containing the southernmost native trout fisheries in the Sierra Nevada, the Forest has four "golden like" trout of the **Kem** River drainage and possibly some remnant native rainbow trout populations. Nonnative populations of rainbows, browns and brook trout, smallmouth and largemouth bass, green sunfish, and Sacramento perch occur. A total of 24 species of fish are known on the Forest.
- b. Wildlife: **The** variety of wildlife species is closely related to the diversity of habitats available. The Planning Area offers several broad ecosystems, each of which provides a variety of habitats for 85 species of mammals, 194 species of birds, 25 of reptiles and 11 of amphibians. Because of the losses of habitat outside the Forest due to urbanization, wildlife species are becoming more dependent upon the Forest to supply their life requirements.
- c. Sensitive Plants: **The** Sequoia NF contains over 2,000 species of plants, comprising over one-fourth of the State's flora. Of this total, 23 species are considered sensitive and are listed by the Regional Forester as requiring special management attention. At this time, no plants on the Sequoia NF are federally listed as threatened **or** endangered. Under the California Endangered Species Act, three species are listed as endangered. Under the California Native Plant Protection Act, three species are listed as rare.

#### 11. FURTHER PLANNING AREAS

Further Planning Areas are unroaded lands which **are** at least 5,000 acres **or** of any size if they are contiguous to an existing classified wilderness. These areas are evaluated and recommended for either wilderness **or** non-wilderness designation. Four National Forest areas (totalling about 91,460 acres) and one Bureau of Land Management area (35,560 acres) are evaluated in this document.

#### 12. HUMAN RESOURCES PROGRAM

In 1982, there were 1,065 individuals employed through Human Resource Programs on the Sequoia NF. Program participants have worked in a wide range of Forest operations including trail maintenance, meadow restoration, fire suppression and prevention, facilities and vehicle maintenance, timber stand improvement projects, drafting, data processing, clerical work, and warehousing.

### 13. INTEGRATED PEST MANAGEMENT

There is no indication of current "epidemics" occurring on the Sequoia National Forest. With the exception of the 1975-77 drought/insect/disease-related tree mortality, catastrophic mortality situations have not been encountered on the Forest within the last 10-15 years. Common pests on the Forest include: root diseases, White Pine Blister Rust, dwarf and true mistletoes, bark beetles, and pocket gophers.

### 14. LANDS

- a. Landownership Adjustments: There are approximately 54,000 acres of privately or State owned land within the boundaries of the Sequoia NF. It consists of many small, scattered parcels. Their effect on management activities, while locally intense, does not have the major effects common on other, less well-consolidated forests. Landownership adjustment is a long-range program and the Sequoia NF will only consider dealing with willing proponents.
- b. Land Line Location: There are over 700 miles of boundary line between public and private land located within and adjacent to the Sequoia National Forest. Encroachments onto Forest land from private land activities are an increasing problem. The management solution has been to embark on a 20-year project to mark and post all boundary lines.
- c. Rights-of-way Acquisition: The Sequoia National Forest's rights-of-way program has concentrated on timber access roads. Existing Forest System roads and trails cross the land of over 30 private landowners without rights-of-way and total about 45 miles.
- d. Non-Recreation Special Uses: Use of approximately 2,150 acres of Sequoia National Forest is authorized by about 280 special-use permits. These permits allow occupancy and use by the private sector and local governments. Permits are for agricultural, industrial, public information, transportation, utilities, communications and water uses.

### 15. LAW ENFORCEMENT

Law enforcement is a concern because of the potential for injury to employees and visitors, and the potential for losses, damages and costs to the natural resources and property. In areas of highly concentrated recreation use (such as the Kern Canyon, Lloyd Meadows Road, and Coffee Camp), law enforcement problems occur. These include vandalism, theft and destruction of government property, wildland arson and occupancy trespass. There also has recently been an increase in the illegal use of National Forest System lands for the cultivation of marijuana.

### 16. MINERALS AND GEOLOGY

Geologically, the Forest is dominated by granitic rocks with small regions of metamorphic rocks. Volcanic rocks are rare. Mining activity is primarily associated with the metamorphic rocks. Currently there are about

five small mines in operation on public or private land within the Forest boundary.

Past mining activity has been mainly for gold, uranium, and tungsten. Combining the mineral potentials for these three minerals into a rating system, the Forest has about 170,000 acres of low, 670,000 acres of medium and 335,000 acres of very high/high overall potential.

Rock aggregate and decomposed granite are the most abundant forms of saleable mineral material for construction. Some hard rock granite is available for making aggregate; but the quality is not high.

Possible geothermal resources occur along the Kern Canyon, near Monache Meadows, at California Hot Springs, and along the eastern edge of the Forest. Oil and gas and other leasable mineral potential is low.

#### 17. NATIONAL NATURAL LANDMARKS

Eleven candidates were identified through the National Park Service theme studies. These are sites which potentially represent a particular niche in the ecological or geological character of the United States. Of these, four are within potential Research Natural Areas or Botanical Areas: and one is within an existing Botanical Area.

#### 18. OFFICE OF INFORMATION AND INTERPRETIVE SERVICES

The Office of Information and Interpretive Services provides an important communication link between Forest managers and the public. The Forest is within one hour's drive of Fresno and Bakersfield and three and one-half hours' drive of the Los Angeles Basin. Hispanics make up a large portion of the user group of the Western Foothills and Kern River. The Forest currently provides bilingual information programs and regularly contacts the Hispanic media.

Current management direction is as follows:

- 1) Provide opportunities for visitors and potential visitors to get basic information about the Forest;
- 2) Provide on-the-ground interpretation and visitor contact in areas of heavy use;
- 3) Make the Forest visitor's stay a more enjoyable and meaningful experience; and
- 4) Assist resource management objectives through public understanding.

#### 19. LIVESTOCK GRAZING

Grazing management programs on the Forest cover about 1.01 million acres of grassland, chaparral, and open forests. Of this total acreage, 171,000 acres are suitable for use by livestock. This large area is divided into approximately 55 allotments, located in three counties. Forty-seven paid permits are issued annually to permittees to graze about 69,000 Animal Unit Months (AUM's).



Current management activities include general administration and range improvement. General administration involves the inventory of range resources, the determination of grazing potentials, the designation of livestock grazing allotments, the granting of permits, and the inspection and administration of livestock grazing. Range improvement practices include fencing and water development, prescribed burning, brush control, thinning of timber stands, control of animal pests, draining, and fertilization.

## 20. RECREATION

The Planning Area offers a broad spectrum of recreational opportunities and settings for all seasons of the year. Principal outdoor recreation activities include camping, motorized travel, water-related activities, hiking, horseback riding, and resort recreation residence use. In 1982, the Sequoia NF received nearly 2.5 million Recreation Visitor Days (36 percent occurred in developed sites and 64 percent in dispersed areas). Four percent of the recreation use was in designated wildernesses. Approximately 90 percent of the use originated from the Southern California counties of Los Angeles, Riverside, San Bernardino, San Diego, and Santa Barbara. There is increasing demand for water-related and snow-related recreational opportunities as well as for dispersed motorized vehicle activities.

## 21. RESEARCH NATURAL AREAS

Research Natural Areas typify important natural ecological or geological types that have special unique characteristics of scientific interest or importance. There are no Research Natural Areas currently established on the Sequoia NF. Three areas are identified to represent the Jeffrey pine, red fir and giant sequoia target elements. One area has been identified as a potential candidate for the conifer woodland element. These areas are recommended for advancement to final establishment status.

## 22. SPECIAL INTEREST AREAS

Special Interest Areas (SIA's) are designated because of their unusual or outstanding scenic, cultural, scientific, natural or other unique characteristics which merit special attention and management. There are two existing SIA's on the Forest, the Bodfish Piute Cypress Botanical Area and the Packsaddle Cave Geologic Area. All five Botanical Areas analyzed in the FEIS are established.

## 23. URBAN INTERFACE

The urban interface is an area of human settlement on private land, contiguous to the Forest, and developed or potentially developable to a density comparable to conventional subdivisions. The Forest has identified several urban interface areas on the basis of visual resources and increased fire prevention and suppression needs. These include many of the communities within or near the Forest boundary.

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## 24. VEGETATION MANAGEMENT

- a. **Chaparral:** There are 245,700 acres classed as chaparral in the Planning Area. About 25 percent is Montane chaparral while the remainder is a mixed chaparral. Of this latter type, approximately 75 percent is in late or mature-to-decadent seral stages. The brush is dense, often virtually impenetrable, and has high dead-to-live fuel ratios.
- b. **Giant Sequoia:** Giant sequoia or Sierra redwood (Sequoiadendron giganteum) grows in mixed conifer forests on the western slope of the Sierra Nevada at elevations ranging from 5,000 to 8,000 feet. Thirty-eight groves (totaling approximately 13,200 acres) are scattered within the Forest. Current management direction is to preserve the species and individual old growth trees for public enjoyment.
- c. **Meadows:** The Forest currently has approximately 7,540 acres of mountain meadows ranging in size from about two acres to several hundred acres. These lie within the boundaries of the conifer ecosystem and represent less than two percent of that ecosystem's gross acreage. Mountain meadows are important for the production of livestock, maintenance of wildlife populations, the grazing of recreation and administrative stock. Meadows provide scenic vistas. Their timbered edges are favored campsites of Forest visitors. Also, meadows serve to filter sediment and bacteria from the water to provide clean water for human use and fish habitat.
- d. **Riparian Areas:** The riparian area includes as the aquatic ecosystem, riparian vegetation, 100-year floodplain and Streamside Management Zone. They are important to a number of Forest resources by providing water quality protection, fish and wildlife habitat, visual contrast, and a fire barrier. The hardwoods supply firewood and the softwoods provide timber. The water and meadows attract livestock. Recreation opportunities are intensely pursued along streams and in the flat areas adjacent to them.
- e. **Timber:** Of approximately 531,000 acres inventoried as containing conifers, 420,000 acres are classified as tentatively suitable for timber production.&/ Under current management direction, the potential yield for the Forest is 95 million board feet per year. Timber is managed under the even-aged system, incorporating such harvest practices as clearcutting, shelterwood and selection methods. Modified even-aged practices are used where timber production is not the dominant use, such as at recreation sites, visually sensitive areas or in critical wildlife habitat.

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<sup>1</sup>/ See Forest Plan, Appendix C, Sec. IV, Determination of Land Suitability for method used to determine land base suitable for timber production.

Regeneration of the forest is done by planting seedling trees or allowing natural seeding. In order to assure survival and tree growth, it is necessary to protect the seedlings from insects, disease, fire and competing vegetation.

- f. **Woodlands:** Woodlands on the Planning Area are divided into various *oak* and pinyon pine woodlands. Black *oak* woodlands lie between the mixed chaparral and conifer forests and are primarily located on the western slope of the Forest. They comprise about 45,900 acres on the Forest. Black *oak* is used for firewood and produces mast (acorns) and habitat for deer and other wildlife species.

The blue *oak* woodland occurs only on the western fringe of the Forest between the floor of the San Joaquin Valley and the mixed chaparral. This woodland has traditionally been used for range production due to the extensive annual grass understory and the proximity to cattle ranches in the Valley.

Live *oak* woodland generally occurs on steep, rocky slopes and covers 124,100 acres of the Sequoia NF. Live *oak* is an evergreen *oak* which grows in relatively pure stands. There has been little utilization of this woodland by wildlife, livestock, or recreationists.

Pinyon pine woodlands are found on the eastern portion of the Piutes and the Kern Plateau and on the Scodie Mountains. They cover approximately 100,600 acres of the Planning Area. Use of the area has been primarily by people who use off-highway vehicles, hunt, or gather pinyon nuts.

## 25. VISUAL RESOURCES

The Planning Area offers a wide range of scenic features that include desert-like, foothill, and mid-to-high-elevation landscapes. Some of the outstanding visual attractions are the Kings River Canyon, the Little Kern River, Farewell Gap, the Needles, and Dome Rock. State Highways 180 and 190 have been designated as eligible as State Scenic Highways. Current estimates are that five percent of the Planning Area has an altered appearance.

## 26. WILD AND SCENIC RIVERS

The National Rivers Inventory of 1982 identified three rivers on the Sequoia NF which may be suitable for inclusion in the National Wild and Scenic River System. These rivers, the South Fork of the Kern River, the Kings River, and the South Fork of the Kings River, were considered in the planning process. In addition, the North Fork Kern River was identified for study as a possible candidate by an Amendment (PL 95-625, November 10, 1978) to the Wild and Scenic River Act. A final environmental statement was completed, the report was evaluated by the Office of Management and Budget, and a recommendation was made by the President. Legislation

designating all or portions of each of these rivers was enacted into law in November 1987.

## 27. WILDERNESS

Five wildernesses comprised of 264,071 acres have been designated by Congress in the Sequoia NF. This is approximately 24 percent of the Forest. These are the Golden Trout, Dome Lands, Monarch, South Sierra, and Jennie Lakes Wildernesses.

### D. ENVIRONMENTAL CONSEQUENCES (FEIS, Chapter 4)

This is a brief summary of the key environmental consequences. The intent is to highlight the major consequences of the alternatives and the differences between them.

#### 1. SOCIOECONOMIC

Because of expanded economic and recreational opportunities under the PRF, MKT, and PRO Alternatives, all local groups except Native Americans would be better-off. Native Americans would experience no change. Under the RPA and WFV Alternatives, ranchers would have fewer AUM's, but all other groups would be better-off. Only recreational day users would be better off under the AMN Alternative. There is negligible change under the CUR Alternative.

#### 2. AIR QUALITY

The projected acreage that would be burned by wildfire, acreage burned by prescribed fire and a comparison of recreational visitor days (RVD's) in developed recreation are used to assess the consequences of the alternative. In each of six alternatives (PRF, AMN, MKT, PRO, RPA, WFV), there will be a steady increase, to a relatively high level, of developed recreation and wildfire. This will result in periodically reduced visibility and lowered air quality. In CUR, there will be a moderate increase, to a relatively low level, of developed recreation and wildfire. This will result in brief periods of lowered air quality.

#### 3. CULTURAL RESOURCES

The three key indicators of the direct and indirect effects of an alternative on cultural resources are acres of timber harvest, anticipated number of mineral operating plans, and miles of road construction and reconstruction. The AMN poses the lowest potential threat while the PRO poses the greatest potential threat. The MKT falls somewhat below PRO in potential for adverse impact. The RPA, PRF, WFV, and CUR are in the middle-to-lower end of the mid-range in terms of their potential to adversely affect cultural resources.

#### 4. DIVERSITY

Timber management practices and the use of prescribed fire are the indicators which can influence diversity. In the chaparral and conifer zones, diversity would increase slightly under PRF. In the CUR, chaparral

would remain stable to moderately improved and the conifer would improve. Under RPA, species diversity in chaparral would increase to the greatest extent in the early stages; the conifer forest would remain about the same as the 1982 level. Diversity in chaparral would increase in the AMN, but the conifer would decline. For MKT and PRO, there would be an increase of total species diversity with a dramatic change in conifer to the young seral stages early in the planning period. Under WFV, species mix would increase in chaparral and diversity would be high in the conifer.

## 5. EARTH RESOURCES

- a. **Soil Productivity:** Indicators of potential effects on soil productivity are both positive (soil protection and improvement activities) and negative (soil disturbing activities). Due to moderate-to-low amounts of soil disturbances from timber harvest and/or moderate-to-high amounts of prescribed fire, maintenance of long-term productivity, with overall positive effects on the soil resource, is expected under the PRF, CUR, RPA, AMN, and WFV Alternatives.

The MKT and PRO Alternatives also have an overall positive effect on the soil resource. Due to the lower difference between the positive and negative effects over the first three decades, the long-term soil productivity will be lower than with other alternatives.

- b. **Water Yield:** Chaparral treatment and timber harvest are indicators of increases in water yield. At about three percent above present levels, Alternatives PRO and MKT show the greatest increases in water yield for the first decade. PRF follows with a two percent increase and RPA with a one percent increase in water yield. CUR, AMN, and WFV have negligible effects on water yield.
- c. **Cumulative Watershed Effects:** Generally, management activities have similar effects on soil and watershed condition. For the purpose of this discussion, they will be considered together. Each of the alternatives has been designed to protect the basic soil productivity and to meet applicable water quality standards. However, implementation of the various alternatives produce differing impacts on soil and watershed condition. Equivalent Roded Acres (ERA's) are used to measure the Cumulative Watershed Effects of the amount and intensity of disturbance resulting under each alternative. The relationship of ERA's to the watershed threshold, or upper tolerance limit, may be used to compare the relative effects of the alternatives on soils and watershed.

CUMULATIVE WATERSHED EFFECTS  
AS A PERCENT OF EQUIVALENT ROADED ACRES CONSUMED BY VARIOUS ALTERNATIVES

DECADE	WATERSHED THRESHOLD	PRF	CUR	RPA	AMN	MKT	PRO	WFV
1	100	55	88	71	18	87	90	42
2	100	56	90	72	18	89	92	43
3	100	57	87	85	29	100	99	95
4	100	69	96	94	34	95	95	62
5	100	75	97	93	33	100	99	58

## 6. FISHERIES

The consequences of the alternatives are measured by the designation and treatment of the Streamside Management Zone, the amount of cumulative watershed disturbance, and the miles of potentially affected streams. The results show that in PRF, CUR, MKT, and PRO, the physical limiting factors are unchanged and native trout production will remain constant. For WFV, AMN, and RPA, structural habitat improvements will result in a one-to-two percent increase in the pounds of trout produced.

## 7. WILDLIFE

Activities associated with the special management direction of each alternative are the indicators used to predict the availability of potential habitats used by the various species groups on the Forest.

The increase (+) or decrease (-) of potential habitat are listed for each species group in the following order: species associated with early successional stages, with late successional stages, and with mast production. By alternative, the projections show:

	<u>Early</u>	<u>Late</u>	<u>Mast</u>
PRF	+27%	-30%	-15%
CUR	+17%	-30%	-10%
RPA	+15%	-22%	-10%
AMN	+10%	-07%	-05%
MKT	+22%	-37%	-15%
PRO	+27%	-48%	-27%
WFV	+30%	-28%	-10%

## 8. FURTHER PLANNING AREAS AND BLM WILDERNESS STUDY AREA

The maximum potential for wilderness within the planning unit is approximately 392,000 acres. This includes all existing wildernesses and Further Planning Areas (including the BLM Rockhouse WSA which is immediately adjacent to the National Forest boundary and the existing Dome Land Wilderness). It does not include the Kings River area, which has since been allocated by Congress, or the Cypress area, which was addressed by the BLM.

## 9. WILDERNESS

Oat Mountain, Dennison, Moses, BLM Rockhouse, and Scodies, (totalling 127,020 acres) constitute the five Further Planning and Wilderness Study Areas evaluated for recommendation for inclusion in the National Wilderness Preservation System. AMN recommends that all five be included in that system. RPA recommends 12,650 acres of BLM Rockhouse; PRF, 12,500 acres of BLM Rockhouse; and MKT, 9,710 acres of BLM Rockhouse. Finally, WFV, CUR and PRO recommend no additional acres for wilderness designation.

In all alternatives, those Further Planning and Wilderness Study Areas not recommended for wilderness would be allocated to non-wilderness management. As such, they would lose some or all of their wilderness characteristics as more management practices are implemented. Recognizing that rugged terrain would limit many opportunities, uses possible in these areas include OHV and other dispersed recreation, timber management, wildlife and range habitat improvement, and measures to improve water yield.

## 10. LIVESTOCK GRAZING

Dispersed recreation and new road construction have the greatest effect on the grazing environment. Generally, forage production remains at current levels in CUR, PRF and WFV; increases in MKT and PRO; and decreases in RPA and AMN. The demand for forage is met in PRF, CUR, WFV, MKT, PRO; but demand exceeds supply in RPA and AMN.

## 11. RECREATION

The quality and opportunity for recreational experiences, and accessibility are compared to demonstrate the key differences between the alternatives. Except for CUR and RPA, demand for dispersed recreation will be met in all alternatives. Demand for developed recreation will be met in AMN and MKT. Opportunities for high quality dispersed recreation will occur in PRF, RPA, and AMN. Opportunities for high quality developed recreation will be available in MKT, PRO and WFV. Access to and through the Forest increases in every alternative.

## 12. VEGETATION

- a. Chaparral: The indicators which strongly influence chaparral are the use of prescribed fire, wildfire, grazing, and mechanical treatments. In PRF, AMN, RPA, WFV, and CUR, productivity and diversity increase until the fourth decade when they are maintained. About 40 percent will be in early successional stages. The MKT and PRO Alternatives show a decline in productivity and diversity through the fourth decade, then an increase in the fifth to near maximum production. Sixty percent is in early successional stages at the end of the fifth decade.
- b. Giant Sequoia: Acres of giant sequoia are allocated to one of three management categories, Intensive, Non-intensive, and Preservation. PRF establishes approximate acres for each grove

and management category. These are: Preservation, 3900 acres: Non-intensive, 9300 acres: and Intensive, 0 acres. A Giant Sequoia Management Implementation Plan will be developed under NEPA procedures and incorporated into the Forest Plan as an amendment.

For the remaining alternatives, approximate acreages allocated to Preservation, Non-intensive, and Intensive management categories are as follows: WFV - 3,000, 9,000, and 1,000; CUR - 9,000, 3,000 and 1,000; RPA - 2,000, 10,000, and 1,000; MKT and PRO - 1,000, 11,000, and 1,000 acres: AMN - 6,000 and 1,000

- c. **Meadows:** Accelerated runoff from surrounding watershed lands can damage meadow ecosystems. Recreation facilities, vegetative manipulation, overuse by livestock, transportation systems, and recreation use can increase or concentrate runoff. These changes in runoff characteristics accelerate channel gulying which lead to ecosystem instability and reduced productivity.

Under PRF, CUR and WFV, the overall effect would vary from the present level of management to an improvement of condition. New road construction would decline by 20 percent, as measured on a miles-of-road-per-acre basis. This would result in less of an increase in gulying in meadows caused by roads. Under MKT and PRO, relatively little watershed restoration activity, compared to the large increases in road construction and moderate-to-large increases in water flow, would add to the overall likelihood of accelerated gully formation in meadows. As a result, plant productivity would be reduced.

AMN and RPA provide for the greatest watershed restoration activity among all alternatives. With Forest-wide OHV restriction and little or no increase in water flow, the likelihood of drainage pattern changes and gulying will be reduced substantially.

- d. **Riparian Areas:** Riparian areas are affected primarily by resource activities, such as timber harvesting, livestock foraging, recreation, and prescribed fire. The effects of these activities can be mitigated by protecting the characteristics of the stream and nearby land--the Streamside Management Zone.

For all alternatives, this protection is accounted for by considering only selective harvest in the Streamside Management Zone (SMZ). This selective harvest would treat five percent or less of the timber in the SMZ. A 100-foot distance from each side of the stream's edge will delineate the SMZ. This delineation accounts for approximately 12,850 acres of CAS land.

- e. **Oak Woodland:** Under all alternatives, small acreage treatments for the black and live oak types result in no change to slight increases in seedling establishment and diversity. Blue oaks would continue unchanged throughout the planning period.



- f. **Pinyon-Sage:** Prescribed fire use, firewood cutting, and OHV use influence diversity and habitat quality.

For PRF, CUR, RPA, WFV, MKT, and PRO, diversity would remain approximately unchanged during the planning period for the pinyon component. Habitat quality declines throughout the ecosystem due to increased soil compaction, soil loss, and overall degradation of habitat due to greater OHV use. For AMN, diversity would remain approximately unchanged.

- g. **CONIFER:** Three principle factors guide conifer management on the 420,000 acres of land estimated to be tentatively suitable for timber production: economic growth and yield, provisions for diversity, and maintenance of a healthy forest where timber harvest is not a primary objective. As management emphasis shifts between alternatives, the acres found suitable for timber production also shift. For example, the PRF has the greatest amount of suitable land with 345,000 acres. RPA, PRO, AND MKT follow with 330,000, 326,000, and 305,000 acres, respectively. The three alternatives that have the least are CUR, AMN, AND WFV with 298,000, 280,000, and 271,000 acres, respectively.

In addition to the number of suitable acres, the intensity of timber production shifts between alternatives. The PRO and MKT assign the greatest amount of land to Regulation Class I (the most intensive harvest classification) with the former 86 percent and the latter 81 percent of the suitable landbase. In descending order, the PRF and CUR place 64 and 62 percent in this class while RPA places 44 percent. Neither the AMN nor WFV assign acres to Regulation Class I.

Uneven-aged management is used exclusively in the AMN and on about 50 percent of the suitable landbase in the WFV. About 20 percent of the land used in PRF is managed under uneven-aged systems. The RPA applies uneven-aged management in the form of Regulation Class III on 30 percent of that alternative's suitable landbase. The remaining four alternatives (PRF, CUR, MKT, AND PRO) use even-aged management extensively on both Regulation Class I and II lands.

### 13. FACILITIES

The transportation system proposed under each alternative is developed in response to resource management demands. New construction is primarily related to timber management. Road closures are related to ability to maintain and the demand on the resources they access. Under MKT and PRO, expansion of recreation opportunities and increased emphasis on commodity production result in extension of the road system and an increase in road mileage available for public use. Under PRF, CUR and RPA, there would be relatively moderate road construction and road mileage available for public use. The AMN Alternative produces few new roads and road mileage available to the public is significantly increased. The WFV Alternative varies little from current levels and would have a moderate amount of roads available for public use.

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#### 14. VISUAL RESOURCES

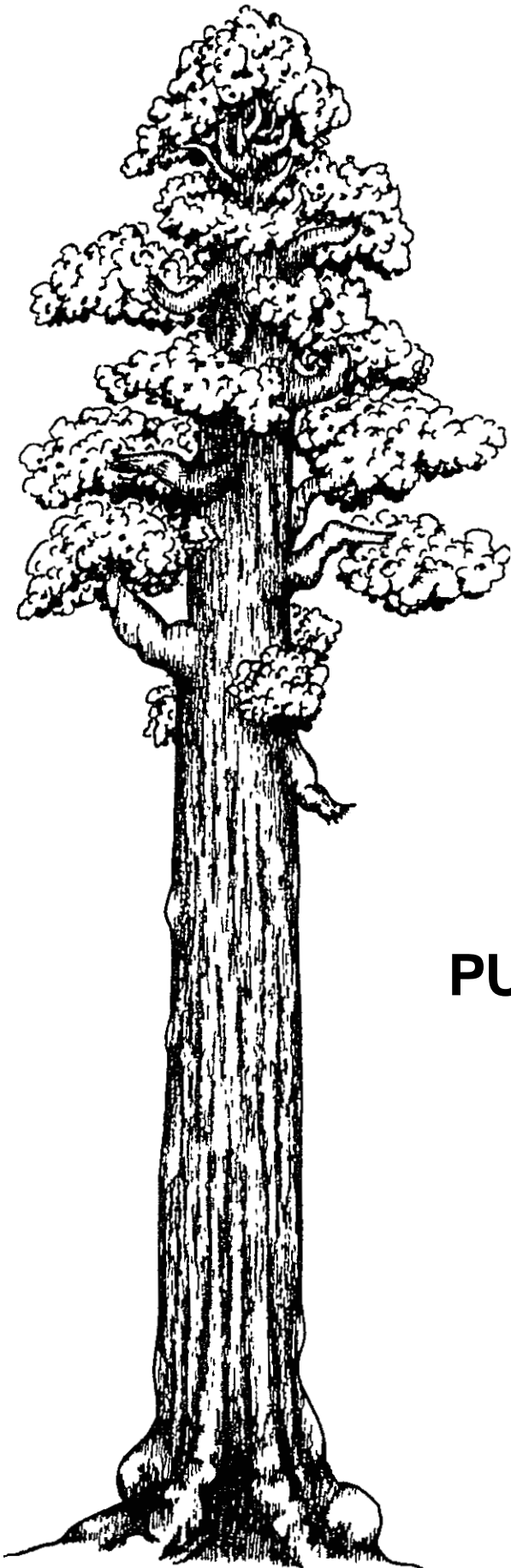
Timber management with associated road building produces the greatest changes to the natural character of the landscape. The AMN and WFV result in 100 percent of the Forest with the natural landscape character dominant. The PRF and RPA have 77 percent and 76 percent respectively, while CUR shows 71 percent. The two alternatives with the greatest impacts are MKT and PRO, resulting in 64 percent and 59 percent respectively of the natural landscape character dominant.

All alternatives, except AMN, have approximately 24 percent of the Forest land base in the Preservation VQO. The AMN has nearly 32 percent.

#### 15. WILD AND SCENIC RIVERS (W&SR)

Enactment of HR799 in November 1987 designated all or portions of four rivers on the Sequoia NF as Wild and Scenic. In addition, Kings River Segment 1 and its surrounding area (the Kings River Further Planning Area) were designated as a Special Management Area. It will be managed according to a management plan which will be incorporated into the Forest Plan as an amendment. HR799 also included the South Fork Kings River on the Sequoia NF. The North and South Forks of the Kern River were designated by enactment of S247.

Interest in the study of the Kern River below Lake Isabella developed during the public comment period for this FEIS. Following evaluation, a determination was made that two of three segments were ineligible for W&SR status. The third segment (Segment 2) is eligible for W&SR status and suitability will be determined in the future. Specific emphasis toward water-oriented recreation is contained in the PRF Alternative and Forest Plan for this important waterway.



## Chapter 1

# PURPOSE AND NEED

## CHAPTER 1

### PURPOSE AND NEED

#### A. Purpose and Nature of the Action

The preparation of the Forest Plan is required by the Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA). A Regional Guide for the Pacific Southwest Region was approved and implemented August 1984. It was developed to provide a direct linkage from RPA to Forest Planning. The preparation of an environmental impact statement disclosing a proposed action and alternatives to it is required by the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), NEPA regulations (40 CFR 1500.00) and the implementing regulations of NFMA (36 CFR 219). This FEIS is prepared in the format established in CEQ regulations (40 CFR 1502.10).

This Final Environmental Impact Statement (FEIS) describes a proposed action and the alternatives to the proposed action for the management of the land and resources administered by the Sequoia National Forest. It also describes the affected environment and discloses the environmental consequences of implementing the proposed action as well as the remaining alternatives.

The proposed action identified in this Final Environmental Impact Statement serves as the basis for the Final National Forest System Land and Resource Management Plan (Forest Plan), which is detailed in a separate document. For purposes of NEPA disclosure, the FEIS and the Forest Plan are treated as combined documents (40 CFR 1506.4). The documents are considered together to reduce duplication and paperwork.

The goal of the Forest Plan is to develop a fully integrated mix of management practices which provide for use and protection of Forest resources, satisfy guiding legislation, and address local, regional, and national issues. The guiding principle of Multiple-Use and Sustained-yield are contained in legislation enacted in 1960. These principles were integrated into the preparation of the FEIS and Plan. The Plan directs the way the Forest will be managed for the production of goods and services in a way that maximizes long-term net public benefit (NPB) in an environmentally sound manner. Consideration of NPB includes an evaluation of the present net value plus the nonquantifiable forest resource benefits.

The Forest Plan is designed to guide Forest management for the next 10-15 years and will be reviewed at least every 10 years. It will be revised at least every 15 years or whenever conditions or demands have significantly changed. Provision for revision or amendment of the Plan is specified in 36 CFR 219.10(f) and (g). In contrast, the FEIS, on which the Forest Plan is based, encompasses a 50-year time horizon. The longer period of analysis was adopted for this document in order to test the long-term implications of the various proposed policies.

The Environmental Impact Statement prepared for the Forest Plan will permit project environmental analyses to be tiered to this FEIS (40 CFR 1508.21).

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Additional detail will be included in the environmental analyses for project level decisions.

All existing Resource Management Plans were reexamined by the Forest's Interdisciplinary Planning Team. The plans identified in Appendix A of the Plan will be incorporated or superseded, or will be developed as indicated.

Subject to existing rights, all permits, contracts, and other instruments for the use and occupancy of National Forest System lands must be in conformance with the Forest Plan (16 U.S.C. 1604 (i)) after it is approved. In addition, all subsequent activities affecting the Forest will be in compliance with the Plan (36 CFR 219.10(e)).

The planning process as specified in the National Forest Management Act regulations was followed in development of the proposed action. An Environmental Impact Statement was prepared for development of these NFMA regulations and was published in the Federal Register, September 17, 1979. Implementing Departmental regulations were first published in the Federal Register September 17, 1979; and were revised and published September 30, 1982. The planning process embodies an interdisciplinary approach in developing the proposed action and alternatives to it (36 CFR 219.5). The planning actions as described in the regulations (36 CFR 219.12(b) through (k)) and used in this Forest planning process are:

1. Identification of issues, concerns, and opportunities.
2. Development of planning criteria.
3. Inventory data and information collection.
4. Analysis of the management situation.
5. Formulation of alternatives.
6. Estimated effects of alternatives.
7. Evaluation of alternatives (and identification of proposed action).
8. Selection of alternatives.
9. Plan implementation.
10. Monitoring and evaluation.

The FEIS was prepared after completion of planning actions 1 through 7. As part of planning action 7, a Preferred Alternative was developed. The Preferred Alternative serves as the proposed action in the FEIS. The Regional Forester will use this FEIS in making a decision under NFMA for approval of the Forest Plan (36 CFR 219.12(j)). This decision is documented in a Record of Decision which is available to the public.

All of the documents and planning records which chronicle the Forest planning process are available for inspection at the Forest Supervisor's Office (900 West Grand Avenue, Porterville, California 93257-2035) during regular business hours. These planning records contain the detailed information and processes used in developing the Forest Plan as required in 36 CFR 219.12. They are incorporated by reference at appropriate points in the text of this FEIS and the Forest Plan.

A glossary and list of acronyms which will facilitate the understanding of this document is located in the Appendices.

## B. Vicinity

The Sequoia NF is located at the southernmost end of the Sierra Nevada range of California within Tulare (62%), Kern (26%) and Fresno (12%) Counties. Several small communities are located within the Forest boundary. The Forest lies between the Los Angeles Basin and the San Francisco Bay populations centers, with driving times to the Forest ranging from 3-1/2 to 5 hours, respectively (Figure 1.1 and 1.2).

The Forest is 1,173,200 total acres in size with 54,155 acres in private or other land agency ownership for 1,119,045 net acres. The Forest is adjacent to the Sierra and Inyo National Forests on the north, the Sequoia and Kings Canyon National Parks on the north and west, and the Bureau of Land Management on the east, west and south. Because there are Further Planning and Wilderness Study Areas being jointly considered, the net Planning Area being considered in this FEIS is 1,130,702 acres.

## C. Scope of Issues Addressed

The Sequoia National Forest System Land and Resource Management Plan addresses public issues and management concerns related to the Forest. These issues and concerns and the associated questions, were identified by the Interdisciplinary Team and must be addressed in at least one alternative. A scoping process was also used to establish the overall scope of the Environmental Impact Statement (40 CFR 1501.7).

Initially, a list of Forest-wide public issues and management concerns was identified from comments solicited at general public meetings, by a general mailing, and from Forest employee meetings. A detailed discussion of the issue identification process can be found in the planning record "Documentation of the Issues Identification Process used by the Sequoia NF for Land Management Planning" and in Appendix A of this FEIS. Each comment received was evaluated in a screening process. Fourteen issues were identified along with 49 planning questions. These issues and planning questions, represent the public issues and management concerns which were addressed in at least one alternative in the DEIS.

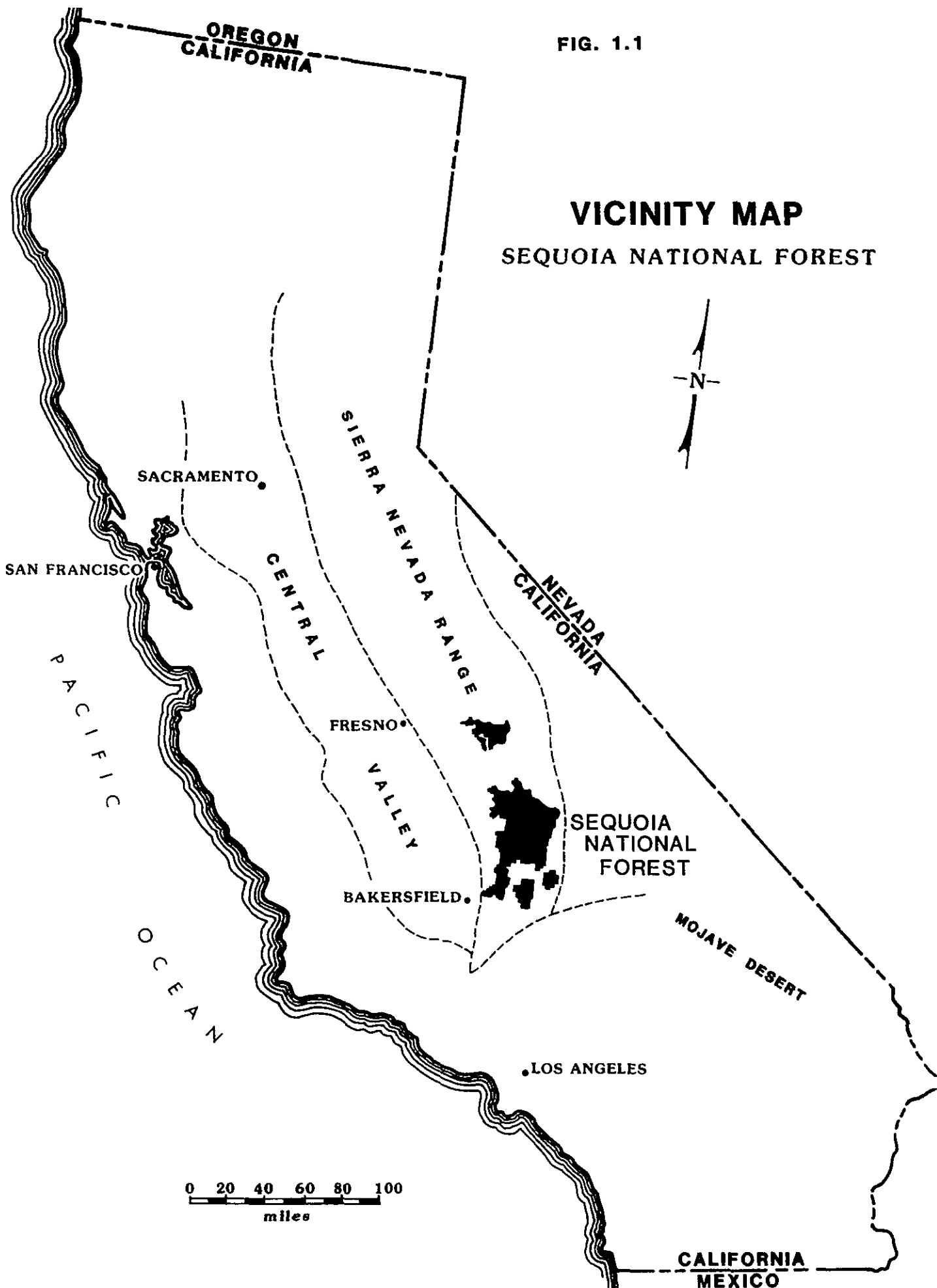
Following release of the DEIS and Draft Forest Plan and a five month comment period, a list of 12 major issues was developed. This list was the result of analysis of the comments contained in approximately 3,000 letters of input and oral testimony from two formal public hearings on the DEIS and Draft Plan. Some of these 12 issues are the same as those contained in the initial issue list, others are a variation of those initial issues, and some others are new.

Following are:

- 1) A listing of initial issues and planning questions.
- 2) A listing of the 12 major issues resulting from the Draft document review.
- 3) A listing and analysis of the relationship between the initial and the new major issues.

FIG. 1.1

# VICINITY MAP SEQUOIA NATIONAL FOREST



# SEQUOIA NATIONAL FOREST LOCATION MAP

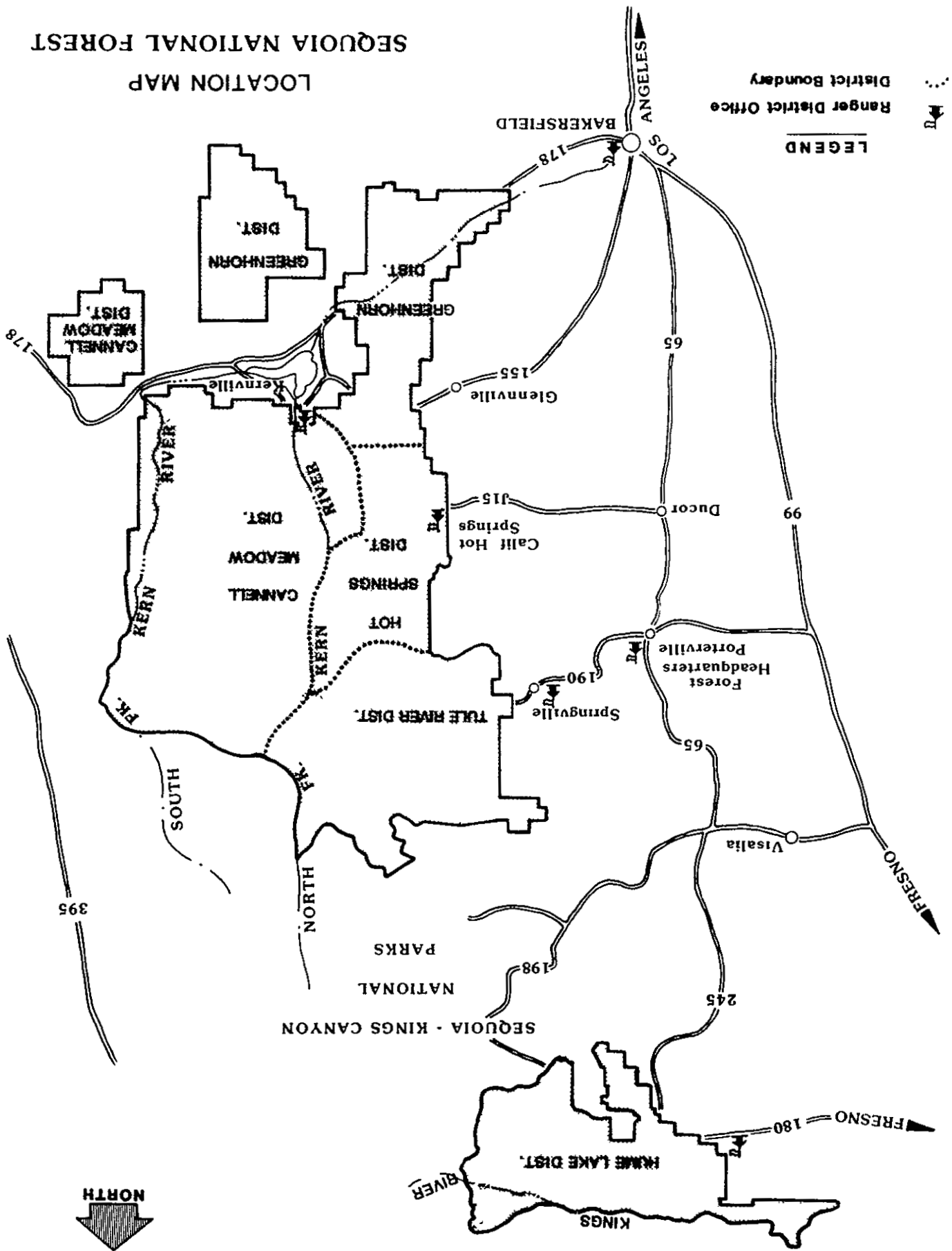


FIG. 1.2



A matrix which tracks all of the issues is located in Chapter 2.E.5., Table 2.28 of the FEIS. Readers are also referred to Appendix N, for a complete discussion of public responses to the DEIS.

D. Issues and Planning Questions

1. Initial Listing of Issues and Planning Questions

I. WILDERNESS MANAGEMENT

Issue: How should designated Wilderness be managed?

11. RARE II FURTHER PLANNING AREAS <sup>1</sup>

Issue: How should Further Planning Areas be allocated and managed?

- A. How can we best coordinate allocation of Further Planning Areas with other Federal and State agencies owning adjacent lands?
- B. What resource trade-offs will be considered in allocating Further Planning Areas to wilderness or non-wilderness?
- C. With respect to each of the Further Planning Areas, what is the appropriate balance of wilderness and non-wilderness?

111. LAND OWNERSHIP ADJUSTMENT

Issue: What should be Sequoia National Forest System land ownership adjustment policy regarding adjacent lands?

- A. What are the priority considerations for exchange or purchase?

IV. WATER

Issue: What management practices should be undertaken to adjust quantity, quality and timing of water yield and uses within the Sequoia NF?

- A. How can the Sequoia NF coordinate with others to insure that impacts are evaluated on a total watershed basis?
- B. To what extent should the Forest attempt to produce water to meet the needs of downstream users?

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<sup>1</sup>Wording adjusted to be consistent with the California Wilderness Act of 1984.

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- C. What areas are available/suitable for storage in the future? What resource gains and losses are involved at any new storage sites?
  - D. How should sediment-causing activities be modified to minimize adverse impacts?
  - E. What methods should be used to adjust quantity and adjust timing of runoff?
  - F. What are the trade-offs involved in adjusting water quality and quantity?
  - G. What should the Sequoia NF's water management policy be with regard to consumptive and nonconsumptive water use?
  - H. What efforts should be made to repair damaged watersheds?

#### V. RECREATION

Issue: What types of recreation and interpretive services opportunities should be provided, and where? What special area classifications should be proposed?

- A. What is the present and future demand for various recreation activities and facilities? What portion of this demand should the Forest satisfy?
- B. How can recreation user conflicts be minimized?
- C. How should recreation use be managed to protect other resource values?
- D. How should recreation activities be coordinated with other public agencies?
- E. How should dispersed recreation be managed?
- F. What kinds of Visitor Interpretive Service facilities and programs are needed? Where will they be located to best serve Forest users?
- G. How can recreation use by the handicapped and elderly best be encouraged in developed sites and in dispersed areas and trails?
- H. Where should Special Interest Areas be recommended for classification? Where should other special designations be proposed?
- I. Which potential alpine ski sites (including expansion sites) should be allocated for possible future development? What should be the priority and timing?

## VI. OFF-HIGHWAY VEHICLES<sup>2</sup>

**Issue:** How should off-highway vehicles (OHV's) be managed?

- A. What is the present and future demand for various OHV uses. What portion of this demand should the Forest satisfy, and where?
- B. How should conflicts between OHV's and other Forest activities be managed?

## VII. TIMBER

**Issue:** How much timber should be harvested, and where?

- A. How should lands capable of producing commercial timber be managed?
- B. How will timber harvest conflicts with other resources be minimized?

## VIII. GIANT SEQUOIA

**Issue:** How should giant sequoia (Sierra redwoods) and associated species be managed?

- A. What management practices should be used?

## IX. FISH AND WILDLIFE

**Issue:** What kinds and amounts of fish and wildlife habitat should be provided?

- A. What areas of what size should be managed for threatened, endangered, and sensitive fish, wildlife and plant species?
- B. What areas of what size should be managed as special wildlife habitat for harvest species?
- C. How should fish habitat be managed?
- D. What resource trade-offs will be necessary to manage fish and wildlife habitat?
- E. What opportunities exist to improve fish and wildlife habitat through the use of resource management practices?

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<sup>2</sup>Wording adjusted to be consistent with the State of California Vehicle Code. Off-highway vehicles are commonly called "off-road vehicles".

- F. What should be the habitat management balance between harvest and non-harvest species?

#### X. ROADS AND TRAILS

Issue: How should roads and trails be managed and maintained in the Forest?

- A. How can Forest roads be maintained and managed to meet both the administrative needs of the Forest Service and the needs of the Forest user?
- B. Under what conditions should roads be opened or closed to public use?
- C. How can roads be managed to protect other resources?
- D. How can the Forest trail system be maintained and managed to meet both the administrative needs of the Forest Service and the needs of the Forest user?

#### XI. ENERGY

Issue: Where and to what degree should we manage for new energy production?

- A. What types of energy production and conservation practices are feasible?
- B. What resource trade-offs will be necessary for energy production?
- C. What are the demands for energy production from the Sequoia NF? What portion of the energy demand will be fulfilled?

#### XII. GRAZING

Issue: How should the Sequoia NF manage its rangeland and forage areas?

- A. What resource trade-offs and costs are involved in management of the range resource?
- B. How should meadows used by livestock be managed?
- C. What is the livestock carrying capacity by vegetation type?
- D. What are the opportunities to increase livestock carrying capacity on the Sequoia NF? What methods should be used?

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### XIII. RIPARIAN

Issue: How should the Forest manage its streams and wetlands?

- A. How will streamside zones be defined?
- B. What uses and activities will be allowed in riparian zones?
- C. What are the trade-offs between stream and wetland protection and the production of goods and services?

### XIV. DIVERSITY

Issue: What is the desirable level of plant and animal diversity that the Forest should establish?

- A. What management activities should be used to maintain or create diversity?
- B. How much vegetation change should occur, and where, during the 10-year planning period?
- C. How much old growth timber should be maintained and where? How should it be managed?

## 2. Major Issues Resulting from the Draft Document Review.

### 1. BUDGET

Issue: Is there too great a discrepancy between current and projected budget levels required to implement the Preferred Alternative (PRF)? Will substantially lower budgets substantially change resource programs and their priorities?

### 2. CLEARCUTTING

Issue: How should the silvicultural practice of clearcutting be applied on the Forest? Should the total number of acres clearcut be reduced?

### 3. FISH AND WILDLIFE

Issue: Will the management of fish and wildlife habitat be adequate in light of increases in Forest uses?

### 4. GIANT SEQUOIA

Issue: What should be the objectives and intensities of management activities in giant sequoia groves?

## 5. OHV's

Issue: How much and where should OHV use occur?

## 6. PESTICIDES

Issue: Are pesticides necessary to ensure long-term sustained yield? Are they safe?

## 7. ROADS

Issue: Road Construction: What are the road needs for use of Forest resources? Road Closures: What are the situations, if any, for road closure?

## 8. TRAILS

Issue: Do the DEIS and Plan have enough emphasis on the total trail system including construction and trail maintenance?

## 9. VISUAL RESOURCES

Issue: How can management practices best maintain visual resources, especially in areas of high visual interest?

## 10. VOLUME OF HARVEST

Issue: What should the Allowable Sale Quantity (ASQ) be for the Forest?

## 11. WILD AND SCENIC RIVERS - KINGS RIVER

Issue: Should Segment 1 of the Kings River receive a recommendation for Wild and Scenic River classification?

## 12. WILDERNESS

Issue: What are the recommendations for wilderness classification?

## 3. Relationship Between the Initial and the New Major Issues.

This will be shown by comparing the new issues to the initial issues.

1. Budget - A new issue
2. Clearcutting - Within parameter of VII. TIMBER
3. Fish and Wildlife - Same as IX. FISH AND WILDLIFE
4. Giant Sequoia - Same as VII. GIANT SEQUOIA
5. OHV's - Same as VI. OFF-HIGHWAY VEHICLES
6. Pesticides - A new issue
7. Roads - Construction - A new issue  
Closures - Same as X. ROADS AND TRAILS
8. Trails - Within parameter of X. ROADS AND TRAILS
9. Visual Resources - Within parameter of VII. TIMBER
10. Volume of Harvest - Within parameter of VII. TIMBER

11. Wild and Scenic Rivers - Kings River - A new issue
12. Wilderness - Same as 11. FURTHER PLANNING AREAS

E. The Role of Issues in Planning

It is important to note that these issues which you have just reviewed, significantly shaped the following sections of this document. That is because: Planning is an issue driven process.

The Forest issues were identified when the planning effort was in its infancy; and again from public response to the Draft Plan and DEIS. These issues were used to focus the entire effort. First, they were used to identify what was important to address during planning. In the second step of the planning process, this knowledge was utilized to define what information would be gathered and analyzed. The highlights of the information so identified are presented in the Affected Environment (Chapter 3, FEIS).

The issues influenced the formulation of alternative plans which are presented in Chapter 2, Plan, (any of which could be selected for implementation). Finally, the issues were used during the comparison and evaluation of the various alternatives in Chapter 2, FEIS, (Alternatives Including the Proposed Action) and Chapter 4, FEIS, (Environmental Consequences).



## Chapter 2

# ALTERNATIVES INCLUDING THE PROPOSED ACTION



## CHAPTER 2

### ALTERNATIVES INCLUDING THE PROPOSED ACTION

#### A. INTRODUCTION

This chapter describes all the alternatives examined in the planning process. Section B describes what an alternative is, the requirements of the regulations applicable to the development of alternatives, and how Forest alternatives were developed. Section C describes the purpose and function of benchmarks. Section D describes alternatives considered but eliminated from detailed study and why they were eliminated. Section E describes the alternatives considered in detail, including the proposed action, and compares the alternatives considered in detail through narratives, tables, and figures, describing how they differ both quantitatively and qualitatively.

#### B. ALTERNATIVE DEVELOPMENT PROCESS

##### Description of an Alternative

In the NMA planning process, a land management planning alternative is a scenario providing sufficient detail to guide management of the land and resources of the Forest from the current state to a desired future condition. The alternatives considered in this chapter address public issues and Forest Service management concerns; represent various combinations of management prescriptions; schedule different combinations of activities resulting in varying levels of outputs, goods, and services; and, thereby, describe alternative scenarios for forest management.

The requirements of the NEPA and NMA establish guidelines for the development of alternatives. NEPA regulations require rigorous exploration and objective evaluation of all reasonable alternatives to the proposed plan, including a "no action" or "no change" alternative, as well as alternatives not within the jurisdiction of the agency. The NEPA regulations also require identification and discussion of alternatives eliminated from detailed study.

NFMA regulations (36 CFR 219.12(f)) include the following criteria:

- Each alternative will be capable of being achieved;
- A "no action" alternative (continuation of present management into the future) will be formulated; representing the most likely condition expected to exist in the future if current management direction were to continue unchanged;
- One or more alternatives will meet the RPA program specified in the Regional Guide;
- Each alternative will provide for the orderly elimination of backlogs of needed treatment for the restoration of renewable resources as necessary to achieve the multiple-use objectives of that alternative;

- Each identified major public issue and management concern will be addressed in one or more alternatives; and,
- Each alternative will represent, to the extent practical, the most cost efficient combination of management practices examined that can meet the objectives established in the alternative.

The NFMA regulations also require that each alternative state:

- The conditions and uses resulting from the long-term application of the alternative;
- The goods and services to be produced, and the timing of these resource outputs;
- The resource management standards and guidelines; and,
- The purposes of the management direction proposed.

The alternatives described in this chapter are based on management prescriptions, each of which is a strategy for managing the lands and resources of a given area. Each prescription is composed of a set of compatible activities and practices which would produce desired resource management objectives in a specific management area. Each alternative has a particular combination of management prescriptions and area allocations that, in aggregate, meet the desired goals and objectives of the alternative. The objective for each alternative is to produce the most net public benefit within the goals and objectives.

Net Public Benefit (NPB) is the combination of both Present Net Value (PNV) and the non-priced resource benefits. PNV, as used in this analysis, is the difference between the priced benefits (average willingness to pay for benefits such as timber, livestock use, wilderness recreation, or developed recreation) and the costs to produce those benefits, all discounted to 1982 dollars.

The non-priced benefits and costs are those associated with resource characteristics which do not conform to dollar valuation. These include wildlife and fish diversity, visual quality, the quality of recreation experiences, threatened and endangered species values, and cultural resource values. In order to maximize NPB, priced and non-priced benefits and costs are evaluated together.

#### Description of the Process Used to Develop Alternatives

The formulation of alternatives (planning action 5) is the culmination of planning actions 1 through 4 of the NFMA planning process (see page 1-2 of the EIS). The following discussion summarizes how planning actions 1 through 5 were accomplished. A more detailed discussion of the various components, including the use of FORPLAN, is found in Appendix B of this EIS as well as in the Forest's planning records.

Step 1 Public issues were identified through public involvement efforts. Forest Service management concerns were also identified and com-

bined with the public issues to form an integrated list of issues and concerns. Issues and concerns were screened and those that could be appropriately addressed through the land management planning process were identified and were used to guide the remaining steps in the process. Appendix A and the Forest planning records contain a more detailed discussion of the scoping and screening process.

- Step 2 The Interdisciplinary Planning Team (IDT) used the Analysis of the Management Situation (AMS) to identify resource management opportunities that would respond to the issues and concerns. Whenever possible the AMS described opportunities to resolve other problems identified, discovered during analysis but not specifically stated by an issue or concern. Where possible, demand levels were determined for forest resources such as recreation use, water, timber, and livestock forage. Need for change in management direction to deal with Forest problems were also described. The AMS is available for review in the Forest's planning records.
- Step 3 A comprehensive list of practices and activities that could be applied to the Forest land were developed using the AMS and other resource information. These activities were eventually entered into a linear program, FORPLAN, and are referred to as FORPLAN prescriptions. These practices and activities allow for achievement of the entire range of resource opportunities described in the AMS. Appendix B of the EIS contains a more detailed discussion of the use of FORPLAN.
- Step 4
- a. The Forest was divided into land units that would allow estimation of the resource outputs and costs associated with the FORPLAN prescriptions. These units, called analysis areas, were delineated to allow distinction among the different capabilities and suitabilities of various sites in the Forest.
  - b. For each analysis area, the full range of suitable FORPLAN prescriptions that could be applied to an area considering site capability and suitability were identified. In order to make a prescription feasibility determination, the physical and biological attributes of each area (such as vegetation type and slope) were considered. Only those practices and activities that were feasible and would not cause permanent impairment of site productivity were identified as suitable.
  - c. Based on the physical and biological attributes for each area where the prescription could be applied, resource outputs and their associated costs and values for each FORPLAN prescription were developed.
- Step 5 Benchmarks were run using FORPLAN in order to:
- a. Display the Forest's minimum or naturally occurring level of outputs and effects:

- b. Determine the Forest's maximum potential to produce individual resources such as water, livestock forage, timber and wilderness:
- c. Better understand basic resource interaction:
- d. Determine the most cost efficient schedule of activities and allocation of land based on absolute minimum constraints (maximum PNW with Minimum Management Requirements):
- e. Serve as reference points for comparison of alternatives:
- f. Determine the need and opportunity for change: and
- g. Determine the bounds of the decision space within which changes can or must occur: or, in other words, the space within which alternatives can be developed.

The benchmarks were compared against projected demand and current supply to establish the potential range of resource output levels that could be produced on the Forest.

Step 6 Individual themes for alternatives were developed to provide a broad range of options for future management based on the limits and opportunities defined by the analysis of the benchmarks. This step was guided primarily by NFMA planning regulations and RPA direction to reflect a broad range of commodity and amenity resource uses and values, and funding levels and to resolve issues and concerns. The issues and concerns (I&C's) were systematically analyzed to determine different ways that they could be resolved. This range of potential resolutions was then used to define the alternatives and was incorporated into FORPLAN modeling. The detailed process used to formulate a range of issue resolutions is located in the planning records in "Levels Needed to Address Issues" - July 20, 1984.

Step 7 FORPLAN was used to determine the most cost efficient combination of activity and timing choices for each alternative. Minimum Management Requirements were imposed on every alternative. Projected demand levels for Forest resources were incorporated into FORPLAN as limits in all alternatives. Excess quantities of outputs above demand were not valued in the FORPLAN model. Finally, other direction which embodied the unique goals of each alternative were added. The individual direction used for the alternatives along with a rationale for each are discussed in Appendix B of the EIS. FORPLAN selected which suitable prescriptions would actually be applied to each analysis area based on PNW and other direction.

Step 8 The results of the FORPLAN runs for each alternative were evaluated to ensure that the allocation of prescriptions and schedule of resource outputs could be implemented on the ground. Adjustments were made, when necessary, to produce a feasible schedule of

outputs and prescriptions meeting the theme and goals of the alternative.

Step 9 Management prescriptions and management areas were linked to spatially assign FORPLAN alternative solutions. Each management prescription is a set of compatible directions, including Standards and Guidelines, that are necessary to attain multiple-use goals and objectives. The management prescription emphasizes a particular set of resources and contains all the compatible practices and activities that would occur in a management area in addition to the practices allocated by FORPLAN.

### C. BENCHMARKS

Ten benchmark analyses were made using the Forest's linear program FORPLAN to establish an analytical base for developing alternatives and to provide a reference point for comparison of alternatives.

The benchmarks were run to display the Forest's minimum level of outputs and effects and to determine the maximum potential to produce individual resources such as water, livestock forage, wilderness, and timber. They determine the bounds of the decision space within which alternatives can be developed.

The benchmarks display physical, biological, and technical capabilities. They are not limited by Forest Service policy or budget, discretionary constraints, spatial feasibility, or program and staffing requirements. Benchmarks are physically and technically, but not necessarily operationally, implementable.

Following is a description of the benchmarks and what was learned from each. A more complete discussion of how each benchmark was modeled is given in Chapter 7, Appendix B, Section 1 of the EIS. Selected outputs for each benchmark are shown in Table 2.1. A comparison of acreage by prescription and benchmark is given in Table 2.2. A detailed description of acronyms can be found in Chapter 7, Appendix I of the EIS.

Table 7.1 - Benchmarks: Average Annual Outputs by Decade

Resource Elements	BENCHMARKS									
	FLW	MWR	MLV	TBR	TBD	TKV	VLN	NON	PGN	HTO
PIW (\$M\$)1/	951	915	960	867	847	485	848	030	925	900
<b>TIMBER (MMBF)</b>										
Base Year (1982)	75	95	95	95	95	05	95	95	75	95
Decade 1	132	122	0	186	237	97	91	127	118	169
Decade 2	165	153	0	186	179	121	113	153	148	171
Decade 3	161	172	0	186	179	151	113	172	174	171
Decade 4	178	172	0	186	179	176	113	172	174	171
Decade 5	211	172	0	186	179	176	113	172	174	171
Long-Term Sustained Yield (MMCF)	31.0	30.3	N/A	33.4	33.4	30.3	72.0	30.3	30.3	37.7
	198	194	N/A	213	213	194	141	194	194	209
<b>GRAZING (H AUM)</b>										
Base Year (1982)	63	63	63	63	63	63	63	63	63	63
Decade 1	75	75	0	76	76	73	75	75	86	91
Decade 2	75	75	0	76	76	73	75	75	83	82
Decade 3	75	75	0	76	76	73	75	75	77	76
Decade 4	75	75	0	76	76	73	75	75	06	90
Decade 5	02	92	0	93	97	91	70	97	84	82
<b>WATER YIELD (H ACRE-FEET)</b>										
Base Year (1982)	736	736	736	736	736	736	736	736	736	736
Decade 1	767	762	734	799	800	750	754	767	767	783
Decade 2	769	766	734	792	794	756	757	766	765	790
Decade 3	760	770	734	786	792	758	760	770	768	794
Decade 4	770	772	734	783	787	755	761	777	781	810
Decade 5	777	774	734	794	796	760	758	774	782	794
<b>THREATENED AND ENDANGERED SPECIES</b>										
<b>PEPEGRINE FALCON (NUMBER OF PAIRS)</b>										
Base Year (1982)	0	0	0	0	0	0	0	0	0	0
Decade 1	0	2	2	7	7	2	2	2	2	2
Decade 2	0	2	2	2	2	2	2	2	7	2
Decade 3	0	2	2	2	2	2	7	2	2	2
Decade 4	0	2	2	7	2	2	2	7	7	2
Decade 5	0	2	2	2	2	2	2	2	7	2

1/ The minimum level (MLV) benchmark shows naturally occurring background benefits and fixed costs associated with maintaining the National rarest in Federal ownership. In order to display incremental trade-offs, background benefits, and fixed costs have been subtracted from the other benchmarks and alternatives.

Table 2.1 - Benchmarks: Average Annual Outputs by Decade - (continued)

Resource Elements	BENCHMARKS									
	FLW	MMR	MLV	TBR	TBD	MKV	WLN	NON	RGN	H2O
<b>LITTLE KERN GOLDEN TROUT (MILES OF STREAM HABITAT)</b>										
Base Year (1982)	29	29	29	29	29	29	29	29	29	29
Decade 1	29	117	117	117	117	117	117	117	117	117
Decade 2	29	117	117	117	117	117	117	117	117	117
Decade 3	29	117	117	117	117	117	117	117	117	117
Decade 4	29	117	117	117	117	117	117	117	117	117
Decade 5	29	117	117	117	117	117	117	117	117	117
<b>CONDOR (ACRES OF NESTING HABITAT) 1/</b>										
Base Year (1982)	0	0	0	0	0	0	0	0	0	0
Decade 1	2229	2229	2229	2229	2229	2220	2229	2229	2229	2229
Decade 2	2229	2229	2229	2229	2229	2229	2229	2229	2229	2229
Decade 3	2229	2229	2229	2229	2229	2229	2229	2229	2229	2229
Decade 4	2229	2229	2229	2229	2229	2229	2229	2229	2229	2229
Decade 5	2229	2229	2229	2229	2229	2229	2229	2229	2229	2229
<b>WILDLIFE - OTHER THAN T&amp;E (Habitat Capability)</b>										
<b>DEER (# ANIMALS)</b>										
Base Year (1982)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Decade 1	11.5	11.2	11.0	11.8	12.0	11.2	11.1	11.5	11.3	11.7
Decade 2	12.0	11.7	11.0	12.3	13.8	11.5	11.5	12.0	11.8	12.2
Decade 3	12.5	12.3	10.5	13.8	13.8	12.2	12.0	12.5	12.4	12.8
Decade 4	13.0	13.0	10.5	13.8	13.8	13.0	12.5	13.0	13.0	13.5
Decade 5	13.8	13.8	10.0	13.8	13.8	13.8	13.8	13.8	13.8	13.8
<b>SPOTTED OWL (NUMBER OF PAIRS) 2/</b>										
Base Year (1982)	80	80	80	80	80	80	80	80	80	80
Decade 1	75	76	82	70	66	77	78	76	77	71
Decade 2	70	71	84	60	56	72	70	67	72	65
Decade 3	63	65	86	55	55	63	65	60	65	58
Decade 4	55	55	88	55	55	55	60	55	55	55
Decade 5	55	55	90	55	55	55	55	55	55	55
<b>GOSHAWKS (NUMBER OF PAIRS)</b>										
Base Year (1982)	110	110	110	110	110	110	110	110	110	110
Decade 1	100	100	115	90	85	105	105	100	100	95
Decade 2	95	95	120	80	80	100	100	95	95	85
Decade 3	90	90	115	75	70	95	95	85	85	75
Decade 4	80	80	115	65	60	90	90	80	75	70
Decade 5	70	70	110	55	45	85	85	75	70	60

1/ For explanation of condor nesting habitat. see Chapter 3 of the EIS.

2/ See Appendix B of the EIS for explanation of spotted owl habitat capability.

Table 2.1 - Benchmarks: Average Annual Outputs by Decade - (continued)

Resource Elements	BENCHMARKS									
	FLW	MIR	MLV	TBR	TBD	MKV	WLN	NON	RGN	H2O
<b>RESIDENT FISH (M POUNDS)</b>										
Base Year (1982)	77	77	77	77	77	77	77	77	77	77
Decade 1	60	77	77	77	77	77	77	77	77	77
Decade 2	60	77	77	77	77	77	77	77	77	77
Decade 3	60	77	77	77	77	77	77	77	77	77
Decade 4	60	77	77	77	77	77	77	77	77	77
Decade 5	60	71	77	77	77	77	77	77	77	77
<b>TOTAL WILDLIFE &amp; FISH USER DAYS (M WFUD's)</b>										
<b>DEER</b>										
Base Year (1982)	43	43	43	43	43	43	43	43	43	43
Decade 1	43	43	20	43	43	43	43	43	43	43
Decade 2	44	44	20	44	44	44	44	44	44	44
Decade 3	46	46	20	46	46	46	46	46	46	46
Decade 4	46	46	20	46	46	46	46	46	46	46
Decade 5	64	64	20	64	64	64	64	64	64	64
<b>ALL OTHER SPECIES (M WFUD's)</b>										
Base Year (1982)	179	179	179	179	179	179	179	179	179	179
Decade 1	264	264	49	264	264	264	264	264	264	264
Decade 2	307	307	66	307	307	307	307	307	307	307
Decade 3	358	358	81	358	358	358	358	358	358	358
Decade 4	413	413	91	413	413	413	413	413	413	413
Decade 5	456	456	101	456	456	456	456	456	456	456
<b>RESIDENT FISH (OTHER THAN T&amp;E)</b>										
<b>(M WFUD's)</b>										
Base Year (1982)	28	28	28	28	28	28	28	28	28	28
Decade 1	28	28	14	28	28	28	28	28	28	28
Decade 2	28	28	14	28	28	28	28	28	28	28
Decade 3	28	28	14	28	28	28	28	28	28	28
Decade 4	28	28	14	28	28	28	28	28	28	28
Decade 5	28	28	14	28	28	28	28	28	28	28



Table 2.1 - Benchmarks: Average Annual Outputs by Decade - (continue)

Resource Elements	BENCHMARKS									
	FLW	MMR	MLV	TBR	TBD	MKV	WLN	EION	RGN	H2O
<b>DEVELOPED RECREATION (M RVD's)</b>										
Base Year (1982)	886	886	886	886	886	886	886	886	886	886
Decade 1	1162	1162	0	1164	1162	1275	1160	1162	1162	1162
Decade 2	1162	1162	0	1162	1245	1400	1210	1162	1162	1162
Decade 3	1385	1385	0	1501	1431	1665	1490	1385	1305	1385
Decade 4	1661	1668	0	1726	1564	1926	1722	1668	1668	1668
Decade 5	1987	1907	0	1871	1673	2129	1745	1907	1987	1987
<b>DISPERSED RECREATION (M RVD's)</b>										
Base Year (1982)	1582	1582	1502	1582	1587	1562	1502	1582	1582	1587
Decade 1	1890	1890	030	1890	1900	836	1890	1890	1890	1090
Decade 2	2156	2156	1011	2160	2160	1011	2160	2156	2156	2156
Decade 3	2428	2428	1132	2430	2430	1132	2430	2428	2428	2428
Decade 4	2708	2708	1254	2710	2710	1254	2712	2708	2708	2708
Decade 5	2995	2995	1375	2990	2990	1375	3000	2895	2995	2995
<b>WILDERNESS (ACRES)</b>										
Base Year (1982)	173.4	173.4	173.4	173.4	173.4	173.4	173.4	173.4	173.4	173.4
Decade 1	264.1	264.1	264.1	264.1	264.1	264.1	355.6	264.1	264.1	264.1
Decade 2	264.1	264.1	264.1	264.1	264.1	264.1	355.6	264.1	264.1	264.1
Decade 3	264.1	264.1	264.1	264.1	264.1	264.1	355.6	264.1	264.1	264.1
Decade 4	264.1	264.1	264.1	264.1	264.1	264.1	355.6	264.1	264.1	264.1
Decade 5	264.1	264.1	264.1	264.1	264.1	264.1	355.6	264.1	264.1	264.1
<b>TOTAL COST (MM\$)</b>										
Base Year (1982)	16.3	16.3	16.3	16.3	16.7	16.3	16.3	16.3	16.3	16.3
Decade 1	19.8	21.1	3.6	31.0	33.8	17.0	17.4	20.5	20.8	24.5
Decade 2	21.0	21.0	3.6	26.0	26.3	17.6	18.2	20.3	70.1	25.d
Decade 3	24.5	26.0	3.6	30.8	30.3	21.4	21.3	25.4	25.1	30.3
Decade 4	78.7	29.4	3.6	32.6	32.5	24.5	23.5	28.8	31.0	37.0
Decade 5	40.0	36.9	3.6	41.1	40.4	34.1	27.3	36.3	40.4	35.9

Table 2.2 - Extent of Management Area and Prescriptions for Benchmarks

Prescrip. Code	Management Emphasis	Vegetative Type	BENCHMARK (M ACRES)									
			ELW	MMR	MLV	TRR	TBD	MKV	WLN	NON	RCN	H2O
BO1	General Dispersed Recreation	Blue Oak Savanna	1	0	43	1	1	0	0	0	0	0
OW1		Oak Woodland	13	33	170	13	13	33	29	33	0	0
MC1		Mixed Chaparral	4	10	165	4	4	0	22	10	0	0
PS1		Pinyon-Sage	1	1	74	1	1	1	12	1	0	0
CF1	General Disp Rec & Timber	Conifer Forest	0	41	402	0	0	30	50	41	0	0
B02	Water Oriented Recreation	Blue Oak Savanna	5	8	0	7	7	5	7	8	5	5
OW2		Oak Woodland	1	2	0	1	1	1	4	2	1	2
MC2		Mixed Chaparral	7	4	0	7	7	7	2	4	4	0
CF3	Developed Recreation	Conifer Forest	16	16	0	0	0	16	16	16	7	0
WF4	Wilderness	All Types	0	0	0	0	0	0	356	0	264	264
WC4	Wilderness	All Types	264	264	264	264	264	264	0	264	0	0
805	Wildlife & Disp Recreation	Blue Oak Savanna	0	0	0	0	0	0	0	0	0	0
OW5		Oak Woodland	46	44	0	46	46	46	43	44	0	0
MC5		Mixed Chaparral	3	4	0	7	7	3	100	4	0	0
PS5		Pinyon-Sage	62	63	0	62	62	62	4	63	0	0
CF5	Wildlife, Disp Rec & Timber	Conifer Forest	0	9	0	0	0	30	12	9	0	0
B06	Grazing	Blue Oak Savanna	37	35	0	35	35	38	30	35	38	38
OW6		Oak Woodland	110	91	0	110	110	90	92	91	169	168
MC6		Mixed Chaparral	151	147	0	147	147	155	26	147	161	0
PS6		Pinyon-Sage	11	10	0	11	11	11	9	10	74	74
CF6	Grazing & Timber	Conifer Forest	4	5	0	0	0	5	5	5	20	0
CF7	Timber	Conifer Forest	382	331	0	402	402	321	299	331	375	0
MC8	Water Yield	Mixed Chaparral	0	0	0	0	0	0	0	0	0	165
CF8	Water Yield	Conifer Forest	0	0	0	0	0	0	0	0	0	402
SIA	Spacial Interest Areas	All Types	1	1	1	1	1	1	1	1	1	1
WSR	Wild, Scenic & Rec Rivers		0	0	0	0	0	0	0	0	0	0

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#### MINIMUM LEVEL OF MANAGEMENT-BACKGROUND ONLY (MLV)

The purpose of the minimum level benchmark is to show the unavoidable costs and benefits of public ownership of the Forest and to establish the basis for comparing the marginal outputs, costs, benefits, and other impacts of the alternatives. The objective function is to minimize cost. This benchmark is used as a basis for the marginal analysis of economic efficiency for the benchmarks and alternatives (see Appendix B of the EIS).

Only those benefits that are incidental to protecting life, health, and safety would be provided. Management would be oriented toward preventing environmental damage to lands in other ownerships. Unavoidable land uses such as utility corridors and private land access across National Forest System lands would be allowed. Management activities include fire suppression and law enforcement. Outputs of timber, grazing, fuels treatment, developed recreation, or wildlife habitat improvement would not occur. Incidental outputs of dispersed recreation **use** and water yield would occur.

This benchmark does not meet legal requirements as defined in the Multiple-Use Sustained-yield Act of 1960, and the Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976. It also does not address many of the **issues** identified in the Forest scoping process, including those related to providing a variety of goods and services such as recreation opportunities, and livestock grazing.

#### UNCONSTRAINED - MAXIMIZE PNV-ASSIGNED VALUES - WITH HOW CONSTRAINTS (FLW)

This benchmark demonstrates the most economically efficient level of resources with assigned values that can be produced with no constraints. It is also used as the basis for evaluating the effect of Minimum Management Requirements (MMR's), Timber Policy Constraints (TPC's), and meeting Culmination of Mean Annual Increment (CMAI). On the Sequoia NF, CMAI is equal to merchantability, that is, when trees have reached merchantable size they have generally met CMAI. The objective function is to maximize PNV.

Only those constraints necessary to assure technical feasibility are included. Management activities are constrained only by production limitations.

This benchmark demonstrates that - if no constraints were placed on Forest management practices, activities, and outputs; and if no consideration was given to nonquantifiable benefits - the following conditions would result to maximize the present net value:

- Developed and dispersed recreation opportunities would be provided at levels meeting projected demand for the entire planning horizon;
- Wilderness would be maintained at its present size;
- Livestock grazing would increase 1.5 times above the current level through **use** of transitory range and forage created by various brush treatments;

- Allowable timber sale quantity in the first period would be 28 percent above current levels, increase to 2.5 times present levels and stabilize at 1.5 times the current level.
- Habitat for wildlife species associated with mature to overmature species would decline by 8 percent.

Although this benchmark produces the greatest PNV possible from the Forest (1,911 million), it does not meet legal requirements for water quality and wildlife diversity. Conditions would fall below those needed to maintain viable populations of some wildlife species. It also does not respond to issues or concerns related to visual quality maintenance and enhancement.

MAXIMIZE PNV-ASSIGNED VALUES - WITH MMR's & NDY (MMR)

This benchmark demonstrates the opportunity cost of the Minimum Management Requirements (MMR's), non-declining yield (NDY), and dispersion considered collectively. (See Section E of this Chapter for a detailed explanation of these terms.) It forms the basis for evaluating constraints beyond the Minimum Management Requirements (MMR's). The objective function is to maximize PNV.

The effect of imposing MMR's and NDY results in a \$17 million drop in PNV from the HW benchmark, less than a one percent decrease. It demonstrates that imposing these requirements would create almost no economic consequences on the Sequoia NF. This benchmark produces nearly identical levels of practices, activities, and outputs as HW except:

- Allowable timber sale quantity in the first period would be 18 percent more than current levels and increase and remain stable at about 1.7 times the current level: and,
- At least five percent of each seral stage/vegetation combination would be maintained over the life of the plan which, along with minimum levels of special habitat components, would insure viable populations of all endemic wildlife species.

This benchmark responds to the issues and concerns related to economic levels of all priced outputs and associated consequences. It does not consider non-priced benefits other than at a minimum level.

MAXIMIZE PNV-MARKET VALUES ONLY - WITH MMR's & NDY (MKV)

The purpose of this benchmark is to estimate the mix of resource practices and activities which maximize the present net value of those outputs having an established market price. Only timber, livestock forage, and developed recreation use are valued. After the solution is found, the values and costs contributed by other resources are calculated and added to the result. The objective function is to maximize PNV.

Except for timber, the outputs of market resources would not differ significantly from the MMR benchmark in which both market and nonmarket outputs were valued.

The Allowable Sale Quantity (ASQ) for timber in the first period is 20 percent less than the MMR level but increases to two percent above the sustained MMR level. This demonstrates that nonmarket values do not contribute significantly to the production of market resources, given price and cost trends.

Outputs of nonmarket resources would decline significantly, resulting in an overall PNV of only \$1,445 million. The large drop in PNV from the MMR benchmark indicates the relative importance of nonmarket values on the Forest.

Although this benchmark responds to issues related to the production of market outputs and services, it does not deal with issues related to providing nonmarket benefits such as dispersed recreation, including wilderness opportunities, and maintenance and enhancement of visual quality objectives.

#### MAXIMIZE TIMBER FOR ONE DECADE - WITH MMR's & NDY (TBR)

This benchmark estimates the maximum amount of timber that can be produced on a non-declining yield (NDY) basis. The objective function is maximize PNV. The ASQ for timber is sustained at eight percent above the highest MMR harvests, while exceeding the first period MMR harvest by 1.5 times.

Because harvest above the MMR level is uneconomic, the PNV is reduced by five percent. Further reductions in PNV do not occur because, by decade three, the harvest level is only eight percent above the MMR level. Clear-cut acres are significantly higher (2.5 times) than MMR only in the first decade. Timber suitable acres were 34,000 more than MMR because 95 percent of all non-stocked timber land and most ski areas are used to produce timber. Whereas in the MMR benchmark, they are used to produce livestock forage and ski areas. Livestock production is about the same as MMR because of increased transitory range in the early decades.

Ski area recreation demand is not met in any decade.

#### MAXIMIZE TIMBER FOR ONE DECADE WITH DEPARTURE FROM EVENFLOW FOR ONE PERIOD - WITH MMR's (TBD)

This benchmark estimates the maximum amount of timber that can be produced with a one period departure, with non-declining yield (NDY) applying to all other periods. The objective function is maximize PNV. The ASQ for period one is 1.9 times greater than MMR level and 1.25 times greater than TBR. The highest harvest achieved by TBD after the first period is four percent less than TBR and four percent greater than MMR benchmark. The land base is the same as TBR and effects on other outputs are similar.

#### MAXIMIZE PNV WITH MAXIMUM WILDERNESS - WITH MMR's & NDY (WLN)

This benchmark demonstrates the consequences of recommending all Further Planning and Wilderness Study Areas to wilderness on the Forest. The objective function is to maximize PNV.

A total of 355,530 acres of wilderness would occur on the Forest. Wilderness Recreation Visitor Days (RVD's) would increase to an average of 244,000 by the fifth decade and remain constant in keeping with desired user capacity. The following conditions would result:

- First period and overall timber harvest would be reduced 25 percent from MMR benchmark.
- Livestock production would remain the same except for a 15 percent reduction in the fifth decade due to land unavailable for brush treatment.

Given these differences, an eight percent decrease in the PNV from the MMR benchmark would occur indicating that a slight economic effect would result over the 50-year planning horizon. This shows that only a small amount of benefits having quantifiable values would be foregone by maximizing the amount of wilderness on the Forest.

This benchmark specifically deals with the issue concerning the designation and management of wilderness on the Forest. It does not address the issue related to maintaining visual quality which would not be provided for outside of wilderness.

MAXIMIZE PNV WITH NO FURTHER PLANNING AND WILDERNESS STUDY AREAS TO WILDERNESS - WITH MMR's & NDY (NON)

This benchmark is the same as the MMR benchmark since the requirements that no Further Planning and Wilderness Study Areas are designated for wilderness and only Minimum Management Requirements (MMR's) applied are satisfied by that benchmark. This indicates that the greatest present net value can be attained by maintaining wilderness at its present size on the Forest.

MAXIMIZE LIVESTOCK-GRAZING FOR FIVE DECADES - WITH MMRS & NDY (RGN)

The purpose of this benchmark is to estimate the maximum capability of the Forest to provide commercial livestock grazing over the planning horizon subject only to Minimum Management Requirements (MMR's). The objective function is to maximize PNV.

Livestock forage production would range between 77,000 and 96,000 animal unit months (AUM's) from the first decade. The following conditions would also result:

- Approximately 140,000 acres of brush would be treated to produce forage to allow for this level of use. All forage on suitable sites throughout the Forest would be subject to grazing.
- Timber harvest would be at the MMR level, producing transitory range. Increased timber harvest does not occur because all ground suitable for grazing is included in MMR benchmark.
- PNV would be reduced less than one percent from MMR level.

This benchmark specifically responds to the livestock grazing issue. It does not consider issues and concerns relating to wilderness, the maintenance or enhancement of visual quality, the enhancement of wildlife habitat diversity, and the quality of recreation experiences on the Forest.

#### MAXIMIZE WATER YIELD FOR FIVE DECADES - WITH MMR's & NDY (H20)

This benchmark estimates the maximum capability of the Forest to provide water over the planning horizon subject only to Minimum Management Requirements (MMR's). The objective function is to maximize PNV.

Average annual water yield is increased up to 9.5 percent over background through timber harvest, chaparral type conversions, and prescribed burning. The following conditions would result:

- Timber harvest would be 38 percent above MMR level in first period and highest harvest would be 16 percent above MMR.
- 115,000 acres of brush would be treated for increased water yield.
- PNV would be two percent less than MMR.

#### CONCLUSIONS

By comparing the benchmarks, the following conclusions can be made:

- Minimum Management Requirements (MMR's), non-declining yield (NDY), and dispersion constrain resource outputs vary only slightly and have a small effect on PNV.
- Resource outputs with assigned values make up the largest portion of the benefits from the Forest.
- Water yield and recreation contribute 80 percent of the total PNV, with timber adding 19 percent and livestock forage one percent.
- All developed recreation demands are always met, except in TBR and TBD. This resource represents the highest use of the land in terms of PNV.

#### D. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

##### 1. The Conservation Alternative

Joined by several other organizations, the Kern-Kaweah Chapter of the Sierra Club prepared what they called the Conservation Alternative. They summarize the content of the Conservation Alternative as follows (letter dated April 25, 1986):

'We are opposed to increased timber production in Sequoia National Forest. We are opposed to below-cost timber sales. We are opposed to clearcutting as a general timber harvesting policy in the Forest. We are opposed to the opening of Further Planning Areas and other released roadless areas to timber production, and we are concerned that the Forest Service does not

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possess adequate data related to the site-productivity of the Forest lands or to the erodibility of its soils to maintain the high rates of timber production as proposed in the Preferred Alternative.

We are opposed to the proposed doubling of timber harvests in the Cannell Meadow Ranger District. Any increase of this magnitude requires a separate Environmental Impact Statement.

We oppose cross-country off-highway vehicle (OHV) use on the Forest. OHV use should be limited to small designated routes on the Forest.

Grazing on Sequoia National Forest should be reduced below current levels to a sustainable yield (optimally 50,500 AUM's or below).

New downhill ski resorts should not be permitted on the Forest unless it can be clearly demonstrated that public funds will not be required for access, lodging, utilities, etc.. that land-base exchanges will not be required for profitability, that sufficient natural snow will be available to make the resort economically self-sustaining, and that no major environmental degradation will result. Downhill ski areas should not be established bordering Wilderness Areas.

Areas limited in the winter to cross-country ski touring should be established, including some relatively flat meadow and meadow-like terrain.

We feel strongly that the entire Rockhouse Wilderness Study Area and the five Further Planning Areas should be designated as wilderness and that the primitive values and the wild character of the sixteen other roadless areas should be protected administratively.

We propose that the lower Kern River below Lake Isabella be studied for inclusion in the Wild and Scenic River System.

We feel that none of the Forest Service alternatives adequately addresses the protection of sensitive plant and wildlife species nor do they call for sufficient monitoring to address the effects of clearcutting, increased grazing, and increased OHV use on wildlife. We call for the actual establishment of all five proposed Botanical Areas and all four proposed Research Natural Areas. We propose also that individual management plans be written for sensitive plant and animal species.

We propose that no giant sequoias be harvested for timber at this time and that some of the second-growth groves in previously cut prime growth areas be studied for possible restoration and preservation.

We are opposed to the wide-spread use of pesticides and herbicides on the Forest."

In addition, the Conservation Alternative proposes that Segment 1 of the Main Fork of the Kings River be recommended for designation as a Wild and Scenic River.

Because the Conservation Alternative is a combination of critique, philosophy, and positions on particular resource issues, we were unable to



formulate a full-blown alternative which could be modeled by FORPLAN. Had we attempted to do so, we would have had to make **so** many assumptions and trade-offs that the result may or may not have been what the proponents had in mind. Instead, we elected to summarize those positions above, and discuss below those items contained in the FEIS and Forest Plan that respond to the proponents' concerns. Their detailed comments are dealt with by subject in Appendix N.

The changes made in the FEIS and/or Forest Plan that respond to the concerns spelled out in the Conservation Alternative include the following:

#### Silvicultural Systems

The implications of uneven-aged management are explored in the AMN, WFW, and PRF Alternatives. In this option, about **30** percent of the average annual volume is managed under uneven-aged silvicultural systems.

#### Volume of Harvest

The Allowable Sale Quantity (ASQ) for PRF is 97 MMBF (2MMBF above the Sequoia's present ASQ). The RPA goal for 1990 is 101.6 MMBF which is met when the 4.6 MMBF of unregulated volume is added. While there will be an increase in harvest on the Cannell Meadow District, site-specific environmental effects will be dealt within project-specific environmental analyses tiered to the Forest Plan.

#### Roadless Areas

The Sirretta Peak portion of the released Woodpecker Roadless Area is to be managed in an undeveloped fashion, off limits to motorized vehicles. The ROS class is to be Semi-primitive Non-Motorized. In addition, 12,500 acres of BLM's Rockhouse WSA are to be recommended for wilderness designation.

#### Off-Highway Vehicles (OHV's)

All **OHV's** will be required to operate on designated roads and trails only. Areas will not be opened to cross-country riding.

#### Special Emphasis Areas

All five proposed Botanical Areas will be classified. Three of the four proposed Research Natural Areas will be recommended for classification. The fourth will be evaluated for such recommendation. This last required evaluation is yet to be done.

#### Giant Sequoia Groves

While the Plan shows an allocation of all giant sequoia groves to one or more basic management strategies, a Forest-wide grove management implementation plan will further define management of each grove. An environmental analysis of this plan will be written and made available for public review. Pending completion of this implementation plan, there will be no new management activities undertaken within the groves except rehabilitation work resulting from catastrophic events.

## Lower Kern River

An eligibility study of the Lower Kern River has been undertaken and is included in Appendix E of this FEIS. One segment (segment 2) is eligible for W&SR status and its suitability will be determined in the future.

## Ski Areas

There will be project level EIS's developed for each new ski area. In these documents such concerns as environmental effects and economic feasibility will be dealt with in full. Full public involvement will occur.

## Below-Cost Sales

Appended to the Conservation Alternative were two other lengthy papers. The first is known as "**The** CHEC Report". It is a consultant's critique of the Draft EIS and Forest Plan, and includes a discussion of below-cost sales. Since much interest has been shown in this report, we include our response to it in Appendix N. The second paper, by Michael Yost, is a critique of silvicultural practices used in Region 5 of the Forest Service. Since it is very general in nature, we have not included it here. It is on file and available to anyone wishing to see it.

## 2. Other Alternatives Considered But Eliminated From Further Study

The six alternatives in this category, in conjunction with the alternatives considered in detail, represent a full range of alternatives. All six alternatives not described in detail were fully developed, narratively described and analyzed by FORPLAN runs. These alternatives were considered by the IDT and Management Team along with the seven alternatives that are presented in detail before making the decision that they were not needed as implementable alternatives. The primary reasons were that they were similar to other alternatives, displayed nothing unique, or provided limited resolution of public issues and concerns. A tabular display of resource outputs for the alternatives is presented in Table 2.3.

### a. Constrained Economically Efficient (CEE)

This alternative was formulated to produce the maximum PNV and contained only minimum legal and minimum implementation direction. Except for timber harvest levels after the first decade this alternative produced resource and activity levels similar to the High Market Emphasis (MKT) Alternative.

A comparison of annual production levels is shown below:

Period		1	2	3	4	5
Timber (MMBF)	CEE	117	146	170	170	170
	MKT	126	126	126	126	126
Grazing (M AUM)	CEE	75	75	75	75	92
	MKT	76	77	77	77	92
Water Yield (M AC-FT)	CEE	757	765	767	767	776
	MKT	755	761	764	770	771
Devel. Rec. (M RVD's)	CEE	1162	1174	1373	1667	1987
	MKT	1162	1292	1296	1654	1987
Disp. Rec. (M RVD's)	CEE	1890	2156	2428	2708	2995
	MKT	1888	2162	2428	2712	2993

Since production levels and associated activities are similar, environmental consequences were assumed to be similar. Alternative CEE provides no issue resolution not found in Alternative MKT. For these reasons and because it was well within the outside limits of other alternatives, this alternative was eliminated from detailed consideration.

b. Fish and Wildlife Harvest Emphasis (WHE)

This alternative was developed to provide high levels of recreation associated with the consumptive uses of native wildlife and fish. This would be done by providing high quality habitat for native harvest species. Other resource activities would support these objectives.

Key management direction was:

- Restrict OHV use in key wildlife areas.
- Restrict grazing season.
- Increase and maintain vegetative diversity.
- Do not recommend any Further Planning and Wilderness Study Areas for wilderness.
- Increase selected roads and trails for better hunter access.

The results of this alternative were similar to the MKT Alternative.

A comparison of annual production levels is shown below:

Period		1	2	3	4	5
Timber (MMBF)	WHE	115	144	165	165	165
	WLI	116	145	171	171	171
	MKT	126	126	126	126	126
Grazing (MAUM)	WHE	70	70	70	70	73
	WLI	75	75	75	75	92
	MKT	76	77	77	77	92
Water Yield (M AC-FT)	WHE	758	763	765	769	773
	WLI	757	765	768	767	776
	MKT	755	762	768	768	771
Devel. Rec. (M RVD's)	WHE	1162	1296	1500	1635	1779
	WLI	1169	1161	1435	1724	1984
	MKT	1234	1364	1364	1514	1987
Disp. Rec. (M RVD's)	WHE	1890	2156	2428	2708	2995
	WLI	1891	2157	2430	2710	2998
	MKT	1888	2160	2429	2712	2993

Since production levels were similar, environmental consequences were assumed to be similar. Unique issue resolution was not produced.

After developing and analyzing the results of this alternative, the IDT and Management Team directed that another alternative be developed which would emphasize non-harvest species as well as harvest species. They also directed that the amount of visual change be reduced. This new alternative, WFV - which is a modification of the WHE Alternative - is presented in detail in this EIS.

c. Wilderness/Capital Investment Emphasis (WLI)

This alternative emphasizes both wilderness and market resource production. Quality wilderness is recommended for designation while capital investments on other lands support intensive management for market commodities.

Key management direction was:

- Limit OHV's to roads and trails Forest-wide.
- Recommend Scodies Further Planning Area and a portion of BLM Rockhouse Wilderness Study Area for wilderness designation.
- Manage 44.5 miles of the South Fork Kern River and 40.5 miles of the South Fork Kings River under the Wild and Scenic River System.
- Improve wildlife and fish habitat after market resources objectives are met.
- Road nearly all of the commercial conifer zone.

The results of this alternative were similar to the MKT Alternative.

A comparison of the annual production level is shown in the table on the preceding alternative, labelled Fish and Wildlife Harvest Emphasis (WHE). After developing and analyzing the results of this alternative, the IDT and Management Team directed that it was not needed as an implementable alternative.

d. Low Budget Alternative (LBU)

This alternative produces the nonmarket and market commodities and services that would be provided under a 25 percent reduction from the 1982 budget level. Market resource production (timber, forage, and developed recreation) is maintained at 75 percent of the 1982 levels.

Key management direction was:

- Would not expand developed recreation sites.
- Maintain many roads at minimum levels.
- Recommend about 69,700 acres for wilderness designation.
- Decrease fishery and wildlife habitat management activities.
- Harvest approximately 65 MMBF of timber annually.
- Manage campground at 75 percent of current occupancy levels.

The results of this alternative were similar to the CUR Alternative.

The annual production level is shown below:

Period		1	2	3	4	5
Timber (MMBF)	LBU	65	65	65	65	65
	CUR	94	94	94	94	94
Grazing (MAUM)	LBU	59	50	45	45	45
	CUR	69	69	69	69	69
Water Yield (M AC-FT)	LBU	743	743	743	744	741
	CUR	737	756	752	757	761
Devel. Rec. (M RVD's)	LBU	978	978	978	978	1413
	CUR	1147	1147	1305	1433	1499
Disp. Rec. (M RVD's)	LBU	1891	1958	2041	2132	2238
	CUR	1391	1421	1508	1681	1824

After developing and analyzing the results of this alternative, the Management Team determined that there was a lack of any strong support for an across-the-board reduction in timber, forage production, and developed recreation programs. They directed that this alternative was not needed as an implementable alternative.

e. Current, Economic Dispersed (CED)

This alternative produces market and nonmarket commodities close to 1980 RPA target levels. Timber harvest, dispersed recreation, and ski area

developments are emphasized. OHV use on designated roads and trails is emphasized over cross-country use.

Key management direction was:

- Would not expand developed recreation sites except at new water developments.
- Emphasize dispersed recreation over developed recreation.
- Recommend about 12.650 acres for wilderness designation.
- Road nearly all commercial conifer areas.

The results of this alternative were similar to the RPA Alternative except that more AUM's of livestock grazing and less developed recreation programs would occur with the CED Alternative.

After developing and analyzing the results of this alternative, the IDT and Management Team directed that it was not needed as an implementable alternative.

A comparison of the annual production levels is shown below:

Period		1	2	3	4	5
Timber (MMBF)	CED	110	126	151	151	151
	RPA	101	101	101	101	101
Grazing (MAUM)	CED	71	75	77	76	90
	RPA	70	72	74	81	100
Water Yield (M AC-FT)	CED	755	761	759	760	767
	RPA	746	757	756	764	763
Devel. Rec. (M RVD's)	CED	1233	1233	1264	1667	1987
	RPA	1222	1354	1413	1760	1987
Disp. Rec. (M RVD's)	CED	1819	2156	2428	2708	2995
	RPA	1828	2103	2439	2632	2993

f. Preferred Departure (PFD)

In the draft EIS, departure opportunities were evaluated to determine if allowing a departure from the principle of non-declining flow of timber would better meet the multiple-use objectives of the proposed Forest Plan. This was the only criterion listed in 36 CFR 219.16(a)(3) that would potentially trigger a departure on this Forest. The direction that was applied while modeling this departure in the FORPLAN analysis was the same as the Preferred Alternative as displayed in the draft EIS except one period of departure from the base sale schedule was allowed. A minimum level of timber harvest was not used and departure was not forced to occur. No departure resulted. The PFD Alternative produced the same outputs as the Preferred Alternative in the draft EIS.

Given the nature of the modifications made to the Preferred Alternative between the draft and final EIS, these results and conclusions remain basically unchanged. ~~The PD~~ Alternative was eliminated from further detailed study because of this analysis and the recognition that no issues, concerns or objectives were better resolved ~~or~~ met.

Table 2.3 - Alternatives Eliminated From Detailed Study:  
Annual Outputs by Decade

Resource Elements	ALTERNATIVES					
	CEE	WHE	PFD	CED	LBU	WLI
PNV (MM\$)	912	885	805	823	248	906
TIMBER (MMBF)						
Base Year (1982)	95.1	95.1	95.1	95.1	95.1	95.1
Decade 1	116.9	115.4	104	110.0	65.0	116.0
Decade 2	146.0	144.3	120	126.0	65.0	145.0
Decade 3	169.7	165.5	136	151.0	65.0	171.0
Decade 4	169.7	165.5	136	151.0	65.0	171.0
Decade 5	169.7	165.5	136	151.0	65.0	171.0
Long-Term Sustained Yield (MMCF) (MMBF)	30.3	30.5	23.0	27.8	16.7	30.3
	194	195	147	179.0	106.0	194.0
GRAZING (M AUM)						
Base Year (1982)	63.0	63.0	63.0	63.0	63.0	63.0
Decade 1	75.0	69.6	71.0	71.0	59.0	75.0
Decade 2	75.0	70.3	75.0	75.0	50.0	75.0
Decade 3	74.7	70.0	74.7	77.0	45.0	74.7
Decade 4	74.7	70.1	73.8	76.0	45.0	74.7
Decade 5	91.6	73.2	89.2	90.0	45.0	91.6
WATER YIELD (M Acre-Feet)						
Base Year (1982)	736	736	736	736	736	736
Decade 1	757	758	751	755	743	757
Decade 2	765	763	759	761	743	765
Decade 3	767	765	757	759	743	768
Decade 4	767	769	756	760	744	767
Decade 5	776	773	769	767	741	776
THREATENED AND ENDANGERED SPECIES						
PEREGRINE FALCON (Number of Pairs)						
Base Year (1982)	0	0	0	4	4	4
Decade 1	2	2	2	4	4	4
Decade 2	2	2	3	4	4	4
Decade 3	2	3	5	4	4	4
Decade 4	2	3	5	4	4	4
Decade 5	2	4	5	4	4	4



Table 2.3 - Alternatives Eliminated From Detailed Study:  
Average Annual Outputs by Decade - (continued)

Resource Elements	CEE	WHE	PFD	CED	LBU	WLI
<b>LITTLE KERN GOLDEN TROUT</b> (Miles of Stream Habitat)						
Base Year (1982)	29	29	29	29	29	29
Decade 1	40	40	60	60	40	40
Decade 2	60	60	117	117	55	60
Decade 3	85	85	117	117	70	80
Decade 4	117	117	117	117	95	117
Decade 5	117	117	117	117	117	117
<b>CONDOR</b> (Acres of nesting habitat)						
Base Year (1982) <u>1/</u>	0	0	0	0	0	0
Decade 1	2299	2299	2299	2299	2299	2299
Decade 2	2299	2299	2299	2299	2299	2299
Decade 3	2299	2299	2299	2299	2299	2299
Decade 4	2299	2299	2299	2299	2299	2299
Decade 5	2299	2299	2299	2299	2299	2299
<b>WILDLIFE - OTHER</b> THAN T&E (Habitat Capability in Animal Numbers)						
<b>DEER</b>						
Base Year (1982)	11,000	11,000	11,000	11,000	11,000	11,000
Decade 1	11,500	13,200	11,500	11,500	11,000	11,500
Decade 2	12,000	13,500	13,000	13,000	11,000	12,000
Decade 3	12,000	14,000	14,000	14,000	10,500	12,000
Decade 4	12,000	14,000	14,000	14,000	10,500	12,000
Decade 5	13,800	15,000	15,000	15,000	10,500	13,800
<b>RESIDENT FISH - OTHER</b> THAN T&E (M Pounds)						
Base Year (1982)	77	77	77	77	77	77
Decade 1	77	78	77	77	77	71
Decade 2	71	78	77	77	77	77
Decade 3	77	78	77	77	77	77
Decade 4	77	78	77	77	77	71
Decade 5	71	78	77	77	77	77

1/ See Chapter 3, FEIS for explanation of condor nesting habitat.

Table 2.3 - Alternatives Eliminated From Detailed Study:  
Average Annual Outputs by Decade - (continued)

Resource Elements	CEE	WHE	PFD	CED	LBU	WLI
<b>SPOTTED OWL <sup>1/</sup></b>						
(Habitat Capability to Support ___ Pairs)						
Base Year (1982)	80	80	80	80	80	80
Decade 1	75	75	75	75	75	75
Decade 2	70	75	70	70	75	75
Decade 3	65	70	65	65	70	65
Decade 4	60	65	65	65	70	60
Decade 5	55	60	60	60	65	55
<b>GOSHAWKS</b>						
(Habitat Capability to Support ___ Pairs)						
Base Year (1982)	110	110	110	110	110	110
Decade 1	105	105	105	105	105	105
Decade 2	95	95	105	105	105	95
Decade 3	90	90	100	100	100	90
Decade 4	85	85	90	90	100	85
Decade 5	75	80	80	80	95	75
<b>WILDLIFE &amp; FISH USER DAYS, TOTALS (MWFUDS)</b>						
<b>DEER</b>						
Base Year (1982)	43	43	43	43	43	43
Decade 1	43	54	46	21	20	22
Decade 2	44	57	54	23	19	24
Decade 3	46	60	59	25	18	26
Decade 4	46	60	59	25	16	26
Decade 5	64	63	65	27	15	31
<b>ALL OTHER SPECIES</b>						
Base Year (1982)	179	179	179	179	179	179
Decade 1	264	243	231	99	74	112
Decade 2	307	278	263	111	92	136
Decade 3	358	328	306	130	111	150
Decade 4	413	383	356	155	132	185
Decade 5	456	441	405	177	158	210

1/ See Appendix B of the FEIS for explanation of habitat capability for spotted owls.

Table 2.3 - Alternatives Eliminated From Detailed Study:  
Average Annual Outputs by Decade - (continued)

Resource Elements	CEE	WHE	PFD	CED	LBU	WLI
<b>RESIDENT FISH (OTHER THAN T&amp;E)</b>						
Base Year (1982)	28	28	28	28	28	28
Decade 1	28	29	28	28	28	28
Decade 2	28	29	28	28	28	28
Decade 3	28	29	28	28	28	28
Decade 4	28	29	28	28	28	28
Decade 5	28	29	28	28	28	28
<b>DEVELOPED RECREATION (M RVD'S)</b>						
Base Year (1982)	886	886	886	886	886	886
Decade 1	1162	1162	1241	1233	978	1169
Decade 2	1174	1296	1240	1233	978	1161
Decade 3	1373	1500	1280	1264	978	1435
Decade 4	1667	1635	1650	1667	978	1724
Decade 5	1987	1779	2000	1987	1413	1984
<b>DISPERSED RECREATION (M RVD'S)</b>						
Base Year (1982)	1582	1582	1582	1582	1582	1582
Decade 1	1890	1890	1900	1819	1891	1891
Decade 2	2156	2156	2150	2156	1958	2157
Decade 3	2428	2428	2420	2428	2041	2430
Decade 4	2708	2708	2700	2708	2132	2710
Decade 5	2995	2995	2990	2995	2238	2998
<b>WILDERNESS (M Acres)</b>						
Base Year (1982)	173.4	173.4	173.4	173.4	173.4	173.4
Decade 1	264.1	264.1	264.1	264.1	328.5	264.1
Decade 2	264.1	264.1	264.1	264.1	328.5	264.1
Decade 3	264.1	264.1	264.1	264.1	328.5	264.1
Decade 4	264.1	264.1	264.1	264.1	328.5	264.1
Decade 5	264.1	264.1	264.1	264.1	328.5	264.1
<b>TOTAL COST (MM\$)</b>						
Base Year (1982)	16.3	16.3	16.3	16.3	16.3	16.3
Decade 1	20.6	20.6	19.0	22.0	12.3	20.7
Decade 2	20.9	20.7	19.6	18.5	12.3	21.0
Decade 3	25.3	25.2	21.8	22.2	12.3	25.9
Decade 4	28.5	28.9	24.2	24.9	12.3	28.8
Decade 5	37.2	35.4	32.7	32.6	12.3	37.4

## E. ALTERNATIVES CONSIDERED IN DETAIL

### 1. INTRODUCTION

This section describes the seven alternatives selected to be considered in detail. The direction common to the alternatives is summarized. Management prescriptions and how they relate to management areas are explained. Each alternative is described equally, including tabular displays of acreage allocations, outputs, and costs. Finally, the alternatives are compared and the differences are explained.

Any of these alternatives could be implemented; and, as a group, they represent a broad range of reasonable alternatives. This is because they describe various levels of issue resolution and resource output levels as defined by benchmark analysis. A full range of qualitative differences is also produced.

### 2. DIRECTION COMMON TO ALTERNATIVES

Higher level direction (laws, regulations, and National and Regional policies) is a part of the Sequoia NF's overall management direction. Generally, it is not repeated unless it is used to emphasize particular practices. Direction common to all alternatives includes the following:

- Minimum Management Requirements (MMR's) were developed from the Forest Planning regulations and 36 CFR 219.27 to ensure compliance with statutes and regulations. They are considered requirements that are generally outside of Forest Service authority to change. MMR's meet these outside requirements at an absolute minimum level. These MMR's were applied to the benchmark analyses as well as the alternatives.
- Timber Policy Constraints (TPC's) are needed to ensure that timber harvest meets sustained non-declining yield, culmination of Mean Annual Increment, and dispersion requirements.
- Minimum Implementation Requirements (MIR's) ensure that alternatives are minimally acceptable and implementable on the ground. They respond to Forest Service policies that go beyond the Minimum Management Requirements. As with MMR's, there is no discretionary control at the Forest level. The MIR's were applied only to the alternatives and not to the benchmark analyses.
- The only Forest constraints common to all alternatives are the construction of the Peppermint Ski Area in the first decade, completion of Shirley Meadow Ski Area expansion, and the maintenance of a spotted owl network under a "No Scheduled Timber Harvest" management alternative.
- Forest-wide Standards and Guidelines common to all alternatives were developed at the Forest level. They provide coordinating direction for management practices and activities. They do not have any significant effect on the FNV or Net Public Benefit (NPB).

In the analytical process used to model the alternatives, the direction that places limits or restrictions on the output of goods and services from the Forest becomes a constraint in FORPLAN. A constraint on an alternative is essentially an objective that must be met in the linear program.

The MMR's, TPC's, MIR's and Forest constraints that could be modeled were used in FORPLAN as constraints common to all alternatives. Forest level constraints unique to an alternative are included in the direction for the individual alternatives. A complete discussion of the constraints used in FORPLAN and their effects is given in Appendix B of the EIS.

The MMR's, TPC's, and MIR's are listed below followed by the Forest-wide Standards and Guidelines common to all alternatives; The accompanying Forest Plan also lists all Standards and Guidelines common to all alternatives and those unique to the Preferred Alternative.

a. MINIMUM MANAGEMENT REQUIREMENTS (MMR's)

Timber

Consider for timber production only those lands that:

- 1) are currently producing or are capable of at least 20 cubic feet per acre of wood per year;
- 2) have not been withdrawn from timber production by Congress, the Secretary of Agriculture, or the Chief of the Forest Service; and
- 3) existing technology and knowledge can provide reasonable assurance that adequate restocking can be attained within five years after final harvest.

Fish and Wildlife

- 1) Threatened and Endangered (T&E) Species: Where possible, provide sufficient quality habitat to assist in the removal of the species from Federal listing. The Forest will implement specific direction for recovery in individual T&E Species Recovery Plans. This direction applies to the following species:

Peregrine Falcon  
California Condor  
Bald Eagle  
Little Kern Golden Trout

- 2) Spotted Owl: Maintain a network of 40 spotted owl habitat areas to ensure the continued existence of an adequate number and distribution of reproductive pairs throughout the existing range of spotted owls in the planning area. The Sequoia NF has selected the "No Scheduled Harvest" prescription (from the range of prescriptions described in Appendix H of the Regional Guide EIS) for management of these areas. To ensure habitat availability during and beyond the planning horizon manage approximately 1650 acres at each site, including 1,000 acres of currently suitable habitat plus approximately 650 acres for

replacement purposes. During Forest Plan implementation, prepare a site specific management plan for each area.

- 3) Goshawk: Manage goshawk habitat to maintain the known range of the species at a density of at least one territory per 18 square miles, with distances between adjacent territories no more than 12 miles. This will provide a minimum of 1,050 acres of habitat for at least 21 pair of goshawks managed according to the Regional Guide direction for goshawks.
- 4) Snags: Snags **or** standing dead trees are **used** by many species of birds and wildlife for food and cover. Within the conifer and broadleaf woodland vegetation types provide, maintain, and manage for an average of 1.5 snags per acre with the following specifications:
  - a) 1.2 snags per acre between 15 and 24 inches dbh and greater than 20 feet high: and,
  - b) 0.3 snags per acre greater than 24 inches dbh and greater than 20 feet high.
- 5) Dead and Down Material: Dead and down material provides food and cover for many small animals and birds. Maintain at least an average density of 35 cubic feet per acre of dead and down material. (Ideal size log is 20 inches in diameter by 20 feet in length.)
- 6) Viable Populations: Manage for sufficient habitat capability according to the Regional Guide; **or** if no specific direction in the Regional Guide, according to habitat capability models. This will insure that all native fish and wildlife species have adequate population levels and distribution to provide for their continued existence throughout their current range.

### Diversity

- 1) Provide and attempt to maintain at least five percent of each vegetation type/seral stage combination found on the Forest.
- 2) Assure adequate distribution of vegetation type/seral stage combinations to Subunits of the Forest.

### Riparian Areas

Manage riparian areas for protection and improvement of riparian dependent resources (see Chapter 3 of the EIS, Riparian Areas) by preventing adverse changes in water temperature, chemistry, sedimentation, and channel blockage; and by protecting streams, streambanks, shorelines, lakes and riparian vegetation.

### Sensitive Soils

To assure conservation and prevent significant **or** permanent impairment of sensitive soils, all of the Forest land on over-steepened slopes (24,000 acres) were not scheduled for any land disturbing activities.

b. TIMBER POLICY CONSTRAINTS (TPC's)

- 1) Insure that **all** even-aged stands scheduled to be harvested have generally reached **Culmination of Mean Annual Increment (CMAI)** as measured by cubic-foot yield predictions.
- 2) Insure that the portion of the Forest to be managed under even-aged regimes will be generally regulated by the end of the planning horizon and will provide perpetual timber harvest at **or** below the long-term sustained yield level.
- 3) Insure that harvest levels **are** produced on a NDY basis so as not to cause adverse changes in community stability.
- 4) Insure that regeneration units, or openings, are not placed adjacent to each other and do not exceed 40 acres in size, unless specifically exempted by the Regional Forester.
- 5) Leave logical harvest units between openings.

c. MINIMUM IMPLEMENTATION REQUIREMENTS (MIR's)

- 1) Manage sensitive plants to insure that they do not become threatened **or** endangered species.
- 2) Maintain scenic corridors along officially designated California State and County scenic highways.
- 3) Maintain scenic corridors along State highways included as eligible in the 1970 California State Scenic Highway System Master Plan.

d. FOREST CONSTRAINTS COMMON TO ALL ALTERNATIVES

- 1) Pursue development of the Peppermint Mountain Resort in decade one. This land allocation was made in each alternative as described in the Peppermint Mountain Resort Final Environmental Impact Statement. This FEIS is incorporated by reference.
- 2) Expand Shirley Meadow Ski Area as described in the Shirley Meadow Ski Area Environmental Assessment and Management Plan. These documents are incorporated by reference.
- 3) Maintain a Spotted Owl Habitat Area network according to Region 5 Guidelines.

e. FOREST-WIDE STANDARDS AND GUIDELINES

The following are Standards and Guidelines that would be applicable regardless of the alternative selected. Management direction which varies by alternative is shown under the individual alternative descriptions. These Forest-wide Standards and Guidelines are legal requirements, Regional Standards and Guidelines are specific mitigation measures needed to meet a fixed objective. For example, the meeting of spotted owl habitat management requirements and the use of Best Management Practices are Regional Standards and Guidelines. Grazing utilization standards and the guideline that tractors will generally not be used for harvesting timber on slopes greater than 40 percent are examples of restrictions imposed to protect soil productivity and water quality which is required by NMA

Additional information on how Standards and Guidelines were developed can be found in the Forest planning records.

1) GENERAL

Two Further Planning Areas, Cypress and Kings River, have been considered for wilderness designation by the BLM and Sierra NF, respectively, during their recent planning processes. Non-wilderness allocation was recommended for the Cypress Area. All alternatives were formulated assuming the Sierra NF's proposal - that the Kings River Area be managed for non-wilderness uses - would carry through from their draft to their final Forest Plan. Enactment of the Kings River Wild and Scenic legislation in November, 1987, established the Kings River Special Management Area. This action resolved the question of wilderness/ non-wilderness with long-term management to be specified in a plan which will be developed within three years of enactment of legislation. Therein, further discussion of environmental consequences of wilderness have been deleted from Appendix C of the EIS.

2) RECREATION

Recreation Opportunity Spectrum (ROS)

- a) Manage the Forest to provide recreation opportunities within the parameters established by each ROS class. Follow "Recreation Opportunity Spectrum Users Guide" to determine the applicable activities, physical settings, and recreation experiences for each ROS class.

General Recreation

- a) Develop special management direction to deal with exceptionally heavy recreation use in areas such as: ~~Hme~~ Lake, Lower Tule River Canyon, Kern Canyon, and Lloyd Meadows.
- b) Continue coordination with the NPS to help facilitate users and management activities for the benefit of park resources (e.g., permit issuance for park backcountry users where access begins on the National Forest).



### Developed Recreation Sites

- a) Manage vegetation to maintain or improve recreation values.
- b) Pursue development of the Peppermint Mountain Resort as detailed in the Final Environmental Impact Statement.
- c) Administer Shirley Meadow Ski Area following the approved master plan.

### Dispersed Recreation Management

- a) Emphasize Pack-in, Pack-out policy.
- b) Provide for a variety of dispersed uses (including both summer and winter activities) consistent with resource protection and maintaining recreation opportunities.
- c) Obtain public involvement whenever changes to the OHV Management Action Plan are necessary based on trail standards and guidelines.
- d) Enforce state laws for noise control, the use of approved spark arresters, and green sticker registration as part of overall OHV administration activities.
- e) Consistent with the Forest Plan, identify, in cooperation with the State, other agencies, and user groups, opportunities to develop segments of trail that support the concept of a Statewide trail system. An objective of this system is to connect use areas and provide opportunities for long distance trail touring.
- f) Identify and respond to potential problems created by target shooting with the objective to minimize user conflicts.

### Trails

- a) Implement mitigation measures (including reconstruction or relocation) where management projects alter or eliminate portions of the long-term Forest trail system.
- b) Allow changes and increases to the trail system necessary to meet high demands, prevent resource and facility damage, user conflicts, and/or other needs identified in project-specific EA's.
- c) Relocate system trails out of meadows where unacceptable damage is occurring.
- d) Maintain and manage the Forest trail system consistent with RCS concepts.
- e) Manage the Pacific Crest Trail (PCT) in accordance with Secretary of Agriculture Guides and Standards and the Regional approved management plan.

- f) Maintain system trails to minimize trail degradation and to protect off-site resources.
- g) Develop and maintain a trail system that emphasizes loop trails.
- h) Undertake trail system planning and winter recreational activity planning at levels consistent with the alternative theme that will provide a comprehensive review and identify specifics of all uses (e.g., hiking, equestrian, OHV, oversnow vehicles, and cross-country skiing).
- 1) Use location and design criteria for OHV trails that will hold down speed of vehicles.

Wild and Scenic Rivers

- a) Manage rivers in accordance with the final legislation on Wild and Scenic River (W&SR) designation.
- b) Prepare a river management plan for each designated river or Special Management Area, including boundary descriptions.
- c) Classify the National Forest segments of designated rivers at their highest eligible level (refer to FEIS, Appendix E):

South Fork Kern

Segment 2	Wild	Sequoia
Segment 3	Recreation	National
Segment 4	Wild	Forest
-----		
Segment 5	Scenic	Inyo
Segment 5A	Wild	National
Segment 6	Wild	Forest
.....		

North Fork Kern<sup>1</sup>

Segment 2	Wild	Sequoia
Segment 3	Wild	National
Segment 4	Recreation	Forest

South Fork Kings

Segment 1	Recreation
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<sup>1</sup>Classifications for the North Fork Kern River are the highest eligible levels as shown in the North Fork Kern Final Environmental Impact Statement dated August 19, 1985.

Segment 1A Wild

Kings

Segment 2 Wild

- d) Maintain ~~W&SR~~ values on Segment 2 of the Lower Kern River pending completion of suitability studies in the future.

#### Recreation Management (Private Sector)

- a) Prepare Future **Use** Determinations Needs Assessment **for** resorts, organizations camps and recreation residences with permits due to expire during the planning period (attempt three year lead time) when potential conflicts are identified; when the public need for the use has diminished: when unacceptable resource damage is occurring; **or** when an alternate use is proposed **or** has evolved without Forest Service approval.
- b) Prepare Future **Use** Determinations Needs Assessment for resorts and organization sites prior to issuing new permits when existing facilities are sold and new termination dates are requested, and criteria listed in "a" above is applicable.
- c) Encourage development of recreation uses on private lands. Permit uses and/or activities on National Forest System lands only after full consideration of the opportunities provided by others, both public and private.

#### Permitted Uses

- a) Maintain at least 50 percent of boating capacity on rivers and *lakes* within appropriate ~~ROS~~ classes for the noncommercial public.

#### Interpretive Service

- a) Capitalize on opportunities to provide the public with interpretive services and information which explains various resource management activities.

#### Visual Resources

- a) Maintain visual quality to the VQO level specified. Consider these a minimum, but strive for higher visual quality whenever practical and when compatible with other resource objectives.
- b) Accept occasional short-term departure from adopted Visual Quality Objectives (VQO's) that will lead to long-term desired visual character. Require a documented decision, based on an environmental analysis, whenever a proposed activity or development reduces the visual quality below the adopted VQO.
- c) Maintain the foreground and middleground of Highways 180, 190 and the Generals Highway to Partial Retention Visual Quality Objective.

- d) Reflect, whenever possible, the form, line, color, and texture of natural occurrences when viewed from middleground and background distances in management activities.
- e) Consider the visual concerns of individual landowners and agencies within and adjacent to National Forest System lands when planning National Forest management activities.
- f) In the following ROS Classes, manage projects to limit the potential visual impact: Semi-primitive Non-Motorized in Partial Retention: Semi-primitive Motorized in Modification: Roaded Natural and Rural in Maximum Modification.

### Wilderness

- a) Manage wildernesses within the framework established by approved wilderness management plans for each area. Continue current management actions pending completion and approval of management plans.

### Cultural Resource Management

- a) Comply with 36 CFR 800 Regulations by completing cultural resource inventories prior to any action which may affect cultural resources.
- b) Develop follow-up actions for evaluation, protection and/or interpretation as a result of inventory findings.

### 3) AIR QUALITY

- a) Establish a visibility monitoring program and determine sensitive indicators for each Air Quality Related Value in National Forest Class I areas. Protect Air Quality Related Values by reviewing all projects and management activities that may impact those values.
- b) Minimize resource and air quality impacts from air pollutants generated by management activities through use of the following control measures:
  - 1) Follow dust abatement procedures.
  - 2) Conduct an air quality analysis for all projects that may impair air quality to determine impacts, mitigations, and/or controls.
  - 3) Respond to local planning authorities when development outside Forest jurisdiction may impact forest resources.
  - 4) Conduct prescribed burning activities in accordance with Air Pollution Control District regulations and with proper prescriptions to assure good smoke management.

- c) Coordinate management activities that potentially impact the air quality of adjacent Class I areas and military facilities with the responsible agency (i.e., Sequoia and Kings Canyon National Parks and Edwards Air Force Base),

#### 4) FISH AND WILDLIFE

##### General

- a) Maintain habitat to insure all native fish, wildlife, and plant species will have adequate population levels and distribution to provide for their continued existence throughout their current range.
- b) Emphasize habitat management for wildlife species that utilize riparian, *oak* hardwood, snags, and down log habitats.
- c) Protect fishery streams by removing no more than 50 percent of the flow at any time.
- d) Maintain the current program of direct habitat improvement by submitting requests for funds to appropriate county, state, and federal agencies.
- e) Give a high priority to meadows and riparian areas when funding fish and wildlife habitat projects through timber sales.
- f) Focus on habitats outside the planned timber sales when funding habitat improvement projects from sources other than timber sales.
- g) Use approved cooperative deer herd management plans as a guide for deer habitat management.

##### Fish, Wildlife, and Plant Habitat Coordination

- a) Manage classified Threatened and Endangered species in accordance with Recovery Plans.
- b) Protect sensitive, proposed for listing, and California species of special concern with the long-term objective of preventing them from being listed.
- c) Participate, when requested, with the Regional Forester's Office, the USDI Fish and Wildlife Service, and the California Department of Fish and Game in the development of recovery or management plans for species listed in Chapter 3, Fisheries, Wildlife and Sensitive Plants, of the FEIS (i.e., Table 3.15 and Sensitive Plants).

##### Old Growth Habitat

- a) Provide habitat for wildlife species associated with late-successional and old-growth forest stands by retaining five percent of old-growth outside of riparian area habitats, well dispersed over the Forest.

- b) Implement spotted owl guidelines contained in Appendix H of the Regional Guide EIS. Maintain a network of 40 spotted owl habitat areas to provide habitat capable of supporting reproductive pairs distributed throughout the existing range of spotted owls on the planning area. To ensure the availability of habitat through the planning horizon and beyond, manage each network habitat through a no scheduled timber harvest prescription, providing 1,000 acres of currently suitable habitat plus approximately 650 acres of replacement habitat. During Forest Plan implementation, prepare a spotted owl management plan **for** each habitat area in the network. Each spotted owl management plan will include:
- Identification of existing owl use areas and specific replacement stands.
  - Specification of the composition and percent makeup of vegetation components to be managed.
  - Silvicultural prescriptions **or** other activities to meet habitat objectives for maintaining habitat capable of supporting reproductive pairs.
- c) Identify and maintain goshawk areas according to the Regional Guide for goshawks.

#### Snag and Down Log Management

- a) Provide habitat for wildlife species that are dependent on snags and downed logs.
- b) Maintain at least an average density of 35 cubic feet per acre of dead and down material. (Ideal size log is 20 inches in diameter by 20 feet in length.)
- c) Manage each compartment acreage to maintain an average of 1.5 snags per acre to provide habitat for cavity and snag using species of wildlife. Managed areas will be one-quarter to two acres in size.

#### Hardwood Management

- a) Provide hardwoods management for key areas of those indicator species highly dependent on hardwoods.

#### 5) RIPARIAN AREAS

- a) Delineate, manage, and monitor riparian areas using the "Riparian Standards and Guidelines for the Sequoia National Forest."
- b) Prevent adverse riparian area changes in water temperature, chemistry, and sedimentation; and maintain a balance of woody debris.
- c) Give emphasis to riparian dependent resources.

6) MEADOWS

- a) Maintain all meadows.
- b) Consider meadows smaller than two acres as part of the riparian areas.
- c) Develop Meadow Management Standards and Guidelines.

7) SENSITIVE PLANTS

- a) Manage sensitive plants to ensure they do not become threatened or endangered.

8) RESEARCH NATURAL AREAS (RNA)

- a) Protect and manage the following potential RNA's as if they are already established pending their final establishment or release by Chief of the Forest Service: Moses Mountain (960 acres), South Mountaineer Creek (1,325 acres), Church Dome (1,380 acres), and Long Canyon (1,000 acres).
- b) Prepare establishment reports for submission to the Chief for the following areas recommended by the Regional RNA Committee for final establishment: Church Dome, South Mountaineer Creek, and Moses Mountain.
- c) Submit the nomination of the Long Canyon site to the Regional RNA Committee. Upon favorable action by the committee, an establishment report will be prepared for submission to the Chief.

9) SPECIAL INTEREST AREAS (SIA)

- a) Establish the Ernest C. Twisselmann (860 acres) Botanical Area located in the vicinity of Sirretta Peak.
- b) Designate the following botanical areas and complete management plans as needed for Bald Mountain (440 acres), Slate Mountain (490 acres), Baker Point (780 acres), and Inspiration Point (270 acres).
- c) Revise and implement a management plan for the Packsaddle Cave Geologic Area.
- d) Revise and implement a management plan for the Bodfish Piute Cypress Botanical Area in cooperation with the Bureau of Land Management.

10) NATIONAL NATURAL LANDMARKS

- a) Continue coordination with the National Park Service to conduct on-site landmark evaluation studies for the following sites: **Moses Mountain, Long Canyon, Bald Mountain, Sirretta Peak, Inspiration**

Point, and the Bodfish Piute Cypress Grove. **These** candidates will be adequately protected and managed as an RNA or SIA until final resolution.

#### 11) RANGE

- a) Apply the standards and guidelines set forth in the most current version of the Range Environmental Analysis Handbook (R-5 FSH 2209.21). Meadows will be grazed to allowable use standards, **as** determined by the height/weight or grazed plot method.

#### 12) TIMBER MANAGEMENT

##### Silvicultural System

- a) Apply even-aged or uneven-aged management systems in all forest types and on all lands allocated for timber production.

##### Cutting Methods

- a) Design all timber harvesting to either maintain growth or to foster regeneration. Harvest designed to maintain growth is described as "intermediate" and includes such cutting prescriptions as sanitation and thinning. Regeneration prescriptions include group selection, shelterwood, seed tree, and clearcutting.

##### Regeneration Methods

- a) Plant all regeneration areas requiring reforestation except where natural seeding is prescribed. Regeneration by natural seeding will be applied primarily in the true fir type.
- b) Meet draft Regional soil standards for long term site productivity.
- c) Utilize current state of the art regeneration techniques, including controlling pests, such as gophers, and controlling competing vegetation.

##### Fuels Reduction

- a) Reduce fuels created by logging slash on all areas where timber harvest is done. The objective of fuels reduction is to prevent at least 90 percent of all fires from reaching five acres in size.

##### Harvest System

- a) Use a variety of logging systems to harvest forest products. Generally, **use** ground-based systems (such as tractors) on slopes of **less** than 40 percent, and aerial systems (such as highlead, skyline, or helicopters) where slopes exceed 40 percent.



### Firewood and Other Forest Products

- a) Allow gathering of firewood and other forest products on available lands where not in conflict with other resources.

### Diversity

- a) Maintain the existing species composition for major forest types where reforestation and thinning projects occur.
- b) Provide for an array of early and late successional stages over time in each Forest ecosystem to assure that long-term viability of Forest wildlife species will be maintained.
- c) Design vegetation treatments to provide for edge, corridors of cover, and enhancement of special habitat features such as meadows for wildlife.

### Integrated Pest Management

- a) Apply the principles of integrated pest management to the control of competing vegetation, animal and insect pests, and diseases. Control of competing vegetation will be within the scope of the BSW Region DEIS of June 1983, entitled: Vegetation Management for Reforestation. This document is incorporated by reference. A full range of management strategies and techniques will be considered before prescribing treatment designed to reduce damage from any forest pest. Strategies include indirect control (which focuses on increasing host resistance to pests) and direct control (which **seeks** to reduce pest populations). Techniques include biological, chemical, mechanical, manual, and prescribed fire in prescriptions considered in the control of pest damage.

### Giant Sequoias

- a) Establish the management objectives of giant sequoias by specific management emphasis. Management emphasis categories are Preservation, Non-intensive, and Intensive (**see** Chapter 3, Giant Sequoia, for definitions of these terms).
- b) Consider planting giant sequoia outside of recognized groves along with other mixed conifers where site conditions favor its survival and growth.
- c) Complete a Forest-wide giant sequoia management implementation plan which assigns management to each grove.
- d) Use stand management prescriptions that **ensure** the maintenance and replacement of "specimen" trees so that their total number does not decrease.

13) SOIL AND WATER

- a) Identify areas of watershed damage and add them to the Watershed Improvement Needs (WIN) program for rehabilitation.
- b) Secure water rights for existing Forest consumptive uses following appropriate Federal/State filing procedures.
- c) Protect water quality and soil productivity through the implementation of Best Management Practices (BMP's) in accordance with the most current version of "Water Quality Management for National Forest System Lands in California."
- d) Utilize the Sequoia NF Cumulative Watershed Effects (CWE) methodology for application within the Forest to assess each project for potentials to incur cumulative effects.

14) MINERALS AND GEOLOGY

- a) Evaluate requests for leaseable minerals and mineral material on a project basis.
- b) Include provisions in operating plans to minimize adverse environmental impacts to surface resources per 36 CFR 228. Upon the completion of any mineral activities on the Forest, provisions will be made for the timely reclamation of a disturbed area with the ultimate goal being full surface production and use of the land.
- c) Complete a Geologic Resource Inventory to Order 3 standards.
- d) Seek resolution of situations where activities, questionably based on the 1872 Mining Law, conflict with management needs.
- e) Review all withdrawals to meet the Bureau of Land Management schedule. Priorities will be coordinated by the Regional Office.
- f) Utilize care where valid existing rights are exercised in withdrawn areas to insure the integrity of the area for the purpose for which it is withdrawn.

15) LANDS

- a) Survey, mark and post all property lines to Forest Service standards. Give priority to those needed for management activities and where a high potential for encroachment exists.
- b) Grant new non-recreation special-use permits or easements only when suitable private land is not available and they would not conflict with management objectives.

- c) Continue a minimum level of administration of special uses that meets current direction except where higher levels are warranted on a case-by-case basis.
- d) Acquire available private land and dispose of public land only where needed to reduce administrative costs, foster resource programs, or resolve administrative problems.
- e) Acquire rights-of-way needed for management activities and to provide public access to National Forest System lands.
- f) Respond to interagency transfer proposals, as needed.
- g) Review existing withdrawals to determine if they should be continued and for how long.

16) RURAL, COMMUNITY, AND HUMAN RESOURCES

- a) Meet human and community needs where feasible by providing employment and training opportunities, particularly for the elderly, disadvantaged and minority communities. Volunteers and other Human Resource Programs will help accomplish planned work while meeting budget constraints.
- b) Provide where feasible an environment that promotes the active participation of all segments of the public in the management of the Forest.
  - 1) Promote the use of symbol signing for the hearing impaired.
  - 2) Utilize bilingual personnel, brochures, and signing in areas heavily used by the Hispanic community.
- c) Ensure over time that Forest Service facilities are responsive to the design needs of the physically challenged.
- d) Ensure that federally conducted and assisted programs administered by the Forest Service (including contracting opportunities and special-use permits) are responsive to the needs of minority groups.

17) FACILITIES AND ENERGY

Energy

- a) Encourage energy development, when sources are available, as long as the development is consistent with other standards and guidelines.

Roads

- a) Construct, maintain, and manage a transportation system to support management objectives. Obliterate unneeded roads.

## 18) FIRE MANAGEMENT

- a) Attack all fires outside of wilderness with sufficient force to assure that the controlled fire size and cost is commensurate with the risks involved and the resources threatened. **The** objective is to gain "containment" 95 percent of the time within four hours of initial attack and "control" within **the** first 24 hours.
- b) Treat fuels in urban interface areas to reduce fire threat to private improvements and Forest resources.
- c) Prepare an activity fuels management/fire protection plan for each compartment. Treatment and protection objectives for timbered compartments are:
  - 1) Treat activity fuels to assure control of 90 percent of all fires at **less** than five acres.
  - 2) Establish fire protection features (e.g., fuelbreaks, roadsides, and access) that assure control of 98 percent of fires escaping initial attack (greater than five acres) at less than 50 acres.
- d) Allow the **use** of unplanned natural ignition prescribed fire for meeting planned objectives in wildernesses when fuel loading and natural barriers limit final fire perimeter to planned boundaries.

## f. VEGETATIVE COMPETITION

### Regional Policy for Herbicide Use

In July 1983, the Pacific Southwest Region of the **USA** Forest Service issued a Draft Environmental Impact Statement (DEIS) entitled "Vegetation Management for Reforestation." This document included detailed discussions and analyses of a preferred alternative (continuation of the then current policy), the other alternatives (including no vegetation management, no application of herbicides and no aerial application of herbicides), and the consequences of these alternatives. Based on the preferred alternative in the Regional DEIS, all alternatives in the Sequoia NF EIS are based on the continued **use** of the full range of alternative treatment methods including mechanical, prescribed fire, biological, and chemical methods. *The* Regional Vegetation Management DEIS is hereby incorporated by reference; the final EIS is expected to be completed in the Spring of 1988.

**The** Forest Plan directs that (1) the selection of any particular treatment method will be made at the project level based on a site-specific analysis of the relative effectiveness, the environmental effects, and the costs of the feasible project alternatives; and (2) the administration directions and monitoring will be developed and described in the environmental analyses for the project.

Should the current Regional policy change to either prohibit **or** restrict herbicide use: then, based on the effects outlined in the Region's Vegetation Management DEIS, timber yields and vegetation management costs

for each alternative presented in this EIS would most likely change as shown in the table below (Table 2.3a). Appendix M describes in more detail how these changes were estimated.

Table 2.3a - Effects on Timber Management of Two Policies that would Restrict Use of Herbicides

Effects are displayed two ways: actual changes and, in parentheses, percentage changes

Effect on:	Herbicide Policy	LMP Alternative						
		PRF	CUR	RPA	AMN	HKT	PRO	WFY
Long-Term Sustained Yield (MMBF)	No Herbicides	-40 (26)	-25 (28)	-27 (28)	-14 (22)	-35 (28)	-38 (30)	-28 (22)
	No Aerial Herb.	-1 (1)	neg	neg	neg	-1 (1)	-1 (1)	neg
Timber Suitable Land Ease (Thousand Acres)	No Herbicides	-44 (15)	-28 (14)	-32 (15)	-21 (18)	-37 (14)	-39 (14)	-22 (15)
	No Aerial Herb.	0	0	0	0	0	0	0
Reforestation and Timber Stand Improvement Budget (Million Dollars) 1/	No Herbicides	+0.1 (3)	+0.1 (4)	+0.1 (4)	neg	+0.2 (6)	+0.1 (3)	neg
	No Aerial Herb.	neg	+0.1 (4)	+0.1 (4)	neg	+0.1 (3)	neg	+0.1 (6)
Average Cost per Thousand Road Feet (Dollars) 1/	No Herbicides	+8.10 (39)	+11.30 (44)	+11.30 (44)	+3.80 (27)	+12.30 (49)	+12.00 (47)	+3.60 (29)
	No Aerial Herb.	+0.10 (1)	+1.10 (4)	+1.00 (4)	neg	+1.00 (4)	+0.20 (1)	+0.80 (6)

1/ All reforestation and timber stand improvement costs, except for animal damage control.

### 3. MANAGEMENT PRESCRIPTIONS AND MANAGEMENT AREAS

A Management Prescription is a cohesive and compatible set of activities selected and scheduled for application on a specific area of land, the Management Area, to attain desired goals and objectives. On the Sequoia NF, there are two types of management areas. Delineated areas such as wildernesses or botanical areas combined with a management emphasis are one type. The other type of Management Area consists of a mapped area of a single vegetative type which is allocated to a particular management emphasis, such as dispersed recreation in conifer forest. A prescription is a set of activities which *is* applied to each Management Area.

Twenty-seven Management Prescriptions were developed to allow consideration of a wide range of management emphasis across the Forest including live-stock grazing, dispersed recreation, water-oriented recreation, developed recreation, water yield, wildlife, timber, research natural areas, special interest areas, and wilderness. Each Management Prescription contains a compatible set of activities that will achieve the desired goals and objectives of the emphasis.

Each prescription, except for wildernesses or other delineated areas, is applied to a specific management area which is mapped and contains a single predominant vegetative type. However, because of the large size of the Management Areas and mapping scale, it is not unusual to find small inclusions of other vegetative types. When inclusions are found in Management Areas, the same emphasis will apply regardless of the vegetative type found. Exceptions are those prescriptions (WC4, WF4, SIA, and WSR) which apply to existing or proposed designated areas. These areas may include various vegetative types, are mapped, and contain no inclusions.

The following are descriptions of vegetative types to which prescriptions are applied. A generalized map of vegetative types is included as part of this document.

- a. Blue Oak Savanna (about 45,000 acres Forest-wide): This vegetation type is on gently, sloping to moderately, steep foothills dominated by annual grassland with scattered blue oak trees. Associated trees may be interior live oak, California buckeye, digger pine, or valley oak. This type is located on the western fringe of the Forest below an elevation of 2,500 feet and below the mixed chaparral type.
- b. Oak Woodland (about 180,000 acres Forest-wide): This vegetation type is composed of black oak woodlands and live oak woodlands. Mature black oaks are 50 to 75 feet high with trunks that are often bent or leaning. They are clear of branches for 10 to 20 feet, and then give off large limbs which form irregularly open, broad, rounded crowns. They are associated with pine, white fir, and incense cedar; and are located on the western slope of the Forest. Black oak woodlands occur in a narrow transition between the mixed chaparral type and the conifer forest type at an elevation of 4,000 to 5,500 feet.

Live oaks are very variable in size, from low, dense brush to a wide-spreading tree 30 or 40 feet high, with high horizontal limbs and a short, thick trunk. They are scattered across the entire Forest from

an elevation of 1,000 to 8,000 feet, on steep, rocky canyonsides and mountainsides. The live oaks are evergreen and form a nearly complete closed canopy.

- c. Mixed Chaparral (about 175,000 acres Forest-wide): This vegetation type consists of broad-leaved shrubs which are adapted to heat and drought. They are three to six feet high and form a dense, often nearly impenetrable canopy. The dominant species are chamise, buckbrush, flannel bush, shin-oak, mariposa manzanita, whiteleaf manzanita, chaparral white-thorn, and birchleaf mountain mahogany. Generally, stands of mixed chaparral contain two or more of these species; although, pure stands of one species may occur. Mixed chaparral occurs below an elevation of 4,500 feet, and occurs between the conifer forest or black oak woodland and the blue oak savanna.
- d. Pinyon-sage (about 140,000 acres Forest-wide): Pinyon pines have short trunks (rarely straight), wide, rather flat crowns of short, heavy, twisted, and bent branches (which often start near the ground and often hang low). Pinyon pines are 10 to 30 feet high. They occur in open stands with shrubs in between. Generally, pinyon pines form pure stands; but, occasionally, can be found with western juniper, California juniper, or Piute cypress. The associated shrubs are basin sagebrush, bitterbrush, and rabbitbrush. The pinyon-sage type occurs in the Scodie Mountains, on the eastern portion of the Kern Plateau, and in the Piute Mountains.
- e. Conifer Forest (about 580,000 acres Forest-wide): The conifer forest is generally above an elevation of 5,000 feet on mountainsides, canyon-sides, ridges, peaks, and in riparian areas. It may be composed of a single conifer species or a mixture of species. Trees are 50 to 200 feet tall, with stand density ranging from open "park like" stands to dense forests with a closed canopy. There is a wide variety in amount and species of understory shrubs, forbs, grasses, and sedges. Conifer species which occur on the Forest are ponderosa pine, Jeffrey pine, sugar pine, giant sequoia, incense cedar, white fir, lodgepole pine, western white pine, red fir, and the subalpine species of foxtail pine, white-bark pine, and limber pine.

The management emphasis and vegetative type of each prescription is summarized in Table 2.4 followed by a synopsis of the emphasis and opportunities for each prescription. For each prescription, management activities will be constrained to meet or exceed minimum legal requirements. Forest-wide Standards and Guidelines apply to the prescriptions and may constrain activities.

A few management prescriptions were applied to the same area in all alternatives; that is, pre-FORPLAN land allocation decisions that were made do not change among the alternatives. The Peppermint and Shirley Meadow Ski Areas (about 4,000 acres) were allocated to the Developed Recreation prescription (CF3) in all alternatives. The Peppermint allocation was made in a separate EIS. Shirley Meadow has a long-term existing permit. Scenic corridors along Highways 180 and 190 (about 55,000 acres) were allocated to General Dispersed Recreation prescriptions (BO1, OW1, MC1, and CF1) in all alternatives according to Minimum Implementation Requirements to protect

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visual quality. Spotted Owl Habitat Areas (about 50,500 acres outside wilderness) were allocated to Wildlife and Dispersed Recreation prescriptions according to Minimum Management Requirements to protect viable populations of spotted owls. The remaining 14,500 acres within Spotted Owl Habitat Areas are located in wilderness for a total of approximately 66,000 acres of managed owl habitat on the Forest.

Management Prescriptions are the same for all alternatives: however, alternatives differ in the number and distribution of acres allocated to each prescription and management area. Tables by alternatives display the acreage by prescription and management area. The accompanying alternative maps display the management emphasis areas for each alternative. Management Prescriptions are applied by combining the management emphasis with the vegetative type from the Forest Vegetative Types Map. The following is a brief description of the 27 Management Prescriptions. The details of the prescriptions used are presented in Chapter 4 of the Forest Plan.



Table 2.4 - Management Area Prescription Summary

Management Area Prescription Code	Management Emphasis	Vegetative Type
B01	General Dispersed Recreation	Blue Oak Savanna
ow1	General Dispersed Recreation	Oak Woodland
MC1	General Dispersed Recreation	Mixed Chaparral
PS1	General Dispersed Recreation	Pinyon-Sage
CF1	General Dispersed Recreation and Timber	Conifer Forest
B02	Water-Oriented Recreation	Blue Oak Savanna
OW2	Water-Oriented Recreation	Oak Woodland
MC2	Water-Oriented Recreation	Mixed Chaparral
CF3	Developed Recreation	Conifer Forest
WF4	Wilderness (natural role of fire)	All Types
WC4	Wilderness (aggressive fire suppression)	All Types
B05	Wildlife and Dispersed Recreation	Blue Oak Savanna
OW5	Wildlife and Dispersed Recreation	Oak Woodland
MC5	Wildlife and Dispersed Recreation	Mixed Chaparral
PS5	Wildlife and Dispersed Recreation	Pinyon-Sage
CF5	Wildlife, Dispersed Recreation, and Timber	Conifer Forest
B06	Grazing	Blue Oak Savanna
OW6	Grazing	Oak Woodland
MC6	Grazing	Mixed Chaparral
PS6	Grazing	Pinyon-Sage
CF6	Grazing and Timber	Conifer Forest
CF7	Timber	Conifer Forest
MC8	Water Yield	Mixed Chaparral
CF8	Water Yield and Timber	Conifer Forest
SIA	Special Interest Areas	All Types
WSR	Wild. Scenic, and Recreation Rivers	All Types
RNA	Research Natural Areas	All Types

MANAGEMENT AREA PRESCRIPTION B01

This prescription emphasizes general dispersed recreation in blue oak savanna.

Emphasis

Recreational opportunities range from Semi-primitive Non-Motorized to Rural. Recreational activity will primarily be in Semi-Primitive Non-Motorized, Semi-primitive Motorized, and Roded Natural areas. A mix of activities will be permitted. OHV use, hiking, viewing scenery, and equestrian use will be the primary activities. Scenic quality will be emphasized.

### Opportunities

Wood will be used for campfires only and use will be limited to dead and downed material. Developed recreational sites will be managed to enhance dispersed recreational and visual opportunities. Watershed improvements which enhance recreational opportunities will receive priority. Transportation system planning and management will favor dispersed recreation and visual needs. Wildlife habitat and diversity will be managed to enhance recreation except in those areas where concentrated **OHV** use occurs. Livestock management will be modified where in direct conflict with dispersed recreation.

#### MANAGEMENT AREA PRESCRIPTION OW1

This prescription emphasizes general dispersed recreation in oak woodland.

### Emphasis

Recreational emphasis will range from Semi-primitive Non-Motorized to Rural opportunities. A mix of activities will be permitted. OHV use, hiking, equestrian **use**, fishing, hunting, and viewing scenery will be the primary activities. Scenic quality will **be** emphasized.

### Opportunities

Firewood cutting for personal **use** will be favored over commercial **use** except where management problems would occur. Developed recreational sites will be managed to enhance dispersed recreational and visual opportunities. Watershed improvements which enhance recreation opportunities will receive priority. Transportation system planning and management will favor dispersed recreational and visual needs. Wildlife habitat and diversity will be managed to enhance recreation except in those areas where concentrated OHV **use** occurs. Livestock management techniques will be utilized to reduce conflict with dispersed recreation.

#### MANAGEMENT AREA PRESCRIPTION MC1

This prescription emphasizes general dispersed recreation in mixed chaparral.

### Emphasis

Recreational opportunities range from Semi-primitive Non-Motorized to Rural. However, emphasis will be on Semi-Primitive Non-Motorized and Semi-Primitive Motorized. A mix of activities will be permitted (including OHV **use**, hiking, fishing, equestrian trail **uses** and viewing as primary activities). OHV use will be permitted on designated routes and areas. Scenic quality will be emphasized.

## Opportunities

Developed recreational sites will be managed to enhance dispersed recreational and visual opportunities. Watershed improvements which enhance recreation will receive priority. Transportation system planning and management will favor dispersed recreational and visual needs. Prescribed fire will be used to improve access, increase visual variety, and enhance recreation and wildlife opportunities. Wildlife habitat and diversity will be managed to enhance recreation except in those areas where concentrated OW use occurs. Livestock management techniques will be utilized to reduce direct conflict with dispersed recreation.

### MANAGEMENT AREA PRESCRIPTION PS1

This prescription emphasizes general dispersed recreation in pinyon-sage.

#### Emphasis

Recreation emphasis will range from Semi-Primitive Non-Motorized to Roaded Natural. A mix of activities will be permitted. Hiking and equestrian use will be stressed in nonmotorized areas. In motorized areas, driving for pleasure, OHV use, and viewing scenery will be emphasized.

#### Opportunities

Firewood cutting for personal use will be favored over commercial use. Developed recreational sites will be managed to enhance dispersed recreational and visual opportunities. Watershed improvements which enhance recreation opportunities will receive priority. Transportation system planning and management will favor dispersed recreational and visual needs. Wildlife habitat and diversity will be managed to enhance recreation except in those areas where OHV use occurs. Livestock management techniques will be utilized to reduce conflict with dispersed recreation.

### MANAGEMENT AREA PRESCRIPTION CF1

This prescription emphasizes general dispersed recreation and sawtimber production in conifer.

#### Emphasis

All recreation opportunities will be provided, but emphasis will be on Semi-primitive Non-Motorized and Semi-primitive Motorized. A mix of activities will be permitted. Activities in the nonmotorized areas will include equestrian trail use, fishing, hiking, cross-country skiing, and trail camping. In the motorized areas, OHV use (including oversnow vehicles), and driving for pleasure activities will be added. Scenic quality will be emphasized. Sawtimber will be produced.

### Opportunities

Timber harvesting will **be** designed considering recreation opportunities and visual concerns. Firewood cutting for personal **use** will be favored over commercial use, except where management problems would occur. Developed recreational sites will be managed to enhance dispersed recreational and visual opportunities. Watershed improvements which enhance recreation opportunities will receive priority. Transportation system planning and management will favor dispersed recreational and visual needs. Wildlife habitat and diversity will be managed to enhance recreation except in those areas where concentrated OHV use occurs. Livestock management techniques will be utilized to reduce conflicts with dispersed recreation.

### MANAGEMENT AREA PRESCRIPTION BO2

This prescription emphasizes water-oriented recreation in blue oak savanna.

### Emphasis

Recreational opportunities will range from Semi-Primitive Motorized to Rural, occurring in developed sites and concentrated use areas adjacent to streams, rivers, or reservoirs. Emphasis will be on Semi-primitive Motorized and Roaded Natural. Semi-primitive Motorized areas will stress observation sites and interpretive service opportunities. Campgrounds and picnic areas will be favored in Roaded Natural and Rural areas. In the Rural class, driving for pleasure and viewing scenery will also be emphasized. All developments will be managed to enhance and emphasize dispersed recreation activities such as rafting, sunbathing, swimming, and fishing in adjacent water bodies.

### Opportunities

Watershed improvements which enhance recreational opportunities will receive priority. Transportation system planning and management will favor recreational, interpretive, and visual needs. Livestock management techniques will be utilized to reduce conflict with recreational uses.

### MANAGEMENT AREA PRESCRIPTION OW2

This prescription emphasizes water-oriented recreation in oak woodland.

### Emphasis

Recreational opportunities will range from Semi-primitive Motorized to Rural, occurring in developed sites and concentrated use areas adjacent to streams, rivers or reservoirs. Emphasis will be on Semi-primitive Motorized and Roaded Natural. Semi-primitive Motorized areas will stress observation sites and interpretive service opportunities. Campground and picnic areas will be favored in Roaded Natural and Rural areas. In the Rural class, driving for pleasure and viewing scenery will also be emphasized. All developments will be managed to enhance and emphasize

dispersed recreation activities such as rafting, sunbathing, swimming, and fishing in adjacent water bodies.

### Opportunities

Trees will be harvested to maintain healthy, vigorous stands. Watershed improvements which enhance recreational opportunities will receive priority. Transportation system planning and management will favor recreational, interpretive, and visual needs. Livestock management techniques will be utilized to reduce direct conflicts with recreational **use**.

### MANAGEMENT AREA PRESCRIPTION M2

This prescription emphasizes water-oriented recreation in mixed chaparral.

### Emphasis

Recreational opportunities will range from Semi-primitive Motorized to Rural, occurring in developed sites and concentrated **use** areas adjacent to streams, rivers or reservoirs. Emphasis will be on Semi-Primitive Motorized and Roaded Natural. Semi-primitive Motorized areas will stress observation sites and interpretive service opportunities. Campgrounds and picnic areas will be favored in Roaded Natural and Rural areas. In the Rural class, driving for pleasure and viewing scenery will also be emphasized. All developments will be managed to enhance and emphasize dispersed recreation activities such as rafting, sunbathing, swimming and fishing in adjacent water bodies.

### Opportunities

Watershed improvements which enhance recreational opportunities will receive priority. Transportation system planning and management will favor recreational, interpretive, and visual needs. Management of chaparral will be minimized except for the enhancement of recreation. Livestock management techniques will be utilized to reduce conflict with recreational **uses**.

### MANAGEMENT AREA PRESCRIPTION CF3

This prescription emphasizes developed recreation in conifer.

### Emphasis

Recreational opportunities will range from Semi-Primitive Non-Motorized to Rural: but emphasis will be on Semi-primitive Motorized, Roaded Natural, and Rural **ROS** Class. Trailheads to facilitate dispersed **uses** in outlying areas, campgrounds, and picnic areas will be the primary developments in the Roaded Natural and Rural areas. Visitor interpretive facilities and organization camps will be authorized for development. Downhill ski areas will be studied for development.

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## Opportunities

Silvicultural practices will be utilized to protect and enhance recreational and visual needs. Dispersed recreational activities will be compatible. Watershed improvements which enhance recreational needs will receive priority. Transportation system planning and management will favor recreational and visual needs. Livestock management techniques will be utilized to reduce conflicts with recreational uses.

### MANAGEMENT AREA PRESCRIPTION WF4

This prescription emphasizes wilderness with the natural role of fire.

#### Emphasis

This area will be managed for the preservation and enhancement of wilderness characteristics. Fire under prescribed conditions will be used to maintain long-term plant diversity in the wilderness. Confinement will be used as a suppression strategy when the potential fire size will generally not exceed 100 acres. Fires generally will not threaten lands outside the wilderness if allowed to burn; nor will fire present a threat to wilderness **users**. Fires will not be allowed to cause significant increase in soil movement. Areas where past activities have resulted in adverse wilderness impacts will be identified and managed to rehabilitate the sites.

#### Opportunities

Timber harvesting will not occur. Firewood gathering will be limited to dead and downed wood for wilderness recreational uses. Dispersed recreation, excluding mechanized **uses**, will be provided. Trails will be provided, but will protect wilderness solitude and soil and water quality. Grazing will be permitted.

Existing wilderness plans will apply except where practices are superseded by these directions and standards. Following Congressional designation of each new wilderness, a wilderness management plan will be completed.

### MANAGEMENT AREA PRESCRIPTION WC4

This prescription emphasizes wilderness with aggressive fire suppression.

#### Emphasis

This area will be managed for the preservation and enhancement of wilderness characteristics. The potential for fires escaping to non-wilderness lands will be reduced. Increased protection for wilderness users and the soil resource will be provided. Fire suppression action will be fast and aggressive. Areas where past activities have resulted in adverse wilderness impacts will be identified and managed to rehabilitate the sites.

## Opportunities

Timber harvesting will not occur. Firewood gathering will be limited to dead and downed wood for wilderness recreation uses. Dispersed recreation, excluding mechanized uses, will be provided. Trails will be provided, but will protect wilderness solitude and soil and water quality. Grazing will be permitted.

Existing wilderness plans will apply except where practices are superseded by these directions and standards. Following Congressional designation of each new wilderness, a wilderness management plan will be completed.

### MANAGEMENT AREA PRESCRIPTION B05

This prescription emphasizes wildlife and dispersed recreation in blue oak savanna.

#### Emphasis

This prescription will provide for regeneration of blue oak to insure a continued supply of quality wildlife habitat. Cover and water developments will be provided to increase habitat available for dependent species. Recreation emphasis will range from Semi-primitive Non-Motorized to Rural opportunities. Hiking, equestrian uses and trail camping will be primary activities. Scenic quality will be emphasized.

#### Opportunities

Wood will be used for campfires only and use will be limited to dead and downed material. Opportunities for developed recreation will be limited to Roaded Natural areas and to enhance dispersed recreation. Watershed improvements which improve wildlife habitat and enhance recreation will receive priority. Transportation system planning and management will favor wildlife needs. Livestock management techniques will be utilized to reduce conflict with dispersed recreation or wildlife.

### MANAGEMENT AREA PRESCRIPTION OW5

This prescription emphasizes wildlife and dispersed recreation in oak woodland.

#### Emphasis

Management emphasis will be to manipulate wildlife habitat in order to increase the quality of recreational experience. Vegetative diversity will be enhanced. Recreation will range from Semi-primitive Non-Motorized to Rural opportunities. Hiking, equestrian use, fishing, hunting, and viewing will be the primary activities. Scenic quality will be emphasized.

## Opportunities

Firewood cutting for personal use will be favored over commercial use except where management problems would occur. Developed recreational sites will emphasize enhancement of dispersed recreational and visual opportunities. Watershed improvements which improve wildlife habitat and enhance recreation will receive priority. Transportation system planning and management will favor dispersed recreational, wildlife, and visual needs. Livestock management techniques will be utilized to reduce conflict with dispersed recreation and wildlife.

### MANAGEMENT AREA PRESCRIPTION MC5

This prescription emphasizes wildlife and dispersed recreation in mixed chaparral. This management area encompasses 78,000 net acres.

#### Emphasis

Management emphasis will be to manipulate wildlife habitat in order to increase the quality of recreational experiences. A mosaic of age classes will be produced and maintained to improve the quality and diversity of wildlife habitats. Recreational opportunities range from Semi-primitive Non-Motorized to Rural. However, emphasis will be on Semi-primitive Non-Motorized and Semi-primitive Motorized. Hiking, hunting, fishing, equestrian trail **uses**, and viewing will be the primary activities. Scenic quality will be emphasized.

#### Opportunities

Developed recreational sites will be managed to enhance dispersed recreational and visual opportunities. Watershed improvements which improve wildlife habitat and enhance recreation will receive priority. Transportation system planning and management will favor dispersed recreational, wildlife, and visual needs. Livestock management techniques will be utilized to reduce direct conflict with dispersed recreation and wildlife. Livestock may be used to maintain browse at an available height.

### MANAGEMENT AREA PRESCRIPTION PS5

This prescription emphasizes wildlife and dispersed recreation in pinyon-sage.

#### Emphasis

Management emphasis will be to manipulate wildlife habitat in order to increase the quality of recreational experiences. Vegetative diversity and quality of wildlife habitat will be improved by creating openings and developing water. Recreation will range from Semi-Primitive Non-Motorized to Roaded Natural. However, emphasis will be on Semi-Primitive Non-Motorized. Hiking and equestrian use will be stressed in nonmotorized areas. In motorized areas, driving for pleasure and viewing scenery will also be emphasized. Scenic quality will be emphasized.



### Opportunities

Firewood cutting **for** personal use will be favored over commercial use. Developed recreational sites will be managed to enhance dispersed recreational and visual opportunities. Watershed improvements which improve wildlife habitat and enhance recreation will receive priority. Transportation system planning and management will favor dispersed recreational, wildlife, and visual needs. Livestock management techniques will be utilized to reduce conflict with dispersed recreation and wildlife.

#### MANAGEMENT AREA PRESCRIPTION CF5

This prescription emphasizes wildlife, dispersed recreation, and sawtimber production in conifer.

### Emphasis

Management emphasis will be to manipulate wildlife habitat in order to increase the quality of recreational experiences. Vegetative diversity will be enhanced. All recreation opportunities will be provided, but emphasis will be on Semi-primitive Non-Motorized and Semi-Primitive Motorized. Activities in the nonmotorized areas will include horseback trail use, fishing, hiking, cross-country skiing, and trail camping. In the motorized areas, activities will also include driving for pleasure. Scenic quality will be emphasized. Sawtimber will be produced.

### Opportunities

Timber harvesting will be designed considering wildlife, recreation, and visual concerns. Firewood cutting will favor personal use. Developed recreational sites will emphasize enhancement of dispersed recreational and visual opportunities. Watershed improvements which improve wildlife habitat and enhance recreation will receive priority. Transportation system planning and management will favor wildlife, dispersed recreational, and visual needs.

#### MANAGEMENT AREA PRESCRIPTION B06

This prescription emphasizes grazing of livestock in blue oak savanna.

### Emphasis

Grazing of livestock will be emphasized. Forage and range improvements will be provided as needed.

### Opportunities

Wood will be used for campfires only and use will be limited to dead and downed material. Recreation will favor Semi-primitive Motorized and Roaded Natural opportunities. Developed recreation will be limited. Dispersed recreation will be minimal. Watershed improvements which enhance and improve range productivity will receive priority. Transportation system

planning and management will favor range activities. Wildlife habitat will be managed to maintain **or** enhance harvest species and to maintain viable populations of species dependent on blue *oak* savanna.

#### MANAGEMENT AREA PRESCRIPTION OW6

This prescription emphasizes grazing of livestock in oak woodland.

##### Emphasis

Livestock grazing will be emphasized in black *oak* woodlands. Where black *oak* stands are dense, thinning will be done to improve forage production. Grazing in live *oak* areas will be minimal but would be done where forage can be increased by vegetative manipulation. Range improvements will be provided as needed.

##### Opportunities

Wood harvesting in black *oak* will be encouraged. Recreation activities which **are** acceptable within Semi-primitive Non-Motorized class will be emphasized. Camp and picnic facilities will not be developed. Dispersed recreation will be limited. Watershed improvements which enhance and protect range productivity will receive priority. Transportation system planning and management will favor range activities. Wildlife habitat will be managed to maintain **or** enhance harvest species and to maintain viable populations of *oak* dependent species.

#### MANAGEMENT AREA PRESCRIPTION MC6

This prescription emphasizes grazing of livestock in mixed chaparral.

##### Emphasis

Livestock grazing will be emphasized. Vegetative manipulation will be used to promote young growth (age less than 20 years) of preferred browse species for increased livestock forage production. Range improvements will be provided as needed.

##### Opportunities

Recreation will stress Semi-primitive Non-Motorized and Semi-primitive Motorized opportunities. Developed recreation will be limited where in conflict with grazing. Dispersed recreation will be limited. Watershed improvements which enhance and protect range productivity will receive priority. Transportation system planning and management will favor range activities. Wildlife habitat management will favor early successional species.

#### MANAGEMENT AREA PRESCRIPTION PS6

This prescription emphasizes grazing of livestock in pinyon-sage.

##### Emphasis

Grazing will be emphasized. Water development will be critical for improved livestock distribution.

##### Opportunities

Firewood availability will be a by-product of range management activities only. Recreation will stress Semi-primitive Non-Motorized opportunities. Camp and picnic facilities will not be developed. (Other recreation facilities will be developed only where appropriate.) Dispersed recreation will be limited. Watershed improvements which enhance and protect range productivity will receive priority. Transportation system planning and management will favor range activities. Wildlife habitat will be managed to maintain or enhance harvest species and maintain viable populations of pinyon-sage dependent species.

#### MANAGEMENT AREA PRESCRIPTION CF6

This prescription emphasizes grazing of livestock and sawtimber production in conifer.

##### Emphasis

Livestock grazing will take place primarily in meadows and open areas. Livestock grazing will be the primary emphasis in meadows. Forage production and range improvements will be provided as needed. Sawtimber will be produced.

##### Opportunities

Silvicultural practices which enhance grazing and produce sawtimber will be utilized. Recreation will stress Semi-Primitive Non-Motorized and Semi-Primitive Motorized opportunities. Dispersed recreation, developed recreation, and OHV use will be limited. Watershed improvements for increasing forage, such as raising the water tables in meadows and protecting soil productivity, will receive priority. Transportation system planning and management will favor range and sawtimber management activities.

#### MANAGEMENT AREA PRESCRIPTION CF7

This prescription emphasizes production of sawtimber volume in conifer.

##### Emphasis

The objective is to promote sawtimber growth and harvest softwood products. Management of the area will require a variety of silvicultural practices and logging systems. Firewood will be a by-product of softwood harvest.

##### Opportunities

Recreational opportunities will range from Primitive to Rural. Where logging occurs emphasis will be on Roaded Natural and Rural uses. Both developed and dispersed recreational activities will be compatible. Watershed improvements will be compatible with the emphasis. Wildlife habitat management will be compatible with the emphasis. Transportation systems planning and management will favor timber needs. Grazing of livestock will be compatible with timber production. Utilize grazing to reduce vegetative competition in plantations where possible.

#### MANAGEMENT AREA PRESCRIPTION MC8

This prescription emphasizes improving water yield in mixed chaparral.

##### Emphasis

Mixed chaparral will be treated to increase water yield.

##### Opportunities

Recreation management will favor Roaded Natural opportunities. Location of new recreation facilities will be limited. Dispersed recreation (including OHV use) will generally be compatible. Watershed improvements, such as stabilizing channels and protecting soil productivity, will be compatible and desirable. Transportation system planning and management will favor water yield and water quality needs. Wildlife habitat management for early successional species will generally be compatible. Grazing of livestock will be needed to maintain vegetation in a treated condition.

#### MANAGEMENT AREA PRESCRIPTION CF8

This prescription emphasizes improving water yield and sawtimber production in conifer.

##### Emphasis

Silvicultural practices and water yield structures will be used to increase the quantity of water or to improve the timing of streamflow. Sawtimber will be produced.

## Opportunities

Timber harvest practices will be used to increase water yield and to produce sawtimber. Recreation management will favor Roaded Natural or Rural opportunities. Developed recreational and visual resource opportunities will be limited. Dispersed recreation (including OHV use) will generally be compatible. Watershed improvements, such as stabilizing channels and protecting soil productivity, will be compatible and desirable. Transportation system planning and management will favor water yield and quality needs. Managing wildlife habitat for early successional species and the grazing of livestock will generally be compatible.

### MANAGEMENT AREA PRESCRIPTION SIA

This prescription emphasizes the management of Special Interest Areas (SIA's).

#### Emphasis

Areas which merit special management and attention include those areas of unusual or outstanding geological and botanical characteristics. Management will be in accord with the terms of their established report for protection and interpretation of significant features and resources. They will be available for scientific study. Public enjoyment is encouraged.

#### Opportunities

Timber or firewood harvesting will not occur except where in accord with their establishment report. Dispersed recreation, consistent with the emphasis, will be encouraged. OHV use will be allowed on designated trails if such use does not threaten values within the SIA. Developed recreation will not occur. Watershed improvements occur only to protect special features. Transportation system management will favor the emphasis. Wildlife habitat will be provided by maintaining a natural state, but manipulation strictly for wildlife will not occur. Grazing may be compatible. Consider mineral withdrawal subject to existing claims. Fire suppression will be done with minimum ground disturbance.

### MANAGEMENT AREA PRESCRIPTION WSR

This prescription emphasizes the management of Wild, Scenic, and Recreation Rivers (WSR). This management emphasis includes approximately 14,000 net acres outside wilderness and 19,000 net acres within wilderness.

#### Emphasis

The Wild, Scenic, and Recreation River emphasis is on the preservation of the free-flowing condition of selected rivers with various outstandingly remarkable features, on the protection of water quality and the immediate environment, and to fulfill other vital national conservation purposes.

## Opportunities

Intensive timber management will not occur. Firewood gathering will be limited to the immediate **use** of the recreationist. Recreational facilities may be developed along those river segments classified as "Recreation" to provide opportunities for engaging in activities that are enhanced by the river. Motorized access in specific locations; non-intensive timber management to control insect and disease outbreaks; inconspicuous fish and wildlife habitat improvement; and water management practices to correct resource problems may occur in "Scenic" or "Recreation" segments. For rivers within a wilderness the most restrictive management in accordance with the Wilderness Act or the W&SR Act will apply. Within "Wild" segments, management will favor the protection of natural values while providing river-related outdoor recreation opportunities in a primitive setting that is generally inaccessible except by trail. Consider mineral withdrawal subject to existing claims. Grazing may be compatible.

### MANAGEMENT AREA PRESCRIPTION RNA

This prescription emphasizes the management of Research Natural Areas.

#### Emphasis

These areas have been identified as areas of important vegetative or geologic type, or areas that have special unique characteristics of scientific interest. These areas *are* set aside for non-manipulative research and education. Uses other than research and education are discouraged.

#### Opportunities

The recommended and deferred sites, with the exception of Long Canyon and a portion of Moses Mountain, are already in wilderness. The areas will be managed as if they are already established. Future management will follow the establishment reports.

#### 4. INDIVIDUAL ALTERNATIVE DESCRIPTIONS

Seven alternatives were selected for detailed analysis to address the specific issues or concerns and the requirements of laws, regulations, or policies. More detailed information on the alternatives (such as resource outputs, costs, environmental effects, and acres allocated to specific management areas and prescriptions) is displayed in the next section, Comparison of Alternatives.

The alternatives differ from each other in their themes, resource production targets, and allocations to each Management Prescription (see Table 2.21 and maps in the map packet). Their implementation results in differing Environmental Consequences (see Chapter 4, FEIS). Further description of each resource area can be found in the Affected Environment (Chapter 3, FEIS). Terms are defined in the Glossary (Appendix J, FEIS) and acronyms are expanded in the Acronyms section (Appendix I, FEIS).

Each alternative's description includes the specific resource objectives for that alternative and a representation of the environment to be created. The allocations to Management Prescriptions and the resource outputs are found in the tables immediately following each alternative's description.

Average annual resource outputs for each alternative were projected for the next five decades. Timber harvest was examined for 16 decades to ensure non-declining yield of wood fiber production as required by NFMA regulations (documented in the planning records).

## PREFERRED ALTERNATIVE (PRF)

### Theme

This alternative produces market and nonmarket resources close to the 1980 RPA target levels. Timber harvest, grazing, wildlife, dispersed recreation and ski area development are emphasized. Approximately 70 percent of the timber volume harvested will be under even-aged management and 30 percent of the volume under uneven-aged management. Approximately 80 percent of the acres will be managed **under** even-aged management and 20 percent will be managed under uneven-aged management.

Timber harvest volume increases from 97 MMBF Allowable Sale Quantity in the first decade to 100 MMBF for the fifth decade. Harvest of preferred market species is emphasized. **There** is a slight shift from group selection to even-aged methods between 1990 and 2030. About 30 percent of the conifer zone will remain unroaded. During the first decade, permitted livestock grazing will remain relatively constant with yearly fluctuations in the annual grassland and chaparral ecosystems. Although FORPLAN outputs indicate an expected increase of forage to 89,000 AUM's based on an increase in transitory range forage, the Forest has decided to keep AUM production at approximate current levels with slight fluctuations to take advantage of surplus annual grass forage in appropriate years. Keeping AUM production at approximate current levels while forage production increases will help to lessen impacts to meadow and riparian habitats and to provide additional forage for recreational stock use which is increasing on the Forest. Emphasis within recreation management is placed on dispersed recreation. Investment is concentrated in construction and reconstruction of trails and in rehabilitation of existing sites. Off-highway vehicles (OHV's) may be used on designated roads and trails on the Forest except where closed by law or closed to prevent resource damage, facility damage, or user conflict. Two additional ski areas are planned for future study to determine their feasibility for development. About 12,500 acres of the BLM Rockhouse Wilderness Study Area are recommended for designation as wilderness. Wildlife habitat is improved in coordination with market resource activities. Vegetative diversity is improved through timber, grazing, and wildlife management activities. The average annual budget for the first decade is \$20 million.

### Resource Program Direction

#### Recreation

##### Developed Recreation

- Manage existing destination sites to compliment dispersed recreation activities by increasing occupancy through extended season.
- Rehabilitate developed sites on an average of a 20-year cycle using established priority lists.
- Maintain fee sites at standard level and non-fee sites at the low standard level maintenance. Over time, move the non-fee sites



toward standard level with an objective to obtain about a 50 percent shift during the first decade.

- Continue the Pack-in, Pack-out policy in lightly used recreation areas.
- Evaluate potential and take opportunities to convert small, underutilized camp and picnic sites to undeveloped occupancy spots.
- Emphasize expansion of water-oriented sites where use dictates resource protection and average utilization exceeds 40 percent of theoretical capacity. (Apply a maximum 10% increase or 600 Persons-At-One-Time (PAOT) each decade.)
- Develop new sites during first and second decade only where new water development and/or licensing actions occur or to facilitate wilderness access. (An objective is an estimated five percent or 300 PAOT increase.)
- Manage potential developed sites during the first decade to maintain values for future development.
- Continue resorts, recreation residence tracts, and organization camp permits unless the land resource is needed for higher public use as determined through Future Use Determination.
- Study the feasibility of constructing two additional ski areas, Mitchell-Maddox and Sherman Pass. Study for the development of one in decade two with expansion in decade three, and the development of the other in decade three with expansion in decade four. Manage these areas to maintain options for future development.
- Emphasize day-use opportunities. Consider elderly and handicapped standards during rehabilitation and reconstruction of facilities.
- Develop barrier-free trails for the handicapped giving priority to Indian Basin at Princess Campground (Hume Lake District) and Redwood Campground (Hot Springs District).

#### Dispersed Recreation

- Emphasize opportunities for dispersed recreation and take action to facilitate increased opportunities.
- Manage heavier used dispersed areas (e.g., Kern River and OHV use areas on the Kern Plateau) at the standard level.
- Utilize less than standard level management in lightly used areas including wildernesses.
- Follow ROS class capacities for dispersed areas. Manage use to maintain the established mix of opportunities.

- Provide sanitation facilities in areas of **or** during periods of concentrated use, where either increased management presence **or** resource protection is necessary and/or potential development exists for which a specific site plan is prepared.
- Allow **OHV** use, including mountain bikes, on designated roads and trails outside of wilderness and the PCT. A portion of this area will be managed as **SNM** and will have no designated routes. Exceptions include incidental access off designated routes **or** system roads by permit: **or** incidental access to dispersed area camp locations immediately adjacent to system roads (generally within 200 feet where no resource damage occurs).
- Increase **OHV** opportunities through development of **OHV** trail facilities. Emphasize **user** accountability via signing, maps, and user education and cooperation actions in concert with other Forest management activities.
- Manage cross-country skiing and oversnow vehicle use to recognize the need for voluntary user cooperation in segregating conflicting uses.
- Explore development of commercial opportunities such as overnight/hut system for winter activities.
- Study use and develop a monitoring plan to identify and resolve conflicts between mountain bikes and other **users**.
- Establish and maintain public pastures to enhance equestrian overnight camping opportunities.

#### Trails

- Maintain trails at levels determined by the Trail System Analysis procedure, with priority given to dispersing **users** and preventing further deterioration of the resources.
- Develop and maintain a trail/transportation system that emphasizes loop trails.
- Maintain, relocate, **or** reconstruct 50 percent of the trail system during the first decade. Emphasize preventing resource damage, including signs to facilitate use.

#### Water-Oriented **Use**

- Continue implementation of Kern River Whitewater Floating Management Plan until revised as part of the Kern River Wild and Scenic River Management **Plan**.
- Develop and implement a Kings River Whitewater Floating Management Plan **as** part of the Kings River Special Area Management Plan (in cooperation with the Sierra NF).

- Maintain current mix of dispersed/developed, night/day-use from the Forest boundary near Kernville to the Johnsondale bridge on the North Fork of the Kern River.
- Designate and manage sites along the Lloyd Meadows Road for day-use and overnight-use including regulated parking during the managed season throughout the first decade.
- Emphasize water-oriented recreation activities along the Kern River below Lake Isabella. Move from current mix of developed site night/day-use toward day-use emphasis during the first decade.
- Maintain the current mix of dispersed/developed, night/day-use along the Tule River.
- In the Hume Lake area, emphasize development of facilities to enhance dispersed day-use recreation. Expand none of the overnight facilities.
- Complete a Recreation Action Plan for the Hume Lake Basin during the first decade.

#### Office of Information and Interpretive Services

- Provide for and maintain present facilities and programs at a high level emphasizing self-service. These include: recreation site and trailhead bulletin boards, publications, media releases, and self-service information stations.
- Provide other programs and facilities at a moderate level. These include: seven-day seasonal information desks, resource management interpretive signs, Three Forest Interpretive Association (3-FIA) programs, exhibits, interpretive trails, outdoor programs, and self-guided auto tours. Use specialized media to promote dispersed use.

#### Visual

- Manage Highway 180, Highway 190, Highway 178, Mountain 99, the Western Divide from Quaking Aspen to the Ponderosa, the Generals Highway, the PCT, and heavily used trails that lead directly into wildernesses as Sensitivity Level 1.
- Manage about 270 miles of roads and 200 miles of trail as Sensitivity Level 2.
- Manage the following viewsheds as Sensitivity Level 1: Monache Meadows, Sherman Pass, and Big Meadow/Salmon Creek.
- Manage the remainder of the forested land as either Sensitivity Level 2 or **3**.

- Manage the remainder of the non-forested lands with the following RCS classes: Semi-primitive Non-Motorized is Retention (R), Semi-primitive Motorized is PR, Roaded Natural and Rural will allow MM with M as the primary VQO.
- Initiate corrective action to meet adopted VQO's when landscape rehabilitation is needed.

#### Cultural Resources

- Complete Archaeological Reconnaissance Reports and site records to allow evaluation of significance.
- Release those site locations declared "not significant" for other management activities.
- Post and sign (e.g., tractors prohibited or Antiquities Act) selected cultural resource sites.
- Monitor a limited number of sites for protection.
- Develop and provide interpretive brochures about selected sites to the public.
- Conduct on-ground interpretation where highly significant properties exist or near developed sites where high level of use or exposure is possible (i.e., properties adjacent to campgrounds or historic logging activities in the vicinity of campgrounds).
- Regularly consult with Native Americans as interested parties on proposed undertakings.
- Interview key knowledgeable informants occasionally for project-specific information. Bring together and organize archival sources according to a Forest archival policy.
- Provide interpretation facilities and programs through the Three Forest Interpretive Association (3-FIA).
- Systematically approach reduction of the existing backlog of sites to be evaluated. Those types of sites deemed more potentially critical in the Forest overview will receive priority.
- Conduct inventories as necessary, occasionally doing non-project-specific inventories which result in partial achievement of the 1995 target for total Forest inventory.

#### Urban Interface

- Manage viewsheds as Sensitivity Level 1 with adjustments based on project level EA's.

## Wilderness

- Recommend about 12,500 acres of BLM Rockhouse ~~WSA~~ to BLM for wilderness designation.
- Use a "confine" or "contain" suppression strategy for wildfire when public safety will not be compromised, adjacent resources can be protected, and other management constraints (air quality, watershed, etc.) can be met. A "control" strategy will be applied to all other wildfires.
- Use prescribed fires to enhance wilderness values. Planned and unplanned ignitions may be used.
- Authorize outfitter-guide services in wildernesses established in 1984 when a public need is demonstrated and wilderness objectives can be maintained.
- Develop or improve trailhead facilities.

## Wildlife and Fish

- Manage to produce early successional stages of habitat through prescribed burning of 10,000 acres per decade in chaparral in order to achieve a 35 percent increase in habitat capability by decade five. Re-burn portions of same acreage in the fourth and fifth decades.
- Protect four superior nest sites of peregrine falcons. Maintain nesting and habitat sites for at least one pair of condors.
- Maintain the current level of fish habitat capability.
- Complete the implementation of Little Kern Golden Trout Management Plan by decade two.
- Maintain at least 20 square feet per acre basal area of black oak where it currently exists.
- Provide diversity through timber harvesting and prescribed burning of chaparral.
- Maintain a network of 40 spotted owl habitat areas. Manage 1,000 acres of currently suitable habitat plus 650 acres for each network area using a "No Scheduled Timber Harvest" prescription.
- Maintain goshawk habitat according to Region 5 Direction. Current direction is to provide a total of 1,050 acres of habitat for at least 21 pairs.
- Maintain an average of 1.5 snags per acre in each compartment.
- Leave an average of at least 132 cubic feet per acre of downed logs where harvesting has occurred in the conifer zone.

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## Livestock Grazing

- Allow livestock grazing at a relatively constant level on existing allotments in 1990 at 69,000 AUM's (with 65,000 AUM's being under term permits and + 4,000 AUM's being under temporary and recreational permits). Total use is expected to increase to 89,000 AUM's by 2030 based on increased transitory range and increased recreational demands. Structural range improvement and increases in transitory range due to timber harvest will better distribute livestock and reduce grazing pressure in meadows and riparian areas.
- Prescribe burn 9,000 acres of chaparral in the second and fifth decades. Retreat portions of the same acreage in the fifth decade.

## Timber

- Harvest timber primarily from well stocked, high site land. Also regenerate interspersed and nearby poorly stocked stands that make logical harvest units. About 20 percent of the area harvested and regenerated will be poorly stocked stands.
- Harvest 740 acres annually using group selection to yield about 27 MMF.
- Harvest 1,900 acres annually using even-aged methods to yield 68 MMF.
- Harvest approximately 2.5 MMF annually using individual tree selection.
- Emphasize harvest of preferred timber species.
- Complete a Forest-wide Giant Sequoia Management Implementation Plan which makes the final assignment of management emphasis to each grove. Do not plan any new activities that will affect giant sequoias until the Implementation Plan is complete. Manage giant sequoia groves as follows: 3900 acres Preservation; 9300 acres Non-intensive; 0 acres intensive.
- Manage giant sequoia groves with the objectives of perpetuating the species, preserving the old growth "specimen" trees, and producing a sustained yield of sawtimber (FSM 2471; Sequoia Supplement).
- Make logging slash and limited amounts of green material available for firewood throughout the Forest.

## Water and Soil

- Treat 1,400 acres and obliterate 65 miles of unneeded roads, in the first decade to improve and maintain soil productivity and water quality.
- Update the existing Watershed Improvement Needs inventory.

- Conduct administrative studies on small watersheds to evaluate water yield improvement, in cooperation with other agencies.
- Establish initial Streamside Management Zones (SMZ) at 100 feet wide for Class I, II, and III streams. Actual management zone widths will be determined on a project basis and will average greater than the above distance.
- Maintain long-term soil productivity.
- Implement draft regional soil resource standards and guidelines.

### Minerals and Geology

- Make available about 76 percent of the planning area outside designated or recommended wilderness for mineral production.

### Lands

- Survey, mark, and post about 255 miles of land line per decade to support the timber program, and about 50 miles of land line per decade in areas around intensively developed private lands. Identify and resolve unauthorized occupancy trespass discovered (about three per mile, average, for land lines surveyed).
- Acquire some private lands which are located in timber, grazing, or recreation emphasis areas if they become available.

### Facilities

- Construct approximately 15 miles of local roads per year (50-year average).
- Reconstruct approximately 23 miles of local roads per year (50-year average).
- Manage the road system to assure resource protection, provide access, and accommodate resource management needs. Provide basic custodial care to protect the road investment.
- Construct approximately 59 miles of collector roads in the first decade to meet the needs of resource management throughout the planning period.
- Emphasize maintenance of arterials and high volume collector roads to provide a high degree of user comfort. Collector roads with low traffic volumes may not be maintained for user comfort.
- Selected roads will be maintained for OHV enthusiasts.
- Improve the signing of road closures to include the reason for road closures,

- Emphasize resource protection in determining road closures.
- Rehabilitate, replace **or** relocate existing buildings and facilities to support management activities.
- Maintain buildings at a minimum level to protect health and to prevent deterioration.

### Protection

- Utilize "control" as the suppression strategy. The maximum size of **90 percent of** non-wilderness fires at containment is expected to be:
 

Timber (CF) and Developed Areas	-	5 acres
Brush (OW, MC, PS)	-	15 acres
Grass (BO)	-	100 acres
- Maintain existing fuelbreaks and firebreaks, approximately **175** miles in the first decade, increasing to **325** miles in the fifth decade.
- Construct about **30** miles of new fuelbreak/firebreak per decade on a project basis to protect land management investments.
- Use prescribed fire to meet general protection objectives on about **15,000** acres per decade.
- Provide assistance as requested by the County Sheriff in search and rescue operations.
- Coordinate with local law enforcement agencies and emphasize intensive violation prevention programs.
- Program fire management activities with prevention (**29%**), detection (**4%**), ground attack (**35%**), aviation operations (**20%**), and fuel management (12%).
- Implement a moderate level of integrated pest management, with emphasis on protection of plantations and developed recreation fee sites.

### Environment to be Created

Vegetative diversity will increase moderately in the chaparral and conifer zones. About **150,000** acres of chaparral will be treated with fire to improve wildlife habitat, livestock grazing, watershed conditions; and to reduce flammability over the planning period. Twenty-six thousand acres will be treated in the first decade. In addition, about **4,900** acres per year will be burned by wildfire. This activity will produce a mottled appearance in the chaparral zone because of color and height changes.

About **345,000** acres of the conifer forest will be managed to produce yields of timber. Only eight percent will be harvested during the first decade. **This** area will be roaded. Changes in the vegetation will be seen. Openings produced by timber harvesting will be covered with young trees. A



near natural appearance will be maintained along Sensitivity Level 1 roads and trails in the Forest.

During the **summer** months cattle will **be** seen grazing meadows and riparian areas in the conifer zone. **The** more heavily grazed meadows will have a closely cropped appearance in the fall and in the spring they will be covered with taller grass.

In the riparian zones in the roaded portion of the conifer zone, harvest activity will be constrained within 100 feet of **streams**.

A moderate amount of fuelbreaks will be constructed and maintained. They will be commonly visible in the chaparral zone and seldom noticeable in the conifer zone.

Developed recreation sites will be managed to facilitate dispersed recreation activities. Fee sites will be managed at standard level, thus providing a quality experience to users. Small underutilized sites in the water-oriented areas will be eliminated and heavily used sites expanded. Developed sites will be rehabilitated using an average 20-year cycle, which will provide upgraded facilities.

Two additional potential ski areas will be studied.

Table 2.5 - Alternative PRF - Management Area Prescription Acreage

<u>Management Area Prescription Code</u>	<u>Vegetative Type</u>	<u>Management Emphasis</u>	<u>Management Area Net M Acres Sequoia NF</u>
B01	blue <i>oak</i> savanna		0
OW1	<i>oak</i> woodland	GENERAL	13
MC1	mixed chaparral	DISPERSED	6
PS1	pinyon-sage	RECREATION	1
CF1	conifer forest		45
<hr/>			
B02	blue <i>oak</i> savanna	WATER-	6
ow2	<i>oak</i> woodland	ORIENTED	1
MC2	mixed chaparral	RECREATION	4
<hr/>			
CF3	conifer forest	DEVELOPED RECREATION	12
<hr/>			
B05	blue <i>oak</i> savanna		0
OW5	<i>oak</i> woodland	WILDLIFE AND	34
MC5	mixed chaparral	DISPERSED	78
PS5	pinyon-sage	RECREATION	63
CF5	conifer forest		25
<hr/>			
B06	blue <i>oak</i> savanna		37
OW6	<i>oak</i> woodland	GRAZING	122
MC6	mixed chaparral		64
PS6	pinyon-sage		9
CF6	conifer forest		8
<hr/>			
CF7	conifer forest	TIMBER	308
<hr/>			
MC8	mixed chaparral	WATER	0
CF8	conifer forest	YIELD	0
<hr/>			
WF4		WILDERNESS-natural fire	264
WC4	A T	WILDERNESS-fire suppression	0
SIA	L Y	SPECIAL INTEREST AREAS	3
WR	L P	WILD & SCENIC RIVERS	
	E	within wilderness	(19)*
	S	outside wilderness	14
RNA		RESEARCH NATURAL AREAS	
		within wilderness	(3)*
		outside wilderness	2
<hr/>			
TOTAL			1,119

\* Included within Wilderness Acreages

Note: The management prescription acres shown in this table include a total of 66,000 acres which are dedicated to spotted owl management. The acres also include 23,900 acres within the Kings River Special Management Area. Both of these items will require management plans. These plans will be incorporated into the Forest Plan by amendment.

Table 2.6 - Alternative PRF - Average Annual Outputs by Decade

Resource Elements	Base Year	'80 RPA	Goals	Decade				
	1982	1990	2030	1	2	3	4	5
<b>RECREATION</b>								
Developed Public (M RVD's)	557	572	754	650	655	695	000	820
Developed Private (M RVD's)	328	530	776	503	595	601	1,145	1,167
Dispersed (M RVD) <sup>1/</sup>	1,582	2,880	3,550	1,818	2,161	2,429	2,712	2,994
Wilderness (M RVD)	61.5 <sup>2/</sup>	--	--	107.0	120.6	150.5	193.6	253.5
Zone of Limited OHV Use (Designated routes only. Closed to cross-country travel.) <sup>4/</sup>								
Area (M Acres) <sup>3/</sup>	267	--	--	855 <sup>5/</sup>	855	055	055	855
Trails Open to OHV Use (Miles)	145	--	--	545 <sup>5/</sup>	605	605	605	605
Trails Closed to OHV Use (Miles)	86	--	--	330 <sup>5/</sup>	330	330	330	330
Zone of Limited OHV Use (Cross-country travel permissible with specific seasonal and resource restrictions.)								
Area (M Acres) <sup>3/</sup>	--	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	--	--	--	N/A	N/A	N/A	N/A	N/A
Zone Open to Cross-Country OHV's								
Area (M Acres) <sup>3/</sup>	588	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	202	--	--	N/A	N/A	N/A	N/A	N/A
Trails with Seasonal OHV Closure (Miles)	102	--	--	520 <sup>5/</sup>	500	500	580	580
Roads with Seasonal Closures (Miles)	425	--	--	539	563	526	633	624
Visual Quality Index	76.6	--	--	75.7	73.7	72.1	70.2	60.0
<b>WILDLIFE AND FISH (Threatened and Endangered Species)</b>								
Peregrine Falcon (Superior Nest Sites)	4	--	--	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream Habitat)	29	--	--	60	117	117	117	117
Condor (Acres of Nesting Habitat) <sup>6/</sup>	0	--	--	2,299	2,299	2,299	2,299	2,299
Wildlife --Other Than T&E (Habitat Capability)								
Deer (Number)	11,000	13,200	13,200	11,500	12,000	13,000	13,000	14,000
Spotted Owls (Number of Pairs) <sup>7/</sup>	80	--	--	75	70	65	60	55
Goshawk (Number of Pairs) <sup>8/</sup>	110	--	--	105	105	100	95	90
Resident Fish (M Pounds)	77	92	92	92	92	92	92	92

- <sup>1/</sup> These numbers include Wilderness RVD's and Total RVD's
- <sup>2/</sup> 1907 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only. All decade projections include all five Sequoia Wildernesses.
- <sup>3/</sup> These acres represent the total area within this zone. Only about 25% of this total is useable terrain due to steep slopes, dense vegetation, etc.
- <sup>4/</sup> These acres include lands designated SPNM (approximately 71,000 acres) outside of Wilderness. By definition, no motorized recreation use will occur within these areas.

- <sup>5/</sup> Includes both less than 24-inch and greater than 24-inch trails (e.g., Jeep trails). Does not include road mileage.
- <sup>6/</sup> See Chapter 3 for explanation of condor nesting habitat.
- <sup>7/</sup> For explanation of spotted owl habitat capability see Appendix B of the EIS.
- <sup>8/</sup> Hypothetical number based on FORPLAN modeling for comparison purposes only. Actual amount of habitat managed will be different (Based on Regional Guide direction). Fragmentation of suitable habitat was not considered.

Table 2.6 - Alternative PRF - Average Annual Outputs by Decade (continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
<b>Wildlife and Fish User Days</b>								
<b>Direct Habitat Improvement (MWFUD's)</b>								
Deer	3	--	--	5	6	7	8	9
All Other Species (Except T&E)	.1	--	--	.2	.3	.3	.3	.3
Resident Fish (Except T&E)	0	--	--	.5	.5	.5	.5	.5
<b>Induced Habitat Improvement (MWFUD's)</b>								
Deer	20	--	--	21	22	23	24	25
All Other Species (Except T&E)	95	--	--	99	105	115	125	135
Resident Fish (Except T&E)	20	--	--	20	28	28	28	28
<b>Total Wildlife &amp; Fish User Days</b>	<b>750</b>	<b>--</b>	<b>--</b>	<b>299</b>	<b>368</b>	<b>304</b>	<b>418</b>	<b>430</b>
<b>Direct Habitat Improvement (Except T&amp;E)</b>								
Deer (Acres of Chaparral)	500	--	--	1,000	1,000	1,000	1,000	1,000
All Other Wildlife Species (Number of Guzzlers)	10	--	--	10	5	0	0	0
Resident Fish (Miles of Stream)	0	--	--	3	0	3	0	3
<b>CRAZING</b>								
Permitted Livestock (MAUM's)	63.0	69.5 1/	74.6 1/	69.0	71.0	78.0	82.0	89.0
Range Betterment (acres)	800	--	--	0	4,000	0	0	5,000
<b>TIMBER</b>								
Sales Offered (MMBF) 2/	97	99	107	102	102	102	102	105
Sales Offered (MMCF)	15.0	15.3	16.6	15.7	15.7	15.7	15.7	16.1
Allowable Sale Quantity (MMBF)	95	97	105	97	97	97	97	100
Long-Term Sustained Yield (MMCF)	--	--	--	24.4	24.4	24.4	24.4	24.4
(MMBF)	--	--	--	158	158	150	150	158
Reforestation (Acres)	2,048	2,242	2,616	2,475	2,132	1,426	3,023	2,813
Timber Stand Improvement (Acres)	1,579	2,664	2,716	4,739	3,977	3,624	3,126	4,635
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
Firewood (Cords)	20,000	--	--	21,013	21,013	21,013	21,013	21,916
<b>WATERSHED</b>								
Quantity (M Acre-Feet)	736	--	--	751	751	750	756	759
Quality (M Acre-feet at Standards)	720	990	1,000	744	744	144	751	754
Increased Quantity (M Acre-Feet)	0	--	--	15	15	14	20	23
Watershed Improvement (Acres)	140	270	310	140	100	50	30	30
Road Obliteration (Miles)	6.5	--	--	6.5	6.5	6.5	6.5	6.5

1/ RPA All goals converted to AUM's based on Forest mix of Animal Unit Factors.

2/ Includes Allowable Sale Quantity and additional sales (unregulated volume. e.g., salvage)

Table 2.6 - Alternative RPF - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '00 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
Water Yield Improvement (Acres)	0	--	--	0	0	0	0	0
Land Acquisition (Acres)	0	--	--	12	30	58	28	14
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	112	14	14	70	60	60	35	35
<b>FIRE</b>								
Fuel Treatment (Acres)								
Fire Protection	2,500	1,700	1,300	1,500	1,500	1,500	1,500	1,500
Timber Management	2,269	--	--	2,572	2,163	1,910	2,796	2,281
Range, Wildlife, Watershed 1/	1,000	--	--	1,100	5,000	1,000	1,100	6,000
Wildfire Burned Acres	4,534	4,606	5,231	4,606	4,601	4,811	4,963	5,231
Intensity Class 1	329	334	370	334	334	349	360	379
Intensity Class 2	389	395	449	315	395	413	426	449
Intensity Class 3	1,841	1,869	2,123	1,869	1,867	1,952	2,014	2,123
Intensity Class 4	665	677	767	677	675	706	728	767
Intensity Class 5	172	176	200	176	176	104	190	200
Intensity Class 6	1,130	1,155	1,312	1,155	1,154	1,206	1,245	1,312
<b>TRANSPORTATION</b>								
Trail Construction (Miles) 2/	16	1	0	16.0	2.1	2.1	2.1	2.1
Trail Reconstruction (Miles) 3/	0	31	30	42	42	21	21	21
Road Construction/Reconstruction								
New Construction (Local Miles)	21.8	--	--	22.1	26.1	9.6	0.6	9.9
Reconstruction (Local Miles)	73.7	--	--	21.0	15.7	22.7	26.0	31.9
New Construction (Collector Miles)	--	--	--	5.9	0	0	0	0
Total	95.5	9	5	49.0	41.8	32.3	34.6	41.0
Road Maintenance (Miles)	1,471	--	--	1,516	1,540	1,559	1,586	1,562
<b>FACILITIES</b>								
Dams and Reservoirs								
Forest Service (Number)	1	--	--	1	1	1	1	1
Other Federal (Number)	2	--	--	2	2	2	2	2
Other State/Local (Number)	0	--	--	0	0	0	0	0
Private (Number)	8	--	--	8	8	8	8	8
Administrative Sites								
Forest Service Owned (Number)	15	--	--	17	18	19	19	19
Leased (Number)	6	--	--	4	3	2	2	2
<b>TOTAL BUDGET (M\$)</b>	16.3	19.6	21.3	20.0	19.0	18.3	22.3	22.0

1/ Combined acreage from range, wildlife and watershed categories.

2/ This trail mileage is accounted for under trail miles for OHV use.

3/ The figures shown include trail relocation (14 miles) and trail reconstruction (28 miles) for the first two decades. The information for Decades 3-5 is trail reconstruction only.

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## CURRENT ALTERNATIVE (CUR)

### Theme

This alternative emphasizes production of timber and cattle over developed recreation and nonmarket resources. It is a continuation of present management direction.

Harvest volume would be 94 MMB Allowable Sale Quantity in the first decade through the fifth decade. There is a slight shift from even-aged methods to group selection and individual tree selection between 1990 and 2030. About 35 percent of the commercial conifer zone will remain unroaded. Livestock grazing would remain constant during the planning period at 69,000 AUM's. Emphasis within recreation management would be maintenance of current recreational facilities at low standard levels. Two additional ski areas are planned for future study to determine the feasibility for development. OHV's would be restricted to roads and trails on some areas of the Forest. Other areas would be open to cross-country travel. Further Planning or Wilderness Study Areas are not recommended for wilderness designation. Wildlife habitat is improved in coordination with market resource activities. Vegetative diversity is improved through timber, livestock grazing, and wildlife management activities. The average annual budget in the first decade is \$16.3 million.

### Resource Program Direction

#### Recreation

##### Developed Recreation

- Manage campgrounds at current occupancy levels and rehabilitate as needed to protect investments.
- Maintain fee sites and non-fee sites at the low standard level.
- Utilize Pack-in, Pack-out policy in lightly used recreation areas.
- Retain resorts, recreation residence tracts, and organization camps that meet health and safety standards.
- Study the feasibility of constructing two additional ski areas, Mitchell-Maddox and Sherman Pass. Study for the development of these areas in the second decade.
- Meet elderly and handicapped standards during rehabilitation and reconstruction of most facilities.

##### Dispersed Recreation

- Manage dispersed areas at the low standard level.
- Implement the current OHV Plan.

- Manage designated special cross-country ski and oversnow vehicle areas on the **Tule** River District and in the Hume Lake area.

#### Trails

- Improve selected trailhead facilities **for** equestrian users.
- Maintain trails at Level II as a maximum, except National Recreation Trails and National Scenic Trails which will be maintained at level III.
- Rehabilitate and reconstruct trails using Volunteer, Adopt-A-Trail, and/or Green Sticker programs, and a small amount of appropriated money.

#### Water-Oriented Use

- Implement the Kern River Whitewater Floating Management Plan.
- Restrict the use of areas along the Lloyd Meadows Road only during weekend holidays.
- Maintain current diversities of dispersed/developed, night/day-use for the Kern River from Lake Isabella to mouth of Kern Canyon.
- Maintain current diversities of dispersed/developed, night/day-use for the entire **Tule** River zone.
- Maintain current diversities of dispersed/developed, night/day-use for the Hume Lake area.

#### Office of Information and Interpretive Services

- Maintain present self-service facilities and programs at a moderate level including recreation site bulletin boards, publications, and media releases.
- Provide other programs and facilities at a low level including seven-day seasonal information desks, self-service information stations, trailhead bulletin boards, resource management interpretive signs, 3-FIA programs, exhibits, interpretive trails, outdoor programs, and self-guided auto tours.

#### Visual Quality

- Generally meet IVQO's, but allow them to be traded up **or** down on a project basis depending on total resource values.

#### Cultural Resources

- Complete Archaeological Reconnaissance Reports and site records for evaluation of significance.

- Release those site locations declared "not significant" for other management activities.
- Post and sign (e.g., tractors prohibited or Antiquities Act) selected cultural resource sites.
- Monitor a limited number of sites for protection.
- Make selected site brochures available to the public.
- Conduct on-ground interpretation at a number of sites where highly significant properties exist or near developed sites where high level of use or exposure is possible (i.e., properties adjacent to campgrounds or historic logging activities in the vicinity of campgrounds).
- Regularly consult with Native Americans as interested parties on proposed undertakings.
- Interview key knowledgeable informants occasionally for project-specific information. Bring together and organize archival sources according to a Forest archival policy.
- Seek opportunities for evaluation of sites included in the Forest backlog of unevaluated sites when associated with project-specific inventories.
- Survey few acres aside from those required by projects (i.e., harvest units, roads, potential impact areas).

#### Urban Interface

- Generally meet Visual Quality Objectives in urban interface areas. Occasionally trade IVQO's up or down on a project basis.

#### Wilderness

- Do not recommend any Further Planning or Wilderness Study Areas for wilderness designation.
- Maintain the three existing outfitter-guide permittees serving the Golden Trout Wilderness.
- Authorize outfitter-guide services in wildernesses established in 1984 when a public need is demonstrated and wilderness objectives can be maintained.
- Suppress fires at less than 10 acres, 90 percent of the time in designated wilderness.

#### Wildlife and Fish

- Treat 13,000 acres of chaparral in the first decade, and 5,000 acres per decade in the second and third decades by prescribed burning for



habitat improvement for species associated with early successional stages of vegetation. Re-burn portions of **same** acreage in the fourth and fifth decades.

- Provide habitat for five pairs of peregrine falcons and maintain habitat for one pair of condors.
- Maintain current level of fish habitat capability.
- Complete implementation of the Little Kern Golden Trout Management Plan by decade three.
- Maintain a minimum of five square feet of basal area of black *oak* for wildlife on lands where timber production is emphasized
- Maintain diversity through timber harvesting and prescribed burning.
- Maintain a network of 40 Spotted Owl Habitat Areas. Manage 1000 acres of currently suitable habitat plus approximately 650 acres for each network area using a "No Scheduled Timber Harvest" prescription.
- Manage at least five percent of the timber base to maintain a minimum overall average of 1.5 snags per acre.
- Maintain at least an average of 35 cubic feet per acre of downed logs.

#### Livestock Grazing

- Continue grazing in existing allotments. There will be a slight upward trend in AUM's within the annual grassland and chaparral ecosystems.
- Treat 5,000 acres of chaparral in each of the first three decades with prescribed burning to maintain current forage production. Re-burn portions of the **same** acreage in the fourth and fifth decades.

#### Timber

- Manage 3,010 acres annually using even-aged methods to yield 85 MMBF.
- Harvest approximately 9.5 MMBF annually using individual tree selection.
- Encourage giant sequoia reproduction. Thin to enhance the health and vigor of the species. Manage giant sequoia as follows: about 9,000 acres for Preservation, about 3,000 acres Non-intensive, and about 1,000 acres Intensive.

- Make available logging slash and dead and down material for firewood throughout the Forest. Make available a small amount of green trees for firewood.
- Make available some lodgepole pine for firewood, generally as a by-product of meadow clearings.

### Water and Soil

- Improve and maintain soil productivity and water quality by treating 1,400 acres and obliterating 65 miles of unneeded roads in the first decade.
- Examine about 20,000 acres to update the existing Watershed Improvement Needs inventory, and to determine cause and effects where restoration is needed.
- Establish initial Streamside Management Zones (SMZ) at 100 feet wide. Actual management zones will be determined on a project basis.

### Minerals and Geology

- Make available about 76 percent of the planning area for mineral production outside designated or recommended wilderness.

### Lands

- Survey, mark, and post about 240 miles of land line per decade to support the timber program. Identify and resolve unauthorized occupancy trespass discovered (about three per mile, average, for land lines surveyed).
- Acquire some private lands which are located in timber, range, or recreation emphasis areas if they become available.

### Facilities

- Construct approximately 14 miles of local roads per year (50-year average).
- Reconstruct approximately 28 miles of local roads per year (50-year average).
- Manage the road system to assure resource protection, provide access, and accommodate resource management needs. Provide basic custodial care to protect the road investment.
- Emphasize resource protection and ability to provide access in determining road closures.
- Emphasize maintenance of arterials and high volume collector roads to a high degree of user comfort. Discourage passenger cars on local and collector roads with low traffic volumes.

- Construct approximately 28 miles of collector roads in the first decade to meet the needs of resource management throughout the planning period.
- Rehabilitate, replace or relocate existing buildings and facilities to support the current level of management.

### Protection

- Control all fires at less than 10 acres, 90 percent of the time.
- Maintain existing fuelbreak/firebreak as the first priority, approximately 175 miles in the first decade, increasing to 195 miles in the fifth decade.
- Construct about 10 miles of new fuelbreak/firebreak per decade on a project basis to protect land management investments.
- Use prescribed fire to reduce fuel loading to meet general protection objectives on about 25,000 acres per decade.
- Provide assistance as requested by the county sheriff in search and rescue operations.
- Coordinate with local law enforcement agencies and emphasize intensive violation prevention programs.
- Program fire management activities with prevention (18%), detection (4%), ground attack (47%), aviation operations (18%), and fuel management (13%).
- Maintain the current moderate level of IPM, which focuses on protection of plantations and timber emphasis areas.

### Environment to be Created

Moderate changes in vegetative diversity would occur in the chaparral and conifer forest zones. The appearance of chaparral would be changed to a mottled appearance because about 35,000 acres per decade will be treated with fire to improve wildlife habitat, livestock grazing, or watershed conditions, and reduce flammability. Over the entire planning period 175,000 acres will be treated. In addition, about 4,400 acres will be burned by wildfire per year. A moderate amount of the conifer zone (about 298,000 acres) will be roaded and have a managed appearance produced by timber harvesting. During the summer in the conifer zone, cattle will be found grazing in and around meadows. In the fall the more heavily used meadows will have a close cropped appearance. Each spring they will be covered with taller green grass and the meadows will look untouched.

In the conifer zone, the riparian zones will be protected from intensive timber harvest but activities may be noticeable closer than 100 feet to the streams.

Some fuelbreaks will be constructed and maintained but will seldom be seen in the chaparral and conifer zones.

A moderate amount of roading will be done in the conifer zone which will provide good public access. While main roads will remain open for public use, a substantial amount of lower standard roads will be closed.

Developed recreation facilities will remain at present locations and occupancy levels and will be maintained at less than standard management levels.

Two additional ski areas will be studied.

Table 2.9 - Alternative CUR - Management Area Prescription Acreage

<u>Management Area Prescription Code</u>	<u>Vegetative Type</u>	<u>Management Emphasis</u>	<u>Management Area Net M Acres Sequoia NF</u>
B01	blue <b>oak</b> savanna		1
OW1	<i>oak</i> woodland	GENERAL	25
MC1	mixed chaparral	DISPERSED	17
PS1	pinyon-sage	RECREATION	1
CF1	conifer forest		32
B02	blue <b>oak</b> savanna	WATER-	5
OW2	<i>oak</i> woodland	ORIENTED	2
MC2	mixed chaparral	RECREATION	2
CF3	conifer forest	DEVELOPED RECREATION	13
B05	blue <b>oak</b> savanna		0
OW5	<i>oak</i> woodland	WILDLIFE AND	49
MC5	mixed chaparral	DISPERSED	60
PS5	pinyon-sage	RECREATION	61
CF5	conifer forest		13
B06	blue <b>oak</b> savanna		37
OW6	<i>oak</i> woodland	GRAZING	92
MC6	mixed chaparral		72
PS6	pinyon-sage		11
CF6	conifer forest		12
CF7	conifer forest	TIMBER	331
MC8	mixed chaparral	WATER	0
CF8	conifer forest	YIELD	0
WA		WILDERNESS-natural fire	0
WC	A T	WILDERNESS-fire suppression	264
SIA	L Y	SPECIAL INTEREST AREAS	3
WR	L P	WILD & SCENIC RIVERS	
	E	within wilderness	(19)*
	S	outside wilderness	14
RNA		RESEARCH NATURAL AREAS	
		within wilderness	(3)*
		outside wilderness	2
TOTAL			1,119

\* Included within Wilderness Acreages

Note: The management prescription acres shown in this table include a total of 66,000 acres which are dedicated to spotted owl management. The acres also include 23,900 acres within the Kings River Special Management Area. Both of these items will require management plans. If this alternative were to be selected, these plans would be incorporated into the Forest Plan by amendment.

Table 2.10 - Alternative CR - Average Annual Outputs by Decade

Resource Elements	Base Year	'80 RPA Goals		Decade				
	1982	1990	2030	1	2	3	4	5
<b>RECREATION</b>								
Developed Public (M RVD's)	557	522	754	567	567	615	655	690
Developed Private (M RVD's)	328	538	776	580	580	690	778	809
<b>Dispersed (M RVD) 1/</b>	<b>1,582</b>	<b>2,880</b>	<b>3,550</b>	<b>1,391</b>	<b>1,421</b>	<b>1,508</b>	<b>1,681</b>	<b>1,824</b>
Wilderness (M RVD)	61.5	--	--	107.5	128.6	150.5	193.6	253.5
Zone of Limited OHV Use (Designed routes only. Closed to cross-country travel.)								
IFES (M Acres) 3/	267	--	--	767	267	267	267	267
Trails Open to OHV Use (Miles)	145	--	--	145	145	145	145	145
Trails Closed to OHV Use (Miles)	86	--	--	86	86	0	86	86
Zone of Limited OHV Use (Cross-country travel permissible with Specific seasonal and resource restrictions.)								
Acres (M Acres) 3/	--	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	--	--	--	0	0	0	0	0
Zone Open to Cross-Country OHV's								
Area (M Acres) 3/	588	--	--	588	588	588	588	588
Trails Available to OHV Use (Miles)	282	--	--	282	282	282	282	282
Trails with Seasonal OHV closure (miles)	102	--	--	90	90	90	90	90
Roads with Seasonal Closures (Miles)	425	--	--	425	578	495	571	552
Visual Quality Index	76.6	--	--	76.1	73.9	71.6	69.3	66.9
<b>WILDLIFE AND FISH</b>								
Threatened and Endangered Species								
Peregrine Falcon (Superior Nest Sites)	4	--	--	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream Habitat)	29	--	--	45	60	117	117	117
Condor (Acres of Nesting Habitat) 4/	0	--	--	2,299	2,299	2,299	2,299	2,299
Wildlife - Other Than T&E (Habitat Capability)								
Deer (Number)	11,000	13,200	13,200	11,000	11,000	11,000	11,500	11,500
Spotted Owls (Number of Pairs) 5/	80	--	--	75	72	66	60	55
Goshawk (Number of Pairs) 6/	110	--	--	105	100	95	90	85
Resident Fish (M Pounds)	77	92	92	77	17	77	77	77

1/ These numbers include Wilderness RVD's and Total WFUD's

2/ 1982 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only.

All decade projections include all five Sequoia Wildernesses.

3/ These acres represent the total area within this zone. Only about 25% of this total is useable terrain, due to steep slopes, dense vegetation, etc.

4/ See Chapter 3 for explanation of condor nesting habitat acres.

5/ See Appendix B for explanation of spotted owl habitat capability.

6/ Hypothetical number based on FORPLAH modeling for comparison purposes only. Actual amount of habitat managed will be different (based on Regional Guide direction). Fragmentation of suitable habitat was not considered.

Table 2.10 - Alternative CUR - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
<b>Wildlife and Fish User Days</b>								
Direct Habitat Improvement (MMFUD's)								
Deer	3	--	--	3	3	3	3	3
All Other Species (Except T&E)	.1	--	--	.2	.2	.2	.2	.2
Resident Fish (Except T&E)	0	--	--	0	0	0	0	0
Induced Habitat Improvement (MMFUD's)								
Deer	20	--	--	20	20	20	27	22
All Other Species (Except T&E)	95	--	--	102	124	146	171	199
Resident Fish (Except T&E)	28	--	--	28	28	28	28	28
Total Wildlife & Fish User Days	250	--	--	295	373	383	418	437
<b>Direct Habitat Improvement (Except T&amp;E)</b>								
Deer (Acres of Chaparral)	500	--	--	1,300	500	500	500	500
All Other Wildlife Species (Number of Guzzlers)	10	--	--	5	5	2	0	0
Resident Fish (Miles of Stream)	0	--	--	0	0	0	0	0
<b>GRAZING</b>								
Permitted Livestock (MAUM's)	63.0	69.5 1/	74.6 1/	69.0	69.0	69.0	69.0	69.0
Range Betterment (acres)	000	--	--	0	500	500	0	500
<b>TIMBER</b>								
Sales Offered (MMBF) 2/	97	99	107	99	99	99	99	99
Sales Offered (MMCF)	15.0	15.3	16.6	15.2	15.2	15.2	15.2	15.2
Allowable Sale Quantity (MMBF)	95	97	105	94	94	94	94	94
Long-Term Sustained Yield (MMCF) (MMBF)	--	--	--	15.8 103	15.8 103	15.8 103	15.8 103	15.8 103
Reforestation (Acres)	2,048	2,242	2,616	787	4,293	830	2,854	2,233
Timber Stand Improvement (Acres)	1,579	2,664	2,716	2,495	787	4,840	4,859	3,716
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
Firewood (Cords)	20,000	--	--	23,160	22,449	23,082	22,487	22,468
<b>WATERSHED</b>								
Quantity (M Acre-Feet)	736	--	--	737	756	752	757	761
Quality (M Acre-Feet at Standards)	720	990	1,000	730	749	741	753	751
Increased Quantity (M Acre-Feet)	0	--	--	1	20	16	21	25
Watershed Improvement (Acres)	140	270	310	140	100	50	30	30
Road Obliteration (Miles)	6.5	--	--	6.5	6.5	6.5	6.5	6.5

1/ RPA AM goals converted to AUM's based on Forest mix of Animal Unit Factors.

2/ Includes Allowable Sale Quantity and additional sales (unregulated volume, e.g., salvage)

Table 2.10 - Alternative CR - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
Water Yield Improvement (Acres)	0	--	--	0	0	0	0	0
<b>LANDS</b>								
Land Acquisition (Acres)	0	--	--	16	32	64	30	20
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	112	14	14	70	60	60	60	60
<b>FIRE</b>								
Fuel Treatment (Acres)								
Fire Protection	2,500	1,700	1,300	2,500	2,500	2,500	2,500	2,500
Timber Management	2,269	--	--	2,147	3,735	1,960	2,923	2,848
Range, Wildlife, Watershed	1,000	--	--	1,000	1,000	1,000	1,000	1,000
Wildfire Burned Acres	4,534	4,606	5,231	4,534	4,482	4,428	4,374	4,320
Intensity Class 1	329	334	379	329	325	321	317	313
Intensity Class 2	389	395	449	389	384	380	375	371
Intensity Class 3	1,841	1,869	2,123	1,841	1,819	1,797	1,775	1,753
Intensity Class 4	665	677	767	665	657	650	642	634
Intensity Class 5	172	176	200	172	172	170	167	165
Intensity Class 6	1,138	1,155	1,312	1,138	1,124	1,110	1,097	1,083
<b>TRANSPORTATION</b>								
Trail Construction (Miles) <sup>1/</sup>	16	1	0	13	0	0	0	0
Trail Reconstruction (Miles)	0	31	30	44.5	44.5	45.8	44.5	45.8
<b>Road Construction/Reconstruction</b>								
New Construction (Local Miles)	21.8	--	--	21.7	15.4	11.4	10.3	11.8
Reconstruction (Local Miles)	73.7	--	--	29.1	26.6	29.5	26.0	30.0
New Construction (Collector Miles)	-	--	--	2.8	0	0	0	0
Total	95.5	9	5	53.6	42.0	40.9	36.3	41.8
Road Maintenance (Miles)	1,471	--	--	1,522	1,608	1,545	1,610	1,589
<b>FACILITIES</b>								
Dams and Reservoirs								
Forest Service (Number)								
Other Federal (Number)								
Other State/Local (Number)								
Private (Number)								
Administrative Sites								
Forest Service Owned (Number)	15	--	--	17	18	19	19	19
Leased (Number)	6	--	--	4	3	2	2	2
<b>TOTAL BUDGET (MM\$)</b>	16.3	19.6	21.3	16.3	21.1	17.9	20.8	20.1

<sup>1/</sup> This trail mileage is accounted for under trail miles for OHV use.



## 1980 RESOURCE PLANNING ACT PROGRAM (RPA)

### Theme

This alternative would meet or exceed the Sequoia National Forest share of the Resource Planning Act goals.

Harvest volume would be 101 MMBF Allowable Sale Quantity in the first decade through the fifth decade. There is a slight shift from group selection to even-aged methods between 1990 and 2030. About 30 percent of the commercial conifer zone will remain unroaded. Livestock grazing use would increase from current levels to 100 M AUM's by the fifth decade. Emphasis within recreation management would be on developed recreation. Investment is concentrated in rehabilitation and expansion of existing campgrounds. One additional ski area is planned for future study to determine the feasibility for development. Off-highway vehicles are limited to designated roads and trails. About 12,650 acres of the BLM Rockhouse Wilderness Study Area would be recommended for wilderness designation. Wildlife habitat would be improved in coordination with other resource objectives. Vegetative diversity would be improved through timber, range, and wildlife management activities. The average annual budget would be approximately \$19.7 million.

### Resource Program Direction

#### Recreation

##### Developed Recreation

- Maintain developed sites at standard level.
- Rehabilitate existing developed sites using an average 20-year schedule. Drop those sites which cannot be brought up to fee site standards.
- Expand existing campgrounds and construct new facilities when average utilization exceeds 40 percent for water-use oriented sites.
- Retain all resorts, recreation residence tracts, and organization camps which are being utilized at greater than 10 percent of capacity.
- Study the feasibility of constructing one additional ski area (Mitchell-Maddox or Sherman Pass).
- Meet most elderly and handicapped standards during rehabilitation and construction of facilities.
- Emphasize elderly and handicapped **use** in day-use areas.

##### Dispersed Recreation

- Manage dispersed areas at standard levels.

- Continue closures of wilderness and the Pacific Crest Trail to all motorized/mechanized vehicles (approximately 264,000 acres).
- Limit the use of wheeled OHV's to designated roads and trails on approximately 855,000 acres.
- Minimize OHV conflicts with other users in and adjacent to developed recreation sites.
- Allow day-use of oversnow vehicles on the Hume Lake District, Western Divide, and Kern Plateau.
- Emphasize expansion of Nordic Skiing opportunities on the Hume Lake Ranger District and Western Divide.
- Emphasize nonmotorized use in SNM ROS classes.
- Emphasize equestrian overnight camping by providing public pastures to facilitate stock management.
- Emphasize equestrian use in wildernesses, front country, and conifer areas in P. SNM or SEM ROS class areas associated with wilderness, front country and conifer zones.

#### Trails

- Maintain trails to an established standard considering the primary uses.
- Rehabilitate or reconstruct over a 10-year period all trails on the system to eliminate backlog of needed work shown on trail condition records.
- Construct and maintain new trails if needed to meet dispersed recreation levels.
- Construct new fishing/hunting access trails and trailheads to facilitate use.
- Construct new hiker/stock user trails in the Conifer Zone or as connectors to the PCT. Schedule construction of PCT trailheads and overnight camps as called for in the PCT Management Plan.

#### Water-Oriented Use

- Implement the Kern River Whitewater Floating Management Plan.
- Allow commercial and noncommercial floating on both South Fork Kern River and in the Golden Trout Wilderness.
- Emphasize dispersed day-use with developed overnight-use along Lloyd Meadows Road.

- Emphasize dispersed day-use with developed overnight-use along the Kern River from Lake Isabella to mouth of Kern Canyon.
- Emphasize heavily developed day-use sites along the Tule River at Coffee Camp and vicinity.
- Emphasize overnight-use of the Tule River from Wilson Flat to Western Divide.
- Emphasize heavily developed overnight- and day-use sites in the Hume Lake area.

#### Office of Information and Interpretive Services

- Provide for high level of maintenance of recreation site bulletin boards.
- Provide for self-service and maintain most facilities and programs at a moderate level to service a mix of moderate level outputs of resources. Programs and services to include: seven-day information desks, self-service information stations, trailhead bulletin boards, resource management interpretive signs, publications, 3-FIA programs, exhibits, media releases, interpretive trails, outdoor programs, and self-guided auto tours.
- Design specialized media programs to promote dispersed recreation at moderate level.

#### Visual

- Maintain at least **75** percent of the Forest-wide landbase with the natural landscape character dominating and no more than 25 percent with an altered landscape dominating.
- Include in these percentages Retention in foreground and Partial Retention in middleground of Highways 180 and 190, Generals Highway, and the Sherman Pass Road from Kern River to Kennedy Meadows.

#### Cultural Resources

- Complete Archaeological Reconnaissance Reports and site records for evaluation of significance.
- Release those site locations declared "not significant" for other management activities.
- Obtain final determination of significance from the Keeper of the National Register. Routinely carry out testing where questions of significance develop.
- Post and sign (e.g., tractors prohibited or Antiquities Act) selected cultural resource sites on a limited basis.

- Monitor a number of sites for protection. Visits will be on a revolving basis and prioritized according to resource significance and vulnerability.
- **Make** selected site brochures available to the public.
- Develop and carry out a wide variety of on-ground interpretation in accordance with a management plan. Information distribution will be on a broad basis in a variety of formats.
- Take concerns into account when information is obtained from key community spokespeople on a project-by-project basis.
- Occasionally interview key knowledgeable informants for project-specific information. Consult archival sources as they are known to apply to specific projects.
- Develop a comprehensive program to eliminate all of *the* backlog of sites to be evaluated.
- Conduct non-project-specific surveys aimed at completing the Forest inventory by the 1995 target date.

#### Urban Interface

- ~~Meet~~ IVQO's in Urban Interface areas.

#### Wilderness

- Recommend the 12,650-acre portion of the BLM Rockhouse Wilderness Study Area to BLM for Wilderness designation.
- **Use** a "contain" or "confine" fire suppression strategy when wilderness characteristics and/or adjacent resource values are not jeopardized.

#### Wildlife and Fish

- Provide habitat for two pairs of peregrine falcons and one pair of condors.
- Complete implementation of the Little Kern Golden Trout Management Plan by decade two.
- Increase fish habitat capability by one percent over current levels in the first decade.
- Maintain average of 20 square feet basal area per acre in stands containing **oak** species.
- Manage habitat for species associated with early successional stages of vegetation through prescribed burning of 27,000 acres of chaparral in the first decade and 19,000 acres in each of the second

---

and third decades. Re-burning of acreage will commence in the fourth decade.

- Maintain a network of 40 spotted owl habitat areas. Manage 1,000 acres of currently suitable habitat plus approximately 650 acres for each network area using a "No Scheduled Timber Harvest" prescription. A network of 40 Spotted Owl Habitat Areas has been established.
- Manage 10 percent of the timber land to maintain an average of at least three snags per acre.
- Leave at least 70 cubic feet down logs average per acre.
- Maintain diversity slightly above current levels through timber harvesting and prescribed burning.

### Livestock Grazing

- Produce 69,500 AUM's in decade one and 100,000 in decade five.
- Allow cattle to graze in all meadows.
- Prescribe burn 13,000 acres in decade five to meet RPA goals.

### Timber

- Harvest 670 acres annually using group selection to yield about 21 MMBF.
- Harvest 2,000 acres annually using even-aged methods to yield 71 MMBF.
- Harvest approximately 9.5 MMBF annually using individual tree selection.
- Encourage giant sequoia reproduction. Thin to enhance the health and vigor of the species. Manage giant sequoia as follows: about 2,000 acres for Preservation, about 10,000 acres Non-intensive, and about 1,000 acres Intensive.
- Make available logging slash, and dead and down material for firewood throughout the Forest. Make available a small amount of green trees for firewood.
- Make available some lodgepole pine for firewood generally as a by-product of meadow clearings.
- Approximately one-third of the volume harvested will utilize uneven-aged management.

## Water and Soil

- Increase water yield of Deer Creek, Salmon Creek, *Oak Mountain*, and the Sampson Area by prescribed burning and type conversion of 6,000 acres of chaparral in decades one, two and three.
- Improve and maintain soil productivity, water quality, fish habitat, recreational experience, forage production, and timber productivity by treating 2.700 acres and obliterating 489 miles of unneeded roads in the first decade.
- **Meet** water quality goals for at least 99 percent of the runoff the first decade and 100 percent thereafter.
- Examine about 24,000 acres to update the existing watershed improvement needs inventory, and to determine cause and effects where restoration is needed.
- Establish initial SMZ's at 100 feet wide for Class I, Class II, and Class III streams. Actual management zones will be determined on a project basis and average the above distances.

## Minerals and Geology

- **Make** available about 76 percent of the planning area for mineral production outside designated **or** recommended wilderness.

## Lands

- Survey, mark, and post about 270 miles of land line per decade to support the timber program. Identify and resolve unauthorized occupancy trespass discovered (about three per mile, average, for land lines surveyed).
- Acquire some private lands which are located in timber, range, **or** recreation emphasis areas if they become available.

## Facilities

- Construct approximately 13 miles of local roads per year (50-year average).
- Reconstruct approximately 29 miles of local roads per year (50-year average).
- Construct approximately 37 miles of collector roads in the first decade to meet the needs of resource management throughout the planning period.
- Emphasize maintenance of arterials and high volume collector roads to a high degree of user comfort. Encourage passenger cars on collector roads with low traffic volumes.
- Emphasize resource protection in determining road closures.

- Manage the road system to assure resource protection, provide access, and accommodate resource management needs. Provide basic custodial care to protect road investment.
- Rehabilitate, replace **or** relocate existing buildings and facilities to support the current level of management.

### Protection

- Maintain fire protection program at current levels.
- Maintain existing fuelbreak/firebreak, approximately 175 miles in the first decade, increasing to 325 miles in the fifth decade.
- Construct about 30 miles of new fuelbreak/firebreak per decade on a project basis to protect land management investments.
- Use prescribed fire to reduce fuel loading to meet general protection objectives on about 30,000 acres per decade.
- Provide assistance as requested by the County Sheriff in search and rescue operations.
- Coordinate with local law enforcement agencies and emphasize intensive violation prevention programs.
- Program fire management activities with prevention (29 percent), detection (4 percent), ground attack (40 percent), aviation operations (15 percent), and fuel management (12 percent).
- Implement a moderate level of IPM, focusing on protection of timber emphasis areas and developed recreation sites. Selection harvests may limit opportunities in some situations.

### Environment to be Created

A moderate amount of vegetative diversity would exist in the chaparral zone with about 63,000 acres treated with fire to improve wildlife habitat, livestock grazing, **or** watershed conditions, and reduce flammability over the first decade. About 220,000 acres will be treated during the planning period. The amount of diversity would be further increased by the burning of approximately 4,900 acres per year by wildfire. This burning would produce a mottled appearance because of changes in vegetative height and the lighter green color of the younger chaparral.

**The** roaded portion of the conifer zone would have a managed appearance due to timber harvesting. This harvesting will be highly dispersed and over time a more uneven-aged appearance will be produced. Openings containing younger trees will be seen when traveling in this zone. Along heavily traveled routes, management activities may be seen, but are subordinate to the overall natural appearance. The area accessed and managed primarily for timber production will be about 329,000 acres. Much of the conifer zone will retain a natural character.

During the **summer** months, cattle will be seen grazing in the conifer zone in and around meadows. In the fall, the more heavily used meadows will have a closely cropped appearance. They will appear green and natural the next spring.

In the conifer zone, the riparian areas will appear undisturbed within 100 feet of streams.

A moderate amount of fuelbreaks will be constructed and maintained. They will be commonly seen in the chaparral zone and will seldom be seen in the conifer zone.

In general, all main roads and most lower standard roads would be open to public use.

Developed recreation facilities will be expanded primarily in locations where water is present and road access is good. The trail system will be expanded and maintained at a high maintenance level. Equestrian opportunities will be increased.

One additional ski area will be studied.



Table 2.11 - Alternative RPA - Management Area Prescription Acreage

<u>Management Area Prescription Code</u>	<u>Vegetative Type</u>	<u>Management Emphasis</u>	<u>Management Area Net M Acres Sequoia NF</u>
B01	blue <i>oak</i> savanna		2
OW1	<i>oak</i> woodland	GENERAL	29
MC1	mixed chaparral	DISPERSED	12
PS1	pinon-sage	RECREATION	63
CF1	conifer forest		98
B02	blue <i>oak</i> savanna	WATER-	7
ow2	<i>oak</i> woodland	ORIENTED	2
MC2	mixed chaparral	RECREATION	2
CF3	conifer forest	DEVELOPED RECREATION	9
B05	blue <i>oak</i> savanna		2
OW5	<i>oak</i> woodland	WILDLIFE AND	30
MC5	mixed chaparral	DISPERSED	91
PS5	pinon-sage	RECREATION	0
CF5	conifer forest		18
B06	blue <i>oak</i> savanna		32
OW6	<i>oak</i> woodland	GRAZING	109
MC6	mixed chaparral		26
PS6	pinon-sage		9
CF6	conifer forest		36
CF7	conifer forest	TIMBER	218
MC8	mixed chaparral	WATER	18
CF8	conifer forest	YIELD	23
WR4		WILDERNESS-natural fire	0
WC4	A T	WILDERNESS-fire suppression	264
SIA	L Y	SPECIAL INTEREST AREAS	3
WR	L P	WILD & SCENIC RIVERS	
	E	within wilderness	(19)*
	S	outside wilderness	14
RNA		RESEARCH NATURAL AREAS	
		within wilderness	(3)*
		outside wilderness	2
TOTAL			1,119

\* Included within Wilderness Acreages

Note: **The** management prescription acres shown in this table include a total of 66,000 acres which are dedicated to spotted owl management. The acres also include 23,900 acres within the Kings River Special Management Area. **Both of** these items will require management plans. If this alternative were to be selected, these plans would be incorporated into the Forest Plan by amendment.

Table 2.12 - Alternative RPA - Average Annual Outputs by Decade

Resource Elements	Base Year 1982	'80 RPA 1990	Coals 2030	Decade				
				1	2	3	4	5
<b>RECREATION</b>								
Developed Public (M RVD's)	557	572	754	639	739	778	800	1,037
Developed Private (M RVD's)	328	578	776	583	615	635	800	950
Dispersed (M RVD) <sup>1/</sup>	1,582	2,880	3,550	1,828	2,103	2,439	2,632	7,993
Wilderness (M RVD)	61.5 <sup>2/</sup>	--	--	107.5	128.6	150.5	193.0	253.5
Zone of Limited OHV Use (Designed routes only. Closed to cross-country travel.)								
Area (M Acres) <sup>3/</sup>	267	--	--	855	855	855	855	855
Trails Open to OHV Use (Miles)	145	--	--	344	344	344	344	344
Trails Closed to OHV Use (Miles)	86	--	--	243	243	243	243	243
Zone of Limited OHV Use (Cross-country travel permissible with Specific seasonal and resource restrictions.)								
Acres (M Acres) <sup>3/</sup>	0	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	0	--	--	0	0	0	0	0
Zone Open to Cross-country OHV's								
Area (M Acres) <sup>3/</sup>	588	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	282	--	--	N/A	N/A	N/A	N/A	N/A
Trails with Seasonal OHV Closures (Miles)	102	--	--	520	520	520	570	570
Roads with Seasonal Closures (Miles)	425	--	--	533	639	709	808	920
Visual Quality Index	76.5	--	--	75.0	73.1	71.2	69.2	69.2
<b>WILDLIFE AND FISH</b>								
Threatened and Endangered Species								
Peregrine Falcon								
(Superior Nest Sites)	4	--	--	4	4	4	4	4
Little Kern Golden Trout								
(Miles of Stream Habitat)	29	--	--	60	117	117	117	117
Condor (Acres of Nesting Habitat) <sup>4/</sup>	0	--	--	2,299	2,299	2,299	2,299	2,299
Wildlife - Other Than TBE								
(Habitat Capability)								
Deer (Number)	11,000	13,200	13,200	13,200	13,700	13,200	13,200	13,200
Spotted Owls (Number of Pairs) <sup>5/</sup>	80	--	--	75	58	61	55	55
Goshawk (Number of Pairs) <sup>6/</sup>	110	--	--	105	100	95	90	85
%ResidentFish (M Pounds)	77	92	92	78	78	78	78	78

<sup>1/</sup> These numbers include Wilderness RVD's and Total WFD's

<sup>2/</sup> 1982 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only.

All decade projections include all five sequoia wildernesses.

<sup>3/</sup> These acres represent the total area within this Zone. Only about 25% of this total is useable terrain, due to steep slopes, dense vegetation, etc.

<sup>4/</sup> See Chapter 3 for explanation of condor nesting habitat acres.

<sup>5/</sup> See Appendix B for explanation of spotted owl habitat capability.

<sup>6/</sup> Hypothetical number based on FORPLAN modeling for comparison purposes only. Actual amount of habitat managed (due to fragmentation, fragmentation of suitable habitat was not considered).

Table 2.12 - Alternative RPA - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
<b>Wildlife and Fish User Days</b>								
<b>Direct Habitat Improvement (MWFUD's)</b>								
Deer	3	--	--	12	12	12	12	12
All Other Species (Except T&E)	.1	--	--	.1	.1	.1	.1	.1
Resident Fish (Except T&E)	0	--	--	.5	.5	.5	.5	.5
<b>Induced Habitat Improvement (MWFUD's)</b>								
Deer	20	--	--	20	20	20	20	20
All Other Species (Except T&E)	95	--	--	113	115	127	152	180
Resident Fish (Except T&E)	28	--	--	28	28	28	28	28
<b>Total Wildlife &amp; Fish User Days</b>	<b>250</b>	<b>--</b>	<b>--</b>	<b>299</b>	<b>371</b>	<b>385</b>	<b>420</b>	<b>437</b>
<b>Direct Habitat Improvement (Except T&amp;E)</b>								
Deer (Acres of Chaparral)	500	--	--	2,700	1,900	1,900	3,300	1,200
All Other Wildlife Species (Number of Guzzlers)	10	--	--	3	3	2	2	1
Resident Fish (Miles of Stream)	0	--	--	3	0	3	0	3
<b>GRAZING</b>								
Permitted Livestock (AUM's)	63.0	69.5 1/	74.6 1/	69.5	71.9	73.6	81.3	100.0
Range Betterment (acres)	800	--	--	0	0	0	0	1,300
<b>TIMBER</b>								
Sales Offered (MMBF) 2/	97	99	107	106	106	106	106	106
SALES OFFERED (MMCF)	15.0	15.3	16.6	16.4	16.4	16.4	16.4	16.4
Allowable Sale Quantity (MMBF)	95	97	105	101	101	101	101	101
Long-Term Sustained Yield (MMCF)	--	--	--	18.1	18.1	18.1	18.1	18.1
(MMBF)	--	--	--	118	118	118	118	118
Reforestation (Acres)	2,048	2,242	2,616	2,516	2,963	1,939	3,271	2,252
Timber Stand Improvement (Acres)	1,579	2,664	2,716	2,495	1,847	4,213	4,456	5,202
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
Firewood (Cords)	20,000	--	--	21,931	21,931	21,931	21,931	21,931
<b>WATERSHED</b>								
Quantity (M Acre-Feet)	736	--	--	742	751	753	759	759
Quality (M Acre-feet at Standards)	720	990	1,000	735	749	751	757	757
Increased Quantity (M Acre-Feet)	0	--	--	6	15	17	23	23
Watershed Improvement (Acres)	140	270	310	270	290	300	310	310
Road Obliteration (Miles)	6.5	--	--	48.9	0.5	0.5	0.5	0.5

1/ RPA AUM goals converted to AUM's based on Forest mix of Animal Unit Factors.

2/ Includes Allowable Sale Quantity and additional sales (unregulated volume, e.g., salvage)

Table 2.12 - **Alternative RPA - Average Annual Outputs by Decade** (Continued)

Resource Elements	Base Year	180 RPA	Goals	Decade				
	1982	1990	2030	1	2	3	4	5
Water Yield Improvement (Acres)	0	--	--	600	600	600	0	0
<b>LANDS</b>								
Land Acquisition (Acres)	0	--	--	40	64	20	10	10
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	112	14	14	14	14	14	14	14
<b>FIRE</b>								
Fuel Treatment (Acres)								
Fire Protection	2,500	1,700	1,300	3,000	3,000	3,000	3,000	3,000
Timber Management	2,269	--	--	2,663	2,975	2,365	3,092	2,684
Range, Wildlife Watershed	1,000	--	--	3,300	2,500	2,500	3,300	2,500
Wildfire Burned Acres	4,534	4,606	5,231	4,606	4,601	4,811	5,045	5,231
Intensity Class 1	329	334	379	334	334	349	366	379
Intensity Class 2	389	395	449	395	395	413	433	449
Intensity Class 3	1,841	1,869	2,123	1,869	1,067	1,952	2,047	2,123
Intensity Class 4	665	677	767	677	675	706	740	767
Intensity Class 5	172	176	200	176	176	104	193	200
Intensity Class 6	1,138	1,155	1,312	1,155	1,154	1,206	1,265	1,312
<b>TRANSPORTATION</b>								
Trail Construction (Miles) <sup>1/</sup>	16	1	0	3.0	0	0	0	0
Trail Reconstruction (Miles)	0	31	30	89.0	20.0	20.0	20.0	20.0
<b>Road Construction/Reconstruction</b>								
New Construction (Local Miles)	21.8	--	--	16.5	16.6	11.3	10.6	11.5
Reconstruction (Local Miles)	13.7	--	--	25.2	29.7	28.2	29.2	31.2
New Construction (Collector Miles)	--	--	--	3.7	0	0	0	0
Total	95.5	9	5	45.4	46.3	39.5	39.8	42.7
Road Maintenance (Miles)	1,471	--	--	1,520	1,554	1,568	1,591	1,575
<b>FACILITIES</b>								
<b>Dams and Reservoirs</b>								
Forest Service (Number)	1	--	--	1	1	1	1	1
Other Federal (Number)	2	--	--	2	2	2	2	2
Other State/Local (Number)	0	--	--	0	0	0	0	0
Private (Number)	8	--	--	8	8	8	8	8
<b>Administrative Sites</b>								
Forest Service Owned (Number)	15	--	--	17	18	19	19	19
Leased (Number)	6	--	--	4	3	2	2	2
<b>TOTAL BUDGET (M\$)</b>	16.3	19.6	21.3	19.7	70.2	19.6	22.4	22.0

<sup>1/</sup> This trail mileage is accounted for under trail miles for OHV use.

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## AMENITY EMPHASIS (AMN)

### Theme

This alternative emphasizes high production levels of nonmarket resources (wildlife and fish, dispersed recreation, visual quality, wilderness). Market resources benefits (timber, livestock grazing, developed recreation) are produced at economically efficient levels to support nonmarket resources.

Nonmarket resources receive first priority. Dispersed recreation areas are managed to encourage their use. Off-highway vehicles are limited to reduce conflicts with other users. Winter snow use and equestrian uses are encouraged. The trail system is extended. Activities at developed recreation sites are de-emphasized. The feasibility of development of one additional ski area is planned for future study. All Further Planning and Wilderness Study Areas, 127,020 acres, are recommended for wilderness designation. This includes 35,560 acres of BLM Rockhouse Wilderness Study Area. Nonconsumptive wildlife and fish use receives priority over consumptive uses. Habitat improvement is concentrated outside conifer zones. Livestock grazing and OHV's are restricted in key wildlife areas. About 43 MMF Allowable Sale Quantity of timber is harvested annually, using uneven-aged timber management, during the planning period. This increases to 54 MMF Allowable Sale Quantity of annual harvest in the fifth decade. This provides some vegetative diversity in the conifer zones. About 48 percent of the commercial conifer zone will remain unroaded. Wide Streamside Management Zones protects riparian areas from disturbance. Fire prevention receives heavy emphasis. The average annual budget for the first decade is \$14.7 million.

### Resource Program Direction

#### Recreation

##### Developed Recreation

- Manage sites at low standard level.
- Maintain existing fee sites using the rehabilitation priorities already established. Manage a combination of fee and non-fee sites as is currently done, but close those sites being utilized at less than 10 percent of theoretical occupancy rate.
- Utilize Pack-in, Pack-out policy in lightly used recreation areas.
- Retain resorts, recreation residence tracts, and organization camps that meet health and safety standards.
- Study the feasibility of constructing one additional ski area at Mitchell-Maddox or Sherman Pass.
- Meet elderly and handicapped standards during rehabilitation and reconstruction of most facilities.

## Dispersed Recreation

- Manage dispersed recreation areas at standard level to encourage their use.
- Limit off-highway vehicles (OHV's) to designated roads and trails.
- Minimize conflict from motorcycle and three-wheel vehicle use in and adjacent to developed recreation sites.
- Expand dispersed oversnow vehicle day-use on Hume Lake Ranger District and Western Divide. Extend use of Kern Plateau with hut system and/or resorts.
- Manage Nordic skiing with a resort orientation. Emphasize expansion of opportunities on Hume Lake District, Western Divide and Kern Plateau.
- Locate and sign new cross-country ski and oversnow vehicle trails. Provide adequate plowed parking and sanitation facilities.
- Emphasize nonmotorized use in SPNM ROS class areas.
- Emphasize overnight camping with public pastures provided to facilitate equestrian use.
- Emphasize equestrian use in P. SPNM, or SPM ROS class areas associated with wilderness, front country, and conifer zones.

## Trails

- Maintain existing trails to an established standard considering the primary use.
- Rehabilitate or reconstruct over a 10-year period all trails on the system to eliminate backlog of needed work shown on trail condition records.
- Construct new trails if needed to meet dispersed recreation levels.
- Construct new angler/hunter access trails and trailheads to facilitate use. Construct new hiker/stock user trails in the Conifer Zone or as connectors to the PCT. Schedule construction of PCT trailheads and overnight camps as called for in the PCT Management Plan.

## Water-Oriented Use

- Continue to implement the Kern River Whitewater Floating Management Plan.
- Prohibit commercial floating in Golden Trout Wilderness and on the South Fork Kern River.

- Emphasize dispersed **OHV** use with developed overnight-use along the Lloyd Meadows Road on the North Fork of the Kern River.
- Emphasize dispersed day-use with developed overnight-use along the Kern River from Lake Isabella to mouth of Kern Canyon.
- Emphasize heavily developed day-use of sites at Coffee Camp and vicinity on the Tule River.
- Provide increased parking for day-use on the Tule River from Wilson Flat to Western Divide.
- Emphasize dispersed day-use and maintain developed overnight sites in the Hume Lake area.

#### Office of Information and Interpretive Services

- Provide low levels of self-service at information stations and outdoor programs.
- Provide high levels of communication contact directing dispersed use through seven-day information desks, trailhead bulletin boards, resource management interpretive signs, publications, 3-FIA programs, exhibits, media releases, interpretive trails, self-guided auto tours, and recreation site bulletin boards.
- Provide specialized media (AM radio stations) at the moderate level.
- Maximize the opportunity for communications between users and the Forest.

#### Visual

- Maintain Preservation (P) VQO for all designated areas (e.g., wilderness): and R and PR in the remainder of the Forest.

#### Cultural Resources

- Complete Archaeological Reconnaissance Reports and site records for evaluation of significance.
- Release those site locations declared "not significant" for other management activities.
- Obtain final determination of significance from the Keeper of the National Register. Routinely carry out testing where questions of significance develop.
- Make major efforts to nominate sites and districts to the National Register.
- Protect all known sites including posting and signing as necessary.

- Develop and carry out a wide variety of on-ground interpretation in accordance with a management plan. Information distribution will be on a broad basis in a variety of formats.
- Routinely and systematically incorporate ethnographic concerns into management actions through a program of ongoing interviews and other interactions with cultural groups.
- **Make** numerous interviews on a routine basis. Carry out ongoing subject indexing and transcribing. Bring together and organize archival sources according to a Forest archival policy.
- Develop a comprehensive program to eliminate all of the backlog of sites to be evaluated.
- Conduct inventories as necessary, occasionally doing non-project-specific inventories which result in partial achievement of the 1995 target for total Forest inventory.

#### Urban Interface Areas

- ~~Meet~~ IVQO's.

#### Wilderness

- Constrain all types of commercial permitted use opportunities within wildernesses to match the management emphasis of each particular wilderness.
- Recommend all Further Planning Areas (including BLM Rockhouse WSA) for wilderness designation (127,020 acres).
- Use prescribed fires to enhance wilderness values. Planned and unplanned ignition may be used.
- Manage wilderness at standard level.
- Because of emphasis on native fish species, allow stocking to meet Little Kern Golden Trout Management Plan only.

#### Wildlife and Fish

- Emphasize habitat improvement for non-harvest uses of wildlife species associated with early seral stages of chaparral and late seral stages of conifers.
- Maintain four superior nest sites for peregrine falcons and for one pair of condors.
- Complete implementation of the Little Kern Golden Trout Management Plan by the second decade.
- Provide habitat capability for maximum population of resident trout, approximately a one percent increase.



- Manage *oaks* in key wildlife areas and near developed recreation sites to maximize the number of species present.
- Maintain average of 40 square feet basal area per acre in stands containing *oak* species.
- Prescribe burn about 38,000 acres of chaparral in the first decade, 30,000 acres in both the second and third decades and 29,000 acres in the fifth decade. Re-burn portions of **same** acreage in the fourth and fifth decade to maximize the number of species present.
- Emphasize diversity outside conifer zones.
- Maintain a network of 40 spotted owl habitat areas. Manage 1,000 acres of currently suitable habitat plus approximately 650 acres for each network area using a "No Scheduled Timber Harvest" prescription
- Manage 10 percent of the timber land to maintain an average of at least three snags per acre.
- Leave at least an average of 140 cubic feet of down logs per acre.
- Emphasize native fisheries production in riparian vegetative management.

#### Livestock Grazing

- Authorize grazing outside recommended wilderness except in meadows and riparian areas in the conifer zone.
- Do not recommend grazing in new wildernesses.
- Authorize cattle grazing only February through June in annual grasslands and mixed chaparral areas in key wildlife areas.

#### Timber

- Utilize uneven-aged management exclusively.
- Harvest 687 acres annually using group selection to yield about 24 MMBF increasing to 35 MMBF in the fifth decade.
- Harvest approximately 19.0 MMBF annually using individual tree selection.
- Encourage giant sequoia reproduction. Thin to enhance the health and vigor of the species. Manage giant sequoia as follows: about 6,000 acres for Preservation, about 6,000 acres Non-intensive, and about 1,000 acres Intensive.
- Emphasize harvest programs designed to produce diversity in conifer forest vegetation.

- Emphasize firewood opportunities in *oaks*, pinyon pine and other conifers as a by-product of wildlife projects, trail construction and maintenance, timber sales, etc. Emphasize noncommercial firewood gathering.

### Water and Soil

- Maintain soil productivity and water quality.
- Treat 2,000 acres and obliterate 250 miles of unneeded roads in the first decade to improve and maintain soil productivity and water quality, fish habitat, recreational experience, forage production and timber productivity.
- Examine about 60,000 acres to update the existing Watershed Improvement Needs inventory, and to determine cause and effects where restoration is needed.
- Do not harvest timber in Streamside Management Zones (SMZ's).
- Initially, use 100 feet wide SMZ's on Class I, Class II, and Class III streams. Actual management zone widths will be determined on a project basis and average the above distances.

### Minerals and Geology

- Make available about 68 percent of the planning area for mineral production outside designated or recommended wilderness.

### Lands

- Survey, mark, and post about 155 miles of land line per decade. Identify and resolve unauthorized occupancy trespass discovered (about three per mile, average, for land lines surveyed).
- Pursue a minor amount of rights-of-way work.
- Acquire private lands in wildernesses if they become available. or elsewhere if they contain unique plant communities.
- Discourage issuance of special-use permits which restrict dispersed recreation.

### Facilities

- Construct approximately 0.4 miles of local roads per year (50-year average).
- Reconstruct approximately 8 miles of local road per year (50-year average).
- Construct approximately 0 miles of collector roads in the first decade to meet the needs of resource management throughout the planning period.

- Manage the road system to assure resource protection, provide access, and accommodate resource management needs. Provide basic custodial care to protect the road investment.
- Emphasize maintenance of arterials and high volume collector roads to a high degree of user comfort. Passenger cars will be accepted on collector roads with low traffic volumes.
- Emphasize resource and road investment protection in determining road closure.
- Rehabilitate, replace or relocate existing buildings and facilities to support management activities.
- Maintain buildings at minimum level to protect health and to prevent deterioration.

### Protection

- Emphasize fire prevention and provide a mobile fire protection force.
- Utilize "control" as the suppression strategy. The maximum size of 90 percent of non-wilderness fires at containment is expected to be:
 

Timber (CF) and Developed Areas	-	5 acres
Brush (OW, MC, PS)	-	15 acres
Grass (BO)	-	100 acres
- Supplement ground detection with aerial observation.
- Maintain approximately 175 miles of fuelbreak/firebreak in the first decade, increasing to 325 miles in the fifth decade.
- Construct about 20 miles of new fuelbreak/firebreak per decade on a project basis to protect land management investments.
- Use prescribed fire to reduce fuel loading to meet general protection objectives on about 25,000 acres per decade.
- Provide assistance as requested by the County Sheriff in search and rescue operations.
- Coordinate with local law enforcement agencies. Emphasize intensive violation prevention programs.
- Program fire management activities with prevention (29%), detection (4%), ground attack (35%), aviation operations (20%), and fuel management (12%).
- Implement a low level of IPM with emphasis on protecting values associated with dispersed recreation and visual quality.
- Practice a moderate level of IPM in plantations.

## Environment to be Created

A large amount of vegetative diversity will exist in the chaparral zone with about 242,000 acres treated with fire to improve wildlife habitat, livestock grazing, watershed conditions, and reduce flammability over the entire planning period. About 63,000 acres will be treated in the first decade. The chaparral diversity will be increased further by the burning of about 5,000 acres per year by wildfire. The burning will produce a mottled uneven appearance. **The** appearance is caused primarily by height changes and a lighter color produced by younger vegetation.

The roaded portion of the conifer zone will have a managed appearance consistent with the visual quality objective. About 279,000 acres will be managed to produce timber outputs. Although timber management will occur, **it** will not be the primary management emphasis. **The** naturally appearing landscape will remain dominant.

During the summer months, cattle will not be seen in the meadows or riparian zones. These areas will be covered with tall grass in late summer.

**The** riparian areas in the timber zone will appear undisturbed within 100 feet of streams.

A large number of fuelbreaks will be built and maintained. They will be located primarily in the chaparral zone and, because of the number, will be easily seen. Some will be constructed in the conifer zone, but generally will not be seen.

A moderate number of roads will **be** constructed and maintained for public use. Some low standard roads will be closed to the public.

Developed recreation facilities will be provided only at locations where dispersed use will be enhanced. These facilities will be generally close to water, **or** in the conifer zone close to wilderness to support access there.

New trails will be constructed and all trails will be maintained at a high level to allow easy access throughout the Forest.

**One** additional ski area will be studied.

Table 2.13 - Alternative AMN - Management Area Prescription Acreage

<u>Management Area Prescription Code</u>	<u>Vegetative Type</u>	<u>Management Emphasis</u>	<u>Management Area Net M Acres Sequoia NF</u>
B01	blue <i>oak</i> savanna		24
OW1	<i>oak</i> woodland	GENERAL	50
MC1	mixed chaparral	DISPERSED	108
PS1	pinyon-sage	RECREATION	25
CF1	conifer forest		340
<hr/>			
B02	blue <i>oak</i> savanna	WATER-	4
OW2	<i>oak</i> woodland	ORIENTED	1
MC2	mixed chaparral	RECREATION	2
<hr/>			
CF3	conifer forest	DEVELOPED RECREATION	9
<hr/>			
B05	blue <i>oak</i> savanna		1
OW5	<i>oak</i> woodland	WILDLIFE AND	80
MC5	mixed chaparral	DISPERSED	31
PS5	pinyon-sage	RECREATION	0
CF5	conifer forest		31
<hr/>			
B06	blue <i>oak</i> savanna		7
OW6	<i>oak</i> woodland	GRAZING	29
MC6	mixed chaparral		0
PS6	pinyon-sage		0
CF6	conifer forest		2
<hr/>			
CF7	conifer forest	TIMBER	0
<hr/>			
MC8	mixed chaparral	WATER	0
CF8	conifer forest	YIELD	0
<hr/>			
WF4		WILDERNESS-natural fire	356
WC4	A T	WILDERNESS-fire suppression	0
SIA	L Y	SPECIAL INTEREST AREAS	3
WR	L P	WILD & SCENIC RIVERS	
	E	within wilderness	(19)*
	S	outside wilderness	14
RNA		RESEARCH NATURAL AREAS	
		within wilderness	(3)*
		outside wilderness	2
<hr/>			
TOTAL			1,119

\* Included within Wilderness Acreages

Note: The management prescription acres shown in this table include a total of 66,000 acres which are dedicated to spotted owl management. The acres also include 23,900 acres within the Kings River Special Management Area. Both of these items will require management plans. If this alternative were to be selected, these plans would be incorporated into the Forest Plan by amendment.

Table 2.14 - Alternative AMN - Average Annual Outputs by Decade

Resource Elements	Base Year	'80 RPA Goals		Decade				
	1982	1990	2030	1	2	3	4	5
<b>RECREATION</b>								
Developed Public (M RVD's)	551	522	754	652	686	863	1,002	1,117
Developed Private (M RVD's)	328	538	716	580	590	635	120	800
Dispersed (M RVD) <sup>1/</sup>	1,582	2,880	3,550	1,890	2,162	2,432	2,716	2,998
Wilderness (M RVD)	61.5 <sup>2/</sup>	--	--	108	129	150	194	253
Zone of Limited OHV Use (Designed routes only. Closed to cross-country travel.)								
Area (M Acres) <sup>3/</sup>	267	--	--	764	764	764	164	764
Trails Open to OHV Use (Miles)	145	--	--	321	321	321	371	321
Trails Closed to OHV Use (Miles)	86	--	--	266	266	266	266	266
Zone of Limited OHV Use (Cross-country travel permissible with specific seasonal and resource restrictions.)								
Acres (M Acres) <sup>3/</sup>	--	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	--	--	--	0	0	0	0	0
Zone Open to Cross-Country OHV's								
Area (M Acres) <sup>3/</sup>	588	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	282	--	--	N/A	N/A	N/A	N/A	N/A
Trails with Seasonal OHV Closures (Miles)	102	--	--	520	520	520	520	520
Roads with Seasonal Closures (Miles)	425	--	--	521	608	697	190	881
Visual Quality Index	76.6	--	--	16.3	75.8	15.3	74.8	14.3
<b>WILDLIFE AND FISH</b>								
Threatened and Endangered Species								
Peregrine Falcon (Superior Nest site+)	4	--	--	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream Habitat)	29	--	--	60	117	117	117	117
Condor (Acres of Nesting Habitat) <sup>4/</sup>	0	--	--	2,299	2,299	2,299	2,299	2,299
Wildlife - Other Than T6E (Habitat Capability)								
Deer (Number)	11,000	13,200	13,200	13,700	14,100	14,600	15,100	15,100
Spotted Owls (Number of Pairs) <sup>5/</sup>	80	--	--	75	15	14	72	70
Goshawk (Number of Pairs) <sup>6/</sup>	110	--	--	105	100	100	95	95
Resident Fish (M Pounds)	77	92	92	75	15	15	75	15

1/ These numbers include Wilderness RVD's and Total WFUD's

2/ 1982 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only. All decade projections include all five Sequoia Wildernesses.

3/ These acres represent the total area within this zone. Only about 25% of this total is useable terrain due to steep slopes, dense vegetation, etc.

4/ See Chapter 3 for explanation of condor nesting habitat acres.

5/ See Appendix B for explanation of spotted owl habitat capability.

6/ Hypothetical number based on FORPLAN modeling for comparison purposes only. Actual amount of habitat managed will be different (based on Regional Guide direction). Fragmentation of suitable habitat was not considered.

Table 2.14 - Alternative AMN - Average ts by Decade (Continued)

Resource Elements	Base Year '80		RPA Goals 2030	Decade				
	1982	1990		1	2	3	4	5
<b>Wildlife and Fish User Days</b>								
Direct Habitat Improvement (MWFUD's)								
Deer								
All Other Species (Except T&E)								
Resident Fish (Except T&E)								
Induced Habitat Improvement (MWFUD's)								
Deer	20	--	--	22	21	21	20	19
All Other Species (Except T&E)	95	--	--	114	131	159	189	222
Resident Fish (Except T&E)	28	--	--	29	29	29	29	29
Total Wildlife & Fish User Days	250	--	--	294	364	382	412	432
<b>Direct Habitat Improvement (Except T&amp;E)</b>								
Deer (Acres of Chaparral)	500	--	--	3,800	3,000	3,000	3,800	2,900
All Other Wildlife Species (Number of Guzzlers)	10	--	--	5	4	5	6	10
Resident Fish (Miles of Stream)	0	--	--	5	0	5	0	5
<b>GRAZING</b>								
Permitted Livestock (MAUM's)	63.0	69.5 1/	74.6 1/	55.0	65.9	64.9	64.6	66.0
Range Betterment (acres)	800	--	--	0	0	0	0	0
<b>TIMBER</b>								
Sales Offered (MMBF) 2/	97	99	107	48	52	55	59	59
Sales Offered (MMCF)	15.0	15.3	16.6	7.4	7.8	8.4	9.0	9.0
Allowable Sale Quantity (MMBF)	95	97	105	43	47	50	54	54
Long-Term Sustained Yield (MMCF)	--	--	--	10.5	10.5	10.5	10.5	10.5
(MMBF)	--	--	--	68	68	68	68	68
Reforestation (Acres)	2,048	2,242	2,616	687	629	586	602	587
Timber Stand Improvement (Acres)	1,579	2,664	2,716	2,495	0	0	687	1,316
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
Firewood (Cords)	20,000	--	--	5,000	5,375	5,778	6,211	6,239
<b>WATERSHED</b>								
Quantity (M Acre-Feet)	736	--	--	733	133	735	735	736
Quality (M Acre-Feet at Standards)	120	990	1,000	721	729	733	133	134
Increased Quantity (M-Acre Feet)	0	--	--	-3	-3	-1	-1	0
Watershed Improvement (Acres)	140	270	310	200	50	20	20	10
Road Obiteration (Miles)	6.5	--	--	25.0	24.4	0.5	0.5	0.5

1/ RPA AN goals converted to AUM's based on Forest mix of Animal Unit Factors.

2/ Includes Allowable Sale Quantity and additional sales (unregulated volume. e.g., salvage)

Table 2.14 - Alternative AHN - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
Water Yield Improvement (Acres)	0	--	--	0	0	0	0	0
<b>LANDS</b>								
Land Acquisition (Acres)	0	--	--	56	52	40	0	0
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	112	14	14	90	70	60	50	50
<b>FIRE</b>								
Fuel Treatment (Acres)								
Fire Protection	2,500	1,700	1,300	2,500	2,500	2,500	2,500	2,500
Timber Management	2,269	--	--	707	649	606	622	607
Range, Wildlife, Watershed	1,000	--	--	3,800	5,000	3,000	5,800	5,900
Wildfire (Burned Acres)	4,534	4,606	5,231	4,606	4,601	4,811	5,186	5,347
Intensity Class 1	329	334	379	334	334	349	376	300
Intensity Class 2	389	395	449	395	395	413	445	459
Intensity Class 3	1,841	1,869	2,123	1,869	1,867	1,952	2,104	2,170
Intensity Class 4	665	677	767	677	675	706	761	784
Intensity Class 5	172	176	200	176	176	184	199	205
Intensity Class 6	1,138	1,155	1,312	1,155	1,154	1,206	1,301	1,341
<b>TRANSPORTATION</b>								
Trail Construction (Miles) <sup>1/</sup>	16	1	0	6.3	0	0	0	0
Trail Reconstruction (Miles)	0	31	30	89.0	47.3	48.0	20.0	20.0
Road Construction/Reconstruction								
New Construction (Local Miles)	21.8	--	--	.9	.5	.5	.2	.1
Reconstruction (Local Miles)	73.7	--	--	84	7.7	7.3	7.4	7.3
New Construction (Collector Miles)	--	--	--	0	0	0	0	0
Total	95.5	9	5	9.3	8.2	7.8	7.6	7.4
Road Maintenance- (Miles)	1,471	--	--	1,497	1,520	1,542	1,538	1,537
<b>FACILITIES</b>								
Dams and Reservoirs								
Forest Service (Number)	1	--	--	1	1	1	1	1
Other Federal (Number)	2	--	--	2	2	2	2	2
Other State/Local (Number)	0	--	--	0	0	0	0	0
Private (Number)	8	--	--	8	8	8	8	8
Administrative Sites								
Forest Service Owned (Number)	15	--	--	17	18	19	19	19
Leased (Number)	6	--	--	4	3	2	2	2
<b>TOTAL BUDGET (M\$)</b>	<b>16.3</b>	<b>19.6</b>	<b>21.3</b>	<b>14.7</b>	<b>13.8</b>	<b>14.2</b>	<b>14.1</b>	<b>14.6</b>

<sup>1/</sup> This trail mileage is accounted for under trail miles for OHV use.



## HIGH MARKET EMPHASIS (MKT)

### Theme

This alternative emphasizes high production levels of market resources (-timber, livestock grazing, developed recreation). Nonmarket benefits are produced at economically efficient levels.

Timber, livestock grazing, and developed recreation would be the priority market resources. Harvest volume would be 126 MMB Allowable Sale Quantity in the first decade through the fifth decade. There is a slight shift from even-aged methods to individual tree selection in the fifth decade. Nearly all of the commercial conifer zone would be roaded. Livestock grazing would also increase over current levels. Emphasis would be placed on developed recreation with management of dispersed recreation areas at low standards. Campgrounds would be rehabilitated, expanded and/or constructed. Two additional ski areas would be planned for future studies to determine the feasibility for development in the first four decades. The entire non-wilderness portion of the Forest is open for off-highway vehicle use. About 9,710 acres of BLM Rockhouse Wilderness Study Area are recommended for wilderness designation. High vegetative diversity would result from intensive timber and range management programs. Wildlife and fish habitat improvement activities would increase slightly above current levels: but improvement results largely from vegetation treatments done for other resource purposes. Protection of market resources would receive first priority with strong fire prevention and suppression action. Estimated yearly budget for the first decade is approximately \$24.3 million.

### RESOURCE PROGRAM DIRECTION

#### Recreation

##### Developed Recreation

- Rehabilitate existing developed sites using an average 20-year schedule. Drop those sites which cannot be brought **up** to fee site standards.
- Expand existing campgrounds and construct new facilities when average utilization exceeds 40 percent for water-oriented and/or OHV-use oriented sites.
- Manage sites at standard level.
- Retain existing resorts, recreation residence tracts, and organization camps at least at current level.
- Study the feasibility of constructing two additional ski areas by the fourth decade (Mitchell-Maddox and Sherman Pass).
- ~~Meet~~ elderly and handicapped standards during rehabilitation and construction at most facilities.

## Dispersed Recreation

- Manage dispersed areas at low standard level.
- Generally open the entire Forest to cross-country vehicle use.
- Manage designated special cross-country ski and oversnow vehicle areas on the Tule River Ranger District and in the Hume Lake area.
- Emphasize equestrian day-use only in the conifer zone.

## Trails

- Maintain hiking-only trails at least at Level I.
- Maintain other trails at least at Level 11.
- Rehabilitate existing trails and build new trails.

## Water-Oriented Use

- Continue implementation of Kern River Whitewater Floating Management Plan. Add commercial floating on South Fork Kern. Add commercial floating in Golden Trout Wilderness.
- Restrict the use of areas along the Lloyd Meadows Road only during weekend holidays.
- Emphasize heavily developed day-use sites for the Kern River from Lake Isabella to mouth of Kern Canyon.
- Emphasize heavily developed day-use sites for the Tule River in the Coffee Camp vicinity.
- Emphasize overnight-use for the Tule River from Wilson Flat to Western Divide.
- Emphasize heavily developed overnight-use and day-use sites in the Hume Lake area.
- Maximize fish production in Hume Lake through heavy stocking and habitat improvement work.

## Office of Information and Interpretive Services

- Provide for self-service at information stations, trailhead bulletin boards, and self-guided auto tours at a low level.
- Provide for moderate level of 3-FIA Programs and interpretive trails.
- Provide for a high level of facilities and programs including: seven-day information desks, recreation site bulletin boards, resource management interpretive signs, publications, exhibits,

media releases, outdoor programs, and specialized media (AM radio stations).

### Visual Quality

- Allow adjustment of IVQO's other than Preservation except:
  - In the foreground and middleground of Highways 180 and 190, and the Generals Highway.
  - In the foreground and middleground of County scenic and eligible scenic highways and the Pacific Crest Trail, RR becomes the adopted VQO.
- Manage all areas with VQO's of M or MM that are not covered by the Standards and Guidelines.

### Cultural Resources

- Complete Archaeological Reconnaissance Reports and site records for evaluation of significance.
- Release those site locations declared "not significant" for other management activities.
- Obtain final determinations of significance from the Keeper of the National Register and test routinely. Carry out tests where questions of significance develop.
- Post and sign (e.g., tractors prohibited or Antiquities Act) selected cultural resource sites.
- Monitor a limited number of sites for protection.
- Make selected site brochures available to the public.
- Do not provide additional on-the-ground public interpretation.
- Distribute reports and other information only when requested.
- Regularly consult with Native Americans as interested parties on proposed undertakings.
- Consider historic values only as revealed by baseline pre-field documentary research (Government Land Office plats, homestead plats, mineral patent records).
- Develop a comprehensive program to accomplish elimination of the backlog of sites to be evaluated.
- Conduct non-project-specific surveys aimed at completing the Forest inventory by the 1995 target date.

## Urban Interface

- Adjust IVQO's downward as necessary to meet market resource objectives with Modification (M) the maximum degree of change permissible.

## Wilderness

- Maintain the three existing outfitter-guide permittees serving the Golden Trout Wilderness.
- Authorize outfitter-guide services in wildernesses established in 1984 when a public need is demonstrated and wilderness Objectives can be maintained.
- Recommend about 9,710 acres of BLM Rockhouse Wilderness Study Area to BLM for designation as wilderness.
- Use a "contain" or "confine" fire suppression strategy when wilderness characteristics and/or adjacent resource values are not jeopardized.

## Wildlife and Fish

- Improve wildlife habitat through meeting market resource objectives.
- Provide habitat for two pairs of peregrine falcons.
- Maintain habitat for one pair of condors.
- Complete implementation of Little Kern Golden Trout Management Plan by decade four.
- Maintain current level of fish habitat capability.
- Maintain a minimum of five square feet of basal area per acre of black *oak* for wildlife on lands where timber production is emphasized.
- Begin prescribe burning 54,000 acres of chaparral for habitat improvement in decade five for species associated with early successional stages of vegetation.
- Provide diversity through timber and range vegetative management.
- Maintain a network of 40 spotted owl habitat areas. Manage 1,000 acres of currently suitable habitat plus approximately 650 acres for each network area using a "No Scheduled Timber Harvest" prescription.
- Manage five percent of the timber base to maintain an average of 1.5 snags per acre.
- Leave at least an average of 35 cubic feet of down logs per acre.

## Livestock Grazing

- Produce 76,000 AM's in the first period, and 92,000 AM's in the fifth period.
- Graze cattle year round, below the conifer ecosystem.
- Type convert 4,000 acres of chaparral to annual grass in decade one. Maintain in decade four.
- Prescribe burn 46,000 acres of chaparral in decade five to increase forage production.

## Timber

- Manage 325 acres annually using group selection to yield about 6 MMBF .
- Manage 4,500 acres annually using even-aged methods to yield 120 MMF .
- Harvest approximately 1.1 MMF annually using individual tree selection.
- Manage selected giant sequoia groves **for** whitewood harvesting. Manage the groves to perpetuate and enhance the giant sequoias.
- ~~Manage~~ giant sequoias as follows: about 1,000 acres for Preservation, about 11,000 acres Non-intensive, and about 1,000 acres Intensive.
- Emphasize firewood accessibility. Manage for commercial operations when economically feasible.
- Emphasize firewood opportunities in **oaks** and pinyon pine and as a by-product of sawtimber harvesting.

## Water and Soil

- Manage the Tule River watershed for water yield improvement by a Coordinated Resource Management Plan, including prescribed burning and type conversion **of** 4,000 acres **of** chaparral in the first decade with retreatment in fourth decade. Evaluate impacts of management.
- Initiate a high level of watershed restoration work to protect market resource investments and maintain soil productivity.
- Restore approximately 2,000 acres in the first decade and 500 acres per decade thereafter.
- Obliterate approximately 250 miles of roads in the first and second decade and five miles thereafter.

- Inventory the watershed restoration needs of 60,000 acres in the first decade and 10,000 acres each decade thereafter.
- Establish initial Streamside Management Zones (SMZ) at 100 feet wide for stream Classes I, II, and III. Actual width will be determined on a project basis and average 100 feet.

### Minerals and Geology

- Make available about 76 percent of the planning area for mineral production outside designated wilderness.

### Lands

- Survey, mark, and post about 380 miles of land line per decade to support the timber program. Identify and resolve unauthorized occupancy trespass discovered (about three per mile, average, for land lines surveyed).
- Acquire some private lands which are located in timber. range, or recreation emphasis areas if they become available.

### Facilities

- Construct approximately 19 miles of local roads per year (50-year average).
- Reconstruct approximately 37 miles of local roads per year (50-year average) .
- Construct approximately 52 miles of collector roads in the first decade to meet the needs of resource management throughout the planning period.
- Emphasize resource protection in determining road closures.
- Emphasize maintenance of arterials and high volume collector roads to a high degree of user comfort. Discourage passenger cars on local and collector roads with low traffic volumes.
- Manage the road system to assure resource protection, provide access, and accommodate resource management needs. Provide basic custodial care to protect road investment.
- Construct, rehabilitate, replace or relocate buildings and facilities to support management activities.
- Maintain buildings at a level sufficient to protect health and to prevent deterioration.

## Protection

- Utilize "control" as the suppression strategy. The maximum size of 90 percent of non-wilderness fires at containment is expected to be:
  - Timber (CF) and Developed Areas - 2 acres
  - Brush (OW, MC, PS) - 15 acres
  - Grass (BO) - 100 acres
- Maintain intensive fire prevention and detection programs.
- Construct about 40 miles of new firebreak each year for the first 20 years.
- Maintain approximately 320 miles of fuelbreak/firebreak each year throughout the planning period.
- Treat about 40,000 acres per decade with fire to meet general protection objectives.
- Provide assistance as requested by the County Sheriff in search and rescue operations.
- Provide an intensive law enforcement program.
- Program fire management activities with prevention (29%), detection (4%), ground attack (35%), aviation operations (20%), and fuel management (12%).
- Implement a high level of IPM with emphasis on protecting a large amount of regenerated land and existing and newly developed recreation sites.

## Environment to be Created

The diversity will change moderately in the chaparral zone and dramatically in the conifer zone. Prescribed fire will be used on about 316,000 acres of chaparral to improve wildlife habitat, livestock forage conditions, and reduce flammability by the fifth decade. About 48,000 acres will be treated in the first decade.

In addition, about 4,800 acres will be burned by wildfires. **This** will change the appearance of the chaparral so that it appears nonuniform with differences in color and height.

In the conifer zone, about 305,000 acres will be managed and roaded primarily for timber production. Changes in vegetative appearance will occur. Openings where timber has been harvested will contain younger trees. Harvesting will not be noticed from the most visually sensitive highways. A large portion of the conifer zone outside of wilderness will be roaded. Access will be good. Timber management activities will be commonly seen.

During the summer season, cattle will be seen grazing meadows and riparian areas in the conifer zone. The meadows in heavily used locations will appear closely cropped in the fall, but in the spring will be green and covered with taller grass.

In the conifer forest in the riparian areas, management of timber will be noticed adjacent to streams.

A large amount of fuelbreaks will be constructed and maintained. They will be commonly seen in the chaparral zone. They will also be seen, but less often, in the conifer forest.

Developed recreation will be managed at a high level. New sites will be developed to support winter-oriented recreation and OHV use. Sites will be managed at the standard level which provides a higher quality experience than exists now. **Trails** will be rehabilitated every 20 years and will be maintained at less than standard level. Access into the Forest will not be easy on the trail system.

Two new ski areas will be studied.



Table 2.15 - Alternative MKT - Management Area Prescription Acreage

<u>Management Area Prescription Code</u>	<u>Vegetative Type</u>	<u>Management Emphasis</u>	<u>Management Area Net M Acres Sequoia NF</u>
B01	blue <i>oak</i> savanna		17
OW1	<i>oak</i> woodland	GENERAL	33
MC1	mixed chaparral	DISPERSED	60
PS1	pinyon-sage	RECREATION	0
CF1	conifer forest		43
<hr/>			
B02	blue <i>oak</i> savanna	WATER-	8
ow2	<i>oak</i> woodland	ORIENTED	2
MC2	mixed chaparral	RECREATION	1
<hr/>			
CF3	conifer forest	DEVELOPED RECREATION	19
<hr/>			
B05	blue <i>oak</i> savanna		0
OW5	<i>oak</i> woodland	WILDLIFE AND	42
MC5	mixed chaparral	DISPERSED	4
PS5	pinyon-sage	RECREATION	63
CF5	conifer forest		9
<hr/>			
B06	blue <i>oak</i> savanna		18
OW6	<i>oak</i> woodland	GRAZING	91
MC6	mixed chaparral		75
PS6	pinyon-sage		10
CF6	conifer forest		3
<hr/>			
CF7	conifer forest	TIMBER	280
<hr/>			
MC8	mixed chaparral	WATER	11
CF8	conifer forest	YIELD	47
<hr/>			
WF4		WILDERNESS-natural fire	0
wc4	A T	WILDERNESS-fire suppression	264
SIA	L Y	SPECIAL INTEREST AREAS	3
WR	L P	WILD & SCENIC RIVERS	
		within wilderness	(19)*
		outside wilderness	14
RNA		RESEARCH NATURAL AREAS	
		within wilderness	(3)*
		outside wilderness	2
<hr/>			
TOTAL			1,119

- Included within Wilderness Acreages

Note: **The** management prescription acres shown in this table include a total of 66,000 acres which are dedicated to spotted owl management. The acres also include 23,900 acres within the Kings River Special Management Area. Both of these items will require management plans. If this alternative were to be selected, these plans would be incorporated into the Forest Plan by amendment.

Table 2.16 - Alternative MKT - Average Annual Outputs by Decade

Resource Elements	Base Year 1902	'80 RPA 1990	Goals 2030	Decade				
				1	2	3	4	5
<b>RECREATION</b>								
Developed Public (M RVD's)	557	522	754	651	754	754	004	990
Developed Private (M RVD's)	320	538	776	503	610	610	710	997
Dispersed (M RVD) <u>1/</u>	1,582	2,880	3,550	1,888	2,160	2,429	2,717	2,993
Wilderness (M RVD)	61.5 <sup>2/</sup>	--	--	107.5	120.6	150.5	193.6	253.5
Zone of Limited OHV Use (Designed routes only. Closed to cross-country travel.)								
Area (If Acres) <u>3/</u>	267	--	--	0	0	0	0	0
Trails Open to OHV Use (Miles)	145	--	--	N/A	N/A	N/A	N/A	N/A
Trails Closed to OHV Use (Miles)	86	--	--	N/A	N/A	N/A	N/A	N/A
Zone of Limited OHV Use (Cross-country travel permissible with specific seasonal and resource restrictions.)								
Acres (M Acres) <u>3/</u>	--	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	--	--	--	0	0	0	0	0
Zone Open to Cross-country OHV's								
Area (M Acres) <u>3/</u>	500	--	--	055	055	055	855	055
Trails Available to OHV Use (Miles)	282	--	--	494	494	494	494	494
Trails with Seasonal OHV Closures (Miles)	102	--	--	270	270	270	270	270
Roads with Seasonal Closures (Miles)	425	--	--	640	611	636	653	717
Visual Quality Index	76.6	--	--	75.0	72.5	70.0	67.7	65.1
<b>WILDLIFE AND FISH</b>								
Threatened and Endangered Species								
Peregrine Falcon (Superior Nest Sites)	4	--	--	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream Habitat)	29	--	--	40	60	80	117	117
Condor (Acres of Nesting Habitat) <u>4/</u>	0	--	--	2,299	2,299	2,299	2,299	2,299
Wildlife - Other Than T&E (Habitat Capability)								
Deer (Number)	11,000	13,200	13,200	11,500	12,000	12,000	12,000	13,800
Spotted Owls (Number of Pairs) <u>5/</u>	00	--	--	75	67	59	55	55
Goshawk (Number of Pairs) <u>6/</u>	110	--	--	100	95	90	05	75
Resident Fish (M Pounds)	77	92	92	77	77	77	77	77

1/ These numbers include Wilderness RVD's and Total WFUD's

2/ 1982 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only.

All decade projections include all five Sequoia Wildernesses.

3/ These acres represent the total area within this zone. Only about 25% of this total is useable terrain due to steep slopes, dense vegetation, etc.

4/ See Chapter 3 for explanation of condor nesting habitat acres.

5/ see Appendix B for explanation of spotted owl habitat capability.

6/ Hypothetical number based on FORPLAN modeling for comparison purposes only. Actual amount of habitat managed will be different (based on fleqional Guide direction). Fragmentation of suitable habitat was not considered.

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Table 2.16 - Alternative MFT - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
<b>Wildlife and Fish User Days</b>								
Direct Habitat Improvement (MWFUD's)								
Deer	3	--	--	1	0	0	0	13
All Other Species (Except T&E)	.1	--	--	.2	.3	.3	.3	.3
Resident Fish (Except T&E)	0	--	--	0	0	0	0	0
Induced Habitat Improvement (MWFUD's)								
Deer	20	--	--	22	24	26	26	31
All Other Species (Except T&E)	95	--	--	102	121	143	168	178
Resident Fish (Except T&E)	28	--	--	28	28	28	28	28
<b>Total Wildlife &amp; Fish User Days</b>	<b>250</b>	<b>--</b>	<b>--</b>	<b>303</b>	<b>372</b>	<b>387</b>	<b>421</b>	<b>440</b>
Direct Habitat Improvement (Except T&E)								
Deer (Acres of Chaparral)	500	--	--	0	0	0	0	5,400
All Other Wildlife Species (Number of Guzzlers)	10	--	--	5	5	5	3	3
Resident Fish (Miles of Stream)	0	--	--	0	0	0	0	0
Permitted Livestock (AUM's)								
Range Betterment (acres)	63.0	69.5 2/	74.6 2/	75.7	76.7	76.7	76.7	92.1
	800	--	--	400	0	0	400	4,600
<b>TIMBER</b>								
Sales Offered (MMBF) 2/	97	99	107	131	131	131	132	132
SALES OFFERED (MMCF)	15.0	15.3	116.6	20.1	20.1	20.1	20.3	20.3
Allowable Sale Quantity (MMBF)	95	97	105	126	126	126	127	127
Long-Term Sustained Yield (MMCF)	--	--	--	20.0	70.0	20.0	70.0	70.0
	--	--	--	130	130	130	130	130
Reforestation (Acres)	2,048	2,242	2,616	4,707	2,796	3,169	3,363	3,865
Timber Stand Improvement (Acres)	1,579	2,664	2,716	2,495	4,382	6,912	5,774	6,599
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
Fuelwood (Cords)	20,000	--	--	31,887	31,946	31,935	31,765	31,443
<b>WATERSHED</b>								
Quantity (M Acre-Feet)	736	--	--	755	761	764	770	771
Quality (M Acre-Feet at Standards)	720	990	1,000	743	749	752	758	759
Increased Quantity (M Acre-Feet)	0	--	--	19	25	28	34	35
Watershed Improvement (Acres)	140	270	310	200	50	50	50	50
Road Obliteration (Miles)	6.5	--	--	25.0	24.4	0.5	0.5	0.5

1/ RPA AM goals converted to AUM's based on Forest mix of Animal Unit Factors.

2/ Includes Allowable Sale Quantity and additional sales (unregulated volume. e.g., salvage)

Table 2.16 - Alternative IMT - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
Water Yield Improvement (Acres)	0	--	--	400	0	0	400	0
<b>lam\$</b>								
Land Acquisition (Acres)	0	--	--	250	250	10	0	0
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	112	14	14	60	40	20	20	20
<b>FIRE</b>								
Fuel Treatment (Acres)								
Fire Protection	2,500	1,700	1,300	4,000	4,000	4,000	4,000	4,000
Timber Management	2,269	--	--	4,783	3,062	3,480	3,205	3,923
Range, Wildlife, Watershed	1,000	--	--	800	0	0	800	10,000
Wildfire Burned Acres	4,534	4,606	5,231	4,606	4,601	4,811	4,821	5,063
Intensity Class 1	329	334	379	334	334	349	349	367
Intensity Class 2	389	395	449	395	395	413	414	434
Intensity Class 3	1,841	1,869	2,123	1,869	1,867	1,952	1,956	2,055
Intensity Class 4	665	677	767	677	675	706	707	743
Intensity Class 5	172	176	200	176	176	184	185	194
Intensity Class 6	1,138	1,155	1,312	1,155	1,154	1,206	1,209	1,270
<b>TRANSPORTATION</b>								
Trail Construction (Miles) <sup>1/</sup>	16	1	0	13	13	0	0	0
Trail Reconstruction (Miles)	0	31	30	44.5	44.5	45.8	44.5	45.8
Road Construction/Reconstruction								
New Construction (Local Miles)	21.8	--	--	25.9	26.5	13.4	12.9	16.8
Reconstruction (Local Miles)	73.7	--	--	48.2	27.1	38.0	29.8	40.7
New Construction (Collector Miles)	--	--	--	5.2	0	0	0	0
Total	95.5	9	5	79.3	53.6	51.4	42.7	57.5
Road Maintenance (Miles)	1,471	--	--	1,544	1,537	1,566	1,567	1,559
<b>FACILITIES</b>								
Dams and Reservoirs								
Forest Service (Number)	1	--	--	1	1	1	1	1
Other Federal (Number)	2	--	--	2	2	2	2	2
Other State/Local (Number)	0	--	--	0	0	0	0	0
Private (Number)	8	--	--	8	8	8	8	8
Administrative Sites								
Forest Service Owned (Number)	15	--	--	17	18	19	19	19
Leased (Number)	6	--	--	4	3	2	2	2
<b>TOTAL BUDGET (\$M\$)</b>	16.3	19.6	21.3	24.3	21.7	22.6	23.3	25.7

<sup>1/</sup> This trail mileage is accounted for under trail miles for OHV use.

## HIGH PRODUCTION EMPHASIS (PRO)

### Theme

This alternative meets regionally assigned high timber targets. It also produces other market resources at the same percentage increase over 1982 levels as timber. Nonmarket benefits are produced at economically efficient levels.

Timber is the first priority market resource. Harvest volume would be 133 MMB Allowable Sale Quantity in the first decade through the fifth decade. There is a slight shift from even-aged methods to individual tree selection in the fifth decade. Nearly all the commercial conifer zone would be roaded. Livestock grazing would also increase over current levels. Emphasis would be placed on developed recreation with management of dispersed recreation areas at low standards. Campgrounds are expanded and constructed. Two additional ski areas are planned for future study to determine their feasibility for development in the first four decades. The entire non-wilderness portion of the Forest would be open for off-highway vehicle use. Areas would not be recommended for wilderness designation. High vegetative diversity would result from intensive timber and range management programs. Wildlife and fish habitat improvement activities would increase slightly above current levels: but improvement would result largely from vegetation treatments done for other resource purposes. Protection of market resources would receive first priority with strong fire prevention and suppression action. Estimated yearly budget for the first decade is approximately \$24.6 million.

### RESOURCE PROGRAM DIRECTION

#### Recreation

##### Developed Recreation

- Rehabilitate existing developed sites using an average 20-year schedule. Drop those sites which cannot be brought up to fee site standards.
- Expand existing campgrounds and construct new facilities when average utilization exceeds 40 percent for water-oriented and/or OHV-use oriented sites.
- Manage sites at standard level.
- Study the feasibility of constructing two additional ski areas by the fourth decade (Sherman Pass and Mitchell-Maddox).
- Meet elderly and handicapped standards during rehabilitation and construction of most facilities.

##### Dispersed Recreation

- Manage dispersed areas at low standard level.

- Allow **use** of wheeled OHV's on approximately 855,000 acres (entire Forest outside of wilderness).
- Allow cross-country use of oversnow vehicles except in wilderness, on the PCT. and in a small area on the Hume Lake District.
- Emphasize equestrian day-use only in the conifer zone.

#### Trails

- Maintain hiking-only trails at least at Level I.
- Maintain other trails at least at Level 11.
- Rehabilitate existing trails and build new trails.

#### Water-Oriented Use

- Continue implementation of Kern River Whitewater Floating Management Plan. Add commercial floating on South Fork Kern. Add commercial floating in Golden Trout Wilderness.
- Maintain current diversities of dispersed/developed night/day-use on the Kern River from Kernville to the Johnsondale Bridge.
- Restrict the use of areas along the Lloyd Meadows Road only during weekend holidays.
- Emphasize heavily developed day-use sites for the Kern River from Lake Isabella to mouth of Kern Canyon.
- Emphasize heavily developed day-use sites **for** the Tule River in the Coffee Camp vicinity.
- Emphasize overnight-use for the Tule River from Wilson Flat to Western Divide.
- Emphasize heavily developed overnight- and day-use sites in the **Hume** Lake Area.

#### Office of Information and Interpretive Services

- Provide for self-service at information stations, trailhead bulletin boards, and auto tours at a low level.
- Provide for a moderate level of 3-FIA Programs and interpretive trails.
- Provide for a high level of facilities and programs including: seven-day information desks, recreation site bulletin boards, resource management interpretive signs, publications, exhibits, media releases, outdoor programs, and specialized media (AM radio stations).

## Visual Quality

- Maintain VQO's of R in immediate foreground (up to 300 feet) and PR in the rest of the foreground and middleground of Highways 180 and 190, and the General's Highway.
- Manage all areas with VQO's of M or MM that are not covered by the Standards and Guidelines.

## Cultural Resources

- Complete Archaeological Reconnaissance Reports and site records for evaluation of significance.
- Release those site locations declared "not significant" for other management activities.
- Obtain final determinations of significance from the Keeper of the National Register. Routinely carry out tests where questions of significance develop.
- Monitor and sign a wide variety of sites for protection.
- Make selected site brochures available to the public.
- Conduct on-ground interpretation at a number of sites where highly significant properties exist or those where high level of use or exposure is possible (i.e., properties adjacent to campgrounds or historic logging activities in the vicinity of campgrounds).
- Regularly consult with Native Americans as interested parties on proposed undertakings.
- Interview key knowledgeable informants occasionally for project-specific information. Bring together and organize archival sources according to a Forest archival policy.
- Seek opportunities for evaluation of sites included in the Forest backlog of unevaluated sites when associated with project-specific inventories.
- Conduct non-project-specific surveys aimed at completing the Forest inventory by the 1995 target date.

## Urban Interface

- Adjust IVQO's downward as necessary to meet market resource objectives with Modification (M) the maximum degree of change permissible.

## Wilderness

- Do not recommend any Further Planning or Wilderness Study Areas for wilderness designation.

- 
- Maintain the three existing outfitter-guide permittees serving the Golden Trout Wilderness.
  - Use a "contain" or "confine" fire suppression strategy when wilderness characteristics and/or adjacent market resource values are not jeopardized.

### Wildlife and Fish

- Improve wildlife habitat through meeting market resource objectives.
- Maintain four superior nest sites for peregrine falcons and for one pair of condors.
- Maintain habitat for one pair of condors.
- Complete implementation of the Little Kern Golden Trout Management Plan by decade four.
- Maintain current fish habitat capability.
- Maintain a minimum of five square feet of basal area per acre of black oak for wildlife on lands where timber production is emphasized.
- Begin prescribe burning 54,000 acres of chaparral in decade five for habitat improvement for species associated with early successional stages of vegetation.
- Provide diversity through timber and range vegetative management.
- Maintain a network of 40 spotted owl habitat areas. Manage 1,000 acres of currently suitable habitat plus approximately 650 acres for each network area using a "No Scheduled Timber Harvest" prescription.
- Manage five percent of the timber base to maintain an average of 1.5 snags per acre.
- Leave at least an average of 35 cubic feet down logs per acre.

### Livestock Grazing

- Type convert 4,000 acres of chaparral to annual grass in the first decade. Maintain in fourth decade.
- Produce about 76,000 AUM's in the first period and 92,000 AUM's in the fifth period.
- Graze cattle year round.
- Obtain private land containing wet meadows or annual grass range through land exchange if parcels are available.



- Prescribe burn 46,000 acres of chaparral in decade five to increase forage production.

#### Timber

- Harvest 163 acres annually using group selection to yield about 3 MMBF.
- Harvest 4,627 acres annually using even-aged methods to yield 129 MMBF.
- Harvest approximately 1.1 MMBF annually using individual tree selection.
- Convert approximately 10,000 acres of brushland to commercial timber production.
- Manage selected giant sequoia groves for whitewood harvesting. Manage groves to perpetuate and enhance giant sequoias.
- Manage giant sequoias as follows: about 1,000 acres for Preservation, about 11,000 acres Non-intensive, and about 1,000 acres Intensive.
- Emphasize firewood opportunities in oak and pinyon pine ecosystems; and as a by-product of sawtimber harvesting.

#### Water and Soil

- Manage the Tornado Creek, Lightning Creek, White River, and South Creek Watersheds for water yield improvement by type converting or prescribed burning 4,000 acres of chaparral to annual grass in decade one and retreating in decade four.
- Initiate a high level of watershed restoration work to protect market resource investments and maintain soil productivity.
- Restore approximately 2,000 acres in the first decade and 500 acres thereafter.
- Obliterate approximately 250 miles of roads in the first and second decade and five miles thereafter.
- Inventory the watershed restoration needs of 60,000 acres in the first decade and 10,000 acres each decade thereafter.
- Establish initial Streamside Management Zones (SMZ) at 100 feet wide for stream Classes I, II, and III. Actual widths will be determined on a project basis and average 100 feet.

#### Minerals and Geology

- Make available about 76 percent of the planning area for mineral production outside designated Wilderness.

- Approve approximately 43 operating plans per year in the first period and 55 per year in period five.

#### Lands

- Survey, mark, and post about 360 miles of land line per decade to support the timber program. Identify and resolve unauthorized occupancy trespass discovered (about three per mile, average, for land lines surveyed).
- Provide support service to meet functional objectives.
- Acquire private lands which are located in timber, range, or recreation emphasis areas, if they become available.

#### Facilities

- Construct approximately 20 miles of local roads per year (50-year average).
- Reconstruct approximately 39 miles of local roads per year (50-year average).
- Construct approximately 55 miles of collector roads in the first decade to meet the needs of resource management throughout the planning period.
- Emphasize maintenance of arterials and high **volume** collector roads to a high degree of user comfort. Encourage passenger cars on collector roads with low traffic volumes.
- Emphasize protection in determining road closures.
- Manage the road system to assure resource protection, provide access, and accommodate resource management needs. Provide basic custodial care to protect road investment.
- Construct, rehabilitate, replace or relocate buildings and facilities to support management activities.
- Maintain buildings at a minimum level to protect health and to prevent deterioration.

#### Protection

- Utilize "control" as the suppression strategy. **The** maximum size of 90 percent of non-wilderness fires at containment is expected to be:
 

Timber (CF) and Developed areas	- 2 acres
Brush (OW, MC, PS)	- 15 acres
<b>Grass</b> (BO)	- 100 acres
- Maintain intensive fire prevention and detection programs.

- Construct about 40 miles of new fuelbreak/firebreak each year for the first 20 years.
- Maintain approximately 320 miles of fuelbreak/firebreak each year throughout the planning period.
- Treat about 40,000 acres per decade with fire to meet general protection objectives.
- Provide assistance as requested by the County Sheriff in search and rescue operations.
- Provide an intensive law enforcement program.
- Program fire management activities with prevention (24 percent), detection (4 percent), ground attack (35 percent), aviation operations (20 percent), and fuel management (17 percent).
- Implement a high level of IPM with emphasis on protecting a large amount of regenerated land and existing and newly developed recreation sites.

#### Environment to be Created

Vegetative diversity will increase moderately in the chaparral zone and dramatically in the conifer zone. Prescribed fire will be used on about 316,000 acres to improve wildlife habitat, livestock forage conditions, and reduce flammability by the fifth decade of the planning period. About 48,000 acres will be type converted in the first decade. About 4,800 acres of chaparral will be burned by wildfire per year. This treatment will alter the appearance of the chaparral and make it appear uneven because of height and color changes.

In the conifer zone, about 326,000 acres will be managed and roaded primarily for the production of timber. In this area, openings created by harvesting will be commonly seen. Openings will be covered with younger trees. Harvest activities will not be apparent from the most visually sensitive highways.

During the summer months, cattle will be seen in the conifer zone grazing meadows and riparian areas. In the fall, heavily grazed meadows will be closely chopped. In the following spring, they will be green and covered with taller grass.

In the conifer forest in the riparian zone, timber harvest activities will be seen adjacent to streams.

A large number of fuelbreaks will be constructed and maintained. They will easily be seen in the chaparral zone and only occasionally in the conifer zone.

All developed recreation sites will be fee sites. Existing sites will be expanded. New campgrounds will be constructed where needed to support OHV and water-related recreation. Developed sites will be operated at standard level which provides a higher quality experience than currently exists.

Dispersed recreation will be de-emphasized with trails maintained at a low level. Use of trails will continue but access will be more difficult.

Road access in the Forest will be very good. Very few roads will be closed to public use. Roads will be well maintained.

Two new ski areas will be studied.

Table 2.17 - Alternative BFO - Management Area Prescription Acreage

<u>Management Area Prescription Code</u>	<u>Vegetative Type</u>	<u>Management Emphasis</u>	<u>Management Area Net M Acres Sequoia NF</u>
B01	blue <i>oak</i> savanna		1
OW1	<i>oak</i> woodland	GENERAL	13
MC1	mixed chaparral	DISPERSED	4
PS1	pinyon-sage	RECREATION	0
CF1	conifer forest		22
B02	blue <i>oak</i> savanna	<del>WATER-</del>	7
ow2	<i>oak</i> woodland	ORIENTED	1
MC2	mixed chaparral	RECREATION	0
CF3	conifer forest	DEVELOPED RECREATION	16
B05	blue <i>oak</i> savanna		0
OW5	<i>oak</i> woodland	WILDLIFE AND	44
MC5	mixed chaparral	DISPERSED	3
PS5	pinyon-sage	RECREATION	62
CF5	conifer forest		6
B06	blue <i>oak</i> savanna		35
OW6	<i>oak</i> woodland	GRAZING	110
MC6	mixed chaparral		140
PS6	pinyon-sage		11
CF6	conifer forest		2
CF7	conifer forest	TIMBER	332
MC8	mixed chaparral	WATER	4
CF8	conifer forest	YIELD	23
WF4		WILDERNESS-natural fire	0
WC4	A T	WILDERNESS-fire suppression	264
SIA	L Y	SPECIAL INTEREST AREAS	3
WR	L P	WILD & SCENIC RIVERS	
	E	within wilderness	(19)*
	S	outside wilderness	14
RNA		RESEARCH NATURAL AREAS	
		within wilderness	(3)*
		outside wilderness	2
TOTAL			1,119

\* Included within Wilderness Acreages

Note: The management prescription acres shown in this table include a total of 66,000 acres which are dedicated to spotted owl management. The acres also include 23,900 acres within the Kings River Special Management Area. Both of these items will require management plans. If this alternative were to be selected, these plans would be incorporated into the Forest Plan by amendment.

Table 2.18 - Alternative PRO - Average Annual Outputs by Decade

Resource Elements	Base Year 1982	1980 RPA 1990	Goals 2030	Decade				
				1	2	3	4	5
<b>RECREATION</b>								
Developed Public (M RVD's)	557	522	754	582	692	696	874	990
Developed Private (M RVD's)	328	538	776	580	600	600	780	997
Dispersed (M RVD) <u>1/</u>	1,582	2,880	3,550	1,888	2,161	2,429	2,712	2,993
Wilderness (M RVD)	61.5**	--	--	107.5	128.6	150.5	193.6	253.5
Zone of Limited OHV Use (Designed routes only. Closed to cross-country travel.)								
Area (M Acres) <u>3/</u>	267	--	--	0	0	0	0	0
Trails Open to OHV Use (Miles)	145	--	--	N/A	N/A	N/A	N/A	N/A
Trails Closed to OHV Use (Miles)	86	--	--	N/A	N/A	N/A	N/A	N/A
Zone of Limited OHV Use (Cross-country travel permissible with Specific seasonal and resource restrictions.)								
Area (M Acres) <u>3/</u>	--	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	--	--	--	0	0	0	0	0
Zone Open to Cross-Country OHV's								
Area (M Acres) <u>3/</u>	588	--	--	855	055	855	855	855
Trails Available to OHV Use (Miles)	282	--	--	494	494	494	494	494
Trails with Seasonal OHV Closures (Miles)	102	--	--	270	270	270	270	270
Roads with Seasonal Closures (Miles)	425	--	--	650	631	655	667	738
Visual Quality Index	76.6	--	--	74.9	72.2	69.4	66.8	63.9
<b>WILDLIFE AND FISH</b>								
Threatened and Endangered Species								
Peregrine Falcon (Superior Nest Sites)	4	--	--	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream Habitat)	29	--	--	40	60	80	117	117
Condor (Acres of Nesting Habitat) <u>4/</u>	0	--	--	2,299	2,299	2,299	2,299	2,299
Wildlife - Other Than T&E (Habitat Capability)								
Deer (Number)	11,000	13,200	13,200	11,500	12,000	12,000	12,000	13,800
Spotted Owls (Number of Pairs) <u>5/</u>	80	--	--	75	59	55	55	55
Goshawk (Number of Pairs)	110	--	--	95	85	80	70	60
Resident Fish (M Pounds)	77	92	92	77	77	77	77	77

1/ These numbers include Wilderness RVD's and Total WFUD's

2/ 1982 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only.

All decade projections include all five Sequoia Wildernesses.

3/ These acres represent the total area within this zone. Only about 255 of this total is useable terrain due to steep slopes, dense vegetation, etc.

4/ See Chapter 3 for explanation of condor nesting habitat acres.

5/ See Appendix B for explanation of spotted owl habitat capability.

6/ Hypothetical number based on FORPLAN modeling for comparison purposes only. Actual amount of habitat managed will be different (based on Regional Guide direction). Fragmentation of suitable habitat was not considered.

Table 2.18 - Alternative PRO - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
<b>Wildlife and Fish User Days</b>								
Direct Habitat Improvement (MWFUD's)								
Deer	3	--	--	1	0	0	0	13
All Other Species (Except T&E)	.1	--	--	.2	.3	.3	.3	.3
Resident Fish (Except T&E)	0	--	--	0	0	0	0	0
Induced Habitat Improvement (MWFUD's)								
Deer	20	--	--	22	24	26	26	31
All Other Species (Except T&E)	95	--	--	102	121	193	195	199
Resident Fish (Except T&E)	28	--	--	28	28	28	28	28
Total Wildlife & Fish User Days	790	--	--	305	370	389	419	441
<b>Direct Habitat Improvement (Except T&amp;E)</b>								
Deer (Acres of Chaparral)	500	--	--	0	0	0	0	5,400
All Other Wildlife Species (Number of Guzzlers)	10	--	--	10	10	5	3	3
Resident Fish (Miles of Stream)	0	--	--	0	0	0	0	0
<b>GRAZING</b>								
Permitted Livestock (MAUM's)	63.0	69.5 1/	74.6 1/	75.7	75.7	75.4	75.4	92.1
Range Detterment (acres)	800	--	--	400	0	0	400	4,600
<b>TIMBER</b>								
Sales Offered (MMBF) 2/	97	99	107	138	138	138	138	138
Sales Offered (MMCF)	15.0	15.3	16.6	21.2	21.2	21.2	21.2	21.2
Allonable Sale Quantity (MMBF)	95	97	105	133	133	133	133	133
Long-Term Sustained Yield (MMCF)	--	--	--	20.7	20.7	20.7	20.7	20.7
(MMBF)	--	--	--	135	135	135	135	135
Reforestation (Acres)	2,048	2,242	2,616	4,790	3,155	3,487	3,309	3,953
Timber Stand Improvement (Acres)	1,579	2,664	2,716	2,515	4,627	7,562	6,436	6,991
<b>WOOD PRODUCT</b>								
Firewood (Cords)	20,000	--	--	34,056	33,789	33,967	34,344	32,534
<b>WATERSHED</b>								
Quantity (M Acre-Feet)	736	--	--	756	764	767	173	773
Quality (M Acre-Feet at Standards)	720	990	1,000	744	752	755	761	761
Increased Quantity (M Acre-Feet)	0	--	--	20	28	31	37	37
Watershed Improvement (Acres)	140	270	310	200	50	50	50	50
Road Obliteration (Miles)	6.5	--	--	25.0	24.4	0.5	0.5	0.5

1/ RPA AM goals converted to AUM's based on Forest mix of Animal Unit Factors.

2/ Includes Allowable Sale Quantity and additional sales (unregulated volume. e.g., salvage)

Table 2.18 - Alternative PRO - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year 1962	'80 RPA 1990	Goals 2030	Decade				
				1	2	3	4	5
Water Yield Improvement (Acres)	0	--	--	400	0	0	400	0
<b>LANDS</b>								
Land Acquisition (Acres)	0	--	--	300	350	200	200	0
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	112	14	14	60	40	20	20	20
<b>FIRE</b>								
Fuel Treatment (Acres)								
Fire Protection	2,500	1,700	1,300	4,000	4,000	4,000	4,000	4,000
Timber Management	2,269	--	--	4,810	3,320	3,657	3,347	4,093
Range, Wildlife, Watershed	1,000	--	--	800	0	0	800	10,000
Wildfire Burned Acres	4,534	4,606	5,231	4,606	4,601	4,811	4,736	4,896
Intensity Class 1	329	334	379	334	334	349	343	355
Intensity Class 2	389	395	449	395	395	413	406	420
Intensity Class 3	1,841	1,869	2,123	1,869	1,867	1,952	1,922	1,987
Intensity Class 4	665	677	767	677	675	706	695	718
Intensity Class 5	172	176	200	176	176	184	181	187
Intensity Class 6	1,138	1,155	1,312	1,155	1,154	1,206	1,188	1,228
<b>TRANSPORTATION</b>								
Trail Construction (Miles) <sup>1/</sup>	16	1	0	1.3	0	0	0	0
Trail Reconstruction (Miles)	0	31	30	89.0	45.0	45.3	45.0	45.3
Road Construction/Reconstruction								
New Construction (Local Miles)	21.8	--	--	26.7	27.9	14.2	14.5	18.7
Reconstruction (Local Miles)	73.7	--	--	47.9	30.7	39.7	34.2	42.9
New Construction (Collector Miles)	--	--	--	5.5	0	0	0	0
Total	95.5	9	5	80.1	58.6	53.9	48.7	61.6
Road Maintenance (Miles)	1,471	--	--	1,543	1,530	1,551	1,551	1,553
<b>FACILITIES</b>								
Dams and Reservoirs								
Forest Service (Number)	1	--	--	1	1	1	1	1
Other Federal (Number)	2	--	--	2	2	2	2	2
Other State/Local (Plumber)	0	--	--	0	0	0	0	0
Private (Number)	8	--	--	8	8	8	8	8
Administrative Sites								
Forest Service Owned (Number)	15	--	--	17	18	19	19	19
Leased (Number)	6	--	--	4	3	2	2	2
<b>TOTAL BUDGET (MM\$)</b>	16.3	19.6	21.3	24.6	22.4	23.2	23.7	26.4

<sup>1/</sup> This trail mileage is accounted for under trail miles for OHV use.



## WILDLIFE, FISH AND VISUAL EMPHASIS (WV)

### Theme

This alternative emphasizes high levels of both recreational use associated with wildlife, fish, and visual quality. Management of other resources supports wildlife and fish goals and produces commodities at economically efficient levels.

The Piute and Scodie Mountains would be managed for maximum wildlife recreational opportunities. Off-highway vehicle use would be limited to reduce conflicts with wildlife. Equestrian use would be encouraged. Trails and campgrounds would be developed to meet sporting needs. Additional ski areas would not be planned for future study to determine feasibility for development. Areas would not be recommended for wilderness designation. Wildlife and fish habitat improvement would be emphasized. Livestock grazing would be limited to reduce competition with wildlife. Harvest volume would be 82 MMF Allowable Sale Quantity in the first decade through the fifth decade. About 40 percent of the commercial conifer zone would remain unroaded. Harvest unit size and location would be limited by visual concerns. The average annual budget during the first decade would be approximately \$18.6 million.

### RESOURCE PROGRAM DIRECTION

#### Recreation

##### Developed Recreation

- Maintain and rehabilitate existing fee sites using the priorities already established.
- Manage a combination of fee and non-fee sites as is currently done: but close those sites being utilized at less than 10 percent of theoretical occupancy rate.
- Expand existing campgrounds. Construct new ones to meet hunting and fishing demands in specific areas.
- Manage sites at standard level.
- Continue the Pack-in, Pack-out policy in lightly used recreation areas.
- Continue all resorts, recreation residence tracts, and organization camps which are being used at greater than 20 percent capacity.
- Consider meeting elderly and handicapped standards during rehabilitation and construction of facilities. Emphasize elderly and handicapped use in day-use areas.

## Dispersed Recreation

- Manage dispersed areas at standard level where compatible with wildlife and fish recreation opportunities.
- Manage the Piute and Scodie Mountains for maximum wildlife recreational opportunities.
- Manage dispersed use intensively in river zones using site plans specific to those areas.
- Continue closures of wilderness and Pacific Crest Trail to all motorized/mechanized vehicles (approximately 264,000 acres).
- Close the Scodies and Piutes to O W use for wildlife and soil protection.
- Limit use of wheeled OHV's to designated roads and trails on approximately 306,000 acres.
- Allow use of wheeled OHV's on approximately 549,000 acres.
- Seasonally close key wildlife areas to OHV use.
- Develop loop trails, trailheads, and appropriate facilities to meet the need of sport recreationists who use OHV's,
- Allow day-use of oversnow OHV's on the Hume Lake District, Western Divide and Kern Plateau where compatible with wildlife and fish recreation opportunities.
- Emphasize nonmotorized use in SPNM ROS Class.
- Emphasize equestrian overnight camping by providing public pastures to facilitate stock management and reduce conflicts with other resources.
- Emphasize equestrian **use** in P. SPNM, or SPM ROS class areas associated with wilderness, front country, and conifer zones.

## Trails

- Maintain existing trails to an established standard considering the primary use.
- Rehabilitate or reconstruct, over a 10-year period, all trails on the system to eliminate backlog of needed work shown on trail condition records.
- Construct and maintain new trails as needed to meet dispersed recreation levels.
- Construct new fishing and hunting access trails and trailheads to facilitate use.

- Construct new hiker and stock user trails in the Conifer Zone **or** as connectors to the PCT. Schedule construction of PCT trailhead and overnight camps as called for in the PCT Management Plan.

#### Water-Oriented Use

- Continue to implement the Kern River Whitewater Floating Management Plan.
- Prohibit commercial floating in the Golden Trout Wilderness **or** South Fork Kern River.
- Emphasize dispersed day-use with developed overnight use along the Lloyd Meadows Road.
- Emphasize dispersed day-use with developed overnight-use along the Kern River from Lake Isabella to the mouth of the Kern Canyon.
- Emphasize heavily developed day-use sites at Coffee Camp and vicinity along the Tule River.
- Increase parking opportunity for day-use emphasis from Wilson Flat to Western Divide along the **Tule** River.
- Emphasize dispersed day-use and maintain developed overnight sites in the **Hume** Lake area.

#### Office of Information and Interpretive Services

- Provide a high level of self-service through information stations, publications, seven-day information desks, and exhibits.
- Provide a moderate level program for recreation sites, bulletin boards and media releases.
- Provide a low level program at trailhead bulletin boards, 3-FIA programs, interpretive signs, interpretive trails, outdoor programs, self-guided auto tours, and specialized media (AM radio stations).

#### Visual

- Manage all areas outside wilderness and not covered by Standards and Guidelines with an adopted VQO of PR **or** better.

#### Cultural Resources

- Complete Archaeological Reconnaissance Reports and site records for evaluation of significance.
- Obtain final determinations of significance from the Keeper of the National Register.
- Routinely carry out testing where questions of significance develop.

- Release those site locations declared "not significant" for other management activities.
- Protect known significant sites and sign, if necessary.
- Develop and carry out a wide variety of on-the-ground interpretation in accordance with a management plan.
- Distribute information on a broad basis in a variety of formats.
- Regularly consult with Native Americans as interested parties on proposed undertakings.
- Interview key knowledgeable informants occasionally for project-specific information.
- Consult archival sources as they are known to apply to specific projects.
- Systematically approach reduction of the existing backlog of sites to be evaluated. **Those** types of sites deemed more potentially critical in the Forest overview will receive priority.
- Conduct inventories as necessary, occasionally doing non-project-specific inventories which result in partial achievement of the 1995 target for total Forest inventory.

#### Urban Interface

- Meet IVQO's in Urban Interface areas.

#### Wilderness

- Do not recommend any Further Planning or Wilderness Study Areas for wilderness designation.
- Use prescribed fires to enhance wilderness values. Planned and unplanned ignition may be used.
- Manage existing wildernesses at standard level.

#### Wildlife and Fish

- Emphasize habitat improvement for harvest species.
- Maintain four superior nest sites for peregrine falcons and for one pair of condor.
- Maintain a network of 40 spotted owl habitat areas. Manage 1,000 acres of currently suitable habitat plus approximately 650 acres for each network area using a "No Scheduled Timber Harvest" prescription.

- Provide habitat for T&E species as needed to meet recovery and management plan goals.
- Provide maximum habitat for native fisheries, a one percent increase in habitat capability over current levels.
- Complete implementation of Little Kern Golden Trout Management Plan by decade two.
- Manage 10 percent of the timber land to maintain an average of at least three snags per acre.
- Maintain an average of 40 square feet basal area per acre of *oak*, in age classes 80-100 years on lands where timber production is emphasized.
- Maintain an average of 140 cubic feet per acre of dead and down logs with ideal size 20 inch diameter by 20 feet.
- Manage Piute Mountains for a diversity of harvest species, including deer, squirrels, turkeys, quail, chukars, bear, etc.
- Treat about 25,000 acres of mixed chaparral in the first decade, 25,000 in both the second and third decades, and 40,000 acres in the fifth decade to maximize habitat for harvest species associated with early successional stages of vegetation. Re-treatment of those burned areas will commence in the fourth decade.
- Develop water in deficient areas for upland game and deer.
- Maintain habitat for other non-harvest species by providing medium quality habitat capability.
- Construct about 15 miles of jeep/foot/bike trails for hunting use. Reconstruct 30 miles of road to all weather standards.

### Livestock Grazing

- Utilize livestock management techniques to reduce conflict with wildlife, fisheries, or visual quality.

### Timber

- Harvest 987 acres annually using group selection to yield about 35 **MMBF**.
- Harvest 1,200 acres annually using even-aged methods to yield 41 **MMBF**.
- Harvest approximately 6.1 **MMBF** annually using individual tree selection.
- Emphasize harvest programs designed to produce diversity in conifer forest vegetation.

- Encourage giant sequoia reproduction. Thin to enhance the health and vigor of the species. Manage giant sequoias as follows: about 3,000 acres for Preservation, about 9,000 acres Non-intensive, and about 1,000 acres Intensive.
- On slopes 40 percent or less, treat 1600 acres of brush in clearcuts per year to maintain 50 percent ground cover of brush species over 20 years. Maintain 50 percent of brush in desirable forage species for deer.
- Utilize uneven-aged management on approximately 40 to 50 percent of the harvest volume.
- Produce firewood as a by-product of wildlife habitat projects.

### Water and Soil

- Improve and maintain soil productivity and water quality by treating 2,000 acres and obliterating 250 miles of unneeded roads in the first decade.
- Examine about 10,000 acres to update the existing watershed improvement needs inventory, and to determine cause and effects where restoration is needed.
- Establish initial Streamside Management Zones (SMZ) at 100 feet wide for Class I, II and III streams. Actual management zone will be determined on a project basis and average 100 feet.
- Protect riparian vegetation to provide maximum shading for fish habitat.
- Complete instream projects where possible to maintain native fish production and use.

### Minerals and Geology

- Make available about 76 percent of the Planning Area for mineral production outside designated wilderness.

### Lands

- Survey, mark, and post about 380 miles of land line per decade to support the timber program. Identify and resolve unauthorized occupancy trespass discovered (about three per mile, average, for land lines surveyed).
- Acquire all private lands in existing and future wilderness - if they become available.
- Discourage issuance of special-use permits that tend to restrict dispersed recreation.

- Acquire about **920** acres of unique plant community land - if it becomes available.

### Facilities

- Construct approximately 10 miles of local roads per year (50-year average).
- Reconstruct approximately **19** miles of local roads per year (50-year average).
- Construct approximately 35 miles of collector roads in the first decade to meet the needs of resource management throughout the planning period.
- Emphasize maintenance of arterials and high volume collector roads to a high degree of user comfort. Discourage passenger cars on local and collector roads with low traffic volumes.
- Emphasize resource protection and ability to provide access in determining road closures.
- Manage the road system to assure resource protection, provide access, and accommodate resource management needs. Provide basic custodial care to protect the road investment.
- Rehabilitate. replace or relocate existing buildings and facilities to support the current level of management.
- Maintain buildings at a level sufficient to protect health and to prevent deterioration.

### Protection

- Utilize "control" as the suppression strategy. The maximum size of 95 percent of non-wilderness fires at containment is expected to be:  

Timber (CF) and Developed Areas	-	2 acres
Brush (OS, MC, PS)	-	10 acres
Grass (BO)	-	50 acres
- Use aerial observation to supplement the ground detection force,
- Emphasize fire prevention.
- Maintain approximately 175 miles of fuelbreak/firebreak in the first decade, increasing to 325 miles in the fifth decade.
- Construct about 25 miles of new fuelbreak/firebreak per decade on a project basis to protect land management investments.
- Use prescribed fire to reduce fuel loading to meet general protection objectives on about **25,000** acres per decade.

- Provide assistance **as** requested by the County Sheriff in search and rescue operations.
- Coordinate with local law enforcement agencies. Emphasize intensive violation prevention programs.
- Program fire management activities with prevention (**29** percent), detection (**4** percent), ground attack (**35** percent), aviation operations (**20** percent), and fuel management (**12** percent).
- Implement a moderate level of IPM with emphasis on protecting plantations and existing and newly developed recreation sites.
- Modify IPM practices to promote wildlife, fish, and visual quality, except in timber emphasis areas.

### Environment to be Created

Vegetative diversity will increase dramatically in the chaparral and conifer zones. Prescribed fire will be used to treat about **232,000** acres of chaparral to improve wildlife habitat and reduce flammability over the planning period. About **58,000** acres will be treated in the first decade. **An additional 4,900** acres per year is expected to be burned by wildfire. The chaparral will appear mottled where burned because of height and color changes.

About **271,000** acres of conifer forest will be managed primarily for timber production. This amount of land continues future timber outputs: while, at the **same** time, maintains the diversity needed for wildlife habitat and visual quality. **This** is a result of the longer rotation ages employed. Timber harvest will be highly dispersed and will produce a more uneven-aged appearance. Openings **still** will **be** apparent, but the conifer forest will appear more nearly natural. Harvest activities will not be apparent from the most visually sensitive roads and trails.

**The** livestock management in the chaparral zone will be modified when in direct conflict with wildlife, fisheries. **or** visual quality. In the conifer zone, meadows may be grazed after July 15; and utilization will be reduced when in conflict. Cattle are allowed to graze the annual grass range, but the season of use is shortened. **These** reductions in grazing will mean cattle will be seen less often by Forest users and that meadows will have more grass remaining in them in the fall.

In the conifer zones, the riparian areas will appear undisturbed within 100 feet of streams.

A large number of fuelbreaks will be constructed and maintained. They will commonly be seen in the chaparral zone and seldom **be** seen in the conifer zone.

Developed recreation facilities will be provided in locations to support dispersed recreation activities with emphasis on fish and wildlife related activities. **The** Forest trail system will be expanded. Trails will be



maintained at the standard level where fish and wildlife opportunities are greatest. Restrictions will be placed on **use** of key fawning areas and key wildlife winter range areas during specified periods. Overall user access on trails and roads in the Forest will be good. There will be seasonal closure on roads and trails.

**OHV's** will not be permitted to use the Scodie Mountains or Piute Mountains in order to avoid any possible conflict with wildlife in those areas. Roads and trails will provide access to these areas, but **OHV's** will be excluded.

New ski areas will not be studied.

Table 2.19 - Alternative WFV - Management Area Prescription Acreage

<u>Management Area Prescription Code</u>	<u>Vegetative Type</u>	<u>Management Emphasis</u>	<u>Management Area Net M Acres Sequoia NF</u>
B01	blue <i>oak</i> savanna		8
OW1	<i>oak</i> woodland	GENERAL	12
MC1	mixed chaparral	DISPERSED	16
PS1	pinyon-sage	RECREATION	0
CF1	conifer forest		81
<hr/>			
B02	blue <i>oak</i> savanna	WATER-	1
ow2	<i>oak</i> woodland	ORIENTED	0
MC2	mixed chaparral	RECREATION	5
<hr/>			
CF3	conifer forest	DEVELOPED RECREATION	8
<hr/>			
B05	blue <i>oak</i> savanna		34
OW5	<i>oak</i> woodland	WILDLIFE AND	158
MC5	mixed chaparral	DISPERSED	127
PS5	pinyon-sage	RECREATION	74
CF5	conifer forest		312
<hr/>			
B06	blue <i>oak</i> savanna		0
OW6	<i>oak</i> woodland	GRAZING	0
MC6	mixed chaparral		0
PS6	pinyon-sage		0
CF6	conifer forest		0
<hr/>			
CF7	conifer forest	TIMBER	0
<hr/>			
MC8	mixed chaparral	WATER	0
CF8	conifer forest	YIELD	0
<hr/>			
WF4		WILDERNESS-natural fire	264
WC4	A T	WILDERNESS-fire suppression	0
SIA	L Y	SPECIAL INTEREST AREAS	3
WR	L P	WILD & SCENIC RIVERS	
	E	within wilderness	(19)*
	S	outside wilderness	14
RNA		RESEARCH NATURAL AREAS	
		within wilderness	(3)*
		outside wilderness	2
<hr/>			
TOTAL			1,119

\* Included within Wilderness Acreages

Note: The management prescription acres shown in this table include a total of 66,000 acres which are dedicated to spotted owl management. The acres also include 23,900 acres within the Kings River Special Management Area. Both of these items will require management plans. If this alternative were to be selected, these plans would be incorporated into the Forest Plan by amendment.

Table 2.20 - Alternative WFV - Average Annual Outputs by Decade

Resource Elements	Base Year	'80 RPA Goals		Decade				
	1982	1990	2030	1	2	3	4	5
<b>RECREATION</b>								
Developed Public (M RVD's)	557	522	754	652	806	901	1,004	1,020
Developed Private (M RVD's)	328	538	776	410	490	600	715	759
Dispersed (M RVD) <sup>1/</sup>	1,582	2,880	3,550	1,888	2,161	2,429	2,712	2,993
Wilderness (M RVD)	61.5 <sup>2/</sup>	--	--	107.5	128.6	150.5	193.6	253.5
Zone of Limited OHV Use (Designed routes only. Closed to cross-country travel.)								
Area (M Acres) <sup>3/</sup>	267	--	--	306	306	306	306	306
Trails Open to OHV Use (Miles)	145	--	--	139	139	139	139	139
Trails Closed to OHV Use (Miles)	86	--	--	88	80	80	88	88
Zone of Limited OHV Use (Cross-country travel permissible with specific seasonal and resource restrictions.)								
Acres (M Acres)	--	--	--	0	0	0	0	0
Trails Available to OHV Use (Miles)	--	--	--	0	0	0	0	0
Zone Open to Cross-country OHV's								
Area (M Acres) <sup>3/</sup>	588	--	--	549	549	549	549	549
Trails Available to OHV Use (Miles)	282	--	--	202	282	282	202	282
Trails with Seasonal OHV Closures (Miles)	102	--	--	180	220	260	310	370
Roads with Seasonal Closures (Miles)	425	--	--	407	493	494	526	528
Visual Quality Index	76.6	--	--	76.0	74.9	73.9	72.9	71.9
<b>WILDLIFE AND FISH</b>								
Threatened and Endangered Species								
Peregrine Falcon (Superior Nest Sites)	4	--	--	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream Habitat)	29	--	--	60	117	117	117	117
Condor (Acres of Nesting Habitat) <sup>4/</sup>	0	--	--	2,299	2,299	2,299	2,299	2,299
Wildlife - Other Than T&E (Habitat Capability)								
Deer (Number)	11,000	13,200	13,200	13,200	13,500	14,000	14,000	15,000
Spotted Owls (Number of Pairs) <sup>5/</sup>	80	--	--	75	71	66	60	55
Goshawk (Number of Pairs) <sup>6/</sup>	110	--	--	105	100	95	90	85
Resident Fish (M Pounds)	77	92	92	78	78	78	78	78

<sup>1/</sup> These numbers include Wilderness RVD's and Total WFVD's

<sup>2/</sup> 1982 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only. All decade projections include all five Sequoia Wildernesses.

<sup>3/</sup> These acres represent the total area within this zone. Only about 25% of this total is useable terrain due to steep slopes, dense vegetation, etc.

<sup>4/</sup> See Chapter 3 for explanation of condor nesting habitat acres.

<sup>5/</sup> See Appendix B for explanation of spotted owl habitat capability.

<sup>6/</sup> Hypothetical number based on FORPLAN modeling for comparison purposes only. Actual amount of habitat managed will be different (based on Regional Guide direction). Fragmentation of suitable habitat was not considered.

Table 2.20 - Alternative W/FV - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
<b>Wildlife and Fish User Days</b>								
<b>Direct Habitat Improvement (MMFUD's)</b>								
Deer	3	--	--	13	14	15	15	16
All Other Species (Except T&E)	.1	--	--	.2	.3	.3	.3	.4
Resident Fish (Except T&E)	0	--	--	1.0	1.0	1.0	1.0	1.0
<b>Induced Habitat Improvement (MMFUD's)</b>								
Deer	20	--	--	21	23	25	25	27
All Other Species (Except T&E)	95	--	--	101	125	151	181	212
Resident Fish (Except T&E)	28	--	--	28	28	28	28	28
Total Wildlife & Fish User Days	250	--	--	297	366	384	415	435
<b>Direct Habitat Improvement (Except T&amp;E)</b>								
Deer (Acres of Chaparral)	500	--	--	2,500	2,500	2,500	2,500	4,000
All Other Wildlife Species (Number of Guzzlers)	10	--	--	10	10	8	8	5
Resident Fish (Miles of Stream)	0	--	--	5	0	5	0	5
<b>GRAZING</b>								
Permitted Livestock (MAUM's)	63.0	69.5	74.6	60.0	67.9	67.7	67.7	71.3
Range Betterment (acres)	800	1/	1/	0	0	0	0	0
<b>TIMBER</b>								
Sales Offered (MMBF) 1/	97	99	107	87	87	87	87	87
Sales Offered (MMCF)	15.0	15.3	16.6	13.4	13.4	13.4	13.4	13.4
Allowable Sale Quantity (MMBF)	95	97	105	82	82	82	82	82
Long-Term Sustained Yield (MMCF)	--	--	--	15.1	15.1	15.1	15.1	15.1
(MMBF)	--	--	--	98	98	98	98	98
Reforestation (Acres)	2,048	2,242	2,616	2,034	1,781	1,530	1,890	1,731
Timber Stand Improvement (Acres)	1,579	2,664	2,716	2,495	2,165	1,985	2,718	3,313
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
Fuelwood (Cords)	20,000	--	--	15,416	15,416	15,416	15,416	15,416
<b>WATERSHED</b>								
Quantity (M Acre-Feet)	736	--	--	738	741	744	745	744
Quality (M Acre-Feet at Standards)	720	990	1,000	731	738	743	744	743
Increased Quantity (M Acre-Feet)	0	--	--	2	5	8	9	8
Watershed Improvement (Acres)	140	270	310	200	50	30	10	10
Road Obliteration (Miles)	6.5	--	--	25.0	24.4	0.5	0.5	0.5

1/ RPA AM goals converted to AUM's based on Forest mix of Animal Unit Factors.

2/ Includes Allowable Sale Quantity and additional sales (unregulated volume. e.g., salvage)

Table 2.20 - Alternative WYV - Average Annual Outputs by Decade (Continued)

Resource Elements	Base Year '80 RPA Goals			Decade				
	1982	1990	2030	1	2	3	4	5
Water Yield Improvement (Acres)	0	--	--	0	0	0	0	0
<b>LANDS</b>								
Land Acquisition (Acres)	0	--	--	68	92	0	0	0
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	112	14	14	90	70	60	50	50
<b>FIRE</b>								
Fuel Treatment (Acres)								
Fire Protection	2,500	1,700	1,300	2,500	2,500	2,500	2,500	2,500
Timber Management	2,269	--	--	2,151	1,819	1,654	1,951	1,924
Range, Wildlife, Watershed	1,000	--	--	3,300	2,500	2,500	3,300	5,800
<b>Wildfire Burned Acres</b>	<b>4,534</b>	<b>4,606</b>	<b>5,231</b>	<b>4,606</b>	<b>4,601</b>	<b>4,811</b>	<b>5,020</b>	<b>5,095</b>
Intensity Class 1	329	334	379	334	334	349	364	369
Intensity Class 2	389	395	449	395	395	413	431	437
Intensity Class 3	1,841	1,869	2,123	1,869	1,867	1,952	2,037	2,068
Intensity Class 4	665	677	767	677	675	706	137	748
Intensity Class 5	172	176	200	176	176	184	192	195
Intensity Class 6	1,138	1,155	1,312	1,155	1,154	1,206	1,259	1,278
<b>TRANSPORTATION</b>								
Trail Construction (Miles) <sup>1/</sup>	16	1	0	1.3	0	0	0	0
Trail Reconstruction (Miles)	0	31	30	89.0	20.0	20.0	20.0	20.0
<b>Road Construction/Reconstruction</b>								
New Construction (Local Miles)	21.8	--	--	19.4	16.1	6.1	4.6	4.6
Reconstruction (Local Miles)	73.7	--	--	17.8	15.8	16.5	21.1	21.8
New Construction (Collector Miles)	--	--	--	3.5	0	0	0	0
Total	95.5	9	5	40.7	31.9	22.6	25.7	26.4
Road Maintenance (Miles)	1,471	--	--	1,513	1,548	1,573	1,570	1,584
<b>FACILITIES</b>								
<b>Dams and Reservoirs</b>								
Forest Service (Number)	1	--	--	1	1	1	1	1
Other Federal (Number)	2	--	--	2	2	2	2	2
Other State/Local (Number)	0	--	--	0	0	0	0	0
Private (Number)	8	--	--	8	8	8	8	8
<b>Administrative Sites</b>								
Forest Service Owned (Number)	15	--	--	17	18	19	19	19
Leased (Number)	6	--	--	4	3	2	2	2
<b>TOTAL BUDGET (MM\$)</b>	<b>16.3</b>	<b>19.6</b>	<b>21.3</b>	<b>18.6</b>	<b>17.7</b>	<b>17.7</b>	<b>18.9</b>	<b>19.0</b>

<sup>1/</sup> This trail mileage is accounted for under trail miles for OHV use.

## 5. COMPARISON OF ALTERNATIVES

This section presents a quantitative and qualitative comparison of the alternatives which were considered in detail. Included are:

- A chart display of the major differences between alternatives (Table 2.21) ;
- A summary of the outputs of alternatives in decades one and five (Table 2.22);
- A tabular display of acreage by prescription and alternative (Table 2.23);
- A tabular comparison of wilderness acreage recommendations by alternative and benchmarks (Table 2.24);
- A display of additional key comparisons by alternative (Table 2.25);
- A tabular display of land classification for timber by alternative (Table 2.26);
- A summary of the key effects on physical and biological environment (Table 2.27);
- A summary comparison of the treatment of issues (Table 2.28); and
- A summary of PNV changes compared to CEE Alternative (Section 7).

Following is a chart comparing the major differences among the alternatives considered in detail. A more detailed description of the actions which would be taken when any alternative was implemented, is presented in narrative form in the preceding section.

Table 2.21 - Major Differences Between Alternatives 1/

SUBJECT	PRF	CLR	RPA
Theme	Emphasizes timber, grazing and dispersed recreation <b>over</b> developed recreation and nonmarket resources.	Emphasizes timber and grazing over developed recreation and nonmarket resources.	Meets the 1980 RPA goals. Market resource production has priority over nonmarket resources.
Timber <u>2/</u>	97 MMBF/year are harvested. <b>1,900</b> acres/year are regenerated under even-aged management systems during the first decade. No land is managed for full yields of timber.	94 MMBF/year are harvested. 3,000 acres/year are regenerated under even-aged management systems during the first decade. 184 M acres are managed for full yields of timber.	101 MMBF/year are harvested. <b>2,000</b> acres/year are regenerated under even-aged management systems during the first decade. 146 M acres are managed for full yields of timber
Giant Sequoia	Final allocation of management category by grove to be made in a Giant Sequoia Management Implementation Plan. A minimum of 3,900 acres will be in Preservation.	Most groves are managed for non-timber objectives.	Timber management is emphasized in about 858 of the groves and non-timber objectives in about 15%.
Rocreation	Dispersed recreation is emphasized over developed recreation. Heavily used areas and fee sites are managed at standard levels. Two additional ski areas will be studied for possible development. Comprehensive trail management planning done. OHV's are restricted to designated roads and trails with seasonal restrictions for resource protection and resolving user conflicts.	Developed recreation is emphasized over dispersed recreation. Current recreational facilities are maintained at low standard levels. Two additional ski areas will be studied for possible development. OHV's are restricted on the Kern Plateau, Tule River RD, and the SE portion of the Hume Lake RD.	Developed recreation is emphasized over dispersed recreation. Existing campgrounds are rehabilitated and expanded. One additional ski area will be studied for possible development. OHV's are limited to roads and trails.

1/ All "per year" data are averages.

2/ Volume harvested is Allowable Sale Quantity. All Alternatives are expected to harvest 5 MMBF of unregulated material in addition to the ASQ.

Table 7.21 - Major Differences Between Alternatives (continued)

SUBJECT	AMH	MKT	PRO	WFV
Theme	Emphasizes wildlife and fish, dispersed recreation, visual quality and wilderness.	Emphasizes high production levels of timber, grazing and developed recreation over non-market resources.	Meets the 1985 Regional high timber goals and emphasizes market resources over non-market resources.	Emphasizes high levels of consumptive and non-consumptive recreation use of wildlife and fish. Visual quality is emphasized.
Timber	43 MMBF/year are harvested. 0 acres/year are regenerated under even-aged management systems during the first decade. No land is managed for full yields of timber.	126 MMBF/year are harvested. 4,500 acres/year are regenerated under even-aged management systems during the first decade. 247 acres are managed for full yields of timber.	133 MMBF/year are harvested. 46,000 acres/year are regenerated under even-aged management systems during the first decade. 282 M acres are managed for full yields of timber.	82 MMBF/year are harvested. 1,200 acres/year are regenerated under even-aged management systems during the first decade. No land is managed for full yields of timber.
Giant Sequoia	Most groves are managed for non-timber objectives.	Timber management is emphasized in most groves.	Timber management is emphasized in most groves.	Timber management is emphasized in about 75% of the groves and non-timber objectives are emphasized in 25%.
Recreation	Dispersed recreation is emphasized over developed recreation. Recreation facilities are managed at low standard level. One additional ski area will be studied for possible development. OHVs are limited to roads and trails.	Developed recreation is emphasized over dispersed recreation. All developed sites are managed at standard level. Dispersed recreation facilities are managed at low standard levels. Two additional ski areas will be studied for possible development. All non-wilderness areas are open to OHV use.	Developed recreation is emphasized over dispersed recreation. All developed sites are managed at standard level. Dispersed recreation facilities are managed at low standard levels. Two additional ski areas will be studied for possible development. All non-wilderness areas are open to OHV use.	All of the developed and dispersed recreation facilities are managed at standard level. Emphasis is to provide high levels of wildlife related recreation opportunities. Additional ski areas will not be studied for possible development. OHVs are not allowed in Scodie or Piute Mountains and are restricted to designated roads and trails on the Kern Plateau, Tule River RD and the SE portion of Hume Lake RD. The remainder of the Forest is open to OHV use, subject to localized seasonal restrictions.



Table 2.21 - Major Differences Between Alternatives (Continued)

SUBJECT	PRF	CUR	RPA
Livestock Grazing	There are <b>69,000 AUM's</b> per year of grazing in the first decade. <b>No</b> acres of chaparral are treated for live-stock in the first decade.	There are <b>69,000 AUM's</b> per year of grazing in the first decade. <b>No</b> acres of chaparral are Created for live-stock use in the first decade.	There are <b>69,500 AUM's</b> per year of grazing in the first decade. <b>No</b> acres of chaparral are treated for live-stock in the first decade.
Wildlife and Fish Habitat	About 10,000 acres of chaparral are treated for wildlife habitat improvement in the first decade. Minor direct habitat work is done for fisheries.	About <b>5,000</b> acres of chaparral are treated for wildlife habitat improvement in the first decade. <b>No</b> direct habitat improvement work is done for fisheries.	About 27,000 acres of chaparral are treated for wildlife habitat improvement in the first decade. About 30 miles of stream are improved for fisheries habitat.
Wilderness	About <b>12,500</b> acres of the BLM Rockhouse Wilderness Study Area are recommended for wilderness designation.	<b>New</b> Wilderness is not recommended.	About <b>12,650</b> acres of the BLM Rockhouse Wilderness Study Area are recommended for wilderness <b>designation.</b>
Roads and Trails	49.0 miles per year of road and 58.0 miles per year of trail are constructed, <b>relocated,</b> or reconstructed in the first decade.	53.6 miles per year of road and <b>45.8</b> miles per year of <b>trail</b> are constructed or reconstructed in the first decade.	45.4 miles per year of road and 92.0 miles per year of trail are constructed or reconstructed in the first decade.

Table 2.21 - Major Differences Between Alternatives (Continued)

	AMN	IKT	PRO	VFV
Livestock Grazing	There are 55,000 AUM's per year of grazing in the first decade. No <b>treatments</b> are done for range forage improvement in the first decade. No grazing is allowed in wet meadows, riparian areas, or <b>recommended</b> Wilderness. Chaparral stocking levels are reduced 50% below allowable <b>use</b> .	There are 75,700 AUM's per year of <b>grazing</b> in the first decade. About 4,000 acres of chaparral are treated in the first decade for livestock use.	There are 75,700 AUM's per year of grazing in the first decade. About 4,000 acres of chaparral are treated in the first decade for livestock <b>use</b> .	There are <b>60,000</b> AUM's per year of grazing in the first decade. No acres of chaparral are <b>treated</b> for livestock in the first decade with stocking levels reduced 50% below allowable use.
Wildlife and Fish Habitat	About 38,000 acres of chaparral are treated for wildlife habitat improvement in the first decade. About 50 miles of stream are improved for fisheries habitat.	No direct habitat improvement work is done for wildlife or fisheries in the first decade.	No direct habitat improvement work is done for wildlife or fisheries in the first decade.	About 25,000 acres of chaparral are treated for wildlife habitat improvement in the first decade. About 50 miles of stream are improved for fisheries habitat.
Wilderness	Oak Mountain, Dennison, Moses, and Scodies Further Planning Areas and the entire BLM Rockhouse Wilderness Study Area are all recommended for <b>Wilderness</b> designation, totalling 127,020 acres.	About 9,710 acres of the BLM Rockhouse <b>Wilderness</b> Study Area are recommended for Wilderness designation.	New wilderness is not recommended.	New wilderness is not recommended.
Roads and Trails	9.3 miles per year of road and 95.3 miles per year of trail are constructed or reconstructed in the first decade.	79.3 miles per year of road and 45.8 miles per year of trail are constructed or reconstructed in the first decade.	<b>80.1</b> miles per year of road and 90.3 miles per year of trail are constructed or reconstructed in the first decade.	40.7 miles per year of road and 90.3 miles per year of trail are constructed or reconstructed in the first decade.

Table 2.22 - Comparison of Average Annual Outputs by Alternative For 1st and 5th Decades

Resource Elements	Base	'80 RPA		PRF		CUR		RPA	
	Year 1982	Coals 1990	2030	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade
<b>RECREATION</b>									
• Developed Public (M RVD)	557	522	754	650	820	567	690	639	<b>1,037</b>
• Developed Private (M RVD)	328	538	776	583	<b>1,167</b>	580	809	583	950
• Dispersed (M RVD) <sup>1/</sup>	1,582	<b>2,880</b>	<b>3,550</b>	1,818	<b>2,994</b>	<b>1,391</b>	<b>1,824</b>	1,830	<b>2,995</b>
• Wilderness (M RVD)	61.5 <sup>5/</sup>	-	-	107.0	253.5	107.5	253.5	107.5	253.5
• Zone of Limited OHV Use (Designated routes only. Closed to Cross-country travel).									
Area (M Acres) <sup>2/</sup>	267	-	-	<b>855<sup>3/</sup></b>	855	267	267	855	855
Trails Open to OHV Use (Miles)	145	-	-	<b>545<sup>4/</sup></b>	605	145	145	344	344
Trails Closed to OHV Use (Miles)	86	-	-	<b>330<sup>4/</sup></b>	330	86	86	243	243
• Zone of Limited OHV Use (Cross-country travel permissible with specific seasonal and resource restrictions).									
Area (M Acres) <sup>2/</sup>	0	-	-	0	0	0	0	0	0
Trails Available to OHV Use (Miles)	N/A	-	-	N/A	N/A	0	0	0	0
• Zone Open to Cross-Country OHV's									
Area (M Acres) <sup>2/</sup>	588	-	-	0	0	588	588	0	0
Trails Available to OHV Use (Miles)	282	-	-	N/A	N/A	282	282	N/A	N/A
• Trails With Seasonal OHV									
Closures (Miles)	102	-	-	<b>520<sup>4/</sup></b>	580	90	90	520	520
• Roads With Seasonal									
Closures (Miles)	425	-	-	539	624	425	552	533	920
• Visual Quality Index	76.6	-	-	75.7	68.0	76.1	66.9	75.0	69.2
<b>WILDLIFE AND FISH</b>									
• Threatened and Endangered Species									
Peregrine Falcon (Superior Nest Sites)	4	-	-	4	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream)	29	-	-	60	117	45	117	60	117
Condor (Acres of Habitat)	0	-	-	2,299	2,299	2,299	2,299	2,299	2,299

<sup>1/</sup> These numbers include Wilderness RVD's and Total WFUD's.

<sup>2/</sup> These acres represent the total area within this zone. Only about 25% of this total is useable terrain due to steep slopes, dense vegetation, etc..

<sup>3/</sup> These acres include lands designated SFM (approximately 71,000 acres) outside of wilderness. By definition, no motorized recreation use will occur within these areas.

<sup>4/</sup> Includes both less than 24-inch and greater than 24-inch trails (e.g., Jeep trails). Does not include road mileage.

<sup>5/</sup> 1982 Use Information for Wilderness includes the Dome Land and Golden Trout Wildernesses only.

All decade projections include all five Sequoia Wildernesses.

Table 2.22 - Comparison of Average Annual Outputs By Alternative For 1st and 5th Decades

Resource Elements	AVN		MKT		PRO		WVW	
	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade
<b>RECREATION</b>								
▪ Developed Public (M RVD)	652	1,117	651	990	582	990	652	1,020
▪ Developed Private (M RVD)	580	800	583	997	580	997	410	759
▪ Dispersed (M RVD)	<b>1,890</b>	2,998	<b>1,888</b>	2,993	<b>1,888</b>	<b>2,993</b>	1,888	<b>2,993</b>
▪ Wilderness (M RVD)	108.0	253.0	107.5	253.5	107.5	253.5	107.5	253.5
▪ Zone of Limited OHV Use. (Designated routes only. Closed to cross-country travel.)								
Areas (M Acres)	764	764	0	0	0	0	306	306
Trails Open to OHV Use (Miles)	321	321	N/A	N/A	N/A	N/A	139	139
Trails Closed to OHV use (Miles)	266	266	N/A	N/A	N/A	N/A	88	88
▪ Zone of Limited OHV Use (Cross-country travel permissible with specific seasonal and resource restrictions.)								
Area (M Acres)	0	0	0	0	0	0	0	0
Trails Available to OHV Use (Miles)	0	0	0	0	0	0	0	0
▪ Zone Open to Cross-country OHVs								
Areas (M Acres)	0	0	855	855	855	855	549	549
Trails Available to OHV Use (Miles)	N/A	N/A	494	494	494	494	282	282
▪ Trails With Seasonal OHV Closures (Miles)	520	520	270	270	270	270	180	370
Roads With Seasonal Closures (Miles)	521	881	640	717	650	738	487	528
Visual Quality Index	76.3	74.3	75.0	65.1	74.9	63.9	76.0	71.9
<b>WILDLIFE AND FISH</b>								
▪ Threatened and Endangered Species								
Peregrine Falcon (Superior Nest Sites)	4	4	4	4	4	4	4	4
Little Kern Golden Trout (Miles of Stream)	60	117	40	117	40	117	60	117
Condor (Acres of Nesting Habitat) <sup>1/</sup>	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299

<sup>1/</sup> See Chapter 3 of the EIS for explanation of condor nesting habitat acres.

Table 2.22 - Comparison of Average Annual Outputs (continued)

Resource Elements	Base Year	'80 RPA Goals		PRF		CJR		RPA		
	1982	1990	2030	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade	
<b>Wildlife - Other Than T&amp;E (Habitat Capability)</b>										
Deer (Number)	11,000	13,200	13,200	11,500	14,000	11,000	11,500	13,200	13,200	
Spotted Owls (Number of pairs) <sup>1/</sup>	80	-	-	75	55	75	55	75	55	
Goshawk (Number of Pairs) <sup>2/</sup>	110	-	-	105	90	105	85	105	85	
Resident Fish (M Pounds)	77	92	92	92	92	77	77	78	78	
<b>Wildlife and Fish User Days</b>										
<b>Direct Habitat Improvement (M WFUD's)</b>										
Deer	3	-	-	5	9	3	3	12	12	
All other species (except T&E)	.1	-	-	.2	.3	.2	.2	.1	.1	
Resident Fish (except T&E)	0	-	-	.5	.5	0	0	.5	.5	
<b>Induced Habitat Improvement (M WFUD's)</b>										
Deer	20	-	-	21	25	20	22	20	20	
All other species (except T&E)	95	-	-	99	135	102	199	113	180	
Resident Fish (except T&E)	28	-	-	28	28	28	28	28	28	
Total	250	-	-	299	438	295	437	299	437	
<b>Direct Habitat Improvement</b>										
Deer (acres of Chaparral)	500	-	-	1,000	1,000	1,300	500	2,700	1,200	
All Other Wildlife Species (Number of guzzlers)	10	-	-	10	0	5	0	3	1	
Resident Fish (miles of stream)	0	-	-	3	3	0	0	3	3	
<b>GRAZING</b>										
Permitted Livestock (M AUM)	63.0	69.5 <sup>4/</sup>	74.6 <sup>4/</sup>	69.0	89.0	69.0	69.0	69.5	100.0	
Range Betterment (acres)	800	-	-	0	900	0	500	0	1,300	
<b>TIMBER</b>										
Sales Offered (MMBF) <sup>3/</sup>	97	99	107	102	105	99	99	106	106	
(MMCF)	15.0	15.3	16.6	15.7	16.1	15.2	15.7	16.4	16.4	
Allowable Sale Quantity (MMBF)	95	97	105	97	100	94	94	101	101	
Long-Term Sustained Yield (MMCF)	-	-	-	24.4	24.4	15.8	15.8	18.1	18.1	
(MMBE)	-	-	-	158	158	103	103	118	118	
Reforestation (Acres)	2,048	2,242	2,616	2,475	2,813	787	2,233	2,516	2,252	
Timber Stand Improvement (Acres)	1,579	2,664	2,716	4,739	4,635	2,495	3,716	2,495	5,202	

<sup>1/</sup> See Appendix B of the EIS for explanation of spotted owl habitat capability.

<sup>2/</sup> Hypothetical numbers based on FORPLAN modeling for comparison purposes only. Actual amount of habitat managed will be different (based on Regional Guide direction). Fragmentation of suitable habitat was not considered.

<sup>3/</sup> Includes Allowable Sale Quantity and additional sales (unregulated volume. e.g., salvage).

<sup>4/</sup> RPA AM goals converted to AUM's based on Forest mix of Animal Unit Factors.

Table 2.22 - Comparison of **Average Annual Outputs** (continued)

Resource Elements	ANN		MKT		PRO		WFV	
	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade
<b>.Wildlife - Other Than TLE</b> (Habitat Capability)								
Deer (Number)	13,700	15,100	11,500	13,800	11,500	13,800	13,200	15,000
Spotted Owls (Number of Pairs) <sup>1/</sup>	75	70	75	55	75	55	75	55
Goshawk (Number of Pairs) <sup>2/</sup>	105	105	100	75	95	60	105	85
Resident Fish (M Pounds)	75	75	77	77	77	77	78	78
<b>.Wildlife and Fish User Days</b>								
Direct Habitat Improvement (M WFUD's)								
Deer	14	19	1	13	1	13	13	16
All other species (except T&E)	.3	.4	.2	.3	.2	.3	.2	.4
Resident Fish (except T&E)	1.0	1.0	0	0	0	0	1.0	1.0
Induced Habitat Improvement (M WFUD's)								
Deer	22	19	22	31	22	31	21	27
All other species (except T&E)	114	222	102	178	102	199	101	212
Resident Fish (except T&E)	29	29	28	28	28	28	28	28
Total	294	432	303	440	305	441	297	435
<b>.Direct Habitat Improvement</b>								
Deer (Acres of Chaparral)	3,800	2,900	0	5,400	0	5,400	2,500	4,000
All Other Wildlife Species (Number of Guzzlers <sup>1</sup> )	5	10	5	3	10	3	10	5
Resident Fish (miles of stream)	5	5	0	0	0	0	5	5
<b>GRAZING</b>								
.Permitted Livestock (M AUM)	55.0	66.0	75.7	92.1	75.7	92.1	60.0	71.3
Range Betterment (Acres)	0	0	400	4,600	400	4,600	0	0
<b>TIMBER</b>								
.Sales Offered (MMBF)	48	59	131	132	138	138	87	87
(MMCF)	7.4	9.0	20.0	20.2	21.2	21.2	13.4	13.4
.Allowable Sale Quantity (MMBF)	43	54	126	127	133	133	82	82
.Long-Term Sustained Yield (MMCF)	10.5	10.5	20.0	20.0	20.7	20.7	15.1	15.1
(MMBF)	68	68	130	130	135	135	98	98
.Reforestation (Acres)	687	587	4,707	3,865	4,790	3,953	2,034	1,731
.Timber Stand Improvement (Acres)	2,495	1,316	2,495	6,599	2,515	6,991	2,495	3,313

<sup>1/</sup> See Appendix B of the FEIS for details on spotted owl habitat capability.

<sup>2/</sup> Hypothetical numbers based on FORPLAH modeling for comparison purposes only. Fragmentation of suitable habitat was not considered.

Table 2.22 - Comparison of Average Annual Outputs (continued)

Resource Elements	Base Year 1982	'80 RPA Coals 1990	2030	PRF 1st Decade	5th Decade	CUR 1st Decade	5th Decade	RPA 1st Decade	5th Decade
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>									
.Firewood (M Cords)	20.0	-	-	21.0	21.9	23.2	22.5	21.9	21.9
<b>WATERSHED</b>									
.Quantity (M Acre-Feet)	736	-	-	751	759	737	761	742	759
.Quality (# Acre-Feet at Standards)	720	990	1,000	744	754	730	757	735	757
.Increased Quantity (M Acre-Feet)	0	-	-	15	23	1	25	6	23
.Watershed Improvement (Acres)	140	270	310	140	30	140	30	270	310
.Road Obliteration (Miles)	6.5	-	-	6.5	6.5	6.5	6.5	48.9	0.5
.Water Yield Improvement (Acres)	0	-	-	0	0	0	0	600	0
<b>LANDS</b>									
.Land Acquisition (Acres)	0	0	0	12	14	16	20	40	10
<b>HUMAN RESOURCES</b>									
.Programs (Enrollees)	112	14	14	70	35	70	60	14	14
<b>FIRE</b>									
.Fire Treatment (Acres)									
Fire Protection	2,500	1,700	1,300	1,500	1,500	2,500	2,500	3,000	3,000
Timber Management	2,269	-	-	2,572	2,881	2,147	2,848	2,663	2,684
Range, Wildlife, Watershed	1,000	-	-	1,100	6,000	1,000	1,000	3,300	2,500
<b>.Expected Acres Burned by Wildfire (Acres)</b>									
Intensity Class 1	329	334	379	334	379	329	313	334	379
Intensity Class 2	389	395	449	395	449	389	371	395	449
Intensity Class 3	1,841	1,869	2,123	1,869	2,123	1,841	1,753	1,869	2,123
Intensity Class 4	665	677	167	677	767	665	634	677	767
Intensity Class 5	172	176	200	176	200	172	165	176	200
Intensity Class 6	1,138	1,155	1,312	1,155	1,312	1,138	1,083	1,155	1,312

Table 2.22 - Comparison of Average Annual Outputs (continued)

Resource Elements	AMN		MKT		PRO		WV	
	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
.Firewood (M Cords)	5.0	6.2	31.9	31.4	34.1	32.5	15.4	15.4
<b>WATERSHED</b>								
.Quantity (M Acre-Feet)	733	736	755	771	756	773	738	744
.Quality (M Acre-Feet at Standards)	727	734	743	759	744	761	731	743
.Increased Quantity (M Acre-Feet)	-3	0	19	35	20	37	2	8
.Watershed Improvement (Acres)	200	10	200	50	200	50	200	10
.Road Obliteration (Miles)	25.0	0.5	25.0	0.5	25.0	0.5	25.0	0.5
.Water Yield Improvement (Acres)	0	0	400	0	400	0	0	0
<b>LANDS</b>								
.Land Acquisition (Acres)	56	0	250	0	300	0	68	0
<b>HUMAN RESOURCES</b>								
.Programs (Enrollees)	90	50	60	20	60	20	90	50
<b>FIRE</b>								
.Fuel Treatment								
Fire Protection	2,500	2,500	4,000	4,000	4,000	4,000	2,500	2,500
Timber Management	707	607	4,783	3,923	4,810	4,093	2,151	1,924
Range, Wildlife, Watershed	3,800	5,900	800	10,000	800	10,000	3,300	5,800
<b>.Expected Acres Burned by Wildfire (Acres)</b>								
Intensity Class 1	334	388	334	367	334	355	334	369
Intensity Class 2	395	459	395	434	395	420	395	437
Intensity Class 3	1,869	2,170	1,869	2,055	1,869	1,987	1,869	2,068
Intensity Class 4	677	784	677	743	677	718	677	748
Intensity Class 5	176	205	176	194	176	187	176	195
Intensity Class 6	1,155	1,341	1,155	1,270	1,155	1,228	1,155	1,278



Table 2.22 - Comparison of Average Annual Outputs (continued)

Resource Element-	Base Year 1982	'80 RPA Goals		PRF		CUR		RPA		
		1990	2030	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade	
<b>TRANSPORTATION</b>										
.Trail Construction (Miles) 1/	16	1	0	16.0	2.1	1.3	0	3.0	0	
.Trail Reconstruction (Miles)	0	31	30	42.0	21.0	44.5	45.8	89.0	20.0	
<b>Road Construction/Reconstruction</b>										
New Construction (Local Miles)	21.8	-	-	22.1	9.9	21.7	11.8	16.5	11.5	
Reconstruction (Local Miles)	73.7	-	-	21.0	31.9	29.1	30.0	25.2	31.2	
New Construction (Collector Miles)	-	-	-	5.9	0	2.8	0	3.7	0	
Total	95.5	9	5	49.0	41.8	53.6	41.8	45.4	42.7	
.Road Maintenance (Miles)	1,471	-	-	1,516	1,562	1,522	1,589	1,520	1,575	
<b>FACILITIES</b>										
<b>Dams and Reservoirs (Class A, B, &amp; C)</b>										
Forest Service (Number)	1	-	-	1	1	1	1	1	1	
Other Federal (Number)	2	-	-	2	2	2	2	2	2	
Other State/Local (Number)	0	-	-	0	0	0	0	0	0	
Private (Number)	8	-	-	8	8	8	8	8	8	
<b>Administrative Sites</b>										
Forest Service Owned (Number)	15	-	-	17	19	17	19	17	19	
Leased (Number)	6	-	-	4	2	4	2	4	2	
<b>TOTAL BUDGET (MM \$)</b>	16.3	19.6	21.3	20.0	22.0	16.3	20.1	19.7	22.0	

1/ This trail mileage is accounted for under trail miles for OHV use.

Table 2.22 - Comparison of Average Annual Outputs (continued)

Resource Elements	AMN		IKT		PRO		WFV	
	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade	1st Decade	5th Decade
<b>TRANSPORTATION</b>								
.Trail Construction (Miles)	6.3	0	1.3	0	1.3	0	1.3	0
Reconstruction (Miles)	89.0	20.0	44.5	45.8	89.0	45.3	89.0	20.0
<b>Road Construction/Reconstruction (Miles)</b>								
New Construction (Local Miles)	.9	.1	25.9	16.8	26.7	18.7	19.4	4.6
Reconstruction (Local Miles)	8.4	7.3	48.2	40.7	47.9	42.9	17.8	21.8
New Construction (Collector Miles)	0	0	5.2	0	5.5	0	3.5	0
Total	9.3	7.4	79.3	57.5	80.1	61.6	40.7	26.4
.Road Maintenance (Miles)	1,497	1,537	1,544	1,559	1,543	1,553	1,513	1,584
<b>FACILITIES</b>								
<b>.Dams and Reservoirs (Class A, B, &amp; C)</b>								
Forest Service (Number)	1	1	1	1	1	1	1	1
Other Federal (Number)	2	2	2	2	2	2	2	2
Other State/Local (Number)	0	0	0	0	0	0	0	0
Private (Number)	8	8	8	8	8	8	8	8
<b>.Administrative Sites</b>								
Forest Service Owned (Number)	17	19	17	19	17	19	17	19
Leased (Number)	4	2	4	2	4	2	4	2
<b>TOTAL BUDGET (MM \$)</b>	11.7	14.6	24.3	25.7	24.6	26.4	18.6	19.0

Table 2.23 - Extent of Management Area and Prescription for Alternatives

Prescrip. Code	Management Emphasis	Vegetative Type	ALTERNATIVE (M Acres)						
			PRF	CUR	RPA	AVN	MKT	PRO	WFV
B01	General Dispersed Recreation	Blue Oak Savanna	0	1	2	24	17	1	8
OW1		Oak Woodland	13	25	29	50	33	13	12
MC1		Mixed Chaparral	6	22	12	113	64	4	16
PS1		Pinyon-Sage	1	2	65	25	1	1	0
<b>CF1</b>	<b>General Disp. Rec. &amp; Timber</b>	Conifer Forest	45	32	98	340	43	22	81
B02	Water-Oriented Recreation	Blue Oak Savanna	6	5	7	4	8	7	1
OW2		Oak Woodland	1	2	2	1	2	1	0
MC2		Mixed Chaparral	4	6	4	4	4	7	7
<b>CF3</b>	<b>Developed Recreation</b>	Conifer Forest	12	13	9	9	19	16	8
WF4	Wilderness	All Types	264	0	0	356	0	0	264
<b>WC4</b>	<b>Wilderness</b>	<b>All Types</b>	0	264	264	0	264	264	0
B05	Wildlife & Disp Recreation	Blue Oak Savanna	0	0	2	1	0	0	34
OW5		Oak Woodland	34	51	30	80	44	46	158
MC5		Mixed Chaparral	87	62	98	32	4	3	134
PS5		Pinyon-Sage	63	61	0	0	63	62	74
<b>CF5</b>	<b>Wildlife, Disp Rec &amp; Timber</b>	Conifer Forest	25	13	18	31	9	6	312
B06	Grazing	Blue Oak Savanna	37	31	32	7	18	35	0
<b>OW6</b>		Oak Woodland	122	92	109	29	91	110	0
MC6		Mixed Chaparral	64	72	26	0	79	144	0
PS6		Pinyon-Sage	9	11	9	0	10	11	0
<b>CF6</b>	<b>Grazing &amp; Timber</b>	Conifer Forest	8	12	36	2	3	2	0
<b>CF7</b>	<b>Timber</b>	<b>Conifer Forest</b>	<b>308</b>	<b>331</b>	<b>218</b>	<b>0</b>	<b>280</b>	<b>332</b>	<b>0</b>
MC8	Water Yield	Mixed Chaparral	0	0	18	0	11	4	0
<b>CF8</b>	<b>Water Yield</b>	<b>Conifer Forest</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>47</b>	<b>23</b>	<b>0</b>
SIA	Special Interest Areas	All Types	3	3	3	3	3	3	3
WSR	Wild. Scenic & Rec Rivers	All Types	5	0	5	6	0	0	5
RNA	Research Natural Areas								
	within Wilderness	(Included in Wilderness Acreages)	3	3	3	3	3	3	3
	outside Wilderness		2	2	2	2	2	2	2



Table 2.25 - Additional Key Comparisons by Alternatives  
(Average Annual In Decade 5)

	PRF	CUR	RPA	AMN	MKT	PRO	W/FV
<b>RECREATION OPPORTUNITIES: (M Acres)</b>							
Primitive	106.1	106.1	106.1	106.1	106.1	106.1	106.1
Semi-primitive Non-motorized	274.3	226.5	250.5	346.1	211.9	225.9	288.3
Semi-primitive Motorized	201.2	200.4	206.5	196.4	202.0	197.1	242.1
Roaded Natural	529.6	578.0	547.9	462.4	591.0	581.9	474.5
Rural	7.8	8.0	8.0	8.0	8.0	8.0	8.0
<b>M RVD'S</b>							
Primitive	19.0	15.8	18.3	18.9	18.2	18.9	19.0
Semi-primitive Non-motorized	114.0	94.9	109.8	113.5	109.1	113.4	114.0
Semi-primitive Motorized	76.0	63.3	73.2	15.7	72.7	75.6	76.0
Roaded Natural	836.0	696.1	805.2	832.5	799.9	831.6	836.0
Rural	855.0	711.9	023.5	851.4	818.1	850.5	855.0
<b>M PAOT'S</b>							
Primitive	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Semi-primitive Non-motorized	2.1	1.8	2.0	2.1	2.1	2.1	2.1
Semi-primitive Motorized	1.4	1.2	1.3	1.4	1.3	1.4	1.4
Roaded Natural	16.8	14.0	16.2	16.7	16.1	16.7	16.8
Rural	17.2	14.3	16.6	17.1	16.5	17.1	17.2
<b>M SAOT's 1/</b>	<b>23.9</b>	<b>23.9</b>	<b>13.5</b>	<b>13.5</b>	<b>23.9</b>	<b>23.9</b>	<b>83</b>
<b>VISUAL QUALITY OBJECTIVES (M Acres):</b>							
Preservation	264.1	264.1	264.1	355.6	264.1	264.1	264.1
Retention	162.0	198.6	217.2	547.8	184.7	168.1	336.8
Partial Retention	434.6	329.6	372.8	215.6	267.3	231.8	518.1
Modification	195.2	256.0	201.1	0	311.8	371.6	0
Maximum Modification	63.1	70.7	63.8	0	91.1	83.4	0
<b>WILDERNESS (M Acres)</b>	<b>264.1</b>	<b>264.1</b>	<b>264.1</b>	<b>355.6</b>	<b>264.1</b>	<b>264.1</b>	<b>264.1</b>
<b>SPECIAL INTEREST AREAS (Acres)</b>	<b>3,190</b>	<b>3,190</b>	<b>3,190</b>	<b>3,190</b>	<b>3,190</b>	<b>3,190</b>	<b>3,190</b>

1/ Thousand Skiers at One Time. The information provided shows how many skiers could use facilities developed under the various alternatives and is not duplicative of RVD information shown above.

Table 2.25 - Additional Key Comparisons by Alternatives (Continued)  
(Average Annual in Decade 5)

	PRF	CUR	RPA	AMN	MKT	FRO	WFV
<b>SILVICULTURAL PRACTICE:</b>							
Clearcut (Acres)	2,000	617	1,554	0	3,360	3,337	453
Shelterwood (Acres):							
Seed Cut	149	2,013	012	0	222	402	335
Removal Cut	104	1,548	178	0	237	304	144
Group Selection and/or							
Other Harvest (Acres): <u>1/</u>	013	564	1,053	1,404	344	450	1,402
Intermediate Harvest (Acres):							
Commercial Thinning	0	0	0	0	0	0	0
Salvage/Sanitation <u>2/</u>	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Timber Stand Improvement <u>3/</u>	4,635	3,716	5,202	1,316	6,599	6,991	3,313
Reforestation <u>4/</u>	2,813	2,233	2,252	587	3,865	3,953	1,731
<b>ACRES WITHDRAWN</b>							
FROM MINERAL ENTRY:	11,470	11,470	9,270	9,270	11,470	11,470	6,970

- 1/ Includes incidental timber harvest not assigned to specific prescriptions on actual acres treated (5% of FORPLAN assignment).
- 2/ Current salvage will exist for each alternative.
- 3/ Includes all release, thinning, and other treatments which protect the stand, increase growth rate, or improve stand quality.  
(Note. Several TSI treatments will occur on the same acres within a decade. The affected acres are reported twice.)
- 4/ Includes natural and artificial.

Table 2.26 " **Land Classification for Timber (M Acres in Decade One)**

CLASSIFICATION	PRF	CUR	RPA	AMN	MKT	PRO	WFV
NON-FORESTED LAND (includes water) <u>1/</u>	273	273	273	273	273	273	273
FORESTED LAW <u>2/</u>	846	846	846	846	846	846	846
FOREST LAED WITHDRAWN FROM TIMBER PRODUCTION <u>3/</u>	199	199	199	199	199	199	199
FOREST LAM) NOT CAPABLE OF PRODUCING INDUSTRIAL WOOD <u>4/</u>	167	167	167	167	167	167	167
FOREST LAM) PHYSICALLY UNSUITED:							
a. Irreversible damage likely to occur	0	0	0	0	0	0	0
b. Not restackable within 5 years of final harvest <u>5/</u>	28	28	28	28	28	28	28
FOREST LAED WITH INADEQUATE INFORMATION <u>6/ 7/</u>	32	32	32	32	32	32	32
TENTATIVELY SUITABLE TIMBER EASE	420	420	420	420	420	420	420
NOT APPROPRIATE FOR TIMBER UNDER THE ALTERNATIVE <u>8/</u>	75	122	91	141	115	94	149
TOTAL UNSUITABLE FORESTED ACRES <u>9/</u>	501	548	517	567	541	520	575
TOTAL SUITABLE FORESTED ACRES	345	298	329	279	305	326	271
TOTAL NATIONAL FOREST ACRES	1,119	1,119	1,119	1,119	1,119	1,119	1,119

1/ Strata: SB, SA, SC, SM, SR, SX, GX, GH, NB, NM, FB, CL (See Appendix C, Section III of the Forest Plan for definitions of strata.)

2/ All other Strata

3/ Wilderness

4/ Strata: HB1, HXX, DXX, FXX, PJ, PC, CJ, JT from available forest land.

5/ Strata: HB2, SA2, SC2, SM2, SX2 from available forest land.

6/ CAS timber strata acres from the available forest land which have soil flag 2.

7/ Lands for which current information is inadequate to project responses to timber management. Usually applies to low site lands.

8/ Lands identified as not appropriate for timber production due to: (a) assignment to other resource uses to meet Forest Plan Objectives; (b) management requirements; (c) not being cost efficient in meeting Forest Plan Objectives over the planning horizon; and (d) dedicated spotted owl network.

9/ Lands included in 3/, 4/, 5/, 6/, 7/, and O.

Table 2.27 - Summary of Key Environmental Consequences

Resource Element	ALTERNATIVE		
	PRF	CUR	RPA
Theme	Emphasizes timber, grazing, and dispersed recreation over developed recreation and nonmarket resources.	Emphasizes timber, grazing, and dispersed recreation over developed recreation and nonmarket resources.	fleets the 1980 RPA goals. Market resource production has priority over nonmarket resources.
Socioeconomic	All social groups are better off except for Native Americans. <b>who</b> experience no change.	There is no change from the present.	All social groups, except Native Americans better off. Native Americans experience no change.
Air Quality	There will be a steady increase to a relatively high level of developed recreation. This will result in periodically reduced visibility and lowered air quality.	There will be a <b>moderate</b> increase to a relatively low level of developed recreation. This will result in some periods of lowered air quality. Fire management would have no immediate effect on air quality.	There will be a steady increase to a relatively high level of developed recreation and wildfire. This will result in periodically reduced visibility and lowered air quality.
Diversity	Prescribed burning of chaparral produces increased diversity through a mosaic of age classes with <b>35%</b> young, <b>35%</b> middle age, and 30% mature. Timber harvest produces a broad mix of conifer age classes. Both the chaparral and conifer <b>zones</b> have increased <b>species diversity</b> .	Chaparral treatments and timber harvest continue at the current level, <b>maintaining</b> the current diversity through time.	Prescribed burning of chaparral produces <b>increased</b> diversity through a mosaic of age classes with <b>40%</b> young, <b>40%</b> middle age, and <b>20%</b> mature. Timber harvest maintains the current level of <b>diversity</b> in the conifer zone. The chaparral zone has increased <b>species diversity</b> .
Soil Productivity and Water Yield	There is a moderately high likelihood of maintaining long-term soil productivity, with overall positive effects on the soil resource. Water yield increases from 2 to <b>3%</b> over the present level.	There is a high likelihood of maintaining long-term soil productivity with essentially no overall positive or negative effects on the soil resource. Water yield increases 0 to <b>3% over</b> the present level.	There is a moderately high likelihood of <b>maintaining</b> long-term soil productivity with overall <b>positive</b> effects on the soil resource. <b>Water</b> yield increases <b>1 to 3%</b> over the present level.



Table 2.21 - Summary of Key Environmental Consequences - (continued)

ALTERNATIVES

Resource Element	AMN	MKT	FRD	WEV
Theme	Emphasizes wildlife and fish, dispersed recreation, visual quality, and wilderness.	Emphasizes high production levels of timber <del>grazing</del> , and developed recreation <del>over</del> non-market resources.	Meets the 1985 Regional high timber goals and emphasizes market resources <del>over non-market</del> resources.	Emphasizes high levels of consumptive and <del>non-consumptive recreation</del> use of wildlife and fish. Visual quality is emphasized.
Socioeconomic	Local recreation users <del>are</del> better off. All other social groups are worse off.	All social groups are better off except Native Americans, who experience no change.	All <del>social</del> groups <del>are</del> better off except Native Americans, who experience no change.	All social groups are better off except Native Americans, who experience no change.
Air Quality	There will <del>be</del> a steady increase to a relatively high level of developed recreation and wildfire. This will <del>result</del> in periodically reduced <del>visi-</del> bility and lowered air quality.	There will be a steady increase to a relatively high level of developed recreation and wildfire. This will result in periodically reduced <del>visi-</del> bility and lowered air quality.	<del>There will be</del> a steady increase to a relatively high level of developed recreation and wildfire. This will result in periodically reduced <del>visi-</del> bility and lowered air quality.	There will be a steady increase to a relatively high level of developed recreation and wildfire. This will result in periodically reduced <del>visi-</del> bility and lowered air quality.
Diversity	Prescribed burning of chaparral produces increased diversity through a mosaic of age classss. Reduced timber harvest leads to <del>less</del> diversity in the conifer zone. The chaparral zone has increased species <del>diversity</del> .	Diversity in the chaparral declines until decade 5 when large areas are burned, producing a mix of 60% young, and 40% mature age classes. Conifer diversity increases dramatically through a much increased mix of age classes and species <del>diversity</del> .	Diversity in the <del>chaparral</del> declines until decade 5 <del>when</del> large areas are <del>burned</del> , producing a mix of 60% young, and 40% mature age classes. Conifer diversity increases dramatically through a much increased mix of age classes and species diversity.	Prescribed burning of chaparral produces <del>in-</del> creased diversity through a mosaic of age classes, with 40% young, 40% middle and 20% mature age classes. Conifer diversity increases <del>dramatically</del> through a <del>much</del> increased mix of age classes. Species diversity In both chaparral and conifer zones is much increased.
Soil Productivity and Water Yield	There is a high likelihood of maintaining long-term soil productivity with overall positive effects on the soil resource. Water yield remains essentially at the present level.	There <del>is</del> a moderate likelihood of maintaining long-term soil productivity. Water yield increases from 3 to 5 percent <del>over</del> the present level.	There is a moderate likelihood of maintaining long-term soil productivity. Water yield increases 3 to 5 percent over the present level.	There is a moderate likelihood of maintaining long-term soil productivity with overall positive effects on the soil resource. Water yield increases from 0.3 to 1.1 percent over the present level.

Table 2.21 - Summary of Key Environmental Consequences (continued)

Source Element	ALTERNATIVE		
	PRF	CUR	RPA
Fish and Wildlife	Potential production of trout remains at the current level. There is a 27% increase in potential habitat for wildlife species associated with early successional stages, a 30% decrease for species associated with late successional stages & a 15% decrease for species associated with mast production.	Potential production of trout remains at the current level. There is a 17% increase in potential habitat for wildlife species associated with early successional stages, a 30% decrease for species associated with late successional stages & a 10% decrease for species associated with mast production.	Potential production of trout increases 1% over the current level. There is a 15% increase in potential habitat for wildlife species associated with early successional stages, a 22% decrease for species associated with late successional stages & a 10% decrease for species associated with mast production.
Further Planning and Wilderness Study Areas	The Scodie Mountain FPA, Oat Mountain FPA, and the DLM Rockhouse WSA will retain their wilderness characteristics under all alternatives.  Moses Further Planning Area will lose its Wilderness characteristics beginning in the first decade via roading & timber harvest. Dennison FPA will have some timber harvest undertaken with aerial logging systems (no roading). About 12,500 acres of BLM Rockhouse WSA are recommended for wilderness.	All Further Planning Areas will generally retain their wilderness characteristics. Areas are not recommended for wilderness.	Moses and Dennison Further Planning Areas & the DLM Rockhouse WSA will lose their wilderness characteristics. About 12,650 acres of BLM Rockhouse WSA are recommended for wilderness.
Grazing	Forage production improves slightly in the conifer zone. Overall demand for livestock forage is closely met. Industry stability is increased.	Forage production remains stable. Forage demand greatly exceeds supply. Industry stability is decreased.	Forage production declines slightly. Overall forage demand exceeds supply. Industry stability is decreased.

Table 2.27 " Summary of Key Environmental Consequences " (continued)

Resource Element	ALTERNATIVE			
	AMN	MKT	PRO	WFV
Fish and Wildlife	Potential production of trout increased 15 over the current level. There is a 10% increase in potential habitat for wildlife species associated with early successional stages, an 7% decrease for species associated with late successional stages, and a 5% decrease for species associated with mast production.	Potential production of trout remains at the current level. There is a 72% increase in potential habitat for wildlife species associated with early successional stages, a 37% decrease for species associated with late successional stages, and a 15% decrease for species associated with mast production.	Potential production of trout remains at the current level. There is a 37% increase in potential habitat for wildlife species associated with early successional stages, a 48% decrease for species associated with late successional stages, and a 27% decrease for species associated with mast production.	Potential production of trout increases 1% over the current level. There is a 30% increase in potential habitat for wildlife species associated with early successional stages, a 28% decrease for species associated with late successional stages, and potential habitat for species associated with mast production will decrease by 10%.
Further Planning and Wilderness Study Areas	The Scodie Mountain FPA, Oat Mountain FPA, and BLM Rockhouse WSA will retain their wilderness characteristics under all alternatives.			
	All Further Planning Areas are recommended for wilderness.	Moses & Dennison FPA's will lose their wilderness characteristics. About 9,710 acres of the BLM Rockhouse WSA are recommended for wilder-	Moses and Dsnnison FPA will lose their wilderness characteristics. No areas are recommended for wilderness.	Moses FPA will lose its wilderness characteristics. Dennison will retain its wilderness characteristics. No areas are recommended for wilderness.
Grazing	Forage production declines. Forage demand exceeds supply. Industry stability is decreased.	Forage production increases. Forage demand is met. Industry stability is increased.	Forage production increases. Forage demand is met. Industry stability is increased.	Forage production remains stable in the conifer zone. Forage demand exceeds supply. Industry stability remains at the current level.

Table 2.27 - Summary of Key Environmental Consequences - (continued)

Resource Element	ALTERNATIVES		
	PRF	CUR	RPA
Recreation	Dispersed opportunities <b>meet</b> demand in all periods while developed drops slightly below by <b>decade 3</b> , then recovers. Overall, opportunities for high quality recreational <b>experiences</b> increase on the Forest. Road access through the Forest will increase, as will trails. OHV use will be enhanced on designated roads and trails. The quality of fishing experience will remain stable, and there will be some conflict between recreationists and cattle.	<b>Both</b> developed and dispersed opportunities do not meet demand in any decade, except for skiing. The range of opportunities will remain the same as current, with increases only for skiing. Road access through the Forest will show only a slight <b>increase</b> , and will not meet user needs. OHV opportunities will remain at the current level. Fishing opportunities will not meet demand. Cattle and recreationist conflicts will increase. Quality of the recreation experience will be low.	Both developed and dispersed opportunities will meet user demand, except developed opportunities are short in <b>decade 3</b> . Overall, the recreation opportunities will increase on the Forest. The quality of the experience will be high. Road access through the Forest will increase. OHV opportunities will decrease. Fishing opportunities will increase. Cattle and recreationist conflicts will decrease until decade 4 and will increase in decade 5.
Chaparral	Productivity and species diversity <b>increase</b> significantly with 35% of the chaparral maintained in early stages of succession.	Productivity and <b>species</b> diversity <b>increase</b> significantly with 40 of the chaparral maintained in early stages of succession.	Productivity and species diversity <b>increase</b> significantly with 405 of the chaparral maintained in early stages of succession.
Meadows	The condition and productivity of the meadows improves and there is less likelihood of gully erosion.	The condition and <b>productivity</b> of the meadows improves and there is less likelihood of gully erosion.	The condition of the meadows improves but there <b>is</b> less likelihood of gully erosion and productivity increases.

Table 2.27 - Summary of Key Environmental Consequences - (continued)

Resource Element	ALTERNATIVE			
	AMN	MKT	PRO	WV
Recreation	Both developed and dispersed opportunities meet demand except developed opportunities are short in decade 2 and skiing demand may not be met in the later decades. Quality of dispersed opportunities will increase significantly, while developed will remain at a low level. Road access through the Forest will increase significantly. OHV opportunities will decrease. Fishing opportunities will increase. There will be a significant reduction in cattle and recreationist conflicts.	Dispersed and developed opportunities will meet demand, except developed will be below demand in decades 3 and 4. The dispersed experiences will be provided at low quality levels while developed are provided at high quality levels. Road access through the Forest will increase. OHV opportunities will increase. Fishing opportunities will not meet demand. Cattle and recreationist conflicts will increase.	Dispersed opportunities will meet demand. Developed opportunities will be slightly below demand until decade 5. Developed and dispersed opportunities increase, with developed provided at a high quality level and dispersed at a low quality level. Road access through the Forest will far exceed demand. OHV opportunities will increase significantly. Fishing opportunities will not meet demand. Cattle and recreationist conflicts will increase.	Dispersed opportunities will meet demand. Developed will be below demand except in decade 3. Both developed and dispersed opportunities will be provided at a high quality level. Road access through the Forest will generally increase, with some localized closures. OHV opportunities will increase. Fishing opportunities will increase. Cattle and recreationist conflicts will be reduced in some areas, but increase overall.
Chaparral	Productivity and species diversity increase significantly with 403 of the chaparral maintained in early stages of succession.	Productivity and species diversity decline until the 5th decade when they increase significantly above the current level. 603 of the chaparral is in early successional stages at the end of the 5th decade.	Productivity and species diversity decline until the 5th decade when they increase significantly above the current level. 601 of the chaparral is in early successional stages at the end of the 5th decade.	Productivity and species diversity increase significantly, with 40% of the chaparral maintained in early successional stages.
Meadows	The condition of the meadows improves but there is less likelihood of gully erosion. Productivity increases.	The condition and productivity of the meadows declines. There is increased likelihood of gully erosion.	The condition and productivity of the meadows declines. There is increased likelihood of gully erosion.	The condition and productivity of the meadows improves. There is less likelihood of gully erosion.

Table 2.27 - Summary of Key Environmental Consequences - (continued)

Resource Element	ALTERNATIVES		
	PRF	CUR	RPA
Timber	<p>About 34511 acres are managed for timber production. A combination of even-aged &amp; uneven-aged management is used on this area. About <b>276,000</b> acres would be managed under even-aged management. Rotation age would average 110 years. Trees would average about <b>26</b> inches DBH and 100 feet tall. On about 48,000 acres, rotation would average 140 years and trees would be about 36 inches in diameter and over 100 feet tall, and group selection would be the dominant harvest method. Stand maintenance would be prescribed on 21,000 acres. The remaining capable lands are unsuitable.</p>	<p>About <b>29811</b> acres are managed for timber production. An even-aged management system is used on <b>676</b> of this land. On about 184,000 acres, rotations will average <b>80 years</b>, trees will be about <b>24</b> inches in DBH and be E0 feet tall. On about 14,000 acres, rotations will average 140 years, trees will be about <b>36</b> inches ODH and be taller than 100 feet. The rest of the timbered lands are managed under stand maintenance.</p>	<p>About <b>32911</b> acres are managed for timber production. An even-aged management system is used on <b>705</b> of this land. On about 145,000 acres, rotations will average 80 years, trees will be about 24 inches in ODH and be 80 feet tall. On about <b>76,000</b> acres, rotations will average 140 years, trees will be about 36 inches DBH and be taller than 100 feet. The rest of the timbered lands are managed under stand maintenance.</p>
Visual Resources	<p>An <b>8.6</b> change from the Existing Visual Condition (EVC) index value will occur, with the greatest changes occurring in the 2nd and 5th decades. <b>Twenty-four</b> percent of the Forest will be in Class I or the Preservation Visual Quality Objective (VQO).</p>	<p>A <b>9.7</b> change from the EVC index value will occur, with the greatest changes occurring in the 5th decade. Twenty-four percent of the Forest will be in Class I or the Preservation VQO.</p>	<p>A <b>9.4</b> change from the EVC index value will occur, with the greatest changes occurring in the 4th and 5th decades. Twenty-four percent of the Forest will be in Class I or the Preservation VQO.</p>

Table 227 - Summary of Key Environmental Consequences - (continued)

Resource Element	ALTERNATIVE			
	AMN	MKT	PRO	WEV
Timber	About 279,000 acres are managed for timber production. Uneven-aged management is used on all of this area. Rotation age would average about 150 years. Trees would average about 36 inches DBH and over 100 feet tall.	About 305,000 acres are managed for timber production. An even-aged management system is used on about 95% of this land. On about 247,000 acres, rotations would average 80 years, trees would be about 24 inches DDH and be 80 feet tall. On about 43,000 acres, rotations would average 140 years, trees would be about 36 inches ODH and be taller than 100 feet. The rest of the timbered lands would be managed under stand maintenance.	About 326,000 acres are managed for timber production. An even-aged management system is used on about 90% of this acreage. On about 282,000 acres, rotations would average 80 years, trees would be about 24 inches DBH and be 00 feet tall. On about 16,000 acres, rotations would average 140 years, trees would be about 36 inches DBH and be taller than 100 feet. The rest of the timbered lands would be managed under stand maintenance.	About 271,000 acres are managed for timber production. An even-aged management system is used on about 50% of this acreage. On about 217,000 acres, rotations would average 140 years, trees would be about 36 inches DBH and be taller than 100 feet. The rest of the timbered lands would be managed under stand maintenance.
Visual Resources	A 2.3 change from the EVC index value will occur, with the greatest changes occurring at a constant rate between the 2nd and 5th decades. Thirty-two percent of the Forest will be in Class I or the Preservation VM.	An 11.5 change from the EVC index value will occur, with the greatest impacts in the 5th decade. Twenty-four percent of the Forest will be in Class I or the Preservation VQO.	A 12.7 change from the EVC index value will occur with the greatest impacts in the 3rd and 5th decades. Twenty-four percent of the Forest will be in Class I or the Preservation VQO.	A 4.7 change from the EVC index value will occur, with the greatest impacts in the 2nd decade. Twenty-four percent of the Forest will be in Class I or the Preservation VQO.

Table 2.28 - Summary Comparison of the Treatment of Issues

Issue and Question #	Output or Effect to be measured	PRF	CUR	RPA	AMN	IKT	PRO	WFV
<b>I. WILDERNESS MANAGEMENT</b>								
Issue: How should designated wilderness be managed?								
Designated wildernesses will be managed as directed in existing wilderness plans or in plans prepared for new wilderness after following the NEPA process.								
Prescribed fire will be used in some alternatives to enhance Wilderness values.								
Use of prescribed fire.	Yes	No	No	Yes	No	No	Yes	
<b>II. RARE II FURTHER PLANNING AREAS</b>								
Issue: How should Further Planning Areas be allocated and managed?								
Ac recommended-NFS for wilderness-BLM	0 12,500	0 0	0 12,650	91,460 35,560	0 9,710	0 0	0 0	
Emphasis of mgt in non-wilderness allocated area.	Commodity & Amenity	Commodity & Amenity	Commodity & Amenity	Amenity	Commodity	Commodity	Commodity & Amenity	
A. How can we best coordinate allocation of Further Planning Areas with other Federal and State agencies owning adjacent lands?								
N/A	Through formal and informal discussions allocations were coordinated with agencies.							
B. What resource trade-offs will be considered in allocating Further Planning Areas to Wilderness or non-wilderness?								
N/A	The full range of resources, including wilderness, were considered for Further Planning Areas. In alternatives emphasizing commodity production, Further Planning Areas with potential to produce commodities were allocated to non-wilderness. Amenity values were being emphasized, areas were allocated to either non-wilderness and managed for amenity uses or allocated to wilderness uses (See Appendix C of the EIS for specifics of each area).							
C. With respect to each of the Further Planning Areas, what is the appropriate balance of wilderness and non-wilderness?								
N/A	Further Planning Areas were not subdivided but were included in total. In order to carry Out the theme of each alternative, Further Planning and Wilderness Study Areas were allocated to wilderness or non-wilderness uses. For each alternative, the balance is shown below.							
Acres recommended for wilderness	12,500	0	12,650	127,020	9,710	0	0	
Acres recommended for non-wilderness	114,520	127,020	114,370	0	117,310	127,020	127,020	

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Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WFV
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**III. LAND OWNERSHIP ADJUSTMENT**

Issue: What should be the Sequoia National Forest System land ownership adjustment policy regarding adjacent lands?

A. What are the **priority** considerations for exchange or purchase?

Resource type of land to be acquired and emphasis on acquisition	Acquire some <b>timber</b> , range, and recreation lands if they become available.	Acquire some lands which have recreation potential <b>or</b> contain unique plants.	Acquire some timber. range and recreation lands if they become available.	Acquire lands with unique plants if they become available.
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**IV. WATER**

Issue: What management practices should be undertaken to adjust quantity, quality, and timing of water yield and uses within the Sequoia NF?

Options for water yield improvement include treating chaparral and timbered land to increase the quantity and improve the timing (as discussed in B, E, and F below). Streamside Management Zones (D below). restoring damaged watersheds (H below). and meeting Minimum Management Requirements (F below) maintain **or** improve water quality (F below).

A. How can the Sequoia NF coordinate with others to insure that impacts are evaluated on a total watershed **basis**?

N/A	In only the <b>MKT</b> Alternative. the Tule River watershed is managed for water yield improvement by a Coordinated Resource <b>Management</b> Plan. In conjunction. impacts would be evaluated. The Tule River was identified in the Affected Environment as the watershed <b>having</b> the most need for coordination.
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B. To what extent should the Forest attempt to produce water to meet the needs of downstream users?

Average % increases in <b>water yield</b> *(water yield prescriptions used)	2.0	0.1	<b>0.8</b>	<b>-0.4</b>	26	2.7	<b>0.3</b>
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C. What areas are **available/suitable** for storage in the future? What resource gains and losses are involved at any **new** storage sites?

N/A	<b>Potential</b> reservoir storage sites are discussed in Affected Environment and Appendix E of the <b>EIS</b> and described in the planning records. Site-specific proposals have not <b>been</b> made; therefore. resource production potentials are not known. Site-specific evaluations will be made when firm proposals are made.
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Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WFV
D.	How should sediment-causing activities be modified to minimize adverse Impacts?							
	BMP's are implemented for all alternatives and reduce sediment Production. Streamside Management Zones (SMZ) lessen sediment Impacts by increasing the sediment filtering ability.							
E.	What methods should be used to adjust quantity and adjust timing of runoff?							
	Quantity and timing differences occurred as a result of resource management activities carried out for each alternative. As discussed in the Affected Environment, clearcutting of timber, type conversion of mixed chaparral to grass, and burning or mechanical treatment of mixed chaparral have the most potential to increase water yield. Snow-melt can be delayed, causing improved timing of streamflow, by locating strip and small patch timber cuts to produce the most Shade. These practices have been incorporated into management prescriptions which have been applied to the PRF, RPA, MKT, and PRO Alternatives. These and other resource driven prescriptions which include clearcutting and chaparral treatments are applied in all the alternatives and result in varying amounts as shown in B above.							
F.	What are the trade-offs involved in adjusting water quality and quantity?							
	The soil and water (water quality) Minimum Management Requirement resulted in a \$0.1 million decrease in PMV. The Riparian Areas MMR resulted in a 6.9 million decrease in PIN. Water quantity and quality vary in average annual thousand acre-feet in the first decade as follows:							
	Quantity	751	737	742	733	755	756	730
	Quality standards	744	730	735	727	743	744	731
G.	What should the Sequoia NF's water management policy be with regard to consumptive and nonconsumptive water use?							
	The Regional Guide requires that balanced consideration be given conflicts between consumptive and nonconsumptive use of additional water, while ensuring that irreversible and Irretrievable Impacts to consumptive or nonconsumptive uses will not occur. This is the same for all alternatives.							
H.	What efforts should be made to repair damaged watersheds?							
	The efforts to repair damaged watersheds were evaluated by varying the acreage treated for each alternative as shown below:							
	First decade average annual acres of watershed restoration	140	140	270	200	200	200	200
V:	<u>RECREATION</u>							
	Issue: What types of recreation and interpretive services opportunities should be provided, and where? What special area classifications should be proposed?							
	Issue resolution is explained by answer to questions A through I.							

Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WFV
A.	What is the present and future demand for various recreation activities and facilities? What portion of this demand should the Forest satisfy?	Recreation demand for various activities is described in the AMS and contained in the planning records.						
	Amount of dispersed recreation provided (MRVD)	Decade 1 Decade 5	1818 2994	1391 1824	1828 2993	1890 2998	1888 2993	1888 2993
	Amount of developed recreation provided (MRVD)	Decade 1 Decade 5	1233 1987	1141 1499	1222 1987	1232 1917	1234 1987	1162 1987
B.	How can recreation user conflicts be minimized?	Given management of recreation opportunities under various ROS settings, conflict resolution is a function of the level of service provided. (See below for developed sites and VE. below for dispersed areas) and the level of information service provided (see VF. below). As such, it will vary between alternatives, but in all cases will meet an acceptable level.						
	Level of developed site management	Std * Low **	Low Std All Sites	Std All Sites	Low Std All Sites	Std All Sites	Std All Sites	Std All Sites
		* = in Fee Sites; ** = Non-Fee Sites; Std = Standard						
C.	How should recreation use be managed to protect other resource values?	N/A Management of recreation will be within guidelines of various ROS classes to establish particular settings, experiences and activities that are appropriate. As such, a combination of managerial (e.g., design and/or regulatory) informational and educational techniques will be implemented and tailored to the specific resources involved.						
D.	How should recreation activities be coordinated with other public agencies?	N/A Recreation activity coordination with others under all alternatives will be accomplished through the environmental analysis (scoping) process, review of each others plans and through comment on this Forest Plan and EIS.						
E.	How should dispersed recreation be managed?	Dispersed area recreation management will be a function of the alternative emphasis and the specific prescriptions applied to an area of ground. Within this framework, the level of management can be considered and envisioned as follows:						
	Level of dispersed area management	Std * Low **	Low All Areas	Std All Areas	Std All Areas	LOW All Areas	LOW All Areas	Std All Areas
		* = in Heavy Use Area; ** = in the rest of the areas; Std = Standard						

Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	QR	RPA	AMN	MKT	PRO	WV
F.	What kinds of Visitor Interpretive Services facilities and programs are needed? Where will they be located to best serve Forest users?							
1.	Kinds of Programs							
	Level of self-service information (e.g., signs and brochures)	H	M	H	L	L	L	H
	Level of programs involving personalized contacts	M	L	M	H	H	H	L
		(H=High, M=Moderate, L=Low)						
2.	Location of Facilities and Programs							
	Priority or Emphasis Levels	Location of Interpretive Facilities and Programs by Interpretive Areas and Alternatives						
	<u>Interpretive Area</u>							
	Western Divide	H	M	M	H	M	M	L
	Tule Plateau	M	M	M	H	M	M	L
	Kern River	H	M	M	H	H	H	L
	Hume	H	M	M	H	H	H	M
	Desert Mountains	L	L	L	L	L	L	L
		(H=High, M=Moderate, L=Low)						
G.	How can recreation use by the handicapped and elderly best be encouraged in developed sites and in dispersed areas and trails?							
	Day-use opportunities emphasized	Yes	No	Yes	No	No	No	Yes
	Number of barrier-free trails in campgrounds	2	0	0	3	0	0	0
	Some facilities made useable by handicapped	Yes	Yes	Yes	Yes	Yes	Yes	Yes
H.	Where should Special Interest Areas be recommended for classification? Where should other special designations be proposed?							
	There are five potential Potential Areas which have been identified. A detailed study has been completed for only one (Twisselmann) and all five have been recommended for establishment in all alternatives. All will be protected to maintain their potential until establishment. There are four potential Research Natural Areas which have been identified for possible establishment. As detailed resource information has not been gathered for them, they will be protected until establishment reports have been completed. All alternatives are the same with respect to RNAs.							

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Table 2.20 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured,	PRF	CUR	RPA	AVN	MKT	PRO	WFV
I.	Which potential alpine ski sites (including expansion sites) should be allocated for possible future development. What should be the priority and timing?							
	In addition to Peppermint, which is recommended for development in a project EIS, two sites (Sherman Pass and Mitchell-Maddox) have the highest potential study for development.							
	Number of ski areas proposed in addition to Peppermint	2	2	1	1	2	2	0
	Number of existing sites expanded	1	1	1	1	1	1	1
	The priority for study for development between Sherman Pass and Mitchell-Maddox has not been determined. The anticipated timing for development of either Sherman Pass and/or Mitchell-Maddox is shown below:							
	Start First:	Period 2	Period 2	Period 5	Period 2	Period 3	Period 1	N/A
	Finish First:	Period 3	Period 2	Period 5	Period 2	Period 4	Period 3	N/A
	Start Second:	Period 3	Period 2	N/A	MIA	Period 4	Period 3	N/A
	Finish Second:	Period 4	Period 2	N/A	N/A	Period 4	Period 4	N/A

VI. OFF-HIGHWAY VEHICLES

Issue: How should off-highway vehicles (OHV's) be managed?

Issue resolution is explained by answers to questions A and B, below

- A. What is the present and future demand for various OHV uses? What portion of this demand should the forest satisfy, and where?

Demand for OHV use      Index of demand for OHV opportunities is established at 1.72 by 2030. (Using a base of 1.0 in 1982, when use was 70,200 RVD's for OHV's and 4,400 RVD's for snowmobiles, this will result in 2030 use projections being 134,500 RVD's for OHV's and 7,600 RVD's for snowmobiles).

Portion of demand      Recognizing the acreages available and the total protected use of OHV's on the Forest, the Sequoia NF can satisfy all projected demands.

Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CLR	RPA	AMN	PKT	PRO	WFV
The following areas are open for OHV use:								
	Areas where OHV's may be used	Entire Forest: designated roads & trails only with identified emphasis areas.	Kern Plateau. Tule River RD & SE portion of Hume Lake RD: designated roads & trails only. Remainder of Forest open to OHV's	Entire Forest: designated roads & trails only.	Entire Forest: open to OHV's.			Same as CUR except Scodles & Putes closed.
B.	How should conflicts between OHV's and other Forest activities be managed?	Various alternatives are developed to manage OHV activities consistent with the theme of the alternative. Specific miles are shown below. Conflicts are avoided via management actions which encourage responsible use through development of trail riding facilities, signing, maps, and user education/cooperation activities utilizing restrictions where necessary to prevent resource damage, facility damage, and/or user conflicts.						
	N/A							
	M Acres of NF Limited Use	855	267	855	764	---	---	306
	Open	---	580	---	---	855	855	358
	Closed	264	264	264	355	264	264	264

Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	IKT	FRO	WFV
<b>VII. TIMBER</b>								
Issue: How much timber should be harvested, and where?								
Resolution of the issue is explained by answers to the questions below.								
A. How should lands capable of producing commercial timber be managed?								
(M Acres)								
	Suitable land where timber production is emphasized and full yields are expected.	0 <sup>1/</sup>	184	146	11	241	282	0
	Suitable land where timber is produced, but rotations are longer and yields reduced.	334	14	76	115	43	16	217
	Suitable land managed for resources other than timber. Some timber is harvested.	21	99	107	163	15	28	54
	Land where only occasional opportunistic harvesting may be done.	75	123	91	142	115	94	149
B. How will timber harvest conflicts with other resources be minimized?								
The acres in A. above show that timber harvesting is restricted in alternatives to minimize conflicts. More specifically, each alternative reduces conflict in these ways:								
PRF	Modified timber harvesting is done on 12.9M acres of streamside management zones to protect fish and wildlife habitat. Timber harvest will be completed in such a way as to minimize visual impacts along most moderately and all heavily used travelways and use areas.							

<sup>1/</sup> 220 acres of Regulation Class I lands have an average rotation of 110 years as a result of retaining all available and suitable lands and scheduling harvest from them.

Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WFV
CUR	Modified timber harvesting will occur on 12911 acres of Streamside Management Zones to protect fish and wildlife habitat. Timber harvest and associated activities will be completed in such a way as to minimize visual impacts along most moderately and heavily used travel routes and use areas.							
RPA	Modified timber harvesting will occur on <b>12.9M</b> acres of Streamside Management Zones <b>to</b> maintain fish and wildlife habitat. Timber harvest and associated activities will be completed in such a way as to minimize <b>visual</b> impacts along most moderately and heavily used travel routes and use areas.							
AMN	<b>No</b> timber harvesting <b>is</b> done on <b>12.9M</b> acres of Streamside Management Zones to protect fish and wildlife habitat. Timber harvesting will be completed in such a way that will maintain the natural appearance over the entire Forest.							
MKT	Modified timber harvesting <b>is</b> done on <b>12.9M</b> acres of Streamside Management Zones to protect fish and wildlife habitat. Timber harvesting and associated activities will dominate most views except those from the most visually sensitive travel routes.							
PRO	Modified timber harvesting is done on <b>12.9M</b> acres of Streamside Management Zones to protect fish and wildlife habitat. Timber harvesting and associated activities will dominate most views except those from the <b>most</b> visually sensitive travel routes.							
WFV	<b>Modified</b> timber harvesting is done on <b>12.9M</b> acres of Streamside Management Zones to <b>protect</b> fish and wildlife habitat. Timber harvesting and associated activities will be visible in <b>most</b> views <b>but</b> will not dominate.  Additional <b>restrictions</b> on timber production to reduce conflicts are provided by Standards and <b>Guidelines</b> and does not change by alternative.							

VIII. GIANT SEQUOIA

Issue: **How** should giant sequoia (Sierra redwood) and associated species be managed?

Giant sequoia will generally be managed under the multiple-use concept. A Forest-wide **giant sequoia** management implementation plan will be prepared with public participation to set specific management direction for each grove. The total acres in each emphasis will approximate those shown below:

Acres of sequoia groves where timber production is emphasized	0	1,000	1,000	1,000	1,000	1,000	1,000
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Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WFV
	Acres of sequoia groves are not managed primarily for timber production	9,300	3,000	10,000	6,000	11,000	11,000	9,000
	Acres of sequoia groves where preservation is emphasized	3,900	9,000	2,000	6,200	1,000	1,000	5,900

A. What management practices should be used?

The full range of management practices may be used to manage giant sequoias. Site-specific practices, which will be used, will be determined after the completion of a Forest-wide management implementation plan and its associated environmental analysis.

IX. FISH AND WILDLIFE

Issue: What kinds and amounts of fish and wildlife habitat should be provided?

The resolution of the issue is described below.

A. What areas of what size should be managed for threatened, endangered, and sensitive fish, wildlife and plant species?

Decade and percent completion of Recovery or Management Plan.

Little Kern Golden Trout	2-100%	3-100%	2-100%	2-100%	4-100%	4-100%	2-100%
Peregrine Falcon	3-100%	5-100%	1-100%	1-100%	1-100%	1-100%	5-100%

Amount of habitat to support

Spotted Owl	40	40	40	40	40	40	40
Goshawk	The number and size of areas to be managed will be in accordance with Regional Guide EIS for goshawk.						

Sierra Red Fox	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Fisher	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Sensitive plants are protected wherever they occur under all the alternatives.

B. What areas of what size should be managed as special wildlife habitat for harvest species?

Area managed for harvest species (M acres)	50	15	70	25	54	54	115
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Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WFV
C.	How should fish habitat be managed?							
	Stream habitat improvement (total # miles for decade)	30	0	30	50	0	0	50
D.	What resource trade-offs will be necessary to manage fish and wildlife habitat?							
	Primary output trade-offs are: Range & Deer Numbers, Range & Fish Pounds in Decade 5							
	Timber (MMBF)	105	99	106	59	131	138	87
	Grazing (M AUM's)	89	63	80	59	92	92	71
	Deer (M Number)	14	12	13	15	14	14	15
	Fish (M Pounds)	92	77	78	75	77	77	78
E.	What opportunities exist to improve fish and wildlife habitat through the use of resource management practices?							
	See IX C. above							
	Options available for management of wildlife habitat							
	Prescribed burning	64	15	71	127	54	54	115
	Number of snags per acre on managed lands	1.5	1.5	3.0	3.0	1.5	1.5	3.0
	Square feet basal area of oaks per acre on managed lands	20	5	20	40	5	5	40
	Cubic feet per acre of downed logs on managed lands	132	35	70	140	35	35	140
	Miles of fish habitat improvement for Decade 1	30	0	30	50	0	0	50
F.	What should be the habitat management balance between harvest and non-harvest species?							
	Emphasis	Harvest	Harvest	Both	Non-Harvest	Harvest	Harvest	Harvest
X.	<u>ROADS AND TRAILS</u>							
	Issue: How should roads and trails be managed and maintained in the Forest?							
	Resolution of the issue is explained by answers to questions below.							

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Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WFV
A.	How can Forest roads be maintained and managed to meet both the administrative needs of the Forest Service and the needs of the Forest user?							
	All roads will be maintained and managed to prevent resource damage and to protect road investments.							
B.	Under what conditions should roads be opened or closed to public use?							
	Roads will be open to public travel unless closure is necessary to ensure resource protection, road investment protection, or save maintenance costs.							
	% of roads closed to avoid resource damage (Average over 50 years)	59	61	41	32	56	56	61
C.	How can roads be managed to protect other resources?							
	Roads are built and maintained to support planned resource activities and uses. Road closure, proper maintenance, road barriers, and signs are all tools in managing for resource protection.							
D.	How can the Forest trail system be maintained and managed to meet both the administrative needs of the Forest and the needs of the Forest user?							
	Maintenance Levels on Trails	Maintenance standard to be determined via use and system analysis. Will range from Level I to Level IV.	NRT and MST Level III. All others Level II maximum	Maintenance to be at original develop scale standard. Will range from Level I to Level IV.	Hiking - Level I Others - Level 2	Hiking - Level I Others - Level 1	Maintenance to be at original develop scale standard. Will range from Level I to Level IV.	
XI.	<u>ENERGY</u>							
	Issue: Where and to what degree should we manage for new energy production?							
	Issue resolution is explained by the answers to questions below.							
A.	What types of energy production and conservation practices are feasible?							
	N/A	The potential for generation of energy by various means is described in the Affected Environment (Chapter 3 of the EIS) and in the AMS located in Forest planning records. Conservation would be achieved in most alternatives through improved maintenance, replacement and retro-fitting of structures.						

Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMH	IKT	PRO	WFV
B.	What resource trade-offs will be <b>necessary</b> for energy production?							
	N/A	The resource trade-offs for generation of energy will be <b>determined</b> after site-specific proposals have been received and an environmental analysis completed.						
C.	What are the demands for energy production from the Sequoia <b>NF</b> ? What portion of the energy demand will be fulfilled?							
	N/A	The demand for energy is described in the Affected Environment ( <b>Ch. 3 of the EIS</b> ) and the <b>AMS</b> located in the Forest planning records. The amount of energy which will be produced will be determined after an evaluation of specific project proposals which will be made through the completion of an environmental analysis.						
<b>XII. <u>GRAZING</u></b>								
Issue: How should the Sequoia NF manage its grazing areas?								
Issue resolution is explained by the answers to questions below.								
A.	What <b>resource</b> trade-offs and costs are involved in management of range resource?							
	N/A	The resource mixes and trade-offs vary by alternative. The costs and values of resources described are <b>in</b> the AMS and in Appendix E of the EIS.						
B.	How should meadows used by livestock be managed?							
	N/A	Standards and Guidelines set utilization standards for all alternatives.						
	Restriction on grazing to reduce conflict with wilderness users and wildlife	Yes	<b>NO</b>	<b>NO</b>	Yes	<b>NO</b>	<b>No</b>	Yes
C.	What is the livestock carrying capacity by vegetation type?							
	N/A	The livestock carrying capacity by vegetation type was defined <b>in</b> the <b>AMS</b> and does <b>not</b> vary by alternative.						

Table 2.28 - Summary Comparison of the Treatment Of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	MKT	PRO	WEV
D.	What are the opportunities to increase livestock carrying capacity on the Sequoia NF? What methods should be used?							
	The opportunities to increase grazing capacity lie in prescribed burning and type conversion of 50,000 acres of chaparral located on moderate slopes.							
	M Acres treated to increase grazing production	50	15	13	0	50	50	0
<b>XIII. RIPARIAN</b>								
	Issue: How should the Forest manage its streams and wetlands?							
	Major forest management options involve the degree of protection of streams and meadows. Streamside Management Zone (SMZ) widths and acreage vary by stream and class (as discussed in A and C below). These different zone widths and reduced timber harvesting within them (B below) result in varying levels of sediment filtering ability and habitat for wildlife species associated with older, mature stands of timber (C below). Meadow influence zones surround and primarily protect the wildlife habitat in and near meadows.							
A.	How will streamside zones be defined?							
	The general definition of SMZ is located in the Affected Environment in the Riparian Areas section.							
8.	What uses and activities will be allowed in riparian zones?							
	Streamside Management Zone							
	Low harvest level (individual trees removed)	X	X	X		X	X	
	No harvest				X			X
	Meadow Influence Zone							
	Average width in feet	175	170	205	210	180	165	280
	Average minimum area in timber size class 3 & 4, & crown closure 40-70%	60%	60%	65%	70%	65%	60%	80%

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Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AMN	TKT	PRO	WFV
C.	What are the trade-offs between stream and wetland protection and the production of goods and services?							
	Riparian Areas MMR resulted in a \$6.9 million decrease in PNW at 12,850 acres devoted to riparian (SMZ) management. Meadow influence zones trade-off in PNW is considered part of the SMZ decrease.							
XIV.	Issue: What is the desirable level of plant and animal diversity that the Forest should establish?							
	Diversity varies by alternative and is shown below:							
A.	What management activities should be used to maintain or create diversity?							
	M Acres by major activity over 2 decades							
	Clearcut & shelter wood harvest	34	38	37	0	61	98	46
	Proscribed burning	111	111	171	184	156	190	157
B.	How much vegetation change should occur, and where, during the 10-year planning period?							
	Conifer Zone							
	Conifer (M acres regenerated by clearcut & shelterwood)	18	21	21	0	29	62	11
	Chaparral (M acres burned)	26	10	27	38	8	8	33
C.	How much old growth timber should be maintained and where? How should it be managed?							
	Amount of old growth timber at end of fifth decade (M acres)	374	308	299	363	269	265	316

Table 2.20 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CUR	RPA	AVN	MKT	PRO	WFV
<b>1. BUDGET</b>								
	Issue: Is there too great a discrepancy between current and projected budget levels required to implement the Preferred Alternative (PRF)? Will substantially <b>lower</b> budgets substantially change resource programs and their priorities?							
	This is a Region-wide issue. Forest Plans describe the general allocation of land, outputs, standards, and guidelines which will be implemented subject to the annual budget level. Priorities will be determined each year. Appendix L has been added to the FEIS to explain the budget process and priorities. It includes discussion on outside funding sources, (e.g., State cooperative funds and volunteers)							
<b>2. CLEARCUTTING</b>								
	Issue: How should the silvicultural practice of clearcutting be applied on the Forest? Should the total number of acres clearcut be reduced?							
	See VII. <u>Timber.</u>							
<b>3. FISH AND WILDLIFE</b>								
	Issue: Will the management of fish and wildlife habitat be adequate in light of increases in Forest uses?							
	See IX. <u>Fish and Wildlife.</u>							
<b>4. GIANT SEQUOIA</b>								
	Issue: What should be the objectives and intensities of management activities in giant sequoia groves?							
	See VIII. <u>Giant Sequoia.</u>							
<b>5. OHV'S</b>								
	Issue: How much and where should OHV use occur?							
	See VI. <u>Off-Highway Vehicles.</u>							
<b>6. PESTICIDES</b>								
	Issue: Are pesticides necessary to ensure long-term sustained yield? Are they safe?							
	This is a Regional issue beyond the scope of the Forest Plan. An additional complication is the recent California initiative, Proposition 65, that could affect the use of many pesticides. There has been information on this matter inserted in various parts of the Plan and FEIS.							
	The Forest will comply with direction given by the Region.							

Table 2.28 - Summary Comparison of the Treatment of Issues (continued)

Issue and Question #	Output or Effect to be Measured	PRF	CLR	RPA	AMN	MKT	PRO	WFV
<b>7. <u>ROADS</u></b>								
	<b>Issue:</b> Road Construction - What are the road needs for use of Forest resources?							
	Additional discussion explaining road construction and how road needs are determined and their relationship to resource management objectives has been added to the FEIS (See Chapter 3). Standards and Guidelines have been expanded to include recreation emphasis/objectives along with resources and economics as factors in road design and management objectives (See Chapter 2).							
	<b>Issue:</b> Road Closure - What are the situations, if any, for road closure?							
	See X. <u>Roads and Trails.</u>							
<b>8. <u>TRAILS</u></b>								
	<b>Issue:</b> Does the DEIS and Plan have enough emphasis on the total trail system, including construction and trail maintenance?							
	See X. <u>Roads and Trails.</u>							
<b>9. <u>VISUAL RESOURCES</u></b>								
	<b>Issue:</b> How can management practices best maintain visual resources, especially in areas of high visual interest?							
	See VII. <u>Timber.</u>							
<b>10. <u>VOLUME OF HARVEST</u></b>								
	<b>Issue:</b> What should the Allowable Sale Quantity (ASQ) be for the Forest?							
	See VII. <u>Timber</u>							
<b>11. <u>WILD AND SCENIC RIVER - KINGS RIVER</u></b>								
	<b>Issue.</b> Should Segment 1 of the Kings River receive a recommendation for Wild and Scenic River classification?							
	Enactment of Kings River Wild and Scenic River legislation in November 1987, included this segment within the Kings River Special Management Area (SMA). Overall direction for this segment of the river and its environs will be developed in the required SMA Management Plan.							
<b>12. <u>WILDERNESS</u></b>								
	<b>Issue:</b> What are the recommendations for wilderness classification?							
	See II. <u>Further Plannino Areas.</u>							



## 6. ECONOMICS AND TRADE-OFFS ANALYSIS

The following tables and narratives individually and in total present and compare the major trade-offs between the alternatives. These comparisons are based on:

- 1) economic effects;
- 2) costs and values of priced and non-priced resources and benefits; and
- 3) the level of issue resolution (see Table 2.28).

(Tables 2.29 through 2.33 can be found following this section). Net cash flow and **NW** information is being presented since they are indicators of concern to the Federal taxpayer and measure responsiveness to the national issues of economy in government and deficit reduction.

Table 2.29, Summary Comparison of Economic Effects, presents a detailed breakout of the total costs, cash and noncash economic benefits, capital investment costs, operation and maintenance costs, and national, regional and local benefits and costs. Total benefits from the Sequoia **NF** increase over the plan period primarily in relation to the amount of recreation expansion and timber production that occurs. Total benefits increase up to over 75 percent above the 1982 base level. Where recreation expansion or timber production increases are limited by budget cuts or other resource consideration, the total increase is reduced to 45 percent above the 1982 base level. Noncash benefits comprise 89 to 96 percent of total benefits in the first decade, mostly due to recreation use. Cash returns increase over time over the 1982 base in all alternatives. These returns are directly related to the **size** of the timber, developed recreation, and range programs.

Capital investment costs are primarily for timber road construction and recreation facility construction. These amounts vary by alternative in relation to the amount of timber production and the size of the recreation program.

Employment and income opportunities are primarily from operators of recreation-oriented businesses, timber and livestock production, and related support businesses. Other resources contribute only a small amount to the available jobs. Changes in local employment opportunities range from a 20 percent decrease to an increase of over 32 percent.

Table 2.30, Present Net Value Comparison - Marginal Cost of Constraints, presents the economic and resource costs of the MMR's, TPC's, and MIR's constraints. (See FEIS, Appendix B, for a detailed explanation of these constraints.) The alternatives were developed from the most economically efficient, unconstrained benchmark, **HLW**, with additional objectives added in sets only as necessary to meet the themes of the alternatives. The first set of objectives were the MMR's (including TPC's) which are necessary to meet the **NMA** regulations. These include protection of Spotted Owl Habitat Areas and goshawk nest areas, protection of riparian areas, maintenance of soil and water productivity, and minimum diversity of

seral stages. All of these, except for the diversity MMR, restrict the timber harvest.

The MMR benchmark (FLW plus MMR's) is further constrained by the MIR's. On the Sequoia NF, protection of the visual quality along California State Highways was the only MIR used that was binding. This requirement further restricted timber harvest.

Collectively, the MMR's, TPC's, and MIR cause a reduction in PNV of \$39 million from the HW benchmark, a 3.9 percent drop. This is reflected in increased costs for timber production and a loss of 1,219 MMBF over the 50-year planning period. The MMR's caused a drop in PNV of \$36.0 million (or 92 percent of the total drop) resulting in a drop of 400 MMBF.

The major cause of this PNV loss is the Spotted Owl Habitat constraint. This is because there is an insignificant overlap with other constraints, and much of the ground is good site containing large timber volumes per acre. This constraint insures the maintenance and improvement of spotted owl habitat. This drop in PNV for spotted owl habitat is a result of removal of land from timber production.

The TPC's caused a drop in PNV of \$3 million (or eight percent of the total drop).

Dispersion of timber harvest and non-declining yield do not cause large drops in PNV because of the low value of timber on the Sequoia NF and the interaction of stand growth (discounting of costs and benefits and the price trends). These combine to result in a low early harvest, climbing slowly, and then stabilizing. Allowing a decline at this point in harvest results in only a slight increase in PNV due mainly to the discounting factor.

The MIR caused a drop in PNV of \$3 million (or eight percent of the total drop).

This constraint maintains high scenic quality along the eligible State scenic highways as per the 1970 Master Plan. This restriction resulted in a drop in PNV due to restrictions on the timing and amount of timber harvest along these MIR highways. It encompasses over 18 miles (approximately 16,000 acres) of timbered roadside which is currently well stocked and fully accessed. There is no overlap between the MIR constraint and either the Spotted Owl or Riparian Areas MMR's. Because these lands contain high volume-low cost timber coupled with no protective overlapping with other constraints, the overall effect of the MIR is a significant constraint on economic timber production, particularly in the first three decades.

An additional 52.4 million (or six percent of the total drop) is due to overlap of constraints and cannot be assigned to any particular constraint.

Of the individual constraints, the Spotted Owl MMR contributed 51.3 percent of the PNV loss with the MIR contributing eight percent: the Threatened and Endangered Species MMR, seven percent: the Dispersion TPC, 4.9 percent: and Riparian Areas MMR, 18 percent.

a. Benefits

The loss in discounted benefits due to the MMR's, TPC's, and MIR show up almost exclusively in the timber benefits. Timber benefit loss accounts for 91.7 percent of the total benefit loss.

Of the total benefits produced by management activities (above minimum levels), recreation contributes 62 percent, with timber adding 35 percent, and water yield contributing another two percent.

b. Costs

Timber accounts for 52 percent of the total costs with recreation contributing an additional 19 percent, and road construction and maintenance another seven percent. Other costs include wildlife, range, watershed, and fire suppression costs.

Table 2.31, Present Net Value Comparison of Alternatives, presents the total PNV and the costs and benefits of the major contributing resources.

Recreation contributes the most to benefits but it varies little between alternatives, except for CUR. Timber benefits and costs have a large influence on the PNV ranking of alternatives but other resource benefits and costs also influence the ranking. No one resource, therefore, dominates the overall pattern of PNV ranking (i.e., there is not a one-to-one relationship between a single resource benefits or costs with PNV). On the Sequoia NF, timber benefits and costs are influenced by harvest method as well as harvest volume and the period of harvest.

AMN and CUR rank last in PNV primarily because of output and budget constraints limiting opportunities to contribute to PNV.

Table 2.32, Average Annual Cash Flows and Noncash Benefits, presents the total costs, benefits, and net cash flow by alternative for decades one and five.

Expenditures are greater than returns to the Treasury in all alternatives in the first decade.

Cash receipts are expected to be mainly from timber production, with livestock production and developed recreation adding an additional five percent to the total. Gross receipts for all alternatives (except CUR and WFV) are higher than the base 1982 level of \$6.1 million. Gross receipts are expected to rise in all alternatives.

Ranking of alternatives by net cash flow generally inversely correlates to costs (except for RPA and AMN when cash receipts drop off a lot). Generally, those alternatives that move up in the rankings from decade one to five are those that allow large increases in timber production.

The CEE Alternative, the most economically efficient, falls near the top of the first period net cash flow ranking. The CUR Alternative ranked above this level has a lower timber harvest. Those ranked below the CEE have timber harvest above that level needed for economic efficiency (PRO

and MKT) or increased capital investment and maintenance costs (RPA and AMN).

Alternatives CUR and AMN have the best first period net cash flows. This is due to emphasizing investments in resources producing income to the Treasury and to incurring relatively lower capital investment costs (mainly road construction and recreation facilities).

In general, the other alternatives have large early-year investments for roads which lead to increased timber production in later years. Because timber receipts have the most effect on the change in PNV, a ranking by net receipts in decade five is generally similar to the PNV ranking in Table 2.31.

That portion of the economic benefits that would not be collected as cash receipts would be essentially constant across all but three alternatives within any decade. The exceptions (CUR and AMN) are caused by budget and/or output restrictions.

Table 2.33, Indicators of Responsiveness of Alternatives to Major Issues and National Concerns, combines the relationships among the key economic values, community effects, and the differing responses among alternatives to selected ICO's presented previously in this chapter. The purpose is to highlight major differences and similarities among alternatives in terms of trade-offs among key objectives, responses to public issues, management concerns, and resource use and development opportunities. However, a complete understanding of the differences among alternatives requires reading this entire chapter and Chapter 4, FEIS.

Table 2 29 - Summary Comparison of Economic Effects (Millions of Undiscounted Dollars Per Year)

		Alternatives						
		PRP	CUR	RPA	AMN	MKT	PRO	WPV
1	<b>Total Benefits</b>							
	Base Year	67 7	67 7	67 7	67 7	67 7	67 7	67 7
	Decade 1	83 7	85.2	83 8	76.5	87 4	87 8	80 2
	Decade 2	91 7	90 0	92 7	84 4	94 9	95 4	99 6
	Decade 3	96 2	93 0	97 9	90 5	99 3	99 6	104 4
	Decade 4	107 8	97 3	105 0	94 6	107 7	108 1	113 1
	Decade 5	112 3	100 4	112 1	98 2	115 0	115 5	118 8
2	<b>Returns to the U.S Treasury</b>							
	Base Year	6 1	6 1	6 1	6 1	6 1	6 1	6 1
	Decade 1	6 2	6 0	6 5	3 0	9 2	9 4	5 7
	Decade 2	6 5	6 7	7 1	3 4	8 8	9 0	5 9
	Decade 3	7 3	6 9	7 7	3 7	9 8	9 6	6 1
	Decade 4	7 7	7 0	7 7	4 0	10 1	10 2	6 5
	Decade 5	7 9	7 2	7 9	4 0	10 3	10 4	6 1

1 Total benefits include both cash returns to the U S Treasury and noncash benefits Total benefits are the estimated total amount that consumers would be willing to pay for Forest Outputs. whether or not this amount is actually collected by the U S Government

2 Returns to the U.S Treasury are the estimated payments by consumers of Forest Outputs collected by the Federal Government

Table 2 29 - Summary Comparison of Economic Effects (Millions of Undiscounted Dollars Per Year)  
(Continued)

	Alternatives						
	PRP	CUR	RPA	AMN	MKT	PRO	WFV
<b>3 Noncash Benefits</b>							
Base Year	61 6	61 6	61 6	61 6	61 6	61 6	61 6
Decade 1	77.5	79.2	17 3	73 5	78 2	78.4	74 5
Decade 2	85 2	83 3	85 6	81 0	86 1	86 4	93 1
Decade 3	88 9	86 1	90.2	86 8	89 5	90 0	98 3
Decade 4	100.1	90 3	97 3	90 6	97 6	97 9	106 6
Decade 5	104.4	93 2	104 2	94 2	104 7	105 1	112 67
<b>4 Total Costs</b>							
Base Year	21 7	21 7	21 1	21 7	21 1	21 7	21 1
Decade 1	24.5	21 4	23 7	18 7	28 3	28 6	22 6
Decade 2	23.9	25 2	24 3	17 9	25 8	26 5	21 8
Decade 3	22 5	22 1	23 8	18 4	26 8	27 4	21 9
Decade 4	26 5	25 0	26 6	18 3	21 5	27 9	23 1
Decade 5	26.2	24 2	26.3	18 8	30 2	30 6	23 2

3 Noncash benefits are the difference between the total estimated amount that consumers would be willing to pay for Forest Outputs and actual collections by the Federal Government At present it is national policy to provide most Forest outputs either at no charge to consumers or at a charge less than the total willingness to pay value (see Appendix B of the EIS for specific values)

4 Total costs include the Federal and non-Federal costs needed to produce Forest outputs

Table 2 29 - Summary Comparison of Economic Effects (Millions of Undiscounted Dollars Per Year)  
(Continued)

	Alternatives						
	PRF	CUR	RPA	AMN	MKT	PRO	WFV
5. Non-Federal Costs							
Base Year	2	2	2	2	2	2	2
Decade 1	2	2	.2	2	2	2	2
Decade 2	.2	2	2	2	2	2	2
Decade 3	2	.2	2	2	.2	2	.2
Decade 4	2	2	2	.2	2	2	2
Decade 5	2	2	.2	2	2	2	2
6. Federal Cost							
Base Year	21 4	21 4	21 4	21 4	21 4	21 4	21 4
Decade 1	24 3	21 2	23 5	18 5	28 1	28 4	22 4
Decade 2	23 7	25 0	24 1	17 7	25 6	26 3	21 6
Decade 3	22 3	21 9	23 6	18 2	26 6	27 2	21 7
Decade 4	26 3	24 8	26 4	18 1	27 3	27 7	22 9
Decade 5	26 0	24 0	26 1	18 6	30 0	30 4	23 0

5 Non-Federal costs include all costs paid by non-Federal cooperators (examples include California Department of Fish and Game habitat improvement expenditures and range Capital investments made by the permittee)

6 Federal costs are all Costs borne by the Federal Government Include Costs paid from general tax receipts, costs paid from funds set aside from receipts (such as KV), and Costs paid by accepting in-kind payments in lieu of cost (such as purchaser road credits) Federal Cost also equals total cost less non-Federal cooperator cost

Table 2 29 " Summary Comparison of Economic Effects (Millions of Undiscounted Dollars Per Year)  
(Continued)

		Alternatives						
		PRP	CUR	RPA	AMN	MKT	PRO	WFV
<b>7</b>	<b>Total Budget</b>							
	<b>Base Year</b>	16 3	16 3	16 3	16 3	16 3	16 3	16 3
	Decade 1	20 0	16 3	19 7	14.1	24 3	24 6	18 6
	Decade 2	19 8	21 1	20 2	13 8	21 I	22 4	17 I
	Decade 3	18.3	17 9	19 6	14.2	22.6	23 2	17 I
	Decade 4	22 3	20 8	22.4	14.1	23.3	23 7	18 9
	Decade 5	22 0	20 1	22 0	14.6	25 7	26 4	19.0
<b>8</b>	<b>Operation and Maintenance Cost</b>							
	<b>Base Year</b>	11 8	11 8	11 8	11 8	11 8	11.8	11 8
	Decade 1	13 0	11 4	13 6	11 9	14 0	14 1	13 1
	Decade 2	13 I	13 2	13 9	12 3	14 2	14 3	13 6
	Decade 3	13 9	13 2	14 1	12 8	14.3	14 4	13.9
	Decade 4	15 0	13 5	14 I	13 0	15 0	15 0	14 3
	Decade 5	15 5	13 6	15 4	13 2	15 9	16 1	14 I

7 Total budget is equal to Federal cost less the cost of fighting forest fires

8 Operation and maintenance Costs include the cost of administration, management, and protection of existing resources and capital assets Operation and maintenance cost equals total cost less capital investment



Table 2 29 - Summary Comparison of Economic Effects (Millions of Undiscounted Dollars Per Year)  
(Continued)

	Alternatives						
	PRP	CUR	RPA	AMN	MKT	PRO	WPV
9. Capital Investment cost							
Base Year	9.9	9.9	9.9	9.9	9.9	9.9	9.9
Decade 1	6.9	4.9	6.1	2.8	10.3	10.4	5.5
Decade 2	6.1	7.9	6.3	1.5	7.5	8.1	4.2
Decade 3	4.4	4.7	5.6	1.5	8.2	8.8	3.7
Decade 4	7.3	7.3	7.8	1.2	8.3	8.6	4.5
Decade 5	6.6	6.4	6.7	1.3	9.8	10.3	4.3
10. Purchaser Road Credit and Appropriated Roads							
Base Year	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Decade 1	2.2	2.2	1.8	0.3	3.1	3.1	1.8
Decade 2	2.1	1.7	1.8	0.2	2.4	2.6	1.4
Decade 3	1.2	1.5	1.4	0.2	1.8	1.9	0.8
Decade 4	1.2	1.3	1.4	0.2	1.6	1.8	0.8
Decade 5	1.4	1.5	1.5	0.2	2.1	2.3	0.8

9. Capital investment costs are the costs of creating or enhancing capital assets. Costs of treatments or activities that generate outputs or benefits over more than one period are capital investment costs.

10. Purchaser road credit is the cost of roads built by timber purchasers. These roads are accepted as in-kind payments in lieu of cost from timber purchasers.

Table 2 29 - Summary Comparison of Economic Effects (Millions of Undiscounted Dollars Per Year)  
(Continued)

		Alternatives						
		PRF	CUR	RPA	AMN	MKT	PRO	WFV
11	Other Capital Investment							
	Base Year	4.8	4 8	4 8	4 8	4 8	4 8	4 8
	Decade 1	4 7	2 7	4.3	2 5	7 2	7 3	3 7
	Decade 2	4 0	6 2	4 5	1 3	5 1	5.5	2 8
	Decade 3	3 2	3 2	4 2	1 3	6 4	6 9	2 9
	Decade 4	6.1	6 0	6 4	1 0	6 7	6 8	3.7
	Decade 5	5 2	4 9	5 2	1 1	7 7	8 0	3 5
12	25% Receipt Funds							
	Base Year	1 4	1 4	1 4	1 4	1.4	1 4	1 4
	Decade 1	1.6	1 5	1 6	7	2 3	2 3	1 4
	Decade 2	1 6	1 7	1 8	9	2 2	2 2	1 5
	Decade 3	1 8	1 7	1 9	9	2 4	2 4	1 5
	Decade 4	1 9	1 8	1 9	1 0	2 5	2 5	1 6
	Decade 5	2 0	1 8	2 0	1 0	2 6	2 6	1 5

11 Other capital investment is all investment cost other than purchaser road credits and appropriated roads

12 Twenty-five percent of returns to the U S Treasury are distributed back to the counties in proportion to the National Forest's acreage in the County

Table 2 29 - Summary Comparison of Economic Effects (Millions of Undiscounted Dollars Per Year)  
(Continued)

	Alternatives						
	PRP	CUR	RPA	AMN	MKT	PRO	WFV
13 County Yield Tax Revenues							
Base Year	1	.1	.1	.1	.1	1	1
Decade 1	2	2	.2	1	2	2	1
Decade 2	2	2	2	1	2	2	1
Decade 3	2	2	2	1	3	.3	2
Decade 4	2	2	2	1	3	3	2
Decade 5	2	2	2	1	3	3	1
14 Income. first decade	41.4	37.3	42.2	30.6	48.4	49.7	38.2
15 Employment first decade (thousands of person-years)	2.8	2.5	2.8	2.0	3.2	3.3	2.6
16 Discounted Benefits	1.280	962	1.276	1,050	1.342	1.354	1.222
17 Discounted Costs	436	404	433	285	511	522	383
18 Present Net Value	844	558	843	765	831	831	840
19 Benefit-Cost Ratio	2.94	2.38	2.95	3.68	2.63	2.59	3.19

13 Under California law, a yield tax currently equal to three percent of timber harvest value is levied on timber operators

14 Total personal income including wages, salaries, proprietor's income, and rents was estimated for the Forest's zone of influence

15 Employment generated by the Forest in the zone of influence was estimated

16 Discounted benefits over the planning period Background benefits are not included

17 Discounted Costs over the planning period Background costs are not included

18 Discounted benefits less total discounted costs Background Present Net Value is not included

19 Discounted benefits divided by total discounted Costs

Table 2.30 - Present Net Value Comparison-Marginal Cost of Constraints<sup>1/</sup>  
(Millions of 1982 Dollars<sup>1</sup>)

I.D. Code Name	Change		Change		Discounted Benefits				Discounted Costs					
	PNV	In. PNV 2/	Disc. Cost	In Disc. Cost 1/	Disc. Benefits	In Disc. Benefits	All Rec	Timber	Water	Other 3/	Timber	All Rec	Roads	Other 4/
FLV PNV without MMR's	1951		611		1562		978	597	39	-52	335	112	45	119
Spotted Owl Constraint		-20.8		-5.1		-25.9								
Riparian Areas Constraint		-6.9		-10.1		-17.0								
T&E Constraint		-2.8		-2.2		-5								
Dispersion Constraint		-1.9		-2.1		-4								
Non-Declining Yield Const.		-1.1		-.9		-2.0								
Sensitive Lands Constraint		-.1		-.9		-1								
Balance due to Overlap		-2.4		-2.7		-5.1								
MMR PNV with MMR's	1915	-36	507	-2.4	1521	-60	978	560	35	-52	310	112	45	120
Visual Corridor Constraint		-3.0		-4		-7								
CEE Constrained														
Econ. Effic.	1912		583		1505		978	553	35	-52	306	112	45	120
HLV Minimum Level 5/	1960		179		1139		208	0	11096	-165	0	1	0	178

See the text for a discussion of the affects of individual constraints on the resource benefit and cost categories.

- 1/ Direct comparison between individual benefit and cost categories may be misleading because under multiple-use management many resource outputs have common costs that cannot be reliably separated and attributed to individual resources.
- 2/ All changes are measured incrementally from the PNV without MMR's benchmark.
- 3/ Other discounted benefits include range and all fire losses.
- 4/ Other discounted costs include range and fire costs.
- 5/ The minimum level (MLV) benchmark shows naturally occurring background benefits and fixed costs associated with maintaining the National Forest in Federal ownership. In order to display incremental trade-offs, background benefits and fixed Costs have been subtracted from the other benchmarks and alternatives.

Table 2.31 - Present Net Value Comparison of Alternatives 1/  
(Millions of 1982 Dollars)

I.D. Code Name	Change    PNV   in-	Disc.    Cost	Change    in Disc.	Disc.    Benefits	Change 2/    in Disc.	Discounted Benefits				Discounted Costs				
						by Resource	All Rec	Timber	Water	Other 3/	by Category	All Pec	Roads	Other 4/
CEE Constrained Econ. Effic	1912		583		1514		978	553	35	-52	306	112	45	170
PRF Preferred	1844	-87	436	-147	1280	+234	1015	162	28	-75	169	86	43	138
RPA 1980 RPA Program	1043	-08	433	-150	1276	+238	1014	161	23	-78	169	87	40	137
WV Wildlife and Visual	1840	-91	383	-200	1222	+292	996	135	11	-80	131	83	32	137
IKT Market Emphasis	1831	-100	511	-12	1342	+172	1011	211	41	-79	277	05	60	139
PRO High Production							1011	21	44	-81	237	85	61	139
AIN Amenity Emphasis	1765	-166	285	-298	1050	+464	901	74	-1	-74	67	78	6	139
CUR Current-No Action	1558	-373	404	-179	962	+552	726	149	23	-64	159	68	43	134
MLV Minimum Level 5/	1960		179		1139		208	0	1096	-165	0	1	0	178

- 1/ Direct comparison between Individual benefit and cost categories may be misleading because under multiple-use management, many resource outputs have common costs that cannot be reliably separated and attributed to individual resources.
- 2/ All changes are measured incrementally from CEE (the constrained economically efficient alternative)
- 3/ Other discounted benefits include (fire losses and range).
- 4/ Other discounted costs include fire suppression costs, multiple resource project costs (chaparral program) and wildlife project costs.
- 5/ The minimum level (MLV) benchmark shows the naturally occurring background benefits and fixed costs associated with maintaining the National Forest in Federal ownership. In order to display incremental trade-off, the background benefits and fixed costs have been subtracted from the other alternatives.

Table 2.32 - Average Annual Cash Flows and Noncash Benefits(Millions of undiscounted dollars per year)

Alternative	Decade 1				Decade 5			
	Net Cash Flow	Total Federal cost	Returns to Treasury	Noncash <sup>1/</sup> Benefits	Net Cash Flow	Total Federal Cost	Returns to Treasury	Noncash Benefits
CUR	-15 2	21 2	6 0	79 2	-16 8	24 0	7 2	93 2
CEE	-15 4	26 2	10.8	67 9	- 0 6	44 3	43 I	88 9
AMN	-15 5	18 5	3 0	73 5	-14 6	18 6	4 0	94 2
WFV	-16 7	22 4	5 7	74 5	-16 9	23 0	6 1	112 7
RPA	-17 0	28 5	6 5	77 3	-18 2	26 1	7 9	104 2
PRP	-18 1	24 3	6 2	77 5	-18 1	26 0	7 9	104 4
MKT	-18 9	28 1	9 2	78 2	-19 7	30 0	10 3	104 7
PRO	-19 0	28 4	9 4	78 4	-20 0	30 4	10 4	105 1

1/

See Appendix B of the EIS for detailed listing of cash and noncash benefits

Table 2.33 - Indicators of Responsiveness of Alternatives to Major Issues and National Concerns

Alt.	PNV <sup>1/</sup> (\$ MM)	Net Cash Flow (\$ MM/yr)		NonCash Benefits (MMBF/yr)		Timber Issues			Community Effects Issues			Recreation	Issues
						Harvest (MMBF/yr)	Acres Open to Clearcut (M Acres)	Receipts to Counties (\$ MM/yr)	Jobs Available (Person-Yrs)	Local Income (\$ MM/yr)	Preservation/Partial Retention <sup>2/</sup> (% of Forest)	Roads Open for Public Use (Miles)	
													1
Decade		1	5	1	5	1	5	All	1	1	1	5	All
CCE	912	-15.4	-0.6	67.9	88.9	117	170	373	2.4	3,053	45.8	HA	NA
PRF	844	-18.1	-18.1	77.5	104.4	97	101	740	1.6	2,800	41.4	77	835
PPA	843	-17.0	-18.2	77.3	104.2	101	101	222	1.6	2,820	42.2	76	,042
WV	840	-16.7	-16.9	74.5	112.7	82	82	217	1.4	2,557	38.2	100	732
MKT	831	-18.9	-19.7	78.2	104.7	126	127	290	2.3	3,300	48.4	64	943
PRO	831	-19.0	-20.0	78.4	105.1	133	133	298	2.3	3,300	49.7	59	967
WIN	765	-15.5	-14.6	73.5	94.2	43	54	0	0.7	2,000	30.6	100	,010
CUR	558	-15.2	-16.8	79.2	93.2	94	94	198	1.5	2,490	37.3	71	758

<sup>1/</sup> All PNV values are shown incrementally above the minimum level fixed costs and values.

<sup>2/</sup> Percentages are based on Adopted Visual Quality Objectives

7. SUMMARY LISTING OF REASONS FOR CHANGE IN PRESENT NET VALUE COMPARED TO THE CONSTRAINED ECONOMIC EFFICIENCY ALTERNATIVE

CEE - Constrained Economic Efficient

PNV = \$912 million; Decade One Net Cash Flow = \$-15.4 million per year.

This is the most economically efficient alternative since it produces the highest PNV. This is accomplished primarily through early-year capital investments in road construction. This allows a large increase in timber production over the planning period, following the economics of projected price and cost increases. Recreation needs are provided through development of various opportunities as needed to meet demand.

The national public interest in government efficiency is provided by the high PNV. This interest is also met through the recovery of Threatened and Endangered species, through habitat management to insure no additional species become threatened and endangered, and through the maintenance and/or improvement of riparian dependent resources.

Regional publics (primarily recreational users from the Los Angeles Metropolitan Area) find ample opportunities for recreation. However, due to the emphasis on PNV, the quality of their experience is reduced. Timber harvest activities, particularly the large acreage available for regeneration harvests, are evident throughout the conifer zone. Large increases in the livestock grazing program lead to increased conflicts with these recreational users.

Local publics (primarily those viewing the Forest as a source of jobs and income) find increased opportunities through two additional ski area developments and the increased timber production program. The land use and conservation emphasis is contrary to the view of those publics who would see preservation through nonuse or wilderness recommendation as a more appropriate management theme.

Constraint Common to All Following Alternatives

In all alternatives examined in detail, 66,000 acres managed for Spotted Owls were assigned to prescriptions with no scheduled timber harvest. Of this amount 50,500 acres were tentatively suitable acres for timber production. This reduced PNV values for each alternative accordingly.

PRF - Preferred Alternative

PNV = \$844 million; Change in PNV = \$87 million; Decade one Net Cash Flow = \$-18.1 million.

This alternative is similar to RPA with the following differences. Areas are managed for timber differently in the first decade:

- 1) to allow access of primarily high site lands in order to increase the rate of plantation success:



- 2) to allow reduced populations of wildlife to recover and stabilize in conjunction with and increase in chaparral habitat improvement.

Timber, grazing, and developed recreation production levels and opportunities are provided at current levels or higher. Acres regenerated by clearcutting are held to lower levels than in the RPA Alternative. Where timber harvest is allowed, practices are intensive. Regeneration harvest is the dominant harvest method. All potential ski areas are developed. Road access throughout the Forest is relatively high.

This alternative benefits all groups. Local interests are met through a moderate increase in job and income opportunities. Regional publics find the largest variety of recreational opportunities of any alternative. Although visual quality is reduced in timber management areas, this affects less than 60 percent of the conifer zone. This results in a relatively high quality recreational experience over most of the Forest.

The ENV value in PRF is nearly identical to that in RPA and offers the lowest increase in negative fifth decade net cash flow of any alternative.

#### RPA - 1980 Resource Planning Act Program

ENV = \$843 million; Change in ENV = \$-88 million; Decade One Net Cash Flow = \$-17.0 million

Through management to meet the 1980 RPA resource targets, this alternative presents a variety of opportunities for all users. Because of this program, the ENV drops for many reasons.

The Forest is managed to meet the RPA visual objectives to provide a high quality recreational experience. Livestock grazing outputs are reduced to the RPA goals. Extensive habitat improvement work is completed to provide high quality wildlife habitat. Timber harvest is held to the RPA level in order to provide additional old growth wildlife habitat.

All groups benefit from the alternative. However, local users gain only slightly through a small increase in job and income opportunities. Regional publics gain significantly in an increase in recreation opportunities available and a higher quality experience. However, skiing opportunities are only moderately increased.

#### WFV - Wildlife, Fish and Visual Emphasis

ENV = \$840 million; Change in ENV = \$-91 million; Decade One Net Cash Flow = 5-16.7 million

This alternative is very different than the three described previously. The emphasis here is on producing a quality recreational experience, particularly where associated with wildlife uses. Although commodity production of timber, livestock grazing, and developed recreation is reduced or modified to meet this emphasis: these resources still are produced at or near that of CEE. First period acres managed for timber harvest are held to a relatively low level to protect reduced wildlife populations and to allow them to build back to a more stable population

level. Chaparral treatments are stepped up to provide habitat for these growing populations. Additional ski areas are not allowed to be constructed. New wilderness is not recommended. These areas will maintain and increase productivity for wildlife. Timber regeneration cultural treatments are modified to retain quality forage **for** wildlife. Opportunities for recreational experiences would be provided at a moderate level. With 22 percent of the conifer zone available for clearcut harvesting and a moderate amount for road access, the quality of the recreational experience would be provided at a moderate level.

Regional publics would benefit by this alternative but total opportunities for recreation would change only slightly. Local **users** find only a slight increase in job and income opportunities in the first decade. These opportunities, particularly those associated with timber production, increase slowly to a relatively high level by decade five. Livestock grazing AUM production is maintained near the current level with the slow increases allowed in later years.

#### MKT - High Market Emphasis

PNV = \$831 million; Change in PNV = **-\$100 million**; Decade One Net Cash Flow = **-\$18.9 million**.

The costs and benefits of this alternative are similar to CEE. Capital investments and resource programs generally follow the **same** levels as CEE. The reduction in PNV is due to four reasons.

- 1) Provides for a timber production level eight percent above that which is needed from a pure economic efficiency standpoint. This level of production provides more opportunities for local jobs and income, in addition to providing more water yield for valley agricultural **users**.
- 2) Steps up watershed program which completes backlog restoration and road obliteration by decade two. This provides some mitigation for the increased timber activities and associated water yields, benefitting local and regional **user** publics.
- 3) Protects the visual quality along the Generals Highway, County scenic and eligible scenic highways, and the Pacific Crest Trail in order to provide **for** increased quality of the recreational experience (primarily for the Regional users).

The 9,710 acres recommended for wilderness in this alternative do not affect the overall PNV; but would add additional acres managed for wilderness values as opposed to non-wilderness resource use (affecting all publics, though only to a minor degree).

### PRO - High Production Emphasis

PNV = \$831 million: Change in PNV = \$-100 million: Decade One Net Cash Flow = \$-19.0 million

This alternative is very similar to the MKT. The loss in PNV is for the **same** reasons, with the following exceptions.

- 1) Provides a timber production level of 14 percent above that needed for economic efficiency. This benefits local publics by providing the highest level of opportunities for jobs and income over all the alternatives.
- 2) Provides greatest access over the forest in this alternative. But with the visual quality protected only along the Generals Highway, coupled with the large timber and range programs, the quality of the recreational experience will be very low affecting mainly the regional publics.
- 3) Does not recommend wilderness. The entire forested area is managed heavily for commodity production.

### AMN - Amenity Emphasis

PNV = \$765 million: Change in PNV = **-\$166** million: Decade One Net Cash Flow = **-\$15.5** million.

This alternative emphasizes production of noncash benefits and non-priced benefits. The loss in PNV is significant, approaching 18 percent of the total produced in the economically efficient CEE. The reasons for this are many and are explained as follows.

Four Further Planning Areas are recommended for wilderness. Outside of wilderness, approximately 40 percent of the Forest is managed for Semi-primitive Non-motorized recreation experience. Visual quality of at least Partial Retention is averaged over the entire Forest through exclusive use of uneven-aged timber management. Developed recreation sites are managed at the low standard level in order to emphasize a high quality dispersed recreation experience. One ski area is not developed. The area is managed to provide old growth habitat for wildlife. Livestock production is not allowed in meadows, riparian areas, or recommended wilderness in order to reduce conflicts between dispersed recreation, wildlife, and cattle. Livestock production in chaparral is limited to provide high quality habitat for deer.

Only regional publics will benefit from this alternative. The overall quality of the recreational experience will be higher in this alternative than any other. However, the variety of opportunities available for recreation will be provided only at a moderate level, with some at a low quality level. Local publics will experience a substantial loss of job and income opportunities. National interests are not met as evidenced by the large PNV reduction and negative net cash flows. This is somewhat mitigated by the 127,020 acres recommended for wilderness.

## CUR - Current Alternative (No Action)

PNV = \$558 million; Change in PNV = **-\$373** million: Decade One Net Cash Flow = **-\$15.2** million

The drop in PNV occurs directly because of the reduced budget, meeting the Initial Visual Quality Objectives, and maintaining current and projected activities. The shortage of funding primarily affects the recreation, fire, and timber programs.

Recreation demand is not met, reducing the amount of revenue received. The fire program remains at current funding with the same mix of fire resources, resulting in higher suppression costs and greater fire-related losses. Timber harvests remain at current levels; therefore, limiting the revenue received from this source.

Groups do not gain by this alternative. Local publics find little change in job or income opportunities, except as potential ski areas are developed. Regional publics find a low level of recreational opportunities provided at a generally low quality level of experience. The large reduction in PNV (40 percent), large negative cash flows, and no new wilderness recommendations do not provide for National interests.

### 8. TIMBER RESOURCE MANAGEMENT DATA BY BENCHMARK AND ALTERNATIVE (Table 2.34)

- a. The suitable acres (as displayed in Column 1) reflect the differences in acreage allocation between alternatives. With few exceptions, the total suitable acres are a function of areas being designated for some objective such as recreation, wilderness, or wildlife which precludes timber harvest. Economics also had an effect on lands selected as suitable under some alternatives. For example, the CUR utilized 298,000 acres in the solution even though more acres were available. Only the most productive acres were used in the solution when budget and/or timber harvest was constrained.
- b. The inventory values (Columns 2 and 3) vary directly with the suitable area. Those alternatives with higher levels of roadless and/or wilderness generally display a lower beginning inventory. The ending inventory volumes are a reflection of the suitable acres, the ending age class distribution, and the intensity of the management prescription applied. The highest remaining inventories are represented by alternatives with significant numbers of suitable acres managed as Regulation Class II and 111. These Regulation Classes assume rotation ages of 130 to 200 years. Consequently, the trees are larger and the inventory is greater.
- c. The display of the first decade ASQ (Columns 5 to 7) reflect the harvest floors established for the alternatives rather than direct function of suitable areas. Alternative AMN did not have a harvest floor constraint. None of the other alternatives exceeded their prescribed harvest floors.

- d. The LISYC display (Columns 8 to 10) reflects the suitable acres and management intensity of the timber harvest prescriptions in the alternative. Generally speaking, the difference in LISYC vary directly with suitable acres. The exception is the uneven-aged alternative, AMN. The significantly lower LISYC for this alternative is the result of growth and yield reductions brought about by longer regeneration periods, unpredictable stocking, and vegetative competition in the uneven-aged prescriptions. All alternatives attain 90 percent or more of LISYC by the last decade of the planning horizon, including AMN.
- e. The net growth for the first decade (Column 11) reflects consistency between alternatives. Net growth is an indication of the age class distribution of each alternative due to the constraints peculiar to each alternative. Increases in net growth between decades one and five (Columns 11 and 12) are the result of converting old, slow growing stands to younger, faster growing stands. A decrease in net growth occurs in WFV and AMN between decades one and five. This is due to lower stocking levels and competition that can be expected from extensive use of uneven-aged prescriptions and longer rotation ages.
- f. Columns 14 to 19 display the distribution of the suitable land base by Regulation Classes. Regulation Class I corresponds to full yield, Regulation Class II from 50 to 90 percent yield, etc. The amount of land dedicated to full yield varies by alternative, and is a function of volume objectives, economics, and emphasizing objectives other than timber production. The WFV objectives result in no suitable lands that will be managed to produce full yields of timber.
- g. The display of suitable harvest acres (Columns 20 to 23) generally vary with harvest level. The exceptions are those alternatives that dedicate a large portion of the suitable base to yield less than 50 percent of full yield, such as AMN. The AMN and WFV Alternatives have considerable proportions of timber harvest resulting from selection (uneven-aged) prescriptions which produce a relatively high amount of land harvested in relation to volume harvested. Those alternatives that have a higher harvest level and more flexibility in harvest schedule fulfill the base harvest schedule from the more productive lands and achieve a higher volume of growth per acre (PRF and RF'A). Those alternatives with high levels of wilderness, recreation, or other resource objectives have a reduced flexibility in meeting a given harvest level. Consequently, harvest is forced to the less productive sites in some cases.

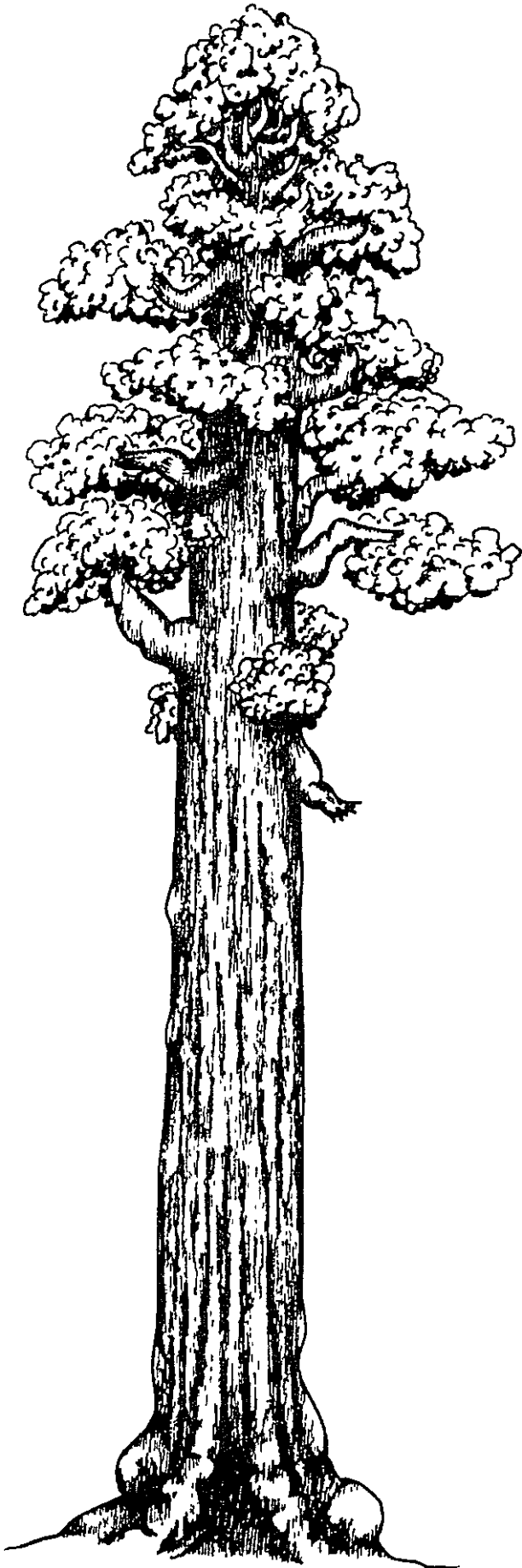
Table 2.34 - Timber Resource Management Data by Benchmark and Alternative

Benchmark or Alternative	Inventory			Average Annual ASQ (First Decade)			Long-Term Sustained Yield Capacity (LTSYC)			Average Annual Net Growth			
	Suitable Lands	Decade 1	Decade 1	Decade 5	Decade 1	Percent of Decade 1	ASWLTSY Ending % in	Decade 1	Decade 5	Decade 5			
	M Acres	MMCF	CF/AC	MMCF	MMCF	MMBF	MMCF	Inventory Dec. 15	CF/AC	CF/AC	MMCF		
Column #	1	2	3	4	5	6	7	8	9	10 1/	11	12	13
MNR Max. FNV	382	1324	3466	744	20.3	1.5	132	31.0	4.2	5	55	56	214
TBR Maximum Timber	402	1356	3373	966	28.6	2.1	186	33.4	35	(89)	47	81	32G
PRF Preferred	345	1064	3084	1133	14.9	1.4	97	74.4	1.7	(91)	47	53	183
RPA RPA Program	329	1031	3134	915	15.5	1.5	101	18.2	1.4	(99)	38	50	165
FRO High Production Emphasis	326	1004	3080	765	20.5	2.0	133	20.7	2.6	(99)	45	58	190
MKT Market Emphasis	305	995	3262	763	19.4	1.9	126	19.9	2.8	(98)	48	55	167
CUR Current	298	949	3185	772	14.5	1.5	94	15.8	1.8	(92)	38	54	160
AMN Amenity	279	943	3380	994	6.6	0.7	43	10.5	1.2	(96)	34	29	81
WFV Wildlife, Fish and Visual	271	981	3620	961	12.6	1.3	82	15.1	1.2	(97)	50	46	125

1/ Values in parenthesis indicate percent of Long-Term Sustained Yield (LTSY) that Allowable Sale Quantity (ASQ) reaches in the 15th decade if LTSY is not reached during the 150-year planning period.

Table 2.34 - Timber Resource Management Data by Benchmark and Alternative (Continued)

Benchmark or Alternative	Area and % of Suitable Land by Yield Level						Harvested Acres for First Decade			First Decade Avg. Annual Harvest
	Full Yield		50-90% Yield		Under 50% Yield		Clearcut	Shelterwood	Selection	As a Percent of
	M Acres	%	M Acres	%	M Acres	%	M Acres	M Acres	M Acres	Suitable Acres
Column #	14	15	16	17	18	19	20	21	22	23
MNR Max. PNV	380	99	0	0	2	1	35.00	0	9.98	1.2
TDR Maximum Timber	391	97	0	0	11	3	100.83	6.98	22.48	3.2
PRF Preferred	0	0	324	94	21	6	17.34	1.28	8.41	0.0
RPA RPA Program	146	44	76	23	107	33	18.47	1.60	1.57	0.8
PRO High Production Emphasis	282	86	16	5	28	9	46.27	0	10.32	1.7
MKT Market Emphasis	247	81	43	14	15	5	43.82	.94	3.69	1.5
OUR Current	184	62	14	5	99	33	7.87	22.3	4.45	1.2
AMN Amenity	11	4	104	41	164	55	0	0	15.00	0.1
WFV Wildlife, Fish & Visual	0	0	217	80	54	20	10.48	1.60	36.53	1.8



**Chapter 3**

**AFFECTED  
ENVIRONMENT**



## CHAPTER 3

### AFFECTED ENVIRONMENT

#### A. INTRODUCTION

A major part of planning consists of exploring the productive potential of the land base and describing society's demand for Forest goods and services. The Affected Environment chapter provides an overview of all the resources that could be managed to respond to society's demand. This chapter describes the range of goods and services that are technically, economically and environmentally feasible under existing conditions at various levels of management intensity. The Affected Environment for planning is the area that would be affected by the implementation of any of the plan alternatives.

The plans of other agencies and the Tule River Indian Reservation were reviewed and coordination meetings were held to ensure that the Forest Plan would be compatible with theirs. A detailed list of plans reviewed is located in Appendix A of the Forest Plan. Two agencies, Bureau of Land Management and Sequoia and Kings Canyon National Parks, were coordinated with very closely since they manage large blocks of adjacent public land.

Parts B and C of this chapter describe the physical and biological conditions occurring in the Planning Area. The social and economic environment is displayed in Part D. The last section, Part E, provides a detailed review and describes each resource (or area of concern) in terms of current use, management, and demand trends. This section is a summary of the data working papers (the Analysis of the Management Situation) which are available for review at the Forest Supervisor's office in Porterville.

#### B. PHYSICAL ENVIRONMENT

The Sequoia NF is located in the southernmost end of the Sierra Nevada range within portions of Fresno, Tulare, and Kern Counties. Elevations range from just under 1,000 feet on the western edge of the Forest on the Kings and Kern Rivers to 12,432 feet on Florence Peak in the Golden Trout Wilderness.

The present form of the Sierra Nevadas is the product of hundreds of millions of years of geologic work. From about 230 to 420 million years ago, the area that is now the Sierra Nevada was under a shallow sea. Continental and marine sediments in this sea bed were lithified to form a complex series of paleozoic rocks. About 132 million years ago, these rocks were raised and deformed into a northwest trending fold. Lava rose under the fold and mixed with the rocks to form a huge granitic batholith approximately 400 miles long and 60 to 80 miles wide.

About 25 million years ago, a period of deformation and volcanic activity began. The eastern edge was lifted along the Sierra Nevada fault and the batholith was tilted to the west. Nearly three million years ago the final uplift brought the Sierra Nevada to its present height.

During the ice ages within the last one million years, the crest of the Sierra Nevada was extensively glaciated. The last glacial period ended 25,000 to 11,000 years ago and extended as far south as the headwaters of the Little Kern River.

Four major rivers drain the Planning Area. The Kings, Kaweah, and Tule Rivers flow almost due west through deep canyons in the western portion of the area. The Kern River, with its headwaters near Mt. Whitney, flows due south 78 miles before turning westward to the San Joaquin Valley. The Kern drains the central and eastern portions of the Planning Area and is impounded at Lake Isabella. Legislation was enacted in November 1987, designating portions of the Kings and Kern Rivers as Wild and Scenic.

The Kern River and its forks separate the southeastern portion of the Planning Area into distinct regions. The Breckenridge Mountains are separated from the Greenhorn Mountains as the river turns westward from Lake Isabella. The Breckenridge Mountains are characterized by oak savanna at the low elevations, a chaparral zone and a small area of conifer forest at the high elevations.

Upstream from Lake Isabella, the South Fork of the Kern River divides the Piute Mountains and Scodie Mountains from the Kern Plateau. The Piutes are similar to the Breckenridge Mountains but have a larger conifer forest zone. The eastern portion of the Piutes exhibits the desert influence, supporting Joshua trees and pinyon pine. The Scodie Mountains are a distinct desert mountain range with an extensive pinyon pine woodland.

The North Fork of the Kern River divides the Greenhorn Mountains from the Kern Plateau. The Greenhorns rise from the floor of the San Joaquin Valley with annual grassland and oak savannas at low elevations, a chaparral belt at mid elevations and a broad belt of conifer forests at higher elevations. The eastern side of the Greenhorn Mountains drops steeply into the Kern River Canyon.

The Kern Plateau region is across the upper Kern Canyon from the Greenhorn range. This mountainous "plateau" is generally covered by mixed conifer forests with red fir forests at higher elevations. Subalpine trees and shrubs grow on the highest mountain tops.

Sheep and Maggie Mountains, Jordan Peak, Slate Mountain and Mule Peak form the divide separating the Tule and Kern River watersheds. The Tule River drains the northwest section of the Forest and is impounded on the valley floor at Lake Success.

The northern unit of the Forest, the Hume Lake Ranger District, is isolated by administrative rather than geomorphic boundaries. This unit is bounded by the Sierra National Forest on the north and Sequoia and Kings Canyon National Parks on the south and east. The majority of the Hume Lake District is in the Kings River drainage from Mitchell and Hogback Peaks westward to Pine Flat Reservoir with the southern portion of the District in the Kaweah River watershed.

The low and intermediate elevations on the western half of the Forest, like most of southern California, has a Mediterranean-type climate comprised of

relatively mild winters, limited precipitation, and long, hot, dry summers. Mean annual precipitation ranges from 10 to 50 inches with 79-90 percent of it falling between November and April. In the montane and subalpine elevations, most of the precipitation during this period is in the form of snow.

On the eastern half of the Forest, precipitation ranges from a high of 35 inches on the Kern Plateau to less than eight inches on the eastern slopes of the Scodie Mountains. The location of the Planning Area in relation to the southern San Joaquin Valley, northern Mojave Desert, and the Tehachapian section of the Transverse Range greatly influences the diversity of climatic conditions found throughout the Forest.

### C. BIOLOGICAL ENVIRONMENT

Soil types, rock substrates, precipitation, seasonal temperatures and elevational relief are all important factors in creating numerous vegetative types. These in turn provide for the diversity of fish and wildlife found in the Planning Area.

Vegetation and its treatment provide the opportunity to produce changes in fish and wildlife habitat, timber production, grazing use, water yield and recreation use. Variation in vegetation is most pronounced in rugged terrain because of the significant impact topography has on localized climate and plant species that can adapt to such environments.

The profile of vegetation on the Sequoia NF changes conspicuously from the west to the east primarily because of elevation and precipitation. Changes are also noticeable on north vs. south facing slopes. In a broad overview, the vegetation on the Forest is basically made up of four large formations: chaparral, hardwoods, conifer woodlands, and conifer forests. Each formation will be briefly described.

#### 1. Chaparral

Chaparral species are hard-leaved evergreen shrubs which are widespread on dry slopes and ridges with rocky or gravelly soils. Precipitation ranges from 10 to 25 inches. Chaparral is fire-adapted because many of the dominant shrubs are capable of stump-sprouting. Within the Forest, chaparral is divided into three types based on ecological and geographical attributes. These types are mixed, montane and semidesert chaparral.

The mixed chaparral occurs on the western slope of the Forest, generally between 1500 and 4000 feet elevation. Montane chaparral is the brush located within the conifer forests. In many cases, the montane chaparral is a seral successional stage of a conifer forest. The semidesert chaparral, occurs on the eastern slopes of the Forest in very arid environments. Many of the dominant species are from the Great Basin or desert mountain ranges. This vegetative type of chaparral is commonly associated with the pinyon pine woodlands.

Western Slope

12,000'

10,000'

8,000'

6,000'

4,000'

2,000'

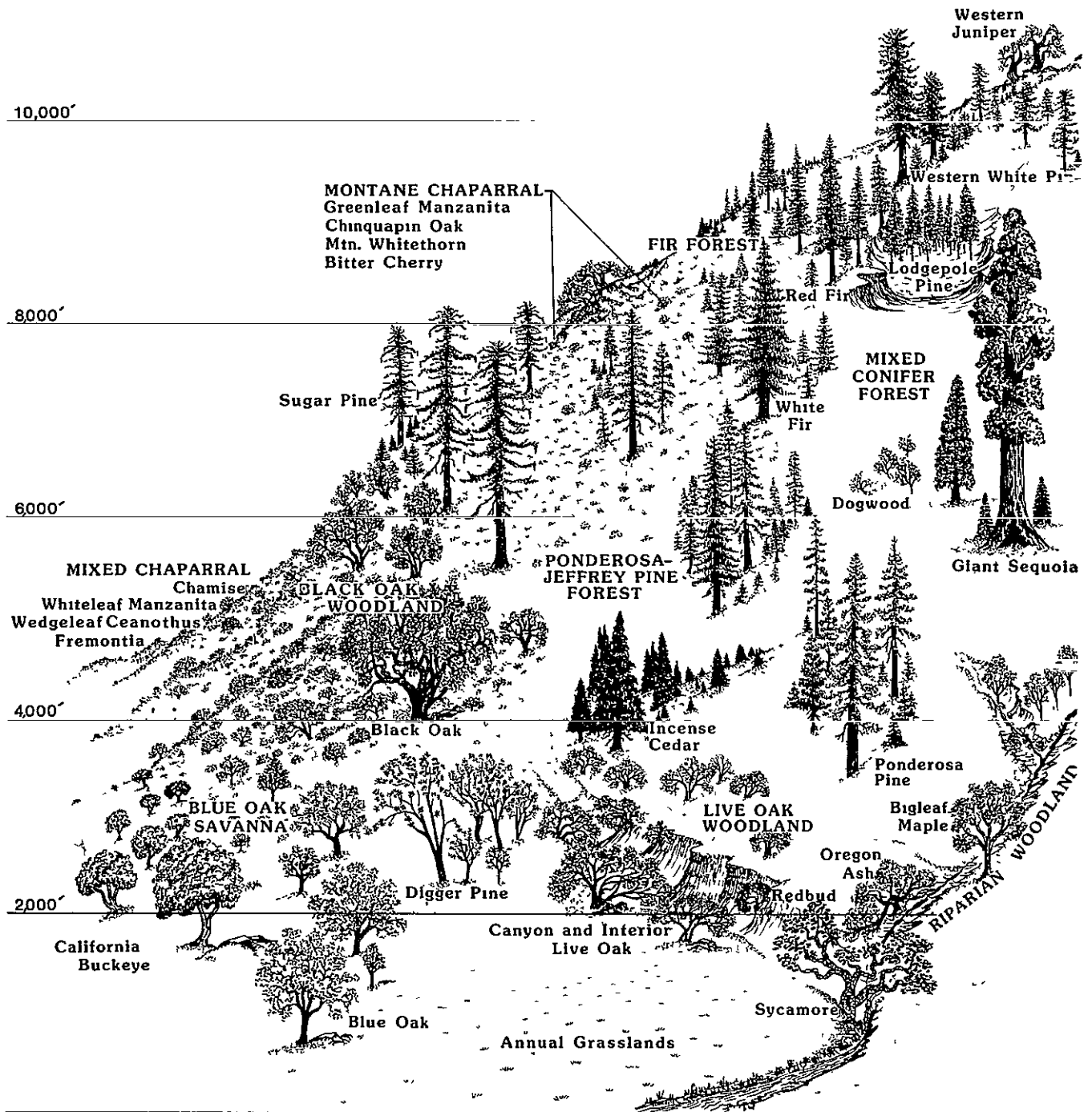
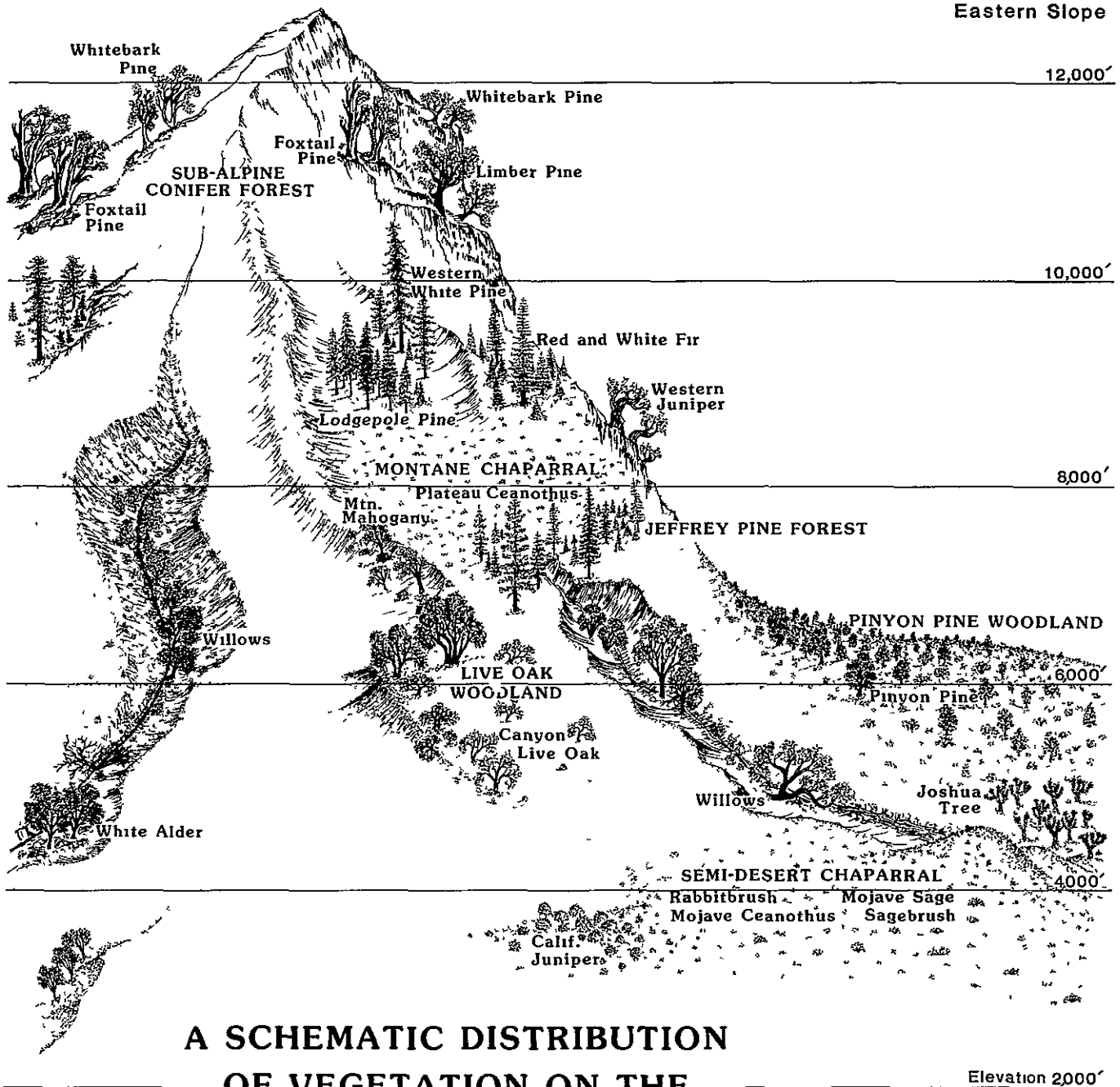


FIG. 3.1

Eastern Slope



**A SCHEMATIC DISTRIBUTION  
OF VEGETATION ON THE  
SEQUOIA NATIONAL FOREST**

Elevation 2000'

## 2. Hardwoods

Broad-leaved trees comprise the hardwood formation on the Forest: species of oak are the dominant trees. Many wildlife species are dependent on these hardwoods for food and shelter. Hardwoods are divided into four types. These are blue oak, live oak, black oak, and riparian woodlands.

The blue *oak* woodland is located on the western fringe of the Forest associated with the annual grassland of the San Joaquin Valley. The blue oak woodland is an open community referred to as a savanna. Blue *oaks* are deciduous in late fall. Live oak woodlands consist primarily of canyon live oaks and occasionally interior live oak. Both of these *oak* species are evergreen forming a closed canopy. Live oak woodlands are located throughout the Forest, generally on steep rocky slopes. Black oak woodlands are perhaps the most important hardwood type for both wildlife, recreation, and wood production. This woodland is located generally above 3,500 feet elevation and is associated with various conifers. Black oak is also a deciduous species. The last hardwood type is the riparian woodland. This vegetative type contains several different species of trees with willows, alders, cottonwoods, sycamores, and oregon ash being the common species. Riparian woodlands occur Forest-wide where water is found intermittently or year-round, near streams, creeks, rivers, lakes, reservoirs, and springs.

## 3. Conifer Woodlands

The conifer woodlands occur in rather arid environments on the Forest. Pinyon pine woodlands are the dominant vegetative community on the eastern half of the Kern Plateau and Piute Mountains. with the Scodie Mountains being comprised of a vast pinyon woodland. The remaining conifer woodlands include digger pine, western and California juniper, and groves of the rare Piute cypress.

## 4. Conifer Forests

The conifer forests are the dominant vegetative formation on the Forest. Several conifer species make up the conifer forests and each has a relatively specific set of environmental parameters that effect the location. Generally six forest types occur on the Sequoia NF: ponderosa-Jeffrey pine, giant sequoia, mixed conifer, red fir, lodgepole pine, and subalpine.

The largest type is the mixed conifer forest. Ponderosa pine characterizes the lower, more mesic, western slopes from 4,000 to 7,000 feet elevation. Jeffrey pine dominates the higher, colder, more xeric sites from about 5,000 to 9,500 feet elevation. Black *oak* is a common associate in the ponderosa-Jeffrey pine forests. Both ponderosa and Jeffrey pine zones overlap on the western slopes of the Forest and a considerable amount of hybridization is evident. On the eastern half of the Forest, Jeffrey pine has been given the common name "east-side pine." Both ponderosa and Jeffrey pines are important timber species.

The giant sequoia or sierra redwood is a remarkable forest type located in approximately 38 isolated groves on the Forest. This species occurs in mixed conifer stands on the western slope of the Forest between 5,000 to

8,000 feet elevation. Giant sequoia, unlike the other conifer types on the Forest, is relatively resistant to insects, fire or fungal disease. Several large giant sequoias are estimated to be over 3,000 years old. Sequoia groves receive between 45 and 50 inches of precipitation and are restricted to sites where soil moisture is ample throughout the dry summer months since giant sequoia roots are relatively shallow.

Mixed conifer forests include many species and actually form a broad transition from the parklike ponderosa-Jeffrey pine forests and the dense red fir forests. Generally, mixed conifer forests contain at least three species with many stands containing five different species of conifers. These species include: ponderosa, Jeffrey and sugar pines; incense cedar, and white fir. Douglas-fir is absent on the Sequoia NF.

Red fir forests occur between elevations of 7,000 and 9,000 feet. This forest type receives 35 to 50 inches of precipitation which mainly occurs as snow. When red fir does not occur in large nearly pure stands, it is associated with western white pine and lodgepole pine. Red fir forests are restricted to the highest elevations on the Kern Plateau and on the western slopes. Red fir occurs as far south as Sunday Peak in northern Kern County.

Lodgepole pine forests generally occur above the red fir forests in relatively rocky habitats, however, large acreages of lodgepole pines exist along the edges of mountain meadows and creeks throughout the conifer formation. Lodgepole pine is capable of occupying wet boggy areas of mountain meadows where most conifers find it difficult to survive. Lodgepole stands are important to wildlife along meadows by providing edge and cover. Also, this species is highly desired for firewood.

The subalpine forests are primarily comprised of foxtail pine. This community occurs on the highest slopes of the Forest between 9,500 to 11,000 feet elevations. Foxtail pine is located in the Golden Trout Wilderness, in the Dome Land Wilderness, and on Sirretta Peak. White-bark pine is located on the alpine slopes of Mt. Harrington and Hogback Peak in the Monarch Wilderness in Fresno County. Limber pine, the last species of the subalpine forest, is restricted to the eastern slopes of the Forest and is relatively uncommon.

Table 3.1 - Vegetative Types Within the Planning Area\*

<u>Vegetative Type</u>	<u>Sequoia NF (net acres)</u>	<u>BLM Rockhouse Area (net acres)</u>
<u>Chaparral</u>		
mixed	129,600	0
montane	61,300	0
semidesert	54,800	5,760
	<u>245,700</u>	<u>5,760</u>
<u>Hardwoods</u>		
blue <i>oak</i> woodland	16,500	0
live <i>oak</i> woodland	124,100	70
black <i>oak</i> woodland	46,000	0
riparian woodland	3,600	0
	<u>190,200</u>	<u>70</u>
<u>Conifer Woodlands</u>		
pinon pine	71,700	28,940
digger pine/cypress /juniper	10,100	650
	<u>81,800</u>	<u>29,590</u>
<u>Conifer Forests</u>		
Jeffrey-ponderosa pine	288,000	0
giant sequoia	13,400	0
mixed conifer	125,200	0
red fir	88,700	0
lodgepole pine	13,800	0
subalpine	2,300	0
	<u>531,400</u>	<u>0</u>
<u>Miscellaneous</u>		
grassland/meadows	29,500	0
herbaceous	1,600	0
rock outcrop	38,800	140
	<u>69,900</u>	<u>140</u>
	=====	=====
	1,119,000	35,560

\* Based on the California Vegetative (CALVEG) System of classification.



## D. SOCIOECONOMIC ENVIRONMENT

### 1. Introduction

Forest management activities affect the human community as well as the physical and biological components of the natural environment. Presented in this section is a profile of the counties and social groups within the sphere of influence of the Sequoia NF. Generally a National Forest's immediate sphere of influence is defined as those counties within which the Forest lies. It is the residents of these counties that are most affected by Forest management activities in their daily lives. The extended sphere of influence, in contrast, is defined by the geographic location of Forest user groups. For instance, the Sequoia's extended sphere of influence includes the Los Angeles Basin because many recreational users live there. In this section, the social and economic impacts of the Sequoia NF management activities on its immediate sphere of influence is presented. Effects on users in the extended sphere of influence is described in the appropriate resource section. For instance, the social effects of the Sequoia's activities on recreational users living in the extended sphere of influence will be dealt with under "Recreation".

Although the Sequoia NF lies within Fresno, Kern, and Tulare Counties, only Kern and Tulare Counties are considered to be in the immediate sphere of influence. Only a small portion of the Sequoia NF, the Hume Lake District, is located in Fresno County. Although County residents make up a high percentage of users of the Hume Lake District, this is only a small portion of the Fresno County population. Relative to Sequoia and Kings Canyon National Parks, the Forest exerts negligible influence on the County. The only direct economic contribution to the County appears to be the Forest Reserve Funds. This is the only variable discussed below for Fresno county.

In addition to describing Kern and Tulare Counties as a whole, the foothill social groups within the three counties that are particularly affected by Forest management activities are described. These groups include the ranchers, retirees, working families, second-home owners and other special populations in the foothill areas and the Kern River Valley, adjacent to the Sequoia NF. Finally, the characteristics and concerns of several special populations potentially affected by Forest management activities are described.

The purpose of describing the Forest socioeconomic environment is to establish a baseline for assessing socioeconomic impacts. This section concludes with the identification of these impact variables. Since most people in the immediate sphere of influence relate to the Sequoia as a source of employment, recreation, firewood, and visual amenity; the variables that will be carried forward to the impact assessment section reflect these four elements.

## 2. Tulare County

### a. Demographic Characteristics

#### Population

For over 30 years, the population of Tulare County has grown steadily from 149,000 in 1950 to 259,300 in 1982. Until the seventies, the County's growth rate substantially lagged behind that of the State as a whole. During the seventies the State's growth rate decreased while Tulare County's doubled. In-migration from Southern California urban areas, and to a lesser extent, from Fresno County and other states is behind this spurt in the growth rate. These new residents are apparently attracted by a steadily diversifying economy, the slower paced lifestyle of a rural county, and relatively low housing prices. These features are attractive to families and retirees alike.

Looking toward the future, Tulare County's population is expected to grow but at somewhat reduced rates. By 1990, the population is expected to reach 312,000 people: by 2000, 387,000 people.

#### Age

Median age for Tulare County's residents is 28 years, slightly below the statewide median of 29.9. Even so, the proportion of the population over 65 has more than doubled since 1970, and is double that for the state as a whole. Over 22 percent of the County's people were 65 or older in 1980, compared to 10 percent statewide. From the standpoint of Forest planning, these two indicators help point the way toward a qualitative definition of goods and services needed by local residents.

#### Race and Ethnicity

At 74 percent of total population, Tulare County is predominantly white and of northern European cultural background. Asian, black, and native American racial groups constitute two percent, one percent, and one percent, respectively, of the County's population. Culturally, about 30 percent are of Hispanic background. Compared to the State, Tulare County has proportionally more people of Hispanic heritage, fewer blacks and Asians and the same amount of Native Americans.

#### Education

Using graduation from high school as an indicator of educational attainment, Tulare County is substantially behind the State as a whole. While 74 percent of all adults statewide have high school educations, only 57 percent of Tulare County adults have their diplomas.

#### Degree of Urbanization

Tulare County residents are much more likely to live in a rural environment than residents of the State as a whole. While over 90 percent of all Californians live in urban environments, only 62 percent of Tulare County residents are in an urban environment.

## Community Stability: Mobility and Home Ownership

Using length of residence in Tulare County and rate of home ownership as indicators of mobility and community stability, Tulare County is less mobile a social system than the State as a whole. While 69 percent of the State's residents lived in the same county from 1975 to 1980, 72 percent of Tulare County's residents stayed in Tulare County over the same period. The rate of home ownership is also higher in Tulare County. Statewide the ratio of homeowners to renters is 60 to 40 percent: in Tulare County it is 64 to 36 percent.

### b. Economic Base

Agriculture has been and remains the dominant sector of Tulare County's economy. Despite recent gains in manufacturing and services, Tulare County's economy is directly and indirectly tied to the growing, harvesting, processing, and distribution of agricultural commodities. For the last 20 years Tulare County has placed as one of the top three counties nationwide in agricultural output. Since 1979, the annual dollar value of agricultural output exceeded \$1 billion.

For the present and looking toward the future, Tulare County's economy is expanding and diversifying. While agriculture will remain the dominant sector for some time, agricultural employment is decreasing both relatively and absolutely. In contrast, employment in the manufacturing, trade, and services sectors is increasing both relatively and absolutely. Looking to the future, these trends are expected to continue.

### Employment/Unemployment and Workforce

Over the 10-year period 1970 to 1980, the number of jobs in Tulare County rose from 83,000 to 107,300 (an increase of 29 percent). Unemployment rates have varied from 7.9 percent in 1976 to 8.3 percent in 1978. In 1980, unemployment stood at 8.0 percent, which is somewhat above the ratio for the state as a whole. This increase in unemployment while employment opportunities are increasing appears to be due to two factors:

- 1) the population is growing faster than are employment opportunities. and
- 2) the Labor Force Participation Rate (LFPR) - the proportion of people in the workforce, including both employed and unemployed persons - has risen steadily since 1970. In 1970, the LFPR stood at 37 percent: in 1980, 47 percent. Entry of increasing numbers of women into the workforce is a major factor in this rather dramatic increase in labor force participation (a phenomenon paralleled throughout the State).

Assuming that present trends in economic growth and labor force participation continue, employment is expected to reach 118,600 to 124,800 in 1990 and 147,000 to 154,800 in the year 2000. (Assume 38 percent to 40 percent of population is employed.)

### Local Dependence on Sequoia National Forest Timber

Employment in Tulare County's timber industry totals 1,080 workers. Of these, 700, or two-thirds of the total, worked in sawmills or planing mills. The rest were employed in logging camps and various wood manufacturing operations.

From a County-wide perspective, these 1,080 jobs constitute about one percent of total employment. However, looking at the local areas where the sawmills are located, the picture appears somewhat different. Woods and mill jobs accounted for about 23 and 10 percent of total employment in Terra Bella and Dinuba respectively. Acknowledging that these are high percentages, these two areas are part of a nearly County-wide employment market. Should there be any changes in timber employment due to change in harvest levels on the Sequoia, that change in employment will in the long run be negligible in the County employment market.

Looking to the future, the timber industry's share of County employment is expected to decrease to less than one percent. Population and employment will clearly grow faster than the timber industry which is constrained by National Forest production levels that are unlikely to change enough to affect the county economy in a big way. Hence as the Tulare County economy grows and diversifies, the relative importance of the local timber industry to the County as a whole will correspondingly diminish. To the communities in which the mills and associated businesses are located, the relative importances shall remain high.

### Tourism-Related Employment

From 1978 to 1981, employment in tourism-related businesses grew steadily. By 1981, 1,300 workers were employed in jobs directly related to tourism and recreation. Recreation-related services alone grew 4.4 percent from 1981 to 1982. While tourism-related employment is only about one percent of total County employment, it is an expanding sector.

### Income

Typical of rural counties, Tulare County's residents realize lower incomes than residents of the State as a whole, and in this case, are falling farther behind. While the County's median household income in 1980 was \$14,153, it reached \$18,248 for the State as a whole. While Tulare County residents realized a 79 percent increase in median income between 1972 and 1980, residents statewide doubled median incomes over the same period. This is not as great a disparity as it would first appear. It should be noted that while household income is lower in Tulare County, only cash income is counted. The value of goods produced and consumed at home are not. Also, women living in rural areas do not enter the paid work force as often as their more urban counterparts. Finally, the price of housing in Tulare County is relatively low: so a relatively low household income goes farther. While the median home value statewide in 1980 was \$84,700, median home value in Tulare County was \$48,900. Using mean family income as an indicator, income is distributed among racial and ethnic groups such that Asian families enjoy a relatively high average income of \$22,488 followed by whites (\$21,655), Native Americans (\$14,817), Hispanics (\$14,055), and

blacks (**\$12,656**). Statewide, whites earn slightly more than Asians. Otherwise Tulare County's distribution of family income among the various racial and ethnic groups parallels that of the State but at substantially lower levels.

As might be expected, the proportion of Tulare County's residents living below the poverty level is higher than that for the State as a whole. In Tulare County **39,600 or (16 percent)** of total population lived below the poverty level in **1980**. In contrast the statewide incidence of poverty was nine percent.

### Forest Reserve Funds

In lieu of property taxes the Forest Service remits **25** percent of its receipts to counties within which National Forests are located. These "25% Funds" must be evenly divided between roads and schools. Over the last five years, Tulare County's share has ranged from **\$500,000** to one million dollars averaging **\$715,000**. Relative to the total road and school budgets, this is a very small amount. However, in this era of restricted budgets, the County feels that every source of revenue is important to County government.

### c. Social Characteristics

#### Lifestyle

In Tulare County's urban and nonurban areas alike there is a rural, outdoors orientation to work and leisure activities. Tulare County residents are not generally "uptown"; they prefer a simple life lived at a relatively slow pace and in some relation to the land. Open space and mountainous scenic backdrops are taken for granted but greatly enhance community identity. During those times of year when the mountains are visible, they are a directional point of reference as well as a scenic backdrop. Since the Sequoia NF is within a **1-1/2** to 2-hour drive of most residents of the county, the Forest affords many opportunities for day use as well as extended backcountry trips. For some ranchers in the foothills, the Sequoia assists directly in the continuance of their livelihood and lifestyle by providing forage.

#### Attitudes, Beliefs, Values

**The** values of Tulare County residents can be described as conservative. High value is placed on self-sufficiency even though many are on some form of public assistance. Economic growth and wise use of land - both public and private - are viewed as good for the County. Much effort has gone into insuring the productive status of prime farm lands and developing lands of marginal agricultural value for human habitation. The Rural Valley Lands Plan and Foothill Growth Management Plan are the tangible results of these efforts. **The** in-migration of urban residents with somewhat more preservationist attitudes toward development is only partly responsible for the existence of these policies and plans. **It** is mainly the longtime residents that have pushed for responsible land use policies and have served on the planning committees that developed them.

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Tulare County residents value their communities and take responsibility for them. In almost all areas, rural and urban, the number of civic and service organizations is astounding. While these groups serve a social function, they also meet what might be considered very ambitious objectives for relatively small communities.

Though Tulare County residents oppose what they **see** as unnecessary governmental intervention, government is **also** seen as a positive tool that can better the quality of life. However, local control of local matters is important: federal government policies and programs may be viewed with some suspicion. This suspicion may stem from the feeling that "the Feds" have no real, long-term interest in the community itself.

#### d. Governmental Institutions

##### Planning

The revised Land Use Element of the Tulare County General Plan is two-thirds complete. The Rural Valley Lands Plan and Foothill Growth Management Plan (FGMP) are complete for the valley and foothill portions of the County respectively. The Mountain Element to the General Plan is slated for staff work in the near future. The Sequoia NF has kept in close contact with the Planning Department on this matter since this element will have an important effect on what happens on private land within the Forest as well as the Poso area, just outside the Forest.

At this time, there is no practical way to determine where conflicts might exist between Forest and County policy, even where County planning is complete. The FGMP is, and the Mountain Element will be, a policy plan which includes explicit policies and standards for development but has little land use or density information other than graphic delineation of future development corridors. While each project must conform to plan policies and standards, there is no way of telling prospectively what sorts of development at what scale might take place near the Forest boundary.

The Springville General Plan for the urban area of Springville is also underway. Undertaken by an appointed subcommittee of the Springville Area Advisory County (SAAC), the Springville General plan is a Specific Area Plan to be developed under the general provisions of the FGMP. Drafts of this plan have been developed with future Forest activities in mind. For instance, if a ski area is developed on Slate Mountain, Springville will be prepared to accommodate additional growth.

##### Fire Suppression

Wildland fire protection within the National Forest is provided by the USA Forest Service and the California Department of Forestry (CDF). While the Forest Service has responsibility for the Federal lands, and the CDF for the State and private lands: actual protection is provided under the terms of a cooperative agreement that enables each agency to protect the lands of the other agency. The CDF protects three blocks of intermingled State, private and Federal lands within the Sequoia Forest boundary (Mountain Home State Forest, Eshom Valley-Heartland, and Owl Mountain). All other Federal

and private land within the Forest boundary is protected by the Forest Service.

Fires burning near or on both sides of the Forest boundary are attacked by units from both agencies. In cases of a large fire burning on both jurisdictions, a unified command structure is implemented to manage the suppression actions. Costs are shared.

Structural fire protection is the responsibility of local governments (County or Districts). With the exception of a few areas of concentrated private land development, there is no structural fire protection available within the Forest. Forest Service crews will assist on a limited basis if the burning building poses a threat to the adjoining wildlands.

### 3. Kern County

#### a. Demographic Characteristics

##### Population

Over the 20-year period of 1960-1980, Kern County's population grew from 291,984 to 403,089, an increase of 40 percent or (two percent per year). Growth has been evenly divided between in-migration and natural increase. Both rate and pattern of growth are similar to those for the State as a whole. The County's population is expected to increase substantially ranging from 476,900 to 595,000 by the year 2000. Because of its relative isolation from other centers of employment, Kern County's growth will depend primarily on development of new employment opportunities and to a lesser degree on the extent to which it becomes an attractive retirement community. Bakersfield has been identified as one of the fastest growing communities in the nation at this time.

Median age is 28.3 years for Kern County's residents, somewhat younger than the 29.9 figure for the State as a whole. Nevertheless, the proportion of older people is increasing. In 1970, eight percent of the population was 65 or over; in 1980, 11 percent was 65 or over, which is about the same proportion as for the State as a whole. This trend is expected to continue as residents age, retirees in-migrate, and birth rates decrease.

##### Race and Ethnicity

According to the 1980 Census, Kern County is 77 percent white and of Northern European cultural background. The largest racial minority group is black (five percent of the total). Culturally the largest minority is Hispanic, standing at 22 percent of the County's people. Kern County is home for 5,981 American Indians (1.5 percent of the County population). Compared to the State as a whole, Kern County has proportionately more people of Hispanic heritage, substantially fewer blacks, and substantially more Native Americans.

## Education

Using graduation from high school as an indicator, Kern County is somewhat behind the State as a whole. The former registers 63 percent of its adult population as having completed high school: the latter, 74 percent.

## Degree of Urbanization

Kern County residents are somewhat **less** likely to live in urban areas than State residents as a whole. Statewide, over 90 percent live in urban areas. About 80 percent of Kern County's residents live in urban areas.

## Community Stability: Mobility and Home Ownership

Rates of mobility and home ownership are virtually the same for Kern County and the State as a whole. In both cases about 70 percent of those residing in the County and State in 1980, were also there in 1975. As for tenure, 60 percent of all housing units are owner-occupied, while 40 percent are rental units. This distribution holds for both Kern County and the State as a whole.

### b. Economic Characteristics

#### Economic Base

The economic base of Kern County, as measured by employment, has and will continue to center on agriculture, oil and gas production, and military bases. Compared to the State as a whole, employment in these sectors is and has been proportionately high. In contrast to the State as a whole, Kern County's trade and service sectors are relatively small. Analysis indicates that the County's economy is relatively stable and not undergoing any major structural change. Rather it appears to be increasing its competitive edge in its traditionally dominant basic industries. Over time, however, projected levels of growth cannot be supported by these industries alone. Continued growth will necessitate growth in the trade and service sectors as well as expansion of new manufacturing industries. Given proximity of raw materials, food processing and manufacture of petroleum products are logical future additions to the County economy.

#### Employment and Unemployment

Over the 10-year period 1972 to 1981, the number of Jobs in Kern County increased 50 percent from 111,600 to 167,400 jobs. Over the same period, population increased only 40 percent. The increase in labor force participation is attributed to the entrance of more women and "baby boom" adults into the workforce. By the year 2000, assuming expected levels of economic and population growth and a similar rate of participation in the labor force, from 190,800 to 238,000 people will be employed in Kern County.

Over the 10-year period from 1972 to 1981, unemployment varied from 5.8 percent at the beginning of the period to 8.8 percent at the end (hitting a high of 9.3 percent during 1976 - a recession year). These rates are somewhat higher than those for the State as a whole. In recent recession



years, however, Kern County has not been hit harder than the State as a whole.

### Income

As is typical of relatively rural communities, Kern County's median household income is substantially below the statewide figure, \$16,358 compared to \$18,248. Even so, 1980's \$16,358 median income represents a 120 percent increase over the 1970 level. Measured in real terms, median household income is up 3.2 percent over the 10-year period. It should be pointed out that while Kern County's incomes trail the State's, so does the price of housing. A given income goes farther in Kern County than elsewhere in the State.

Using mean family income as an indicator, income is distributed among racial and ethnic groups such that white families enjoy a relatively high average income of \$23,517, followed by Asians (\$21,302), Native Americans (\$18,305), Hispanics (\$16,164), and Blacks (\$14,714). This distribution follows the statewide pattern, but each income level in Kern County is from \$1,000 to \$3,500 lower.

As might be expected, the proportion of Kern County's residents living below the poverty level is higher than for the State as a whole. In Kern County 49,900 people (or 12 percent of the population) live below the poverty level. Statewide the poverty rate is nine percent.

### Forest Reserve Funds

In lieu of property taxes, the Forest Service remits to counties within which National Forests are located 25 percent of its receipts. These "25% Funds" must be evenly divided between roads and schools. Over the last five years, Kern County's share has ranged from \$189,000 to \$470,000 averaging \$285,000. Relative to total road and school budgets, this is a very small sum. However, in this time of restricted budgets, the County feels that every source of revenue is important to County Government.

### c. Social Characteristics

The following social characteristics of Kern County residents are considered relevant to Forest Planning:

#### Lifestyle

Reflecting its relatively rural status, resource based economy, and the ready availability of outdoor recreation opportunities, many Kern County resident's lifestyle -- both work and leisure aspects -- is oriented toward the outdoors. The Sequoia, being within a one- or two-hour drive for most residents, functions much as a regional park, providing a great deal of daytime recreation and some overnight opportunities for County residents. The Sequoia provides an increasing amount of firewood and a scenic backdrop for many as well. Additionally, the Sequoia assists the continuance of local ranching as a livelihood and lifestyle by providing forage.

## Attitudes, Beliefs and Values

Attitudes toward government regulation, growth and resource development, and proper uses of public land are central to understanding Kern County's culture and its relation to the Sequoia.

As a County, Kern County has resisted any but the most necessary government regulation. It has placed the protection of private property rights high on its list of principles. Though Kern County residents oppose what they see as unnecessary governmental intervention, government is sometimes seen as a positive tool that can better the quality of life. However, local control of local matters is all important: federal government policies and programs may be viewed with some suspicion. This suspicion may stem from the feeling that "the Feds" have no real, long-term interest in the community itself.

Generally, growth and development of land and natural resources are regarded as good for the County. Reflecting a positive attitude in these areas, County residents tend to look favorably on development of resources on public land and on the traditional concept of multiple-use. Kern County residents value their communities and take responsibility for them. In almost all areas, rural and urban, the number of civic and service organizations is large. While these groups meet ambitious objectives for their communities, they also serve a social function.

### d. Government Institutions

#### Planning

1980 through 1982 saw a major update of Kern County's General Plan. Uses adjacent to and near the Forest were left largely unchanged from their previous residential, commercial, and resource management designations. While additional growth will yield more pressure on the Forest, there are no major conflicts between County and Forest land use policies at this time.

#### Fire Suppression

Wildland fire protection within the National Forest is provided by the Forest Service. Protection of the private lands within the boundary is done under the terms of a cooperative agreement between the Forest Service and the California Department of Forestry (CDF) - the agency with private wildland fire protection responsibilities.

Wildland fire protection adjacent to the Forest is provided by the Bureau of Land Management (BLM) along the east side of the Forest on BLM lands. Kern County, under a contract with the CDF, provides fire protection for the private wildlands and structures outside of the Forest. Fires burning near or on both sides of the boundary are attacked by the nearest forces regardless of jurisdiction. Large fires burning on more than one jurisdiction are managed under a unified command structure. Costs are shared.

Structural fire protection is the responsibility of local governments (County or Districts). With the exception of a few areas of concentrated private land development, there is no structural fire protection available within the Forest. Forest Service crews will assist on a limited basis if the burning building poses a threat to the adjoining wildlands.

#### 4. Fresno County

As noted in the Introduction, the Sequoia NF relates to Fresno County primarily through Forest Reserve Funds.

In lieu of property taxes the Forest Service remits to counties within which National Forests are located 25 percent of its receipts. These "25% Funds" must be evenly divided between roads and schools. Over the past five years Fresno County's share has ranged from \$81,825 to \$213,055, averaging \$126,930. Relative to total road and school budgets, this is a very small amount. However, in this era of restricted revenue basis, every source of revenue is important to County government.

#### 5. Social Groups in Foothill Communities and Their Relation to the Sequoia National Forest

In order to round out the broad and largely statistical county profiles presented above, descriptions of social groups located in all three counties, and particularly those affected by Forest management activities, are presented below. These groups constitute the foothill communities adjacent to and along access routes into the Forest. They include communities along and near Highway 180 such as Dunlap; Springville, and Camp Nelson in the Highway 190 corridor; California Hot Springs, Pine Flat, Poso. along County Road M56 and M9; Glennville and Alta Sierra along Highway 155; and the Kern River Valley communities. The Tule River Indian Reservation is also a foothill community.

Generally, foothill residents tend to be older and somewhat more affluent than residents of Kern, Tulare or Fresno Counties as a whole. The economics of these communities revolve around ranching, recreation, and retirement annuities. The exception to this picture of relative affluence is the Tule River Indian Reservation. Family income is substantially lower and the poverty rate higher on the Reservation than in Tulare County as a whole. Generally speaking, foothill residents are committed to the relatively low pressure and slow pace of their rural lifestyle. What might be called rural conservatism makes folk in these communities somewhat resistant to change and to "Government interference." The rights of the private property owner are held dear, hence there is somewhat skeptical acceptance of County Government's land use regulation. However, on occasion, County regulatory process is used to try to stop "undesirable" land use changes on neighboring properties.

Ranchers, retirees, young working families and second-home owners constitute the major social groups in the foothill communities. While the following general descriptions portray characteristics of each group as a whole, it is recognized that these groups are not homogeneous. That is, not all members of each group are alike. The intent is to describe general group characteristics for the purpose of assessing the impacts of Forest

management on foothill residents. Except for the ranchers, these groups are not well organized, perhaps because they seem to identify with the entire foothill area or a given community rather than with each other. The ranchers, on the other hand, are a somewhat cohesive group bound by a common interest in perpetuating ranching and their rural lifestyle and in passing both on to their children and grandchildren.

a. Social Groups in Foothill Communities

The lifestyle, values, and relationship to the Forest will be described separately for each major group in the foothill communities:

1) Ranchers

The institution central to ranching in the foothills is family. Most ranch families have run cattle in the hills for generations. They feel tied to the land by long family histories as well as by the present day ranching operation. In some ways the ranch symbolizes the family: keeping the ranch means keeping the family together. Keeping the family together on the land is requisite to maintaining the traditional ranching community (which is held together by ties of kinship, friendship, and history) and is perpetuated by maintaining family ranching as a lifestyle. The traditional ranching community, however, is in a state of change.

People without ranching interests are moving to the hills. Neighborhood ties are weakening. Business is no longer done on a handshake. Many of the old ranching families resent this influx of new people. They feel they were there first: and the new people are intruding, obstructing a way of life carefully nurtured over a 100-year period. Additionally, more people in the hills mean more trespassers and increased fire risk. With diversification of lifestyle in hill communities comes diversification of values. Pride in hard work, self-sufficiency, minimum government "interference" and a conservation ethic are weakening somewhat as more urban people move into the hills. They have come for peace and quiet and life in a beautiful setting. In some quarters the conservation ethic is giving way to a preservation ethic. As the latter grows stronger, conflict within the newly constituted communities may arise over range management practices, especially burning and movement of cattle.

Some ranchers are range permittees on the Sequoia NF. They have a direct economic interest in range management policies on the Forest. For most permittees, grazing cattle on the Forest makes the difference between barely breaking even and breaking even. For most, grazing cattle in the mountains is a part of their family history as well. Many feel as though the Forest were an extension of the home ranch. With this proprietary feeling comes concern and care for maintenance of resource integrity, especially range, watershed, and wildlife habitat. This concern is firmly founded on the concepts of productivity of Forest lands. However, "productivity" does not necessarily extend to increased recreational use. Many ranchers feel that more recreational useage can mean more difficulty for the range permittee. In addition, some permittees feel that while the Forest Service holds them to a

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proper standard of range resource management, a similar standard is not demanded of recreational users.

## 2) Retirees

People retire to the foothills for a tranquil, slow paced life in attractive natural surroundings. In the foothill communities, compared to the state as a whole, they also get housing at reasonable cost, an additional attraction to folks on fixed incomes. Some retirees become active in community affairs. Generally they are politically conservative.

Retirees relate to the Forest as a source of affordable energy (firewood), as a recreation opportunity, and as a scenic backdrop for the communities in which they live.

Most retirees appear to agree that Forest management activities are acceptable as long as they do not have a direct adverse effect on residents. An example of a direct adverse effect might be felling a tree too near a property line or burning within the viewshed.

## 3) Working Families

Like retirees, families come to or stay in the foothills drawn by the natural environment and relaxed lifestyle. They choose the hills over an urban area as a desirable place to raise children. To support their lifestyle, some commute to **jobs** in urban areas. Others are employed locally as ranch hands, construction workers, woods or mill workers, or in such tourist-oriented businesses as restaurants, lodges, and retail stores. Some are self-employed in various cottage industries. Many of the working families, such as farmers, ranchers, and timber industry employees and owners, have a long-term tie to the area and its resources.

Like retirees, working families relate to the Forest as an important source of affordable energy in the form of firewood, as a recreation opportunity, and as a scenic backdrop for their communities.

Most are conservation-oriented; and, therefore, do not object to management activities on Forest land -- as long as they do not infringe on their lives directly. Others are preservation-oriented; and, therefore, less accepting of Forest management activities.

## 4) Second-Home Owners

Second-home owners come to the foothills from both inside and outside of Kern, Tulare, and Fresno Counties. They generally do not work in the area nor are they especially active in local community affairs. They come to the hills for the beauty of the natural environment; they come to "drop out" of many community, familial and social ties. Some pick up those ties if they move to their second-home after retirement. Second-homeowners relate to the Forest mainly as a source of recreation opportunity and as a scenic backdrop. Their attitudes toward Forest management activities run the gamut from conservationist to preserva-

tionist. Even so, most activities are acceptable as long as the second-home owner is not directly affected.

b. Old Timers, Newcomers, and Foothill Community Cohesion

Cutting across all major social groups in the foothill communities is the old timer/newcomer split. The old-time families from all the groups defined above have been in the hills for a generation or more and tend to share a slow growth, conservation-oriented land ethic. Since they were "there first", they feel their vision of community should take precedence over that of the new people.

The values of newcomers, mostly from urban areas, tend in directions different from those of the old timers. Some newcomers are little more than land speculators following the influx of population into the foothills. They tend to pressure for accelerated residential and commercial growth, sometimes at the cost of existing community character. On the other hand, many of the people who have recently moved to the foothills are "urban refugees" looking for a nonurban environment in which to retire or establish a business and raise children. Although they generally desire a higher level of services; and although they may not be community action-oriented: they see themselves as having a large interest in the preservation of the environmental and social values that drew them to the area in the first place.

These two new divergent concepts of community destiny have strained the old homogeneity of attitude toward growth as a relatively slow, organic process consistent with community character and values. In many foothill communities the old timer/newcomer split, which in turn is divided between developer and preservationist, has led to higher levels of community conflict. Often this conflict must be arbitrated at the County level resulting in some loss of a sense of community autonomy.

These social changes are well launched in most foothill communities. Little in the way of Forest management activities will alter the direction of these changes. The rate of change, on the other hand, can be affected by varying levels of Forest management activities. For instance if a ski area were built, the changes described above could be accelerated in the foothill communities near the ski area.

6. Special Populations

a. Native American Populations

1) Tule River Indian Reservation

The Tule River Indian Reservation is located east of Porterville and is directly adjacent to the Sequoia National Forest. According to the 1980 Census, there are 212 people living on the Reservation. Median age is about 18, reflecting a relatively large proportion of children and young people. Median household income is \$6,875. About one-third live on income below the poverty level. The unemployment rate is about 18 percent with about 28 percent of the population actually in the

workforce. The most common occupations are in farming, forestry and services.

The Tule River Indian Council, representing the Tule River Indians, considers the watershed of the South Fork Tule River its sole link to the Sequoia National Forest. The South Fork of the Tule River drains much of the Reservation and is a major source of water. The Council's primary interest lies in maintaining the integrity of that watershed.

2) Tubatulabal Indian Group

Members of the Tubatulabal group are scattered from Bakersfield, through the Kern River Valley and north toward Bishop. A number of sacred and burial sites are located within the Sequoia's boundaries. In addition, they look to the Forest as a source of fish, meat, and on the east-side, as a source of pinyon nuts.

3) Western Mono Indians

The Western Mono Indians have traditionally lived near the present town of Dunlap. They have also occupied portions of the Kings River drainage. Some members of this group have worked in logging operations; some in sawmills. Others see the Forest as a source of raw materials for such traditional activities as basketmaking. Currently, the Western Mono people are pursuing Federal recognition of their tribal status.

4) Kawaiisu Indians

The Kawaiisu Indians represent a very small population of Native Americans whose traditional homeland is centered in Kelso Canyon, Walker Basin, and at Lorraine. As with other local native groups, the Forest represents a source of both traditional foods and employment.

b. Hispanic Americans

In Tulare and Kern Counties, the Hispanic population comprises a significant proportion of those counties' population (30 percent and 22 percent, respectively). Most are of Mexican background. Seventy to eighty percent speak English well. Educational attainment lags that of the counties' as a whole. In Tulare and Kern Counties (57 percent and 63 percent, respectively) of the counties' populace have at least high school educations. The corresponding figures for the Hispanic populations in these two counties are 20 percent and 32 percent. Mean family incomes are somewhat lower as well. While the county-wide mean family income figures for Tulare and Kern Counties are \$20,051 and \$22,069, the corresponding figures for the Hispanic populations are \$14,055 and \$16,164, respectively.

While some Hispanics recreate in dispersed areas, most choose developed picnic sites along Highways 190 and 178 and above Kernville on the Kern River, that is, mainly the sites in the most accessible regions of the "front country". Most recreate in large extended family groups or as members of large groups of young people. The purpose is just to get out, socialize, and share a picnic.

## 7. Socioeconomics Variables in Impact Analysis

From the foregoing description of the Sequoia National Forest's immediate sphere of influence, it is clear that the Forest relates to its neighboring communities as a source of:

- 1) Jobs
- 2) Energy
- 3) Food
- 4) Recreation
- 5) Visual Amenity
- 6) **Tax** Revenue

In addition, decisions regarding Forest management affect the foothill communities sense of autonomy and perpetuation of land ethic. While there is no proximate indicator for sense of autonomy, the number of acres recommended for wilderness designation is a proximate indicator of preservation values. The converse - lack of acres recommended for wilderness designation - *is* considered a proximate indicator of conservation values. Therefore, for purposes of assessing the impacts of plan alternatives on the social and economic well being of residents of the immediate sphere of influence the following variables are selected for evaluation by plan alternative:

### a. Lifestyle

- 1) Jobs - the number of jobs related to resource management.
- 2) Energy - cords of firewood.
- 3) Subsistence/Food - opportunity for pinyon gathering (i.e., change in pinyon-sage community).
- 4) Recreation - Recreation Visitor Days (RVD's) offered, miles of road open.

### b. Values, Attitudes and Beliefs

- 1) Degree to which the conservation ethic as opposed to the preservation ethic is redeemed (i.e., number of acres recommended for wilderness designation).
- 2) Visual amenity - number of acres in urban interface areas above the Partial Retention standard (see glossary for definition).

### c. Tax Revenues

- 1) Level of Forest Reserve **Funds** going to Kern, Tulare. and Fresno Counties.

**These** variables will be carried forward to the Environmental Consequences section and will be evaluated for each alternative. **The** result will be an estimate under each alternative to indicate the relative well being of residents of Kern, Tulare. and Fresno Counties as a whole; of the foothill communities; and of the special populations most affected by Forest management activities during the first decade. Table 3.3, graphically portrays the relation of each social group to the variables discussed above. **Where** "N.A." is listed, the variable is either irrelevant to the



Table 3.3 - Impact Variables and Indicators for Potentially Affected Social Groups

Variable/ Social Group	Lifestyle				Values	Attitudes, Beliefs	Public Revenues
	Recreation	Economics (Ranching, Timber, Tourism)	Firewood	Subsistence	Conservation Ethic	Visual Amenity (Visual Quality Index = VQI)	Tax Revenues
Ranchers	Dispersed RVD's	#AUI's Earnings	#Cords Miles of road open	NA	Ac. in wilderness	NA	N.A.
Retired	Devel. RVD's Day-Use emphasis	NA	#Cords Miles of road open	NA	Ac. in wilderness	VQI	NA
Families	Total RVD's Day-use emphasis	#Total jobs #Total RVD's	#Cords Miles of road open	NA	Ac. in wilderness	VQI	N.A.
2nd. Home- owners	Total RVD's Miles of road open	NA	N.A.	NA	NA	VQI	NA
State Hospital	Devel. RVD's Day-Use emphasis	NA	NA	NA	NA	NA	NA
Hispanic Community	Devel. RVD's Day-use emphasis	NA	NA	NA	NA	NA	NA
Native Americans	NA	NA	NA	Ac. pinyon-sage Wilderness designation	NA	NA	NA
Fresno County	NA	N.A.	NA	N.A.	NA	NA	Fresno Co. \$
2 County Areas (Kern & Tulare Counties)	Total RVD's	Total Earnings Total Jobs	Total # Cords	NA	Ac. in wilderness	VQI	Tulare Co. \$ Kern Co. \$

given group or is relatively unimportant. **The** indicators selected for analysis are considered **the** most significant indicators of well-being for a given group with respect to a given variable.

#### E. RESOURCE ELEMENTS

In addition to describing the planning area in physical and ecological system terms, it can be described in terms of the opportunities it offers to produce goods and services for public use. **The** following is an overview of resources and supporting activities which are available to provide those goods and services. These are summaries of Analysis of Management Situation (AMS) working papers.

##### 1. Air Quality

Air quality has been deteriorating in the San Joaquin Valley and Planning Area since the 1940's. **The** deterioration has been slowed by passage of the Clean Air Act and the stricter California State Pollution Control Standards. **The** Clean Air Act and its amendments force proposed industrial facilities located within attainment areas (those areas that do not exceed national standards for any one regulated pollutant), emitting over 100 tons per year of any regulated pollutant, to monitor and determine existing levels. **The** existing level of pollutants is then used to establish the pollution increment allowed to the facility. Attainment areas are provided with a designation which relates to maximum pollutant concentrations allowed. Class I offers the most protection and Class III the least. No area in California has less than a Class II designation.

The County Air Pollution Control District monitors the air, suggests plans for achieving air quality objectives through a State Implementation Plan, and enforces compliance of the State Implementation Plan for emission of air pollutants from publicly or privately owned land. Sequoia National Forest is in the Fresno County Air Pollution Control District, the Tulare County Air Pollution Control District and the Kern County Air Pollution Control District.

In addition to pollutants produced locally, the Planning Area, as well as the southern San Joaquin Valley, is subject to pollutants generated primarily in the San Francisco Bay area and transported southeast by the prevailing winds. The San Joaquin Valley air basin is the primary contributor to air pollutant transport into the Southern Sierra. Transport is accomplished by strong diurnal upcanyon winds that occur from late morning through the afternoon in response to solar heating of the airshed slopes.

Emissions generated by wildfire and prescribed burns currently produce the most impacts from any source directly on the Forest. Primary pollutants emitted from fire include total suspended particulates, carbon monoxide, and hydrocarbons.

**The** Clean Air Act also mandates that Federal Land Managers have an affirmative responsibility to protect the air quality related values of Class I areas. This allows Federal Land Managers the opportunity to research

impacts of proposed facilities emitting over 100 tons per year of any regulated pollutant and recommend to the permitting authority whether or not to grant the permit.

Good air quality is in short supply in the San Joaquin Valley during certain periods of the year, particularly in late summer and early fall. During this period, the Forest's air supply remains relatively clean as most of the Forest is located at a higher elevation than the low level inversions that trap stagnant air in the Valley. The current management direction that affects the planning area is to protect the air quality, particularly in Class I areas, from further degradation by prohibiting management activities that would degrade the quality of the air.

Federal standards have been established by the Environmental Protection Agency above which air quality goals are not attained. The standard for ozone is 12 parts per hundred million (pphm). Ozone levels have been monitored in three locations on the Sequoia National Forest during the past several years. The Federal standard has been exceeded at all of the locations during the monitoring period. Highest levels have been at Greenhorn Summit, both single occurrence (17 pphm) and long-term average. At Peppermint Heliport, it was exceeded on one day during one year's monitoring. During a five-year period at nearby Mountain Home Demonstration State Forest, the standard was exceeded on 10 days. During the four years of monitoring at Greenhorn Summit, the standard was exceeded on 80 days. (Forest Pest Management Report No. 82-17.)

The Forest Service is in the process of investigating sulfur dioxide transport in the Kern River drainage. Addition of sulfur dioxide to the San Joaquin Valley air basin might accelerate forest deterioration if concentrations of both ozone and sulfur dioxide reach levels where joint action is possible.

Recent information indicates that significant amounts of acidic deposition may be occurring in the western states. The sensitivity of Sierra Nevada resources to acid deposition and the ability of soils, vegetation, and water to neutralize acids is relatively unknown. It is suspected that little ability to neutralize acids exists in the granitic soils of the Sierra but the opportunity for neutralization involves many interrelated complex biological and chemical processes that must be analyzed before any conclusions can be developed about sensitivity. As more information is developed it will be necessary to continue monitoring the Forest for obvious symptoms indicating decline. The National Park Service is currently coordinating a multiple agency integrated ecosystem study of acid deposition in Sequoia National Park. The Forest Service is participating in this project and hopes to gain a better understanding of Sierra Nevada resource sensitivity and subtle changes in soils, vegetation, and aquatic environments.

The Dome Land Wilderness is the only Class I area on the Sequoia NF. The basin-like character of the Dome Lands could be a potential collector for pollutants generated in the area. In response to the accountability mandated by the Clean Air Act, it will be necessary to monitor visibility in the Dome Lands and identify sensitive indicators to high pollution concentrations.

There may be pressures to further regulate burning. If this occurs, the general public and other agency understanding of the benefits of prescribed burning would be desirable.

More accurate localized weather forecasts for burning operations would permit taking full advantage of the best weather for burning and smoke management. Prescribed fire is used under strict prescriptions using favorable meteorological and fuel conditions. Prescribed burn days are predicted by the California Air Resources Board on a daily basis. Major recreational developments such as ski areas have potential to impair air quality. The impacts from such developments will be analyzed to determine if they can be mitigated to an acceptable level.

## 2. Cultural Resources

Sequoia NF has coordinated with other forests and federal agencies to produce a cultural resources overview called Cultural Resources Overview of the Southern Sierra Nevada, completed in 1984. Sources, references, and data used are explicitly identified in various parts of the overview. The theoretical orientation of the researcher was basically cultural ecology and spatial archeology.

As documented in the overview, the Forest occupies transition zones between desert cultures to the east and Central Valley cultures to the west. Yokuts, Kawaiisu, Tubatulabal, and Mono Indian groups all utilized portions of the Forest. In historic times, large-scale historic redwood logging, gold mining, ranching, and farming brought new settlers into this area.

Three types of cultural resources are present in the Planning Area. One group is prehistoric and historic Native American properties. These include lithic scatters, food processing sites with midden, lithic material or bedrock mortars, rock art sites, and quarries. Another group is related to the practice of Indian religion. These may or may not include tangible remains. Native Americans continue to receive permits for collecting foodstuffs and performing traditional ceremonies on public lands. The third group is historic properties including old Forest Service administrative sites, log cabins, lookouts, mining sites, remains of railroad logging, or old homestead properties. A reasonable estimate for the total number of prehistoric and historic resources on the Forest is 10,000.

The physical quality of the cultural resources present on the Forest is degenerating over time as the use of the Forest increases. The potential conflict between cultural resources and other land uses is also increasing. Vandalism is an ongoing problem which affects both the physical and intrinsic quality of the resource.

The public has been chiefly responsible for creating a demand for cultural resources. Interest in our heritage and concern over the destruction of sites representative of the past have prompted passage of much national legislation. Appropriate Federal agencies have initiated programs of compliance. The degree of success these programs have is centered on the funding level. Ethnic groups, historical societies, professional and

avocational archaeological groups have also demanded cultural resources research. This demand could be for traditional use, protection, interpretation, or for scientific study.

Public concerns *are* related to the passage of legislation. There is an indication that cultural resources and their protection will remain an important National issue. Congress has passed three major acts in the last few years: the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the National Historic Preservation Act 1980 Amendments. Future demands for these resources will probably speed up the trend away from a cultural resource program dominated by inventory alone to one where inventory, evaluation, protection, and interpretation all receive equal consideration.

The cultural resource management program on the Sequoia NF reflects functional program priorities, as well **as** pertinent law, regulation, and direction. The objectives for management of the cultural resource program are contained in the Forest Service Manual. They focus on the development and implementation of a long-range program to inventory, protect, and enhance cultural resources on National Forest System lands.

The main goal of the current management program on the Forest is to carry out inventories and evaluations of significance in accordance with the 36 CFR 800 process prior to initiation of project actions. Over the last few years, the Sequoia NF has surveyed an average of 10,000 acres per year in order to discover and evaluate properties in project areas. To date, approximately 20 percent of the Forest has been inventoried. About 1,100 prehistoric and historic properties have thus far been recorded. Of these, approximately 235 have been evaluated for significance. Roughly two-thirds of these were judged eligible for nomination to the National Register of Historic Places.

After properties are identified, they are evaluated. Because of the lengthy procedures involved, current Forest policy is that at least a preliminary determination of eligibility to the National Register (as agreed to by the Forest Archaeologist and the State Historic Preservation Officer) is made for each property as **it** is documented on a project-by-project basis. Final determinations of eligibility are obtained from the Keeper of the National Register when potentially eligible properties will be affected by undertakings. Currently there are no sites or properties on the National Register.

Criteria for evaluation of site significance for their potential eligibility for nomination to the National Register of Historic Places are specified in 36 CFR 60.4. In addition to these regulatory criteria, consideration is given to a property's historic, scientific, ethnic, public and geographic significance. Determinations of significance, naturally, depend upon tangible or spiritual qualities of the resource, the perspective of the evaluator, and the context of the assessment.

While the Forest Archaeologist **may** recommend that a property be considered eligible for the National Register, and the State Historic Preservation Officer comment on this finding, only the Keeper of the National Register

of Historic Places can make a final determination of a property's significance.

Other areas of consultation with the State Historic Preservation Officer (SHPO) include seeking comments and guidance concerning survey efforts, evaluations of effect of project activities on sites, and adequacy of mitigation measures proposed.

Once identified and evaluated, significant properties are flagged and avoided. (Timber sale administrators occasionally monitor properties during the course of timber sales.) Some properties are protected through the redesigning of projects to avoid adversely affecting sites. Such project redesign work has included rerouting fuelbreaks, trails, and roads; relocating developed recreation facilities; adjusting the boundaries of timber harvest areas; or erecting road barriers. Some 100 projects have been modified to protect sites. However, more positive steps for protection, such as systematic patrolling, signing, or determining compatible uses of sites, have yet to be developed.

Other aspects of the Cultural Resource Program play lesser roles than inventory and evaluation. Protection and stabilization objectives deal primarily with site monitoring during project actions. Interpretation, including signing, brochures or other educational means can be done using data recovered from testing or excavations. Ethnographic data collection is generally carried out when information is solicited from Native Americans for project planning. Historic resources, aside from field survey recording, receive consideration when historical records are reviewed as pre-field inventory work and when limited oral interviews are carried out.

The Overview documented the following areas of deficiency in the cultural resource management program:

- 1) Ethnography -- where no sustained work is being carried out on the Forest;
- 2) Archaeology -- where there is a need to refine the chronological and spatial distributional aspects of archaeological assemblages of the region;
- 3) Recording methods -- where specific weaknesses in survey recording, testing procedures, and data recovery efforts are noted: and
- 4) History -- where a lack of an integrated oral history program and proper arrangement and use of archival documentary sources were noted. These areas of weakness may be strengthened if more intensive levels of management are selected for the various aspects of the cultural resources management program.

A range of cultural resource management intensities and opportunities for the Forest can be summarized as follows:

	Low End	High End
Inventory	Carry out 36 CFR 800 process through contact with SHPO regarding evaluation of effect - flag and avoid all sites.	Carry 36 CFR 800 process through to nomination of sites and districts to National Register.
Protection/ Stabilization	Minimum public information to encourage protection.	Protection (including fencing) of all known significant sites. Stabilization measures routine.
Interpretation	Reports and other available information distributed upon request.	On-ground interpretation developed and carried out. Information distribution on a broad basis, in a variety of formats.
Ethnographic	Concerns taken into account only on a reactive project-by-project basis.	Routine systematic incorporation of ethnographic concerns into ongoing management actions through program of ongoing interviews and interactions with cultural groups.
History	Used only as identified in baseline prefield review.	Numerous interviews on routine basis. Archival sources established and in ongoing use.

### 3. Diversity

Diversity is "the distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan" (36 CFR 219.3). The maintenance of diversity on the Sequoia NF is important for the provision and maintenance of: ecosystem stability, biological variety, and aesthetic value.

Diversity encompasses three primary elements: richness, relative abundance, and distribution. These elements are measured in time and geographic scale.

Richness of diversity on the Sequoia NF is represented in the 17 major ecotypes, each with its **own** unique niches of talus slopes, caves, and

Table 3.4 - Diversity - Vegetation Types by Successional Stage

VEGETATION TYPES	FOREST-WIDE		Successional Stage 1/													
	ACRES	%	1		2		3A		3B&C		4A		4B&C		4ct	
	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%
<b>Conifer Forest</b>	579,800	52.0														
Mixed Conifer	381,200		9,049	2.0	3,800	1.0	3,343	1.0	7,800	2.0	272,072	71.0	81,481	22.0	3,648	1.0
Jeffrey-Ponderosa Pj***	112,900		600	>1.0	27,799	25.0	5,598	5.0	988	1.0	66,283	59.0	11,697	10.0		
Red Fir	85,700		300	>1.0	237	>1.0	204	>1.0	476	1.0	54,579	63.0	29,915	35.0		
<b>Hardwoods 2/</b>	221,900	20.0	32,550	15.0	10,850	5.0	17,850	8.0	26,775	12.0	89,250	40.0	44,625	20.0		
			Successional Stages 3/													
			EARLY				MID				MATURE					
			ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%		
<b>Mixed Chaparral</b>	175,800	16.0	35,200	20.0	17,600	10.0			123,000	70.0						
<b>Pinyon Pine/Sage</b>	141,500	13.0	7,100	5.0	21,225	15.0			113,200	80.0						
<b>Total</b>	1,119,000	100.00														

1/ Successional stages based upon the following criteria.

- Stage 1 = Grass/forbs
- Stage 2 = Shrubs/seedling/saplings (up to 20 feet in height)
- Stage 3A = Pole/medium trees (20 to 50 feet in height; 0 to 39 percent canopy cover)
- Stage 3B&C = Pole/medium trees (20 to 50 feet in height; 40 percent or greater canopy cover)
- Stage 4A = Large trees (50 feet or greater in height; 0 to 39 percent canopy cover)
- Stage 4B&C = Large trees (50 feet or greater in height; 40 percent or greater canopy cover)
- Stage 4Ct = Overmature/decadent trees (50 feet or greater in height; 70 percent or greater canopy cover; stands show decadence)

2/ Includes Blue Oak Savanna, Black Oak, Blue Oak and Live Oak Woodlands

3/ Successional stages for Mixed Chaparral and Pinyon Pine/Sage:

- Mixed Chaparral - **Early** = 0 - 10 years since last burn; **Mid** = 11 - 30 years; **Mature** = 31+ years
- Pinyon Pine/Sage - **Early** = 0 - 25 years since last burn; **Mid** = 26 - 70 years; **Mature** = 71+ years



meadows: 339 vertebrate species, and over 2,000 plant species found on the Forest. Management of the Forest is intended to insure that no species or plant community present on the Forest will have its current range reduced or eliminated. This intent is monitored through the use of Management Indicator Species which represent plant and animal communities. Special management programs have been implemented to insure survival of threatened, rare, endangered, and sensitive species. Special and unique habitats are preserved in SIA Botanical Areas, Research Natural Areas, wilderness, and sequoia groves designated for preservation.

Relative abundance is reflected in proportions of habitat types, seral stages and animal populations found on the Forest. Habitat types on the Forest are heavily weighted toward older, mature seral stages. Timber harvest and prescribed burning can enhance diversity by providing a balanced mosaic of age classes and seral types: and by increasing edge.

Mature seral stages are preserved in wilderness, Special Interest Areas, Research Natural Areas, view zones, Streamside Management Zones, Spotted Owl Habitat Areas, preserved sequoia groves, and areas unsuitable for commercial harvest. Approximately 50 percent of the Forest is managed in a manner which compliments species dependent on old growth, mature serial stages.

Distribution or patterns of diversity are difficult to quantify. This element reflects size, shape, and complexity of plant and animal communities. Guidelines which increase distribution and complexity of habitat in managed areas include: Riparian Standards and Guidelines: limitations on the size of clearcuts; retention of snags, down logs and oaks in timber harvest areas: inclusion of aggregation of mature timber: and management of five percent of the Forest outside of wilderness specifically for mature, seral stage habitat.

When large ecosystems include a balance of preservation and managed sites, they support a higher level of diversity, provide a great variety of resources for human use, and are more stable.

#### 4. Earth Resources

##### a. Soil Resource

Most of the soils on the Forest are developed from weathered granitic rock and range from deep to shallow. They have a thin surface layer, slightly developed subsoil horizons, and textures of coarse sandy loam with low moisture and nutrient holding capacities. The many areas of rock outcrop reduce the productive land base and increase logging and road construction costs. Soil productivity is relatively low and erosion potential is relatively high.

Soil productivity for timber and range (forage) are displayed in Table 3.5 by General Soil Map Unit. The name of each map unit is composed of two or three soils or Rock Outcrop. The dominant component is named first. The map unit Rock Outcrop-Chaix-Chawanakee is the most extensive, occupying 30 percent of the land.

The productivity information ranges to cover all of the soils in the map unit and reflects a variance due to climate and physiography. The data is from field estimates, published and unpublished documents, and some from other Forests which have the same soils.

Also included in Table 3.5 is the maximum erosion hazard rating (Maximum EHR) for two slope groups (0-40 percent and 41-75 percent) for each General Soil Map Unit. The maximum EHR is an assessment of the relative hazard of the loss of surface soil in an average year assuming no vegetative cover and no soil disturbance.

The General Soil Map information is from the Forest Soil Survey. The Soil Survey provides descriptions of soil units, soil maps at one inch to the mile, and management interpretations.

Table 3.5 - Soil Productivity and Erosion Hazards on the Sequoia NF

General Soil Map Unit Name	Timber Productivity cu ft/ac/yr	Forage Productivity lbs/ac	Maximum EHR		Percent of Forest
			0-40%	41-75%	
Cagwin-Toem-Rock Outcrop	50-135	unknown	high	high	10
Rock Outcrop-Cannell- Sirretta	50-160	unknown	moderate	high	2
Baldmountain-Rock Outcrop-Glean Variant	35-160	unknown	moderate	high	3
Rock Outcrop-Chaix- Chawanakee	45-90	300-1,000	high	very high	30
Holland-Hotaw	90-195	1,800-4,500	moderate	high	3
Rock Outcrop-Tollhouse	incapable	500-1,000	high	very high	2
Woolstaff-Rock Outcrop- Windriver family	85-140	unknown	high	high	3
Rock Outcrop-Cieneba- Auberry	incapable	600-1,600	high	very high	19
Rock Outcrop-Chualar and Livermore family	incapable	unknown	high	high	5
Rock Outcrop	incapable	none		----	11

Past and current management direction is to protect and maintain soil productivity. Most soils are more sensitive to disturbance when they occur on slopes with gradients greater than 40 percent and require more intensive

mitigation measures. Soil productivity improvement activities have centered around the restoration of damaged or eroding meadows, and some obliteration of unneeded roads.

The soils have the capability to maintain their present productivity over the long-term if the soil surface layer is maintained and there is a continuing supply of forest humus.

Methods available to further maintain or increase the supply of productive land include restoring about 2,000 acres of land in a deteriorating condition: obliterating (ripping and revegetating) about 500 miles of unneeded roads; and utilizing detailed planning that limits the amount of land taken out of production for other uses.

#### b. Surface Water Resource

Ninety-nine percent of the Forest is situated in the headwaters of the Tulare Lake Basin. The Tulare Basin comprises the southern end of the San Joaquin Valley and effectively does not have a direct natural outlet to the sea. The Forest is a major source of runoff entering the Basin. The main rivers draining the Forest are the Kings, Tule, and Kern, which most of the time terminate in ancient lakebeds. Although now reclaimed and used for agriculture, these lakebeds (known as Tulare and Buena Vista Lakes) are important flood water storage areas.

Water flowing from the Forest is regulated by Pine Flat, Success, Isabella, and Terminus Reservoirs. These are primarily used for flood control but also provide irrigation storage and recreation. The Sequoia NF has assisted in gathering information for reservoir releases by operating six snow survey courses and 11 climatological stations in cooperation with the California Department of Water Resources. Federal agencies and irrigation districts have located five additional large reservoir sites. The Sequoia NF reviews but does not initiate development of large reservoirs.

The Sequoia NF monitors water quantity on only a limited project basis. Other agencies (primarily the U.S. Geological Survey) measure stream flow on major rivers. From their data, the Forest average annual water yield is estimated at 736,000 acre-feet. A tabulated display of water yield by the National Forest watershed is contained in Appendix F.

The need for water in the Tulare Basin is so large that it is unlikely the Forest could ever meet the demand. Tulare Basin groundwater overdraft (using more than is being recharged) currently averages 1.4 million acre-feet per year. Additionally, 2.7 million acre-feet of water are imported from the north. Any replacement of this imported water by increasing local supply affords cost and energy savings. Additionally, the San Joaquin Agricultural Water Committee projects that by the year 2000 the unmet demand in the Tulare Basin will be 1.7 million acre-feet. This assumes that: 220,000 acres of the remaining 490,000 acres of suitable unirrigated land will be brought under irrigation by then; and the State and Federal Water Projects will meet their obligation to import more water into the Tulare Basin.

Increasing yield and improving the timing of water flowing off the Forest could meet a small part of the demand and reduce costs. Since the Tulare Basin does not normally drain into the ocean, almost any increase in water flowing into it would be beneficial. If some of the water flowing from the Forest is delayed thereby improving its timing, costs involved in pumping groundwater for irrigation and inundating farm land surrounding Tulare and Buena Vista Lakes would be reduced.

The greatest potential to affect water yield by land management is in the mixed chaparral and conifer ecosystems. Clearcutting of timber, type conversion of mixed chaparral to grass, and burning or mechanical treatment of mixed chaparral can increase water yield. Such treatments could produce up to 75,000 acre-feet of increased average annual water yield. Study is needed to better determine yields and effects. Snowmelt can be delayed, resulting in improved timing of streamflow, by locating strip and small patch timber cuts to produce the most shade. Based on watershed condition and potential for improvement, the following watersheds have the most potential for adjusting timing and yield: Tule River, Deer Creek, Salmon Creek, Oak Mountain Area, White River, South Creek, Tornado Creek, Lightning Creek, and Trout Creek. Currently, water yield is increased as a by-product of timber, range, and wildlife vegetative management.

The Forest Service presently uses less than one tenth of one percent of the runoff for timber harvest (dust abatement), range (watering troughs), recreation, and administrative sites (domestic use). Use will increase insignificantly Forest-wide by the year 1990.

The Sequoia NF is subject to California State Laws governing water rights and uses, with the exception of water uses covered by the Forest Reservation principle: silvicultural practices, fire protection, and watershed improvement. The Forest maintains Water Rights or Statements of Water Use for its existing water diversions (consumptive use) and files applications with the State on imminent future water uses. Future water uses that are not imminent are inventoried.

Water is often used without diverting it from its stream (nonconsumptive use). The Sequoia NF is involved in protecting these uses within the National Forest by:

- 1) setting minimum instream flow requirements in cooperation with the California Department of Fish and Game, for streams impacted by water and hydroelectric developments: and
- 2) eventually evaluating instream flow needs throughout the Forest in a systematic manner.

According to the Regional Guide, balanced consideration is to be given conflicts between consumptive and nonconsumptive use of additional water, while ensuring that irreversible and irretrievable impacts to consumptive or nonconsumptive uses will not occur.

Past water quality monitoring has shown that water on the Forest has been of good quality for the beneficial uses listed on Table 3.6. Timber harvesting, road construction, cross-country OHV use, ski area development

and other activities could increase sediment yields. Water quality is protected by applying pollution mitigation and prevention measures during the enactment of land management actions. **These** measures are called Best Management Practices (BMP's) and are implemented in accordance with the 1981 Management Agency Agreement executed with the California State Water Resources Control Board. BMP's can be administrative practices such as the planning, distribution and scheduling of activities; structural controls such as dams and revetments; nonstructural land treatment measures such as seeding or straw mulching; and/or the maintenance and operation of any of these measures. **The** BMP's are selected on the basis of site-specific conditions that reflect natural background conditions and the social, political, and economic situation. BMP's are the Forest's technically and institutionally feasible measures for the control of pollution. Upon their approval by the State and certification by EPA, they have become the Forest's performance standard for water quality management. (See Appendix Q discussion of BMP's.)

Water quality is maintained and improved by restoring watershed conditions. A gully in a meadow is an example of a watershed site needing restoration. About 140 acres, primarily meadow gully repair, are restored annually. As of base year 1982, meadows on the Cannell Meadow District are the next priority for restoration, followed by those on the Tule River and Hume **Lake** Districts.

About 200 sites (2,000 acres) need restoration, and about 70 sites (700 acres) appear to be healing by themselves. Once these areas are treated, the use of BMP's, in conjunction with a better understanding of cause and effect of watershed damage, will reduce the future areas in need of restoration. Water quality can also be maintained and improved by obliterating (ripping and revegetating) unneeded roads. About 6.5 miles of roads are obliterated annually.

**The** "acre-feet of water meeting water quality objectives" outputs assigned to the Forest in the Regional Guide are in **error** and are therefore unattainable. **The** targets were assigned based on a presumed average annual runoff from the Forest of one million acre-feet when in fact the average annual yield is only 736,000 acre-feet. Presently, 720,000 acre-feet per year are estimated to meet water quality objectives with a projection that by 1991 all water whose quality can be influenced by Forest management will meet water quality objectives.

BMP's are implemented to maintain and improve the beneficial uses of surface water on the Forest as established in Central Valley **REgional** Water Quality Control Board Basin Plan for the Tulare **Lake** Basin. Beneficial uses of water and the associated water quality standards are determinants in identifying the BMP methods and techniques applied for water quality protection.

Table 3.6 displays the beneficial uses for the watersheds that drain nearly 90 percent of the Forest.

Table 3.6 - Dominant Beneficial Water Uses By Major Watershed

Beneficial Uses	<u>Major Watersheds</u>				
	Kings	Tule	No. Fork Kern	So. Fork Kern	Kern Below Lake Isabella
Reservoir related Recreation	X	X	X	X	
White Water Boating	X		X		X
Esthetic Enjoyment	X	X	X	X	X
Fishing	X	X	X	X	X
Wildlife	X	X	X	X	
Fish Spawning	X	X	X	X	
Swimming and Wading	X	X	X	X	X
Dispersed Camping			X	X	
Hydropower		X	X		X
Municipal		X			
Agriculture	X	X			X

Table 3.7 - Characteristics Of Municipal Supply Watersheds

Watershed	Gross Acres	User Community	<u>Watershed Uses</u>					
			Large Reservoirs	Wilderness	Pri-vate Land	State Land	Timber Harvesting	Dev. Rec.
No. Fork of Middle Fork Tule River (Wishon)	24,340	Springville	No	Yes	Yes	Yes	Yes	Yes
So. Fork of Middle Fork Tule River	27,900	Springville	No	No	Yes	No	Yes	Yes
Belknap Creek above Calif. Hwy 190	1,050	Camp Nelson	No	NO	Yes	No	Yes	No
Bear Creek above Conservation Camp	2,665	Mt. Home Conservation Camp	No	NO	Yes	Yes	Yes	Yes
Long Meadow above Hume Lake	960	Hume Lake Special Use Cabin Owners	No	No	Yes	No	Yes	No

**Uses** for municipal water, fish habitat, swimming and wading, esthetic enjoyment, and dispersed camping are sensitive to high sediment levels. **Uses** for swimming and wading, municipal, and camping are affected by high bacteria levels.

Current management direction dictates that the Forest pay special attention to the quality and quantity of water from watersheds providing the principal sources of domestic water to communities (FSM 2543). No water quality problems have been known to occur in municipal supply watersheds. Table 3.7 shows the watersheds from which a portion of the water is used as a municipal supply. None are under formal agreement. All of them, except Long Meadow Creek, are in the **Tule** River watershed. Other communities near the Forest either use groundwater or water from Federal and State water projects.

**The** difficulty of maintaining or improving downstream water quality or quantity on a total watershed basis is compounded by a mixture of land ownerships. **The** Tule River watershed has more land under mixed land ownership than other major watersheds on the Sequoia NF. **The** need to coordinate with the other owners is important for management of this watershed.

#### c. Groundwater Resource

Water within the earth that supplies wells and springs is termed groundwater. Information on groundwater supplies is currently only sought as related to water supply at existing facilities and when drilling wells. Attempts have not been made to inventory or map groundwater availability and quality. Drinkable groundwater has been found within 305 feet of the earth's surface on the Forest and typically at the surface in the form of springs. Twenty-four wells and thirty-five springs provide water for campground and administrative site use.

The current groundwater demand from these wells and springs consists of drawing over 46 acre-feet of water annually for campground and administrative site uses. Groundwater may be needed to supply water for potential campgrounds, potential ski area developments, or an expanded range and wildlife program. Demand could increase 365 acre-feet by 2030 under maximum development. A groundwater inventory (as part of a Geologic Resources Inventory) at particular locations would provide better estimates of water availability and the cost of development. In addition, there are numerous private wells on private land (inholdings) within the Forest boundary. Generally, the demand on these systems is increasing.

#### d. Geologic Hazards

In the past, seismic and volcanic activity have been minor. Since 1900, only small earthquakes with magnitudes equal to or less than 5.0 on the Richter scale have occurred on the Forest. Seismic activity has been associated with scattered faults in the southern half of the Forest. Volcanoes have not erupted on the Forest within the last two thousand years. Volcanoes and earthquakes are not a significant hazard on the Forest.

Landslide hazards have only been done for site-specific projects, and have not been a significant factor in past land management activities. If steeper terrain is accessed to attain management objectives, landslide hazard identification will be more important. A landslide hazard inventory (as a part of a Geologic Resources Inventory) would reduce the risk of causing landslides, reduce costs, and save time during project planning.

e. Cumulative Watershed Effects

While the use of BMP's mitigate on-site disturbances, minor effects of individual projects may accumulate to produce off-site collectively significant manifested impacts which are transmitted to the fluvial system. These effects are seen as accelerated changes in stream channel stability. They can result in deposition of sediment upon or scouring down the channel bottom, lateral erosion of channel banks and/or landslides on over-steepened channel corridors above the banks themselves.

It is assumed that the type, extent and chronology of management activities within a watershed will produce changes in peak streamflow, erosion, and sedimentation. The result is off-site Cumulative Watershed Effects. These effects are not significant as long as they are maintained below a permissible limit expressed as a threshold of disturbance percentage.

Equivalent Roded Acres (ERA's) were used in analyzing Cumulative Watershed Effects. They reflect areas impacted by various management activities such as road building and clearcutting. The ERA coefficients were derived from P. Seidelman's methodology for assessing impacts and research done by R. Harr on timber ERA coefficients. Appendix B of the EIS has a more detailed description of ERA's and the Cumulative Watershed Effects model.

The permissible upper limit is a level of disturbance above which off-site water quality impacts have a higher risk of occurring. This limit is expressed as the Forest-wide threshold which is used only for planning. This threshold was based on the average channel condition of watersheds on the Forest. This level is not applicable to individual projects. Project level planning will require an in-depth investigation of those watersheds effected by a specific activity. Threshold levels will be set for those specific watersheds consistent with the field investigations.

The Forest-wide threshold is reached when there are no more ERA's available for management activity and 100 percent of the ERA's on the Forest have been allocated to activities. Presently, a total of 32 percent of the available Forest ERA's are used up by past management activity and are not presently available for planning. The ERA's associated with timber harvesting account for 31 percent of this total. These ERA's will recover over time and become available for future management as vegetative recovery occurs. ERA's associated with the road system will remain static as roads do not recover.



## 5. Energy Production and Conservation

### a. Energy Production

Hydroelectric generation is the primary form of energy production in the Forest. There are six hydroelectric plants currently in operation on the Sequoia NF with a combined output of 87.6 Megawatts (Table 3.8). Preliminary proposals for additional generation capacity of 23 Megawatts have been made. Development of all potentially identified projects would provide an additional 107 Megawatts. Potential conflicts exist primarily with wilderness recommendations, fish and wildlife instream flow demands, recreation demands, and hydroelectric development (see Further Planning and Wilderness Study Areas in Appendix C of the EIS). The Federal Energy Regulatory Commission reviews applications for hydropower operating permits and makes the decision after receiving recommendations from the Forest Service and other interested parties.

Table 3.8 - Current Hydroelectric Supply on the Sequoia NF

Plant	Capacity Megawatts	Load Factor	FERC License	Owner	Main Transmission Voltage (KV)
Kern River #3 (KR3)	36.0	80%	2290	SCE	66
Kern River #1 (KR1)	24.8	85%	1930	SCE	65
Borel Mouth Kern Canyon	10.4	85%	382	SCE	66
Forks Tule Mouth Tule Canyon	8.5	80%	178	PQ&E	70
	5.4	60%	1333	PG&E	70
	2.5	95%	372	SCE	66

Current management direction is focused on assessing the available resources, acquiring an awareness of potential energy development, and responding to electrical utility or private proposals for development.

Demand for electricity has maintained a slow steady increase roughly proportional to population growth (approximately one percent year). These trends are expected to continue in the short-term. Potential energy development will most likely be an expansion of existing or construction of new hydroelectric facilities.

Biomass yields energy through home firewood use and commercial power generation. Firewood harvest has proven to be very popular with approximately 20,000 cords currently harvested annually. Even though biomass plants are being developed near the Forest, little interest has been expressed in harvesting Forest products primarily for power production.

Another energy source with potential on the Forest is wind generated electricity. "Wind farms" may provide a large amount of electricity at competitive rates. Some potential occurs on the Kern Plateau, Piute Mountains, Scodie Mountains, Tule River, and Kings River Canyon areas. However, considering current information, wind resources are not likely to be developed on the Sequoia NF during this planning period. Geothermal and other leasable energy potentials are discussed under minerals and geology.

b. Energy Conservation

Current management direction is focused on energy conservation, and assessing energy conservation potentials.

Energy conservation efforts have been directed towards the reduction of Forest Service fleet fuel usage and improving the efficiency of Forest Service buildings. The substitution of smaller more efficient vehicles, including motorcycles, for full-sized ones as well as mileage restrictions have significantly reduced the Forest's fuel usage.

An energy survey of all the buildings on the Forest has been completed and has been analyzed resulting in a set of specific recommendations for improving the energy efficiency of each building. Implementation of those recommendations with favorable savings-investment-ratios has already begun. The trend is to continue to explore ways of conserving energy and utilizing existing technology to the extent that funding will permit.

6. Facilities

Facilities considered in the discussion are: transportation system, buildings, utility systems, heliports, dams, and other structures that facilitate multiple resource management. Trails are discussed in the recreation section.

a. Forest Transportation System (Roads and Bridges)

The Forest transportation system consists of 29 bridges, 1,471 miles of Forest development roads, 1,033 miles of abandoned roads, and 383 miles of road under the jurisdiction of others (Table 3.9). A system road is a road currently in the Forest Transportation Plan and planned for maintenance.

Table 3.9 - Forest Transportation System by Miles

Paved	Non-Paved	Total	Jurisdiction
102.90	20.00	122.90	State
10.50	0	10.50	Park Service
167.00	46.00	213.00	County
18.00	18.90	36.90	User or Organization
238.00	1,233.00	1,471.00	Forest Service Development Roads
0	1,033.00	1,033.00	Forest Service Abandoned Roads
<u>536.40</u>	<u>2,350.90</u>	<u>2,887.30</u>	

State and county roads serve as major access routes for Forest **users**. The majority of travel on the Forest Transportation System is linked with the demand for timber products and outdoor recreation. These roads provide access for multiple resource management. Various levels of maintenance are designated for all roads depending on the traffic permitted **or** required by on-going resource programs.

Local roads constructed usually range from **0.4** to **1.5** miles in length and are normally single **lane** with earth surface. From **1981** to **1986** these roads averaged **0.8** miles in length. Local roads reconstructed usually range from **1.0** to **4.5** miles in length and normally consist of clearing, surface reshaping, curve widening, and drainage work. From **1981** to **1986** these roads averaged **2.4** miles in length. Collector roads constructed are normally three to seven miles in length and are usually single lane roads but constructed to a higher standard than local routes. Higher standard **may** consist of flatter grades, larger radius curves, more turnouts, and **may** have surface stabilization.

Native surface roads are susceptible to damage and erosion during spring and early winter, when they are saturated with water and used by wheeled vehicles. The interception and concentration of runoff by roads **may** cause damage to adjacent lands.

System roads are closed to public **use** by means of regulatory closures and road maintenance criteria. Road maintenance and management criteria require that **many** local roads constructed for the primary purpose of a single resource management activity be closed upon completion of the activity. In **1982**, **1.278** miles of roads were closed: **425** of which were closed for the winter. Occasionally specific activities (e.g., prescribed burning and timber sales) **may** require road closures. Normally roads are closed to save maintenance costs, provide resource protection and ensure safety.

Approximately **44** percent of the Forest is unroaded. The feasibility of constructing a cost-effective road system to access some of this area is questionable because of steep terrain. Assuming that traffic will increase at the current rate, there is minimal need to increase capacities of existing routes. Improvements of existing alignments **may** be needed to improve safety. There are **36** identified major sites for obtaining **or** disposing of road construction and maintenance materials. Maintenance demands will increase also.

Based on Sequoia NF Traffic Monitoring Program, only **Horse Corral Road (14S11)** on Hume **Lake** Ranger District **may** require widening. Demand caused by major recreational and urban development will be mostly on State, county, and Forest arterials and will increase by approximately **35** percent by the end of the planning period. Cooperation with these agencies will be required **for** major developments. The future demand is projected to increase concurrently with the population increase in the surrounding area. Maintenance will have to be increased in order to maintain newly constructed roads, plus accommodate the increased use of Forest roads. **The** maintenance level of system roads will be determined by use, type of user, and available maintenance funds.

Forest Highways are specially designated routes under the jurisdiction of State or counties which connect safe and adequate highways to the Forest Development Road System. Table 3.10 lists routes currently designated as Forest Highways.

Table 3.10 - Forest Highways

Forest Highway Number	Name	Approx. Length Miles	Jurisdiction
128	Nine Mile Canyon	25	Inyo County Tulare County
208	Piute Mountain	25	Kern County
209	Rancheria	3	Kern County
210	Wofford Heights-Glennville	20	State
211	Kernville-Pine Flat	43	Kern County Tulare County
212	Springville-Parker Pass	40	State Tulare County
219	Hume Road	3	Fresno County

b. Buildings, Utility Systems, and Other Facilities

The Forest owns and operates approximately 136 buildings and related facilities which support the management activities of the Forest. These include offices, warehouses, residences, shops, and mess halls. The Forest also leases and operates six administrative sites. Over 50 percent of the Forest-owned structures are 36 years or older. Facilities are in various stages of repair and some need to be replaced. The combined effects of increase maintenance requirements as facilities become older, plus deferred maintenance and increasing costs have caused a maintenance deficiency.

Approximately 62 potable water systems and 124 waste water systems presently serve both recreation and administrative facilities. While there are no water systems closed to public use due to noncompliance with drinking water standards, some water systems are closed because of inadequate funds to do the required maintenance, water sampling, and testing. Potable water systems and waste water systems are subject to all Federal, State and local requirements.

There are 11 dams on or near Sequoia NF System land. All of these reservoirs collect runoff from the Forest and may be affected by Forest management practices. The Forest is responsible for operation,

maintenance, inspection, and administration of one dam; inspection only of three special-use dams; and administration only of the remainder.

A potential conflict exists at ~~Hume~~ Lake between recreational activities and hydroelectric power development. A detailed study of this conflict is beyond the scope of this analysis but will take place as a result of a license issued by the Federal Energy Regulatory Commission in 1987. A proposal to construct a dam at Rodgers Crossing on the Kings River has been resolved through enactment of the Kings River Wild and Scenic River legislation. The legislation includes language which prohibits any dam or diversion projects within a specified Special Management Area (approximately 48,000 acres in size).

The Forest maintains and operates four heliports. They are located at Peppermint, Pinehurst, Kernville, and Blackrock Work Center. "Helispots" are located throughout the Forest. They are operated and maintained as needed for timber harvest, other resource management, and emergencies such as fire and search and rescue.

Other facilities on the Forest include seven electric transmission lines greater than 66 KV. The largest (220 KV) is a Southern California Edison line that originates on the Sierra NF and crosses the Sequoia NF at Pine Flat Reservoir. There is a 200-foot right-of-way, about one mile in length, on National Forest System land. The other six are smaller (115 KV or less), and begin along the Kern River or the Tule River. Significant conflicts have not been identified with these existing transmission lines. Two other energy projects lie on the Forest but include only diversion dams, conduits and part of one powerhouse. Designation of utility corridors is not needed as the existing and planned facilities do not conflict with adjacent management.

In addition to building maintenance needs for older structures, construction of new facilities have not kept pace with current needs. Overcrowding and inadequate location of facilities are causing delays or increased costs. To be most cost efficient, some administrative sites and work centers need to be relocated to support resource management. The number and location of facilities needed in the future will be determined by considering the amount and location of the work to be accomplished. Water and wastewater systems will be required for both recreation and administrative sites.

## 7. Fire and Fuels Management

Geographic location, weather, vegetation, topography, access and human activities create a complex fire management situation in the Planning Area. The Sequoia NF has an average of 200 fires each year which burn an average of 4,534 acres. About 67 percent of the fires are caused by lightning and the balance are caused by forest visitors, workers, and residents. The Sequoia NF is one of the five most active fire fighting Forests in the Region.

Fire season normally starts on the Forest about May 15 when the annual grasses have cured at the lower elevations. The season lasts until about mid-November. Hot days, warm nights and low humidities can be expected

throughout the season with the most severe conditions coming in August, September and early October. Thunderstorms occur throughout the spring, ~~summer~~ and fall with varying amounts of scattered precipitation and concentrations of lightning-caused fires.

The fire management organization's (suppression, prevention, detection) mission is to protect life, property and wildland resources from wildfire. Fire also is commonly used as a tool to reach a specific resource objective.

Currently the fire suppression policy is to treat all unplanned ignitions as wildfires with initial attack action geared to holding burned acreage to a minimum. Fires that escape initial attack are suppressed using strategies and tactics developed through an Escaped Fire Situation Analysis. The final size and cost (including damages) of escaped fires is largely determined by this analysis.

The need to protect high value resources and improvements and to provide for public safety can often limit other programs or activities. Fire restrictions or Forest closures during periods of very high and extreme fire danger can limit certain recreation activities, preclude personal use wood cutting, and restrict travel on Forest roads. Timber sale and other contracts contain emergency fire clauses that restrict and/or prohibit certain activities based upon the severity of the fire weather.

The 1982 fire protection force on the Sequoia NF is based upon the 1972 Fire Plan (Table 3.11). The most dramatic reductions in protection strength have occurred since 1978.

Table 3.11 - Protection Force Summary (in modules) 1972-1982

Module Type	Fire Plan Authorized 1972	Fire Plan Implemented 1975	Current Force 1982
Prevention	<b>35</b>	<b>34</b>	15
Suppression			
Initial Attack	21	15	<b>14</b>
Reinforcements	<b>11</b>	7.5	2
Detection	<b>11</b>	<b>11</b>	8

The protection organization indicated by the 1972 Fire Plan was based upon the goal of being able to control all fires at ten acres or less, 95 percent of the time. The Sequoia's peak level of implementation occurred in 1975.

The size of the current fire organization limits the Forest's ability to respond to multiple fire situations. The situation is more acute when the normal force is depleted by fire assignments on other Forests. The number of fires exceeding 10 acres has increased each year since 1977.

**The** Forest has cooperative agreements and/or operating plans with all neighboring fire protection agencies including Sequoia and Kings Canyon National Parks, Bureau of Land Management, Bureau of Indian Affairs, U.S. Army Corps of Engineers, California Department of Forestry, and the County of Kern. **These** agreements provide for the sharing of fire protection resources, thus augmenting the fire suppression capabilities of each agency. Fires that threaten lands of more than one jurisdiction are jointly managed. Initial attack planning is based upon using the nearest suppression force. Training is coordinated and often jointly conducted. **The Incident Command System** is used by all agencies for managing fire suppression actions.

Fuels management activities have consisted of construction and maintenance of fuelbreaks, burning of timber sale slash, and broadcast burning in both timber and brush fuels. **The** potential for the **use** of prescribed fire to **meet** a number of resource objectives, including resource protection, is increasing. **There** has recently been an increased interest in the **use** of prescribed fire in chaparral to improve wildlife habitat, range opportunities, and to provide protection by reducing fire hazard.

Increasing recreation **use**, additional expansion of private land developments, and continued timber harvesting, with associated fire hazard have greatly increased the fire risks and hazards on the Forest. **The** fuel loading caused by the addition of logging slash, the increasing number of young timber stands and plantations, as well as the continuing decadence of chaparral fuels, far exceeds the capabilities of the protection force even with the **use** of bigger and better aircraft and other equipment.

**The** long-range solution to the ever increasing demand for fire protection and the constantly escalating wildfire suppression costs is theoretically the management of the Forest fuels. Such management practices as intensive timber management including increased utilization, conversion of chaparral stands for forage production, restoration of fire to its "natural **role**" in wilderness, and wildlife habitat improvement projects will reduce the volume of fuels; and, hence, decrease both the number and intensity of wildfire. However, until the natural fuels have been reduced over a significant portion of the Forest, reduction in protection **or** suppression costs cannot be expected. **The use** of prescribed fire, using planned ignitions, is probably the most economical treatment method available for managing the forest fuels. However, construction of control lines, pretreatment of some fuels, and sufficient forces to assure control can make some prescribed burns very expensive.

Some **use** of unplanned ignitions to meet prescribed fire objectives (location, intensity, etc.) is possible on a limited basis in those areas where natural features and fuel conditions would assure control of the fire at desired boundaries. By definition, prescribed fire whether from a planned **or** unplanned ignition, must **meet** resource management objectives. Prescribed fire costs must be borne by the "benefitting" resource. **The use** of Emergency Fire Fighting Funds (EFFF) is restricted to the suppression of wildfires and **may not be** used to manage a fire from an unplanned ignition even through the fire **may** meet resource management objectives.

## 8. Fisheries, Wildlife and Sensitive Plants

### a. Fisheries

Fishing is a popular wildlife-related recreational pursuit on the Forest, providing an average of 40 percent of the total Wildlife-Fisheries User Days (WFUD's). Sport fishing is increasing at a faster rate than any other consumptive wildlife use.

There are approximately 732 miles of fishable streams and 260 surface acres<sup>6</sup> of lakes on the Forest. Streams on the Sequoia NF are producing an optimum number of catchable fish from watersheds that are in relatively good hydrological condition.

The Forest has actively implemented programs and plans providing for the improvement and protection of fishery habitat. The Little Kern Golden Trout Management Plan provides for improvement of habitat and restoration of golden trout populations. Forest Riparian Standards and Guidelines, Streamside Management Zones, and Best Management Practices are implemented on all projects affecting the riparian resources surrounding fisheries. These guidelines provide for the protection and improvement of riparian dependent resources. With projects such as road closures, meadow restoration, and watershed improvement, these guidelines reduce sediment entering streams. The Sequoia NF has maintained and will continue an active program of stream habitat improvement through timber sale improvement, watershed improvement, range betterment, road maintenance, volunteer programs, and cooperative projects with the California Department of Fish and Game.

The Planning Area represents the southernmost native trout fisheries in the Sierra Nevada. Native harvest species are the four "golden-like" trout of the Kern River drainage (Kern River rainbow, two subspecies of the South Fork Kern goldens, and the Little Kern golden trout) and possibly some remnant native rainbow trout populations. Known native non-harvest species are Sacramento sucker, California roach, Sacramento squawfish, Sacramento perch, Sacramento blackfish, hitch, hardhead, and riffle sculpin. Nonnative and either stocked or self-sustaining populations of rainbows, brown, and brook trout; smallmouth and largemouth bass; and green sunfish occur on the Forest. White catfish, bluegill, bullheads, and crappie occur in the Kern River below Lake Isabella; but whether these are self-sustaining populations or just swept out of the lake is unknown. The BLM Wilderness Study Area does not contain significant fisheries.

The Forest is currently involved in three fish management activities:

- (1) restoring Little Kern golden trout to its critical habitat:
- (2) considering fisheries concerns in Forest management activities: and
- (3) completing stream surveys for the Forest (to date, 59 percent of the perennial stream mileage has been surveyed).



Table 3.12 - Dominant Fish Species Distribution by Stream Mileage and Total Acreage With Fish

Dominant Species	Stream Mileage	% of Total Fish Mileage	Stream Acreage	Lake <sup>1/</sup> Acreage	Total Acreage by Species	% of Acreage by Species
Rainbow Trout	443.11	60.5	972.8	151.0	1,123.8	65.8
Little Kern Golden Trout	116.56 <sup>2/</sup>	15.9	62.2	44.0	106.2	6.2
Kern River Rainbow Trout	35.22	4.8	140.8	14.0	154.8	9.1
South Fork Golden Trout + Hybrids	58.13	7.9	37.6	--	37.6	2.2
Brown Trout	51.49	7.0	217.9	--	217.9	12.7
Brook Trout	26.65	3.6	17.3	50.6	67.9	4.0
Suckers	<u>0.68</u>	0.1	<u>0.2</u>	<u>--</u>	<u>0.2</u>	0.01
	731.84		1,448.8	259.6	1,708.4	

<sup>1/</sup> Excluding Pine Flat Reservoir.

<sup>2/</sup> Upon completion of the LKGT Management Plan in 8 to 10 years.

Of the approximate 1,280 miles of perennial streams on the Forest, 732 miles are estimated to contain fish, with rainbow trout the dominant harvest species. Hybridized and pure native "golden-like" trout occur in less than 210 miles of streams. Of that total, 117 miles are being returned to pure Little Kern golden trout (LKGT) upon the successful completion of the LKGT Recovery Program. Fish habitat quality in most streams is rated medium or high. Those streams with medium or low ratings either lack fish habitat due to inherent physical qualities such as high water temperatures in the summer combined with steep, rugged terrain, granitic soils and major fluctuations in yearly stream flows, or they have been damaged by livestock, excessive recreation use and/or water diversion

The greatest impacts on fish habitat have historically come from livestock grazing and water diversion for domestic use and energy production. Present conditions can, in most cases, be traced to events of those types that occurred 50 or more years ago.

Livestock grazing began in the area about 130 years ago, and the number of animals (over 100,000 sheep and cattle) remained high until the 1930's. Livestock damage to riparian habitat is mitigated on a case-by-case basis

without reducing livestock numbers. The heavy grazing denuded meadows and **streambanks**, causing sedimentation of **streams** and corresponding damage to fish habitat quality. Livestock numbers have been reduced dramatically: approximately 12,000 cattle now graze Forest lands.

**Water** diversion for domestic use and energy generation alters fish habitat by removing water from **streams** and piping **it** to collection sites.

It was once thought that all economically feasible hydroelectric sites on the Forest had been developed. However, recent legislation and the international oil situation have encouraged the reconsideration of development on **stream** reaches formerly thought uneconomical. Several perennial **streams** on the Forest have at least one application for hydroelectric development. Some applications propose diversion of 90 percent of the available water. The number of permits that will finally be granted and hydroelectric projects built is **unknown**. The resulting impact of fisheries is, therefore, difficult to predict. That impact, whatever its magnitude, is of considerable concern to local anglers in the San Joaquin Valley.

Other management activities, such **as** road construction, timber harvest, and recreational developments, can adversely impact fish habitat. In **many** cases, the direct impacts can be mitigated. However, as access **for** fishing is improved, resident fish populations drop as more resident trout are taken and as habitat quality declines with increasing use.

The fishing resource on the Sequoia offers a multiproduct output. Two of the most important outputs are food and recreation. Demand analysis views fishing as primarily a recreation experience so demand for fishing is measured in WFUD's.

**The** supply and demand of the fisheries resource is presented and examined by two approaches. The first approach **is** that of the above: fisheries discussed by stream mileage and lake acreage containing fish and the respective habitat quality.

*The* second approach is to examine the fish resource in view of angling opportunities. These differences can be defined by ease of access to the various streams and lakes on the forest, and can be summarized as:

- 1) Heavily fished, easily-accessed waters (within one-quarter mile of a road, trail crossing, etc). Opportunities here are heavily dependent on trout stocking.
- 2) Areas fished during an extended trip into one of the wildernesses. Fishing here is usually only a part of the overall experience.
- 3) Areas in the general forest reached on a one-day trip. Fishing is the major activity of the trip with fish quality (size) of more importance than quantity.

From these descriptions, angler data was converted to show amount of anglers **or** demand per mile of **stream or** acre of lake.

Table 3.13 - 1982 Supply/Demand for Fisheries

<u>Water Type</u>	<u>Quantity Available</u>	<u>Wildlife &amp; Fisheries User Days (WFUD's)</u>	<u>Pressure</u>
Accessed Streams	214 mi.	94,500	190 anglers/mi.
Accessed Lakes	151 ac.	17,500	50 anglers/ac.
Wilderness Streams	170 mi.	9,800	25 anglers/mi.
Wilderness Lakes	109 ac.	7,700	30 anglers/ac.
Remote Streams	372 mi.	10,500	12 anglers/mi.
Remote Lakes	None		0
<b>TOTAL</b>	<b>—</b>	<b>140,000</b>	<b>—</b>

The present demand for fishing opportunities in easily-accessed areas is well beyond the current resident fish supply, particularly for streams. Harvest in these areas is almost totally supported by stocked rainbow trout. In 1982, 43 miles of stream and 236 acres of lakes were stocked with 315,000 trout. The native fisheries in these areas are depressed due to the heavy fishing pressure, competition with hatchery rainbows, and damaged habitats due to heavy use.

The projected angler use for 1995 is even more out of balance with supply. The addition of new small impoundments and enhancement of existing lakes coupled with increased stocking will allow the Forest to increase the supply of easily accessed fishing opportunities. Increasing ease of access on small streams will not increase the supply of "accessed" fishing opportunities as these waters are generally too small physically to sustain the angler pressure without habitat damage.

With the exception of heavily used areas (such as trail crossings, campsites, and some lakes), fish populations exceed the consumptive demand in most areas of the wilderness. Supply of fish, except in a few heavily impacted areas, could continue to exceed user demand through the fifth decade of the Plan.

Fishing demand for the remote areas is marginally met through use of many of the small streams that do not contain the desired larger "trophy" fish. If the number of anglers of this type continue to increase, even with low harvest rates, the various fisheries could begin showing symptoms of overharvest (reduced size and number of fish available). With the defined lack of easy access, habitat repairs or enhancements offer little opportunity to increase the supply of this opportunity.

The following opportunities have been identified to maintain, restore, and enhance the fisheries resource:

- 1) Accomplish streambank stabilization and revegetation work and installation of stream structures to help offset previous stream habitat losses.

- 2) Create new fishing reservoirs to provide valuable additional fishing habitat to help meet the increasing demand.
- 3) Control water quality problems related to other resource uses.

b. Wildlife

Wildlife resources occur Forest-wide though they are seldom uniformly distributed. Each species is unique and has its own habitat requirements. They exist only where their specific needs for food, water and cover can be met simultaneously.

Vegetative diversity, its age, structure and geographical location all combine to provide for wildlife needs. Some vegetative combinations provide a rich variety of habitats for wildlife, while others are limited.

On the Sequoia NF several broad ecosystems exist, each capable of providing a variety of habitats over time and space for wildlife. Within the conifer forests, **oak** woodlands, and brush types there exists many physical and biological differences that provide special habitat. In addition, localized special components such as caves, talus slopes, rock outcrops, snags and downed logs, riparian zones, meadows, and **so** on, provide necessary diversity to support an even greater variety of additional wildlife species.

All of these factors combined form habitats of sufficient size and variety to support over 330 species of fish and wildlife on the Sequoia NF.

Table 3.14 - Number of Vertebrate Species on the Sequoia NF

<u>Taxonomic Group</u>	<u>Total Number of Species</u>	<u>Game Species</u>
Mammals	85	23
Birds	194	20
Reptiles	25	0
Amphibians	11	1
Fish	<u>24</u>	<u>16</u>
TOTAL	339	60

The demand to maintain and enhance habitat for endangered, threatened, rare and sensitive species is expected to increase. Federal and State laws and regulations mandate the Forest to manage habitat of threatened and endangered species to insure their survival. Sensitive species are managed in such a way as to prevent them from becoming threatened or endangered.

The endangered California condor is a special case. The bird was discovered nesting on the Sequoia NF in 1984. The nesting habitat was established as a special management area at that time. As the recovery program proceeds, the Sequoia NF will adjust the management area to provide for the condor's **needs**.

Table 3.15 - Federal and State Listed Wildlife Species on the Sequoia NF

Listed by Federal, State or Forest Service as Endangered (E), Threatened (T), Fully Protected Under California State Fish and Game Code (CP), California Department of Fish and Game Species of Special Concern (CSC), or Sensitive (S).

<u>Species Common Name</u>	<u>Federal</u>	<u>State</u>	<u>Forest Service</u>
Little Kern Golden Trout "Revised Fisheries Management Plan For Little Kern Golden Trout" Apr. 1984	(T)		
Kern Canyon Slender Salamander		(T)	
Tehachapi Slender Salamander		(T)	
Southern Rubber Boa		(T)	
California Condor "California Condor Recovery Plan" Feb. 1980 California Condor Recovery Team	(E)	(E,CP)	
Coopers Hawk		(CSC)	
Northern Goshawk		(CSC)	(S)
Sharp-shinned Hawk		(CSC)	
Golden Eagle		(CP,CSC)	
Swainson's Hawk		(T)	
Bald Eagle "Bald Eagle Recovery Plan"	(E)	(E,CP)	
Prairie Falcon		(CSC)	
American Peregrine Falcon "Recovery Plan for Peregrine Falcon" Aug. 1982 Pacific Coast American Peregrine Falcon Recovery Team	(E)	(E,CP)	
Burrowing Owl		(CSC)	
Long-eared Owl		(CSC)	
Great Gray Owl		(E)	(S)
Spotted Owl		(CSC)	(S)
Willow Flycatcher		(CSC)	(S)
Yellow Warbler		(CSC)	
Sierra Red Fox		(T)	(S)
Wolverine		(T,CP)	
Fisher			(S)
Pine Marten			(S)

Changes in the vegetation in a particular area can reduce the habitat capability as viewed from a particular species' needs while enhancing its capabilities for another species. Conflicts arise with any change in habitat. The degree of conflict depends on the species involved.

Wildlife species on the Sequoia NF vary in their sensitivity to change, and to the apparent availability of habitat, both existing and potential. Species which are particularly sensitive to change include tree cavity nesting species, riparian (including wet meadows) dependent species,

species associated with older overmature stands of timber, species which utilize early successional stages of vegetation, and species associated with mast-producing trees.

Cavity-nesting species of wildlife are abundant on the Forest.

Approximately **35** species utilize cavities on the Forest. Data show population levels of these species to be unevenly distributed and approximately 80 percent of potential carrying capacity overall.

Due to abundant forage, available water, and rich variety of habitats, riparian areas and meadows have an importance to wildlife which is highly disproportionate to their limited acreage. They are also a focal point of conflicts between users such as grazing, recreation, timber, and wildlife. Cattle utilize the abundant forage resource. Overuse can cause habitat damage. Recreationists are attracted to these areas for their scenic beauty, generally flat topography, and water. Trails through these areas and OHV's can cause significant damage to the habitats. Timber harvest adjacent to and in these areas can change the structural diversity.

Most riparian areas on the Forest have not been significantly altered by management activities. Meadows have received significant use in the past. Current meadow management focuses on restoration and maintenance of the existing acreage.

The Sequoia NF currently contains approximately **470,000** acres of mature to overmature timber. This vegetation provides habitat for wildlife species associated with these older timber stands. The actual percentage of this vegetation that is capable of supporting reproductive individuals varies among species according to their specific habitat requirements and factors such as elevation, stand density, and fragmentation. Timber harvest is the only major activity that significantly decreases this habitat type.

Early successional stages are not abundant on the Planning Area. Available data show approximately 30,000 acres in the timber zone to be in this seral stage. Other vegetation zones currently contain little of young growth stage. Prescribed burning programs have provided for some increases in the chaparral. Regeneration timber harvest, particularly clearcutting, can also provide for large acreages.

Wildlife species associated with these early seral stages are at low population levels, approximately 50 percent of potential carrying capacity. Concern exists that if more of this stage is not created, some wildlife species will continue at low population levels.

There are approximately 190,200 acres supporting mast-producing trees on the Forest. Potential exists for another **30,000** acres. This acreage provides potential habitat for species associated with mast-producing trees at approximately 85 percent of maximum carrying capacity. This amount cannot be increased during the planning horizon as 80 years is required to begin significant mast production.

Current demand is both consumptive and nonconsumptive, with nonconsumptive the major use. User data for 1982 show **43,000** consumptive WFUD's and 67,000 nonconsumptive WFUD's associated with terrestrial wildlife.

Consumptive use is almost totally deer hunting while nonconsumptive uses include bird watching, photography, and animal study.

Future wildlife demand is expected to increase based upon projected population growth. **The** increased use will be almost exclusively nonconsumptive. Hunting use ~~may~~ increase as deer numbers increase.

Because of the losses of habitat outside the Forest due to urbanization, wildlife species are becoming more dependent upon the Forest to supply their life requirements. Management activities currently occurring on the Forest degrade habitat **for** some species while improving the quality of habitat for other species. The challenge of wildlife management on the Forest is to balance these gains and losses of habitat to insure species survival while meeting public needs.

### Management Indicators

The objective of the wildlife and fish management program on the Forest is to manage habitats to maintain **or** enhance viable populations of existing wildlife and fish species. To insure that viable populations of all species occurring on the Forest are maintained, certain species called Management Indicator Species (MIS) were selected to act as barometers for wildlife communities. These species and associated guilds were selected because they are believed to represent the vegetation types, successional stages, and special habitat elements necessary to provide for viable populations of all species on the Forest; and their population changes are believed to indicate or represent the effects of management activities on wildlife and fish populations. Ten wildlife species were selected as MIS on the Forest. Listed below are the species chosen and the habitats they represent.

- 1) Species associated with early successional stages:
  - Mule Deer
- 2) Species associated with riparian zones:
  - Rainbow Trout (Native)
- 3) Species associated with snags:
  - Pileated Woodpecker
- 4) Species associated with mast-producing vegetation:
  - Gray Squirrel
- 5) Species associated with late successional stages:
  - Spotted Owl
  - Goshawk

6) Threatened and Endangered species:

- California Condor
- Peregrine Falcon
- Bald Eagle
- Little Kern Golden Trout

An estimate of current habitat supply for MIS on the Forest is listed in Table 3.16.

Table 3.16 - Indicator Species Used to Determine Changes in Habitat

Species	Current Acres High Quality Habitat	Current Acres Moderate/Low Quality Habitat
Mule Deer <sup>1</sup>	13,000	666,000
Spotted Owl <sup>2</sup>	20,000 (estimated)	55,000 (estimated)
Pileated Woodpecker <sup>1</sup>	44,700	232,200
Goshawk	Unknown	Unknown
Acorn Woodpecker'	Unknown	59,300
Grey Squirrel	147,100	237,700
Bald Eagle	Unknown	138,000
California Quail <sup>1</sup>	Unknown	138,000
Peregrine Falcon <sup>1</sup>	4 sites	24 sites
Rainbow Trout <sup>1</sup>	350 stream/lake areas	750 stream/lake areas
California Condor <sup>3</sup>	2,000	Unknown
Little Kern Golden Trout <sup>4</sup>	62.2	-----

MULE DEER - Early Successional Stages

Mule deer are found throughout the Forest in virtually all habitats at varying densities. Deer were chosen to represent early successional stages

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<sup>1</sup>Acres figures were derived using Hurley, Janet et al; Wildlife Habitat Capability Models and Habitat Quality Criteria for the Western Sierra Nevada, Stanislaus National Forest. May, 1981. Models were compared with vegetation data for the Sequoia NF.

<sup>2</sup>See Appendix B of the FEIS for explanation of habitat capability acres for spotted owls.

<sup>3</sup>Acres based on nest habitat identified in the Starvation Grove Nest Management Plan for the California Condor.

<sup>4</sup>Based on the Little Kern Golden Trout Management Plan.



of vegetation because of their reliance on food and cover found in these habitat types.

Portions of seven deer herds occur within the boundaries of the Sequoia. The deer population on the Forest is estimated at 11,000 individuals. Direction is found within deer herd management plans being cooperatively developed with the California Department of Fish and Game.

Deer hunting is a major recreational use on the Forest. Prescriptions will be delineated in these plans for the maintenance and improvement of habitat elements to benefit deer. The majority of these recommendations focus on manipulating vegetation to sustain early successional stands of forage. Other habitat improvements suggested in the deer herd plans center around development of springs and installation of wildlife guzzlers.

Conflicts between deer and Forest management activities include competition for forage with domestic livestock, disturbance of deer and deer fawning areas by road traffic and off-highway vehicles, and changes or disturbances caused by timber management activities to travel corridors utilized by deer.

#### RAINBOW TROUT (Native) - Riparian

Rainbow trout is the most common and most important recreational fish in the Forest. Of the approximate 1,280 miles of perennial streams on the Forest, 57 percent or 732 miles are estimated to contain fish, with rainbow trout the dominant harvest species.

As with other species of trout, a combination of various land management activities can influence the quality and quantity of aquatic habitat for rainbow trout. Several fishery habitat improvement projects are completed each year. Erosion control structures, gully plugs, and vegetation plantings are the most commonly performed work. Newly developed riparian guidelines further restricting management activities in the riparian zones have been established for the Forest. These guidelines will further benefit this important habitat type.

#### PILEATED WOODPECKER - Snags

Pileated woodpeckers are found throughout the Forest within conifer and conifer-hardwood stands where large diameter softwood snags are present. Conflicts occur primarily from timber and fuels management activities which reduce the older age class of timber and the availability of large diameter softwood snags.

Opportunities exist to create and/or recruit snags into areas now deficient in large diameter softwood snags and to provide an adequate distribution of older mature mixed conifer stands throughout the Forest. Also, retaining one-fourth to two aggregations of mature trees to protect present and future snags will benefit snag dependent species.

## **GRAY SQUIRRELS - Oaks and Hardwoods**

Gray squirrels occur throughout the Forest wherever oaks, pines, and snags are present. Abundant populations of gray squirrels currently exist on the Forest. Opportunities exist to improve habitat for this species by manipulating young dense hardwood stands to provide for older age classes by trees and protection of oaks in timber management areas.

## **SPOTTED OWL - Mature to Overmature Timber**

The spotted owl is identified as a sensitive species in California National Forests. Throughout Northern California, it represents wildlife species associated with mature and older timber stands in the Douglas-fir and mixed conifer types. In the Sierra Nevada, spotted owls also occur in mixed conifer/hardwood stands and in older second growth that contain an old growth or mature component.

Because the spotted owl is identified as sensitive and has been selected as a MIS, management of suitable habitat is necessary to ensure the maintenance of a viable population, well distributed across the Forest. (36, CFR, 219.19)

The Pacific Southwest Regional Guide defines suitable spotted owl habitat as consisting of mature timbered stands having multilayered conditions, a canopy closure of 70 percent or greater, and obvious decadence. The Regional Guide also indicates that deviation from this definition is possible, in the Sierra Nevada, based on local research data, habitat models, or other information sources.

Suitable habitat on the Forest has been tentatively defined as consisting of 30-80 percent old growth, with the remaining acreage in younger stands of mixed conifer and mixed hardwood/conifer stands. The selection of these vegetation types in the SOHA's is based on what currently exists on the Forest.

Field surveys since the late 1970's have identified 75 locations with individuals or pairs of spotted owls on the Forest. Recently (since the base planning year of 1982) four locations have been verified with pairs reproductively successful pairs, 19 locations have been verified with pairs (reproductive success has not been determined), and another 29 locations have been verified to at least have an individual spotted owl (some of these 29 may actually have had pairs).

Based on the field survey data, coupled with information on the amount and distribution of habitat that appears to be suitable, habitat on the Forest is estimated to be capable of supporting approximately 75 pairs of spotted owls through the first decade. This includes estimated capability to support 20 pairs in wilderness, 5 pairs on lands managed under prescriptions compatible with spotted owl habitat needs, and 50 pairs on lands suitable and available for timber production.

A network of 40 Spotted Owl Habitat Areas has been developed. Ten of these SOHA's are currently located on non-CAS land (wilderness) while 30 are on CAS land. There are three additional SOHA's believed capable of supporting

reproductive pairs of spotted owls on National Park Service Land adjacent to the Proposed Forest Network. The purpose of the network is to ensure the maintenance of a self-sustaining population, well distributed across the planning area. The network consists of Spotted Owl Habitat Areas (SOHA's), each consisting of 1,000 acres of suitable habitat plus replacement habitat within a 1.5 mile radius of a known or estimated location of a nest site. To the extent possible, the SOHA's are grouped together in clusters of three, with no more than 1.5 miles spacing between SOHA's within a cluster. Clusters are spaced 6 to 12 miles apart to ensure the population is well distributed. Individual SOHA's have been identified when natural geographic conditions preclude clusters. The individual SOHA's are no more than six miles from the nearest clusters. To the extent possible the network sites are located on lands not available for timber harvest or on lands already allocated to prescriptions compatible with spotted owl habitat needs.

During 1987, intensive inventories were conducted to document current occupancy and reproductive success in the proposed network SOHA's. Adjustments in the number, location and size of SOHA's in the network may occur in the future. These changes will be based on spotted owl inventory and monitoring efforts and on an updated definition of suitable habitat in the southern Sierra Nevada. The definition will be updated using information from the Spotted Owl Research, Development, and Application Program which involves a five-year program beginning in 1987 of inventories, monitoring, research, and administrative studies concerning spotted owls.

#### ~~GOSHAWK~~ - Mature to Overmature Timber

Goshawks are another species representing animals associated with mature to overmature timber stands. These birds appear infrequently on the Forest although precise numbers are not known due to the lack of a comprehensive survey. Fifty acres of habitat will be managed around nest sites to prevent disturbance to nesting activity as described in the Regional Guide.

#### CALIFORNIA CONDOR, PEREGRINE FALCON, BALD EAGLE

The California condor is a federally listed endangered species that has infrequently utilized portions of the Forest for roosting; and, in one documented case, nesting habitat. Currently, the Starvation Grove Nest Site (2,299 acres) and the Breckenridge Mountain Roost Site (640 acres) are managed to maintain condor habitat. The Basket Peak (2,000 acres) and Lion Ridge (1,000 acres) roost sites receive modified management to minimize possible conflicts with the recovery needs of the condor. Additional areas may be set aside as critical needs are perceived in accordance with the California Condor Recovery Plan and in cooperation with the USDI Fish and Wildlife Service.

In many tables throughout this document acres for condor nesting habitat are shown as zero acres for the 1982 Base Year and 2,299 acres for the decades following the base year. These acres changed from zero to 2,299 when condors were discovered nesting on the Forest after 1982. A management area of 2,299 acres was then established to protect and manage this habitat.

The peregrine falcon is a Federally listed endangered species. Endangered species status directs National Forests to protect critical habitats and participate in recovery efforts for listed species. A 1980 survey identified four superior nest sites for peregrine falcons. So far 12 birds have been successfully hatched on the Sequoia NF, although production of young has not been verified near the hatch sites.

The bald eagle is classified as endangered in California by the USDI Fish and Wildlife Service. The bald eagle sometimes visits the Forest during the winter months and is occasionally observed around Pine Flat Reservoir and the Kern River, near Lake Isabella.

Conflicts with the condor, peregrine falcon, and bald eagles occur primarily from disturbance associated with human-related activity around nest sites during the breeding period and at winter roosts (bald eagle) and from changes in vegetation that reduce diversity of avian prey (peregrine falcon). **There** are no known bald eagle nests, however, winter roosting sites do exist on the Sequoia NF.

#### LITTLE KERN GOLDEN TROUT

The Little Kern golden trout is a federally listed threatened species located primarily in the Golden Trout Wilderness. Through the direction of the Little Kern Golden Trout Management Plan, this trout species will be returned to its designated critical habitat.

#### c. Sensitive Plants

Wildflower photography is a common activity occurring on the Forest, especially in the spring and summer months. The Sequoia NF contains over 2,000 species of plants, a remarkable assemblage comprising over one-fourth of the State's flora. Of this total, 24 species are considered sensitive and are listed by the Regional Forester as requiring special management attention. An additional 25 species (formerly sensitive) have been proven to be more abundant or widespread than was previously believed and/or are not in jeopardy by various management activities.

Distribution of each sensitive plant species on the Sequoia NF is unique, both geographically and ecologically. Managing sensitive plants must be done on a case-by-case basis due to specific locations, potential threats and the ecology of each species. Current Forest Service policy is to assure that agency actions do not Jeopardize the continued existence of these species or result in the destruction or modification of their essential habitat until such time as their status for possible listing under the Endangered Species Act is determined.

The dynamic nature of the knowledge base for sensitive plants requires the list to be updated as new information becomes available. Deletions and additions occasionally become necessary. The trend on the Sequoia NF indicates a net reduction of sensitive species. Twenty-five sensitive plants from the Regional Forester's List have been "delisted" from Sequoia NF since 1978. As the Forest inventory (and inventories of adjacent public lands) reaches completion, further "delistings" from the sensitive plant list can be expected. Many of these species are presently being

inventoried by the California Department of Fish and Game Natural Diversity Data Base System. Currently, the Forest inventory is of a resolution that enables prediction of potential habitat and occurrence on any given project.

A complete list of sensitive plant species occurring on the Forest is found on the following list. The Forest will actively pursue status determination and long-term protection of all sensitive plants. Currently, sensitive plant surveys are conducted prior to any ground disturbing activity in areas where they are known or suspected to occur.

Generally sensitive plants on the Sequoia NF fall into three broad categories. They are:

- 1) Plants are rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.

Unexpected larkspur	<u>Delphinium inopinum</u>
Muir's raillardella	<u>Raillardella muirii</u>
Tompkin's sedge	<u>Carex tompkinsii</u>

- 2) Occurrence of plants confined to several populations or one extended population.

Hall's daisy	<u>Erigeron aequifolius</u>
Kernville poppy	<u>Eschscholzia procera</u>
Congdon's bitterroot	<u>Lewisia congdonii</u>
Coville's navarretia	<u>Navarretia setiloba</u>
Purple mountain parsley	<u>Oreonana purpurascens</u>
Piute jewel flower	<u>Streptanthus cordatus</u> var. <u>piutensis</u>
DeDecker clover	<u>Trifolium dedeckerae</u>
Charlotte's phacelia	<u>Phacelia nashiana</u>

- 3) Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

Ertter milkvetch	<u>Astragalus ertterae</u>
*Shevock milkvetch	<u>Astragalus shevockii</u>
Kaweah brodiaea	<u>Brodiaea insignis</u>
"Shirley Meadows mariposa**	<u>Calochortus westonii</u>
Springville clarkia***	<u>Clarkia springvillensis</u>
*Kern River daisy	<u>Erigeron multiceps</u>
*Piute buckwheat	<u>Eriogonum breedlovei</u> var. <u>breedlovei</u>
Needles buckwheat	<u>Eriogonum breedlovei</u> var. <u>shevockii</u>
*Twisselmann's buckwheat	<u>Eriogonum twisselmannii</u>
Kaweah fawn lily	<u>Erythronium grandiflorum</u> ssp. <u>pusaterii</u>
Greenhorn adobe lily	<u>Fritillaria striata</u>
*Bald Mountain potentilla	<u>Horkelia tularensis</u>
*Twisselmann's nemacladus	<u>Nemacladus twisselmannii</u>
Nine Mile Canyon phacelia	<u>Phacelia novemmillensis</u>

\* These seven sensitive plants are endemic to the Sequoia NF.

\*\* See "Management Guide for Shirley Meadows Mariposa," Sequoia NF, 1984.

\*\*\*See "Management Guide for Springville Clarkia," Sequoia NF, 1987

All other sites will be protected until specific species management guides are written.

At this time, there are no plants on the Sequoia NF that are federally listed as threatened or endangered. Kaweah brodiaea, Greenhorn adobe lily, and Springville clarkia are listed as "endangered" under the California Endangered Species Act; and Twisselmann's nemacladus. Twisselmann's buckwheat and Congdon's bitterroot are listed as "rare" by the State of California pursuant to Section 1904, Fish and Game Code (Native Plant Protection Act). A Management Guide and Conservation Agreement has been established between the Forest Service and the USDI Fish and Wildlife Service for the Shirley Meadows Mariposa (a Sequoia NF endemic species).

#### 9. Further Planning, Wilderness Study and Released Areas

Further Planning and Wilderness Study Areas are unroaded lands which are at least 5,000 acres or of any size if they are contiguous to an existing designated wilderness or another agency or Forest Further Planning Area. These areas will be recommended for either wilderness or non-wilderness in this environmental statement.

Within the Planning Area there are six National Forest Further Planning Areas totalling 117,308 acres (net). There is also a BLM Wilderness Study Area totalling 35,557 acres (net). (See Figure 3.1 and Table 3.2).

Of this total, two areas totaling 25,849 acres were not considered for wilderness recommendation in Sequoia NF planning, but were considered by others in their planning. One 1,949 acre parcel (Cypress) is public land within the Forest and is contiguous to a larger parcel of unroaded Bureau of Land Management (BLM) land. BLM considered both parcels during their planning and have recommended they not be designated as wilderness. The other parcel (Kings River) includes lands on both the Sierra NF and the Sequoia NF. The Sequoia's portion totaling 23,900 acres was being considered by the Sierra NF during their planning. This area was not recommended for wilderness designation in the Sierra's DEIS. Enactment of the Kings River Wild and Scenic River legislation in November 1987, included this area as a Special Management Area. This action negates the need for additional consideration as a Further Planning Area. A plan for managing the Special Management Area will be prepared jointly by the two National Forests within three years of the legislation enactment date.

The lands which were considered were either lands administered by the Forest Service or BLM. The BLM Wilderness Study Area being considered was identified during the Bureau's wilderness review processes completed in December 1979. The Forest Service Further Planning Areas were identified during the Roadless Area review and Evaluation (RARE II) process and EIS. Forest Service roadless lands were identified as being either non-wilderness or Further Planning Areas. Further Planning Areas were to be recommended for wilderness or non-wilderness during the Land Management Planning process and associated EIS. The non-wilderness lands were to be managed for non-wilderness uses.

On June 25, 1979, the State of California filed a suit claiming the RARE II EIS was inadequate with respect to non-wilderness areas. Four areas in the

Sequoia NF were included. The judge directed that these areas were to be reevaluated for wilderness or non-wilderness. The original ruling was upheld by the Ninth Circuit Court of Appeals. The Forest Service then directed that because the RARE II EIS was inadequate, all Roadless Areas inventoried during the RARE II process would be evaluated for wilderness or non-wilderness during the Land Management Planning process. Except for six Further Planning Areas, this issue was resolved in the California Wilderness Act of 1984.

The Roadless Areas specifically cited by the California Wilderness Act of 1984 were either those portions of RARE II identified as Further Planning or non-wilderness areas which were adjacent to newly created wilderness or adjacent to existing wilderness where the wilderness was expanded. Roadless Areas cited in the 1979 RARE II EIS as non-wilderness, and not specifically cited in the California Wilderness Act of 1984, were also released to non-wilderness management. See Appendix P of the EIS for the management prescription by alternative for all released areas. See Appendix C of this EIS for management prescriptions of all Further Planning Areas.

Areas that became new wilderness (W) and those released to non-wilderness (NW) management are shown below:

Name	RARE II		Acres Released for NW Uses	Acres Allocated for W
	RARE II No.	Acres (Net)		
Agnew	(199)	18,200	9,300	8,900
Jennie Lakes	(200)	13,700	3,200	10,500
South Sierra	(029)	34,100*	9,700	24,400
Woodpecker	(206)	44,400	13,600	30,800
Domeland Additions	(207)	3,100	3,100	0
Domeland Additions II	(305)	1,100	---	1,100**

\* acreage on Sequoia NF.

\*\* An unspecified area of a few hundred acres was excluded from wilderness to allow a possible small hydroelectric project, but has not been subtracted from total acreage.

**FIG. 3.2 DISTRIBUTION OF WILDERNESS, WILDERNESS STUDY AND FURTHER PLANNING AREAS**

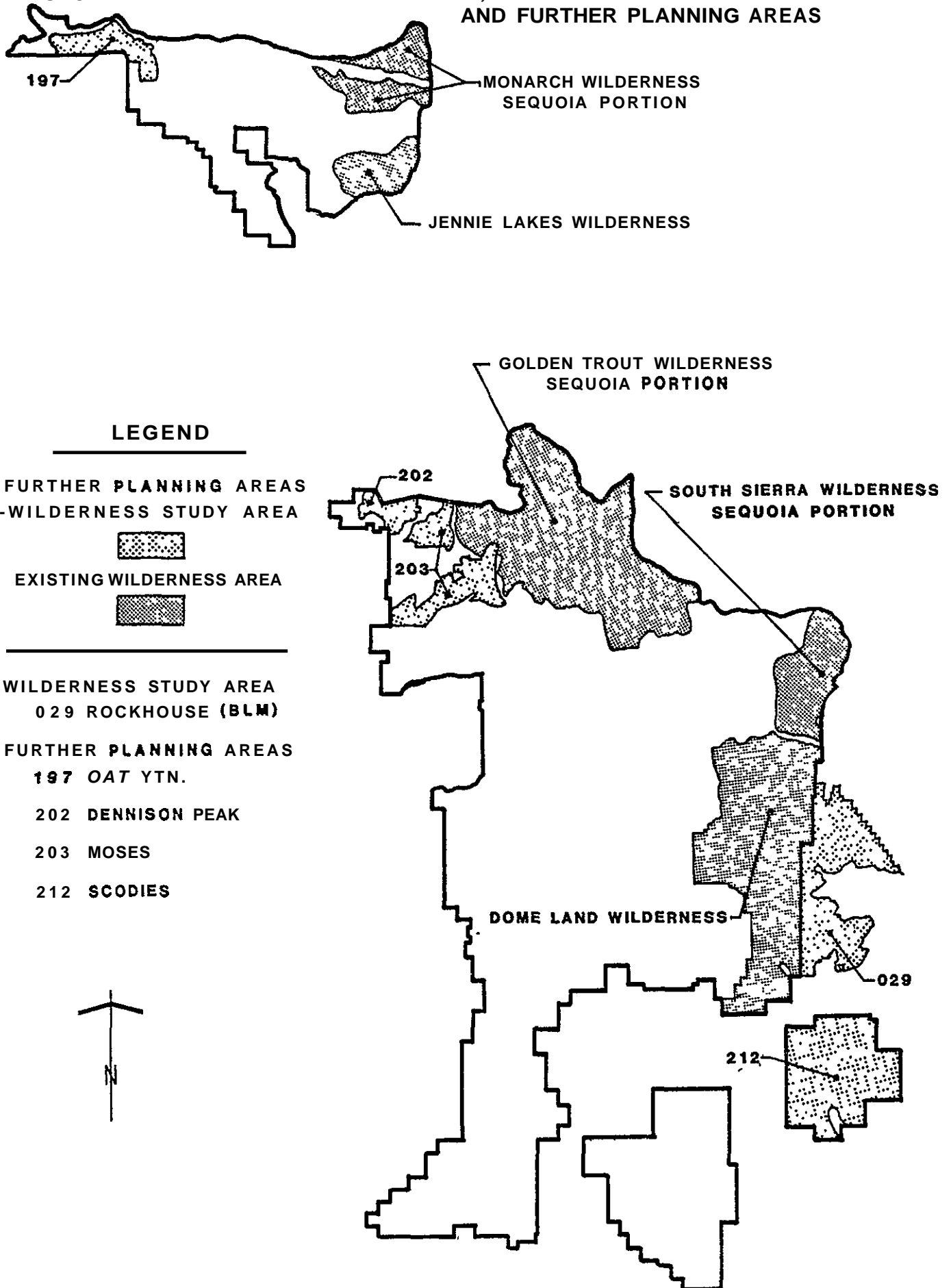




Table 3.17 - Further Planning and Wilderness Study Areas in the Planning Area

Area Type	Code	Name	Gross Acres	Net Acres
<u>Further Planning Areas</u> (National Forest)				
	*A5213	Cypress	1,949	1,949
	**B5198	Kings River	24,300	23,900
	05197	Oat Mountain	12,400	12,400
	05202	Dennison Peak	6,700	6,700
	05203	Moses	24,359	24,359
	05212	Scodies	48,000	48,000
			<u>117,708</u>	<u>117,308</u>
<u>Wilderness Study Areas</u> (Bureau of Land Management)				
	CA-010-029	Rockhouse	<u>36,277</u>	<u>35,557</u>
			=====	=====
			153,985	152,865

\* Has been recommended as non-wilderness by BLM. (FEIS, Central California Study Areas). Sequoia NF considered Cypress to be non-wilderness in all alternatives.

\*\* Sierra NF recommended Kings River to be non-wilderness in their Land and Resource Management Plan DEIS. Enactment of the Kings River Wild and Scenic River legislation in November, 1987, established this entire area as a Special Management Area, negating the need for Further Planning Area consideration.

Since the passage of the Wilderness Act in 1964, efforts to establish additional wilderness have increased significantly. Nationally there has been an increase in acreage designated as wilderness by Congress. In 1964, 54 areas were added with a total increase of 9.1 million acres. In 1981, 158 areas were added with a total of 25.1 million acres. In 1984, the California Wilderness Act added an additional 1.8 million acres.

The future demand for wilderness is difficult to estimate. The increasing age of the population implies a reduction in wilderness use, and the last few years have shown such a decrease. This could indicate a decrease in future demand. However, increasing demand for consumptive resources could trigger an upswell in preservationist attitude and an increase in the demand for wilderness.

Approximately nine percent of the Forest is in a further planning category. This portion was evaluated during the planning process and a recommendation made on which areas should receive wilderness status. The recommendation was made after considering the social, financial and physical impacts which would be produced by designating each area.

Selected areas were divided between wilderness and non-wilderness in some alternatives to support the theme of the alternative. In some cases, increased manageability for wilderness was provided by modifying the original RARE II boundary. The main reasons for modifying boundaries are for issue resolution, to provide a range of wilderness and non-wilderness recommendations and to display resource production levels.

Following is a summary of description for the one Wilderness Study Area and the four Further Planning Areas included here.

Detailed descriptions and evaluations for each Further Planning and Wilderness Study Area are provided in Appendix C of the EIS. The acreages in these narratives are derived from the Forest planning data base: they differ in some cases from acreages found in the RARE II literature. The data base is considered to be more accurate.

#### Rockhouse Wilderness Study Area (WSA)

The WSA is located on portions of Kern and Tulare Counties on the Kern Plateau. This area is administered by the Caliente Resource Area, BLM. Rockhouse WSA is actually split into two areas separated by an improved dirt road. The southern section is bounded on the south, east and north by the Canebrake/Long Valley-Rockhouse Basin Road, and on the west by the Sequoia National Forest boundary. The northern section is bounded on the north and east by section lines along the Kennedy Meadows Road, to the south by the Chimney Peak/Rockhouse Basin Road, and to the west by the Sequoia National Forest boundary. Access to the area is provided from Highway 178 to the Canebrake Road or Highway 395 up Nine Mile Canyon along Kennedy Meadows Road.

The area is dominated by pinyon pine covered mountains. Rocky slopes, poor soil development and low precipitation limit vegetative growth and cover in many portions of the area. Rockhouse WSA currently receives a moderate amount of recreation use. Dominant recreation uses are: hiking, equestrian use, off-highway vehicles (OHV's), and hunting.

Outstanding opportunities for solitude and a primitive unconfined type of recreation are prevalent throughout this unit. Dispersed recreation activities are challenging due to a lack of established trails. Scenic views from and within the Rockhouse WSA are excellent. Special features for the southern portion of the WSA included isolated populations of two sensitive plants: Needles buckwheat and Yosemite bitterroot. In addition, the southern portion of Rockhouse WSA contains one of the largest concentrations of the yucca-like plant, Nolina parryi ssp. wolfii, for the Southern Sierra Nevada.

#### Oat Mountain Further Planning Area

Oat Mountain Further Planning Area lies in Fresno County on the Home Lake Ranger District. This area is located along the main drainage of the Kings River immediately southeast of Pine Flat Reservoir. Oat Mountain is easily accessible from Fresno on a day-use basis. Paved roads provide access via Pine Flat Reservoir on the north of the Further Planning Area to Campgrounds 4-1/2, 4, and Mill Flat. Forest Service dirt roads 12S19,

13S86, and 12S01 provide access from the south and east. This area is approximately a 45-minute drive from Fresno. It is approximately a 4-1/2-hour drive from Los Angeles and 3-3/4 hours from San Francisco.

The Oat Mountain Area is dominated by dense foothill woodland and chaparral communities on the steep north-facing slopes with a blue and black oak woodland along the **summit** of Oat Mountain toward White Deer Saddle. Elevations range from 1,000 feet along the north boundary adjacent to Pine Flat Reservoir to 4,300 feet along the summit ridge of Oat Mountain. Terrain is generally steep throughout the study area.

Recreation use is primarily fishing, hiking, and hunting. **The** area contains about 11 miles of trail. Throughout the Oat Mountain area, human influence has not affected the ecological process **or** natural integrity of the area. Oat Mountain provides some opportunities for solitude and for primitive recreation. The area offers moderate opportunities for challenge and self-reliance. **The** area has no outstanding or special features.

#### Dennison Peak Further Planning Area

The Dennison Peak Further Planning Area lies in the northwest corner of the Tule River Ranger District in Tulare County. The area is contiguous to Sequoia and Kings Canyon National Parks. Access into the Dennison Peak area is provided by Balch Park Road north of Springville and Forest Road 19S09 along the North Fork of the Tule River.

The area is very rugged with steep slopes. Chaparral vegetation covers the lower slopes, and canyon live and black oak woodlands make up nearly 50 percent of the vegetative cover. Only one trail bisects the western end of the Planning Area. **The** remainder of the area has no developed access.

While opportunities for solitude and primitive recreation are high in the eastern three-fourths of the area, current use is very light. The highest scenic values lie in the center of the area east of Dennison Peak, though access is difficult. It is adjacent to Sequoia and Kings Canyon National Parks, of which portions were proposed but not included in wilderness designation. The natural ecological integrity of the area has been adversely influenced to a low degree. Signs of human influence are located only in the westernmost quarter of the Further Planning Area in the form of a fence running east-west and an OHV trail bisecting the area north-south.

#### Moses Further Planning Area

The **Moses** Further Planning Area is located in Tulare County in the Tule River Ranger District. This area is split into two geographically separated areas. The eastern boundaries of both sections are contiguous to the Golden Trout Wilderness. The Moses Area can be reached from Springville by California Highway 190 up the Tule River Canyon and Wishon road from the south; and Balch Park and Bear Creek roads from the north and west. It is approximately a four-hour drive from Los Angeles, and two hours from Bakersfield.

**The Moses** Area is diverse in topographical and vegetational characteristics. The boundary contiguous to the Golden Trout Wilderness is

"high country", being over **8,000** feet in elevation. The western boundaries are dominated by diverse stands of chamise chaparral.

Natural integrity and apparent naturalness are evident in the higher elevations. In lower elevations, these characteristics have been diminished by the introduction of unnatural forms such as fuelbreaks, a series of range improvements, motorized vehicles on trails, and nonnative forage species. The area does provide opportunities for solitude and primitive recreation, particularly at the higher elevations.

#### Scodies Further Planning Area

The Scodies Further Planning Area constitutes the most southeastern extremity of the Cannell Meadow Ranger District of the Sequoia NF and the Sierra Nevada. Located in Kern County, it consists of steep granitic mountain faces rising out of the desert. **The summit** is almost plateau-like in appearance. Vegetation varies from a desert ecosystem of Mojave desert species through Joshua tree woodlands, desert chaparral, sagebrush, oak woodlands to an extensive pinyon pine woodland at the higher elevations. A few stringers of Jeffrey pines are located on the north-facing slopes. Very little free water is available in the Scodies; and, therefore, is a severely limiting factor for biotic communities and recreationists.

The area can be reached from the north and south by U.S. Highway **395** and California Highway 14 to Highway **178**. Highway **178** also provides access to the area from the west. Several dirt roads allow access to various canyons and Forest Service four-wheel drive road **27S11** provides access across the summit. The Pacific Crest Trail bisects the Scodies area from Walker Pass to Bird Springs Pass. The nearest urban center is Bakersfield, approximately 1-3/4 hours drive.

Recreation use is estimated to be low compared with other areas on the Forest primarily because of the aridity of the area. OHV use and hunting are the dominant uses with hikers utilizing the Pacific Crest Trail. Throughout the greater part of the Scodies, human influence has not affected the ecological process or natural integrity of the area. However, the Scodies contain many opportunities for solitude and for primitive recreation. The relatively gently sloping terrain of the plateau-like **summit** provides opportunity for cross-country travel for hikers and hunters. Scenic views are abundant and of significant value.

#### 10. Human Resource Programs

The Human Resource Programs (HRP) on the Sequoia NF in **1980** were the Senior Community Service Employment Program (SCSEP), Summer Youth Employment Program (SYEP) sponsored through Self Help Training and Employment and Tulare County Human Services, the Kern High School District Forestry Program, California Conservation Corps (CCC), Work Experience through Tulare County Superintendent of Schools, Volunteers in the National Forest, Youth Conservation Corps (YCC) and Young Adult Conservation Corps (YACC).

Human Resource programs are a response to the political and social climate which will vary during the planning period. A reduction in program authorization generally results in environmental resource work being left

undone or not accomplished by appropriated funding. Authorization and funding of programs results in accomplishment of labor intensive projects in any resource area where suitable projects are available.

Program participants have worked in a wide range of Forest operations, including trail maintenance, meadow restoration work, fire suppression/prevention activities, facilities and vehicle maintenance, timber stand improvement projects, drafting, data processing, clerical and warehousing. The Human Resource Programs supplement the Forest work force and provide dollars and productive work to segments of the population, especially youth and older Americans who cannot readily gain entry into the labor market. The quality of the work produced for the most part has been high. The safety record of the youth programs has been quite good and the Summer Youth Employment Program safety record is outstanding.

In 1982, there were 1,065 individuals employed through Human Resource Programs: 11.2 person-years were worked through YACC; 47.51 person-years through SCSEP; 7.7 person-years through Volunteers in the National Forest; and 45.5 person-years through Hosted programs, which include Summer Youth Employment, Kern High School District Forestry Program, and CCC. For every dollar invested in Human Resource Programs, the return has been \$1.25.

The Forest is located in three fairly rural counties where high youth and adult unemployment (8.0 percent in Tulare County) creates strong demand for work experience and training.

Recruitment for SCSEP in remote Forest stations is difficult, but is not a problem at the Kernville or Porterville offices. Under the new Job Training and Partnership Act (JTPA), work experience students for the most part will not be available. The Summer Youth Employment Program will continue at current levels. There may be opportunity for the Forest to host work programs through JTPA under a volunteer basis.

The Forest's capacity to accommodate the current levels of programs will not change. The opportunity to involve people in productive work and the by-products, getting needed work accomplished along with HRP goals, is a high priority for the Forest.

## 11. Integrated Pest Management

Destructive insects, plant diseases, and animals can cause damage to trees and other forms of vegetation. The affects of this damage include mortality, reduced growth, reduced tree quality, top-kill, degradation and reduced seed production. At times, this damage can adversely impact the attainment of land management goals and objectives. Such damage can vary from year to year and place to place within the Forest.

There is no indication of current "epidemics" occurring on the Sequoia NF. With the exception of the 1975-1977 drought/insect/disease-related tree mortality, no catastrophic mortality situations have been encountered on the Sequoia within the last 10-15 years. Tree mortality on the Sequoia is usually the result of several pests and/or environmental factors acting together rather than the result of action by a single agent. The likelihood of future episodes of catastrophic pest-caused tree mortality depends

in part upon climatic conditions and the degree of effectiveness of mitigating actions taken by the Forest to reduce destructive insect, plant diseases and vertebrate pest impacts.

The common pests on the Forest are:

Annosus Root Disease: Fomes annosus is the most prevalent root disease on the Forest, affecting conifers in all major timber types. It most commonly causes tree mortality in discrete root disease centers. The impact of Fomes annosus may be lessened by treating cut stumps with borax in pine stands, by planting resistant species, and by reducing logging injuries to trees not scheduled for immediate harvest.

Armillaria Root Disease: The fungus Armillaria mellea is ubiquitous, but not usually damaging except in certain situations involving hardwoods. Any plans to manage hardwoods (especially oaks) and mixed conifer hardwood stands, should include considerations of potential problems from this pathogen. Proper tree cutting practices (sprout treatment and stump removal) can reduce damage.

Black Stain Root Disease: Ceratocystis wageneri has recently been discovered infecting groups of pinyon pine in the BLM Rockhouse Wilderness Study Area. It is unknown if the disease is present in the adjacent Dome Land Wilderness. A small infected area is known to occur in the Scodie Mountains near McIvers Spring. Treatment and control of the disease is technically feasible by harvesting trees in the area of infection and not regenerating the area for two to three years.

White Pine Blister Rust: Cronartium ribicola can be serious enough to prohibit the survival of young sugar pine, especially in areas with cool moist conditions during late summer and early fall. Areas with light to moderate rust hazard can be planted with mixed conifer species to reduce the potential for widespread mortality. Depending upon availability, rust-resistant sugar pine may be used in high disease-hazard areas.

True Mistletoe: This flowering plant parasite (Phoradendron bolleanum subsp. pauciflorum) infects white fir and, although not usually as damaging as dwarf mistletoe, it is serious in certain areas on the Sequoia. Another species of true mistletoe attacks incense cedar. The impacts of true mistletoe infestations are reduced growth, mortality, and predisposition to insect attack. Birds are the primary vector of the pest: and, therefore, control is very difficult. The most practical approach for control is to plant non-susceptible species where the mistletoe is concentrated.

Dwarf Mistletoe: Dwarf mistletoes (Arceuthobium spp.) infect all commercial conifers on the Forest except incense cedar and giant sequoia. The main impact of these parasites is growth loss and decreased vigor leading to increased possibilities of insect-caused mortality. The species that attacks ponderosa and Jeffrey pine is the most damaging. These mistletoes can be reasonably controlled through specific silvicultural stand treatments.

Bark Beetle: The most important bark beetles (Scolytus and Dendroctonus spp.) on the Sequoia are the fir engraver, and the western and Jeffrey pine

beetles. In general, bark beetle problems are often associated with trees/stands that have been weakened or stressed by some predisposing agent or condition. Predisposing factors include root diseases, dwarf and true mistletoes, oxidant air pollutants, drought, and competition caused by overstocking.

When large numbers of trees are stressed, bark beetle populations may increase, and healthy trees may also be killed. The best opportunity to mitigate bark beetle related damage is through prevention. Prevention activities include managing the vegetation to promote healthy stands and implementing measures to reduce diseases. Under certain conditions where trees come under temporary, rectifiable stress, individual tree protection by chemicals may be warranted. Currently, carbaryl insecticide is registered as a prophylactic treatment for pines against the mountain and western pine beetles.

Pine engraver beetles (Ips spp.) can also cause significant damage. They prefer to attack and breed in fresh, green slash: but when high population levels develop, standing trees are often attacked. Trees that are stressed are also more susceptible to top-killing by Ips. Pine engraver problems can be prevented through planning, by proper slash disposal, timing of timber harvest activities to reduce the amount of green slash available in the spring and early summer, and by thinning dense young-growth stands to help maintain their thrift and vigor.

The wood borers, Tetropium abietis in fir and Melamophila californica in pine, are widespread, but usually at secondary importance.

Pocket Gopher: This is the major vertebrate pest on the Forest, especially in white and red fir plantations. Pocket gophers (Thomomys spp.) damage seedlings and saplings by clipping and girdling roots and stems, usually resulting in mortality. Damage by this pest occurs on 2,000-3,000 acres annually. Control alternatives include baiting and using strychnine-treated grain, trapping, vegetation control, modifying harvest and site preparation methods, and using individual tree protectors.

Ground Squirrels and Chipmunks: Ground squirrels, chipmunks, and other small rodents may be serious pests in campgrounds and other recreational facilities. These animals are occasionally carriers of bubonic plague (Yersinia pestis) and other diseases: and, sometimes, cause damage to structures and facilities with their chewing and digging behavior. Integrated management includes public awareness efforts, trapping, toxic baits, fumigants, sanitation, new designs in facilities, and habitat modification to mitigate and divert problems.

The demand for control of pests is directly related to their impact on human activities and resources. An integrated pest management (IPM) approach is used to implement and coordinate activities needed to prevent/reduce pest-related problems on the Sequoia NF. This approach recognizes that pest management is an integral part of resource management and that insects, diseases, plants and animals are established elements of forest and range ecosystems. They are considered pests only when they interfere with the attainment of management goals and objectives. For more

information on pest management, refer to the Regional Environmental Impact Statement on Vegetation Management.

## 12. Lands

### a. Landownership Adjustment

The Sequoia NF administers about 1,119,000 acres of National Forest System lands. In addition, there are about 54,000 acres within the boundaries of the Sequoia NF that are privately owned or State owned. The nonfederal land consists of many small, scattered ownerships. Their effect on management activities, while locally intense at times, does not have the major effects common on other, less well-consolidated forests.

Land ownership adjustment is a long range program and the Sequoia NF will only consider dealing with willing proponents. As lands and financing become available, lands needed to meet management objectives may be acquired.

### b. Land Line Location

There are over 700 miles of boundary line between public and private land located within and adjacent to the Sequoia NF. The exterior boundary adjoins several communities, but the greater portion adjoins undeveloped range and watershed land.

Presently, the Forest surveys, marks and posts an average of 15-20 miles of boundary line each year. About 130 miles of boundary lines have not been adequately surveyed, marked, and posted to date. The Forest has targeted the year 2000 for the completion of the land line location work. In order to do this job it will be necessary to mark and post approximately 37 miles per year.

Encroachments onto Forest land from private land activities are an increasing problem. The management solution has been to embark on a 20-year project to mark and post all boundary lines. This will enable neighbors to know the location of the boundary and will begin the process of removing encroachments. In certain cases, where immediate removal will cause great hardship on the private interest, a permit, limited as to time, may be issued.

An average of three encroachments per mile of all types are uncovered by the marking and posting work. Resolution of many of these cases is quite time consuming. A few can be resolved quickly by contacting the landowner and working out removal arrangements directly.

Demand for locating and posting the true boundary line has increased. This stems from the increasing developments within and adjacent to the Forest, increasing concern about encroachment, and the need to minimize the time invested in resolving them.



### c. Rights-of-way Acquisition

Access to the Forest is very important for management of resources and to provide public access. The Sequoia NF's rights-of-way program has concentrated on timber access roads. Existing Forest System roads and trails cross the land of over 30 private landowners without rights-of-way and total about 45 miles. In addition, rights-of-way for new roads and trails will be needed to resolve management and public access problems.

There are several factors which make acquisition more difficult. Land values are rising. In addition, there is increasing reluctance on the part of landowners to allow access by the general public: yet increasing numbers of people want more access to and through the Forest.

### d. Non-Recreation Special Uses

Use of approximately 2,151 acres of Sequoia NF is authorized by 279 special-use permits. These permits allow occupancy and use by the private sector and local governments. Permits are for agricultural, industrial, public information, transportation, utilities, communications, and water uses.

The number of new permits on the Sequoia NF ranges from 18 to 22 per year. However, proper stewardship of the public lands requires fair administration of the uses made by special interest groups and individuals. Continued emphasis must be placed on:

- 1) reducing commitments of public land to nonpublic uses,
- 2) deriving fair returns to the public for those uses permitted; and
- 3) equitable administration.

Demand for special-use permits is tied closely to the development of private land adjacent to the National Forest System lands. This factor will continue to grow and will increase the demand for uses of the National Forest.

## 13. Law Enforcement

Law enforcement includes the protection of government property, employees and forest resources. It is a management concern because of the potential for injury to employees and visitors, and the potential for losses, damages and costs to the natural resources and property. Law enforcement on the Sequoia NF is also a concern to the Forest visitor. The consensus is that law enforcement on public lands is essential and more emphasis should be placed on law enforcement by the Forest Service to provide a suitable level of visitor safety and property protection.

There has been an increase in illegal use of National Forest System lands for the cultivation of marijuana. Employees are subjected to threats and possible violence by the growers. The Sequoia NF works closely with State and county law enforcement agencies investigating and eradicating marijuana gardens on National Forest System lands.

Because of **the** concentrated use of Forest resources and the associated requests for assistance, the law enforcement job is beginning to exceed our current capability. The impacts and associated problems **are** obvious in highly concentrated recreation areas such as the **Kern** River Canyon, Lloyd Meadows Road, and Coffee Camp area in **the Tule** River Canyon. The effect is an increase in vandalism, theft and destruction of government property, wildland arson and occupancy trespass. Threats and assaults to Forest Officers while in the performance of their duties is becoming more frequent. Activities of groups in opposition to Forest Service management direction and in conflict between each other while on National Forest System land are on the rise. Civil claims for and against the government are becoming more frequent and complex, requiring more time and a greater investigative skill. Assistance and cooperation with other local and Federal law enforcement agencies is good but in many cases is **limited** because of other law enforcement priorities and/or lack of personnel.

The use of the Forest's resources and facilities by the forest visitors will accelerate in the years to come in proportion to the increase in population. This situation will have a profound impact upon the Forest law enforcement program. **The** frequency and complexity of the violations of laws, rules and regulations will be directly affected. **The** Forest will be faced with a challenge in attempting to maintain an effective law enforcement program that will be sensitive to visitor and management needs. **It** will become imperative for the Forest to implement improved methods and programs (including interpretation and signing) to meet its responsibility and commitment in law enforcement.

Currently the Forest has one special agent assigned full-time law enforcement responsibilities. **An** additional six fully trained and qualified (Level IV) officers are assigned part-time law enforcement responsibilities on the Ranger Districts. Cooperative agreements are in force with the Tulare and Kern County Sheriffs. **The** Districts' officers will eventually be assigned full-time to law enforcement with emphasis placed upon violation prevention and resource protection.

#### 14. Minerals and Geology

Geologically, the Forest is dominated by granitic rocks with small regions of metamorphic rocks. Volcanic rocks are rare. Mining activity is primarily associated with the metamorphic rocks.

Past mining activity has been mostly along the Upper and Lower Kern Canyon and in the Piute and Greenhorn Mountains. Some activity has occurred near Mountain Home State Forest and within the Hume Lake District during the 1930's and 1940's. Currently there are about five small mines in operation on public **or** private land within the Sequoia NF boundary. Activity is not expected to increase much in the next 10 years. Even though the Sequoia NF has received minerals input for Further Planning Area evaluation, use and production is not a Forest issue **or** concern because of low mineral potential.

Past mining activity has been mainly for gold, uranium, and tungsten. Current gold mining activity is confined mostly to weekend recreational prospecting such as gold panning. Uranium is not mined at the present, but

there are proven reserves. Tungsten is being mined in small quantities. The Forest contains about 16,000 acres which have had prior mining activity.

Mineral potential ratings were developed for locatable and saleable minerals including the energy mineral commodity uranium. They were assigned by the USDA Forest Service Region 5 South Zone Minerals Unit after evaluating basic geology, levels of interest, mineralization, exploration/prospecting and mines. The Forest contains about 170,000 acres of low potential: 670,000 acres of medium: and 335,000 acres of high/very high potential.

Present overall demand for gold, tungsten, and uranium is low as evidenced by the amount of activity but is expected to increase. Demand for gold is expected to increase at about two percent per year. The most probable areas for development are in the Petersburg area, eastern Greenhorn Mountains, and in the Piute Mountains. Demand for uranium will likely be influenced by environmental issues. Highest potential for development is located near Hobo Campground. The demand for tungsten is expected to increase at a rate of about four percent per year. The area with the most potential for tungsten production is located in the Golden Trout Wilderness and sections of the Kern Canyon.

Tungsten and gold are nationally important resources. From the period 1975-1978, over 50 percent of United States consumption of tungsten and gold came from foreign sources. Tungsten is a strategic mineral. The U.S. Government stockpiles tungsten to maintain a buffer from demand fluctuations. The stockpile of tungsten is in excess of estimated needs.

Rock aggregate and decomposed granite are the most abundant forms of mineral material for construction. Forest Service demand should continue at 7,000 tons per year. Supply should meet Forest Service demand in the next 10 years. Afterwards, considering current trends, demand should drop in half primarily because of a reduction in road construction. A Forest-wide inventory (as part of a Geologic Resources Inventory) is needed for later project planning. Some hard rock granite is available for making aggregate but the quality is not high.

Possible geothermal resources occur along the Kern Canyon, near Monache Meadows, at California Hot Springs, and along the eastern edge of the Forest. Recently, geothermal exploration and possible development has been proposed for the Monache Meadows Area. A detailed analysis studying a proposal for geothermal exploration and possible development in the Monache Meadows area was recently completed. Most of the study area was located on the Inyo NF. The central analysis conclusion was that, due to conflicts with other resources, the proposal should not be permitted. Oil, gas, and other leasable mineral potential on the Forest is very low. Considering the current situation, neither geothermal resources nor oil and gas resources are likely to be developed on the Sequoia NF during the planning period.

Prospecting, locating, and developing mineral resources within National Forests is authorized by the 1872 Mining Laws (30 U.S.C. 22 et seq.) and The Organic Act of June 4, 1897. The Act also allows the Secretary of

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Agriculture to set out rules and regulations in connection with operations authorized by mining law. These regulations, which minimize impacts on the resources or define procedures can be found in 36 CFR 228 (locatable minerals), 36 CFR 251 (disposal of saleable mineral materials), and 36 CFR 293.14 (mineral leases and permits in wilderness). Contacting prospectors on Notices of Intent to Operate, reviewing Operating Plans, and on-the-ground checking are done to ensure compliance with the regulations.

Generally, the authority to manage locatable and leasable mineral resources is retained by the Secretary of Interior. Agreements, embodied in Memorandums of Understanding between the Secretaries of Agriculture and Interior which share various work processes, are found in ISM 1500, External Relations. The authority for the management and disposal of mineral materials (including but not limited to common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay) is with the Forest Service. The detailed authorities and direction for locatable minerals, mineral leasing, and mineral sales are in ISM 2800, Minerals and Geology.

Sequoia NF System lands are generally open to mineral entry since most of them are in public domain status. However, 30,304 acres were purchased or donated under the Weeks Act which provides that minerals on these lands would be developable under leases. Of this area, outstanding rights apply to only 1,280 acres. The sellers reserved all mineral rights for these areas, negating the leasing of any minerals until 1999. On 30 acres relinquished in a land exchange, the Federal Government reserved all geothermal resources. In another exchange, all fissionable materials on 1,266 acres were reserved.

The Forest Service does not initiate mining of locatable minerals, but responds to private requests for exploration and development. With the exception of about 6,194 acres withdrawn by the Forest Service (for developed recreation, administrative sites, and roadside strips) and 11,660 acres withdrawn for other agency use. The Forest is open to mineral development subject to the mitigation of impacts to surface resources.

Roads provide adequate access to most areas with mineral potential. Access to wildernesses and special areas when withdrawn (i.e., Wild and Scenic Rivers, Botanical Areas, and Research Natural Areas) is subject to valid existing rights. When not withdrawn, access for special areas is restricted to the extent that the integrity of the area involved must be maintained.

Section 204 of the Federal Land Policy Management Act (FLPMA) requires that all withdrawals be reviewed by 1991 to-determine whether and for how long, their continuation would be consistent with the original purpose for which the land was segregated from mineral entry. The Wilderness Act of September 3, 1964, provided that effective January 1, 1984, the wilderness areas are withdrawn from all forms of appropriation under the mining and mineral leasing laws. Valid existing rights on January 1, 1984, were preserved. The California Wilderness Act of 1984 withdrew designated lands upon enactment.

## 15. National Natural Landmarks

The Department of the Interior, National Park Service, is responsible for administering the Natural Landmarks Program as established by the Historic Sites Act of 1935. A series of theme studies have been completed by the Park Service which identified candidate National Natural Landmarks sites on National Forest System land. These are sites which potentially represent a particular niche in the ecological or geological character of the United States.

Eleven candidates on National Forest System land were submitted to the Sequoia NF for evaluation. The sites, listed in alphabetical order, with approximate acreage and location follow:

1. Bald Mountain	400 ac	T22S, R34 & 35 E.
2. Bodfish Piute Cypress Grove Botanical Area	630 ac	T27S, R32 & 33E.
3. Cedarbrook Forest	500 ac	T14S, R27E.
4. Dome Lands	153,000 ac	Dome Land Wilderness and vicinity.
5. Greenhorn Piute Cypress Grove	70 ac	T27S, R32E.
6. Hobo Ridge	600 ac	T27S, R32E.
7. Inspiration Point	150 ac	T28S, R34E.
8. Little Kern River Basin	100,000 ac	T18 & 19S, R32E.
9. Long Canyon	3,600 ac	T26 & 27S, R34E.
10. Moses Mountain	500 ac	T19S, R30E.
11. Sirretta Pass	1,000 ac	T23S, R34E.

Moses Mountain and Long Canyon are identified within this Plan as potential Research Natural Areas. Bald Mountain, Sirretta Pass and Inspiration Point are candidates for Special Interest Areas (botanical). The Bodfish Piute Cypress is an officially classified Botanical Area.

One area, Little Kern River Basin, is entirely within the Golden Trout Wilderness; and another, Dome Land, is primarily within the Dome Land Wilderness and the BLM Rockhouse WSA. Since these areas are located within a wilderness, they were not deemed necessary to pursue additional status.

The Greenhorn Ridge Cypress Grove represents an insignificant stand. The Cedarbrook site is partially within private ownership and does not possess a significant representation of the ecosystem present. The Hobo Ridge site contains Piute cypress that is well represented in the Bodfish Grove.

## 16. Office of Information and Interpretive Services

The Office of Information (OI) and Interpretive Service (IS) provides an important communication link between Forest managers and the public. The Forest is within one hour's drive of two large urban areas in the San Joaquin Valley (Fresno and Bakersfield) with more than 500,000 people. It is within a 3-1/2-hour drive of the Los Angeles Basin, the largest population center in the State. Local news media include: 40 newspapers, 12 television stations, 30 radio stations and four bureaus, including non-English language media.

Forest Issues identify a need to provide programs to serve the Forest users. With more than 300,000 individuals of Hispanic background residing in the three-county area (Fresno, Tulare, Kern), there is a need for bilingual information programs. Hispanics make up a large portion of the user group of the Western Foothills and Kern River. Interpretive Services in these areas should reflect the user groups. Currently, the Forest publishes press releases to three Hispanic newspapers, six Hispanic radio stations, and one Hispanic television station. An average of four television shows are presented annually in Spanish to publicize the opportunities available in the Forest.

The Forest IS plan identifies and evaluates opportunities for interpretive areas. It also sets directions in each IS area for each Ranger District and the Forest. Current management direction is to provide:

- 1) opportunities for visitors and potential visitors to get basic information about the Forest;
- 2) on-the-ground interpretation and visitor contact in areas of heavy use;
- 3) make the Forest visitor's stay a more enjoyable and meaningful experience; and
- 4) assist resource management objectives through public understanding.

The OI at the Supervisor's Office and District Ranger stations provide news releases and personal and telephone contacts to the public and media. Media cover major events (e.g., holiday weekends and major fires). OI provides advice and assistance in public participation and involvement related to resource planning and information on recreation opportunities, resource management, fire prevention, and other program activities and policy issues.

Although the Forest has direct economic and social impacts on people in the surrounding communities, many long-term urbanites are unaware of the National Forest and think of the area simply as "the mountains." More people recognize the presence of public lands and public recreation facilities; but do not distinguish between the Sequoia NF and the Sequoia and Kings Canyon National Parks. These people are often unaware of the management differences and natural resource issues associated with the Forest and the Parks.

The urban public is generally not involved with Forest activities and, consequently, is uninformed. The result is weak public support for timber management, abuse of public facilities, many person-caused fires, and serious accidents by Forest visitors. Besides personal and environmental damage, this lack of information demands greater outlays of Forest employee time and taxpayer dollars.

With over 50 percent of the State's population within a few hours of the Forest, OI is continually flooded with inquiries when environmental issues or major events occur. In this sense, the Sequoia has extra media responsibilities, which are regional in scope. Increasing use will create the need for efficient and effective means for communicating with the public. Public understanding and support of Forest programs and activities will likely become more critical as more people use and become interested in the Forest and its resources and management.

The Sequoia NF must maintain a good working relationship with the media and the general public. Public involvement in all resource management plans is also likely to increase. Goals for public involvement and resource management education must be well-defined to maximize benefits from efforts. Resolution of public issues and emerging issues related to resource management planning and on-going Forest programs will become more critical.

Forest Public Affairs programs and activities will become more an integral function of all Forest employees. Concessionaires will be an integral part of communications efforts. Although most communications will be self-service oriented, the mix and level of use of the above communication media relate directly to the theme of each alternative.

The Sequoia NF needs to continue an aggressive, positive, and creative office of information and interpretive services. Providing information to the public and involving the public in Forest activities and programs are essential to public understanding of resource management objectives. Increased use of print and electronic media can improve efficiency and reduce costs.

#### 17. Range Management

Rangelands are composed of plant and animal communities and their physical environments. The components of rangelands (soil, water, climate, solar energy, topography, fire, animals and people) are closely related. A change in one affects the others.

Management of rangeland vegetation is the application of knowledge, skills, and techniques based on ecological principles to maintain or reach certain vegetative Objectives. Achievement of these objectives will provide for an integrated mix of related resource values and uses which include soil protection, water quality and yield, open space, plant diversity, wildlife habitat, livestock forage, recreational use and landscape quality.

The underlying value in all decisions affecting range vegetation is maintenance or enhancement of the soil resource. Cost-effectiveness is also a necessary factor in the evaluation of these decisions.

Management of range vegetation includes:

- 1) Inventorying and analysis of range vegetation and uses to form a basis for decision making;
- 2) Monitoring ecological status, resource values, and results of management actions, and;
- 3) Gaining cooperation and understanding from others to achieve range vegetation management objectives.

One of the more visible uses occurring on Sequoia NF ranges is livestock grazing. This use is important, not only for vegetation management purposes, but to sustain ranch operations which are a source of livelihood, to sustain a rural lifestyle, and to promote sound land use practices.

Range management programs on the Forest cover about 1.01 million acres of grassland, chaparral, and open forests. Of this total acreage, 171,800 acres are suitable for use by livestock. This large area is divided into

approximately 55 range allotments, located in three counties. Some 47 paid term grazing permits are issued to graze approximately 65,000 Animal Unit Months (1987 data). Another 4,000 AUM's occur as temporary or recreational stock use. Grazing occurs on two basic types of grasslands, annual and perennial. Annual grassland occurs at lower elevations of 1,000-4,000 feet and perennial grassland generally occurs in wet meadows located from 4,500-10,000 feet. (See Table 3.18)

**The** general administrative management of livestock grazing includes inventories of range resources, determination of grazing potentials, designation of range allotments, granting of grazing permits, and the inspection and administration of range grazing to assure environmentally sound use of the range resources. A major factor which influences the quality of the range environment is the level of administration applied to each grazing allotment. To provide linkage between environmental management of the range resource and administration livestock grazing, the Sequoia NF recognizes the use of grazing systems and allotment management strategies.

Grazing systems are the means for obtaining the kind of grazing prescribed by the management strategy. Some grazing systems entail no more than confining livestock in a fenced area, providing them with water and salt, and removing the animals when the vegetation has been grazed to a desired amount. Other systems *are* quite complex and involve rotating a herd of cattle among several pasture units during a given grazing season with the order of rotation varied between years.

**The** three management strategies in general used on the Forest vary from the use of forage by livestock within the apparent capacity of the rangeland, to an intensive livestock management approach calling for complex cultural practices. **These** management strategies consider the stocking levels of livestock as well as provide for varying use patterns which result from livestock distribution and range improvements.

**The** quantity, quality, and availability of range forage can be substantially increased through greater use of structural and nonstructural range improvements. Structural improvements, such as fences and water developments, are means for controlling the movement and distribution of livestock and facilitating their handling. Nonstructural improvements are practices (such as seeding, fertilization, and plant control) that are designed to increase production, nutritional quality, and availability of forage.

Excess forage exists in many areas because of inadequate water or because livestock do not use the area. Under intensive and improved management systems, these areas often can be brought into productive use by constructing fences and developing additional water supplies. **These** opportunities are best, of course, in areas where growth of vegetation is adequate and soils are stable.

**The** result of current management direction is that forage production and livestock use of rangelands has been gradually increasing. **There** has been a seven percent increase in AUM's between 1973 and 1982, with existing supply now at 63,000 AUM's.



The Sequoia NF complements the annual cycle of the California Annual Grass type that is typical of the San Joaquin Valley. The basic use objective is to keep the lactating cow on a good supply of green forage to maximize calf weight gain through their growth and development period. By moving cattle to the higher elevations in the Forest, the Valley ranchers extend the time cattle are on green forage. The use of this additional green forage produces the maximum possible pounds of beef from both private and National Forest rangelands without supplemental feed.

These range lands are of critical importance to many ranchers in the local livestock industry. Use of National Forest System lands for seasonal grazing in the summer months is essential to the continuing operation of these ranches, and thus to the economic health of many rural communities.

The limiting factor that determines the economic efficiency of many local livestock operations is the amount of Federal range available to compliment forage produced on the privately owned range.

It is anticipated that the number of grazed acres in Tulare and Kern Counties will remain relatively stable throughout the planning period. There will be fewer ranchers in the livestock industry, but they will have larger herds of cattle. Beef-cow numbers should remain constant with a slight reduction in cow/calf operations and an off-setting increase in stockers.

This industry is capable of utilizing all of the additional forage that can be produced in the Planning Area. Future demand is expected to exceed potential supply.

The potential supply of livestock forage on the Sequoia NF based on biological potential is estimated to be 96,000 AUM's. This could be achieved by intensively managing about 1.49 million acres of range in the Planning Area, which is 15 percent greater than the current acreage.

Table 3.18 - Range Capable and Suitable for Grazing

A.	Available Acreage (in 1982). . . . .	<u>Acres</u>
1.	Total NF acres open for grazing.	1,011,109
2.	Acres of waived private lands in grazed allotments	6,218
	AUM's on waived private lands in grazed allotments	3,457
3.	Acres in special-use pastures	724
B.	NF acres inside grazed allotment by:	
1.	Permanent Range	
	Hardwood Forest & Annual Grass	99,000
	Conifer Forest	15,900
	Chaparral	12,100
	Herbaceous	8,800
	Sagebrush & Pinyon-Juniper	<u>19,999</u>
	TOTAL	154,800

Table 3.18 - Range Capable and Suitable for Grazing (continued)

2.	Transitory range inside designated allotments		
	Conifer Forest		6,000
	Hardwood Forest		<u>11,000</u>
	TOTAL		17,000 acres
C.	Potential increase in <b>AUM's</b> ( <u>constrained maximum</u> ). . . . .		<b>AUM's</b>
1.	Hardwood Forest (Oak-Annual Grass Savanna)		6,000
	annual grass	85%	
	perennial grass	5%	
	browse species	10%	
2.	Hardwood Forest (Oak Woodland)		800
	annual grass	78%	
	browse species	20%	
	perennial grass	2%	
3.	Conifer Forest (Transitory Range)		6,000
	perennial grass & forbs	10%	
	browse species	90%	
4.	Chaparral		13,300
	browse species	90%	
	annual grass	10%	
5.	Meadows		1,650
	perennial grass & forbs	100%	
6.	Pinyon-Juniper, Sage		500
	browse species	80%	
	perennial grass & forbs	15%	
	annuals	5%	
	TOTAL		<u>28,250</u>
D.	Existing 1982 Use (Total <b>AUM's</b> permitted in 1987). . . . .		<b>AUM's</b>
1.	cattle (term permit)		65,248
2.	cattle (temporary permit)		2,389
3.	recreation horses		<u>1,504</u>
	TOTAL		69,141

## 18. Recreation

### a. Overview

The Planning Area, with its range of elevation, climate, vegetation, and topography, offers a broad spectrum of recreation opportunities and settings for all seasons of the year. Principal outdoor recreation activities include camping, motorized travel, water-related activities,

hiking, horseback riding, and resort recreation residence **use**. The recreating public can pursue activities in areas of high **use** along the Kern and Tule Rivers, Hume **Lake**, parts of the Lloyd Meadows road and the Kern Plateau or areas of less intensive **use** in other parts of the Forest. They can experience primitive situations within the designated wildernesses. In 1982 the area received nearly 2.5 million recreation visitor days (RVD's) and ranked 11th in the Pacific Southwest Region and 29th in the Nation for total recreation **use**. Approximately 36 percent of the RVD's occurred in developed sites and 64 percent in dispersed areas (4 percent of which were in designated wildernesses).

An examination of Forest recreation records for the period 1977-82 reveals a decrease of about 31 percent. The greatest reason for this change centers on the reporting techniques used prior to 1980. In 1981 and 1982, **use** had decreased at three percent per year, due primarily to the above-normal snow pack which delayed opening of the high country and attendant facilities. Apart from data anomalies and occasional "long winters", **use** is expected to increase.

Forest **use** projections are based on population growth projections of the five southern California counties of Los Angeles, Riverside, San Bernardino, San Diego, and Santa Barbara. Approximately 90 percent of the Sequoia NF **use** originates from these counties, which had a 1980 population total of 11,241,300 and is projected to reach 14,814,990 by the year 2000.

Table 3.19 - Recreation Use Projections on the Sequoia NF (in Thousand RVD's)

			2000	2010	2020	2030
Developed	882.2	937.0	1,043.5	1,082.0	1,213.0	1,279.0
Ski Areas	3.3	297.0	320.5	419.0	547.0	708.0
Dispersed	1,582.0	1,900.0	2,158.0	2,438.0	2,712.0	3,000.0
Total	2,467.5	3,134.0	3,522.0	3,939.0	4,472.0	4,987.0

b. Recreation Management

Until recent years, the traditional Forest Service approach to recreation management has been to provide facilities to support specific recreation activities. Campgrounds, picnic areas, and trails were the primary focus of management efforts, as well as allocating lands for private construction and operations of resorts, camps, recreation residences, stores, and campgrounds. This emphasized concentrated site recreation and "traditional" recreation **uses**.

During the last decade, researchers and managers alike have recognized that an overemphasis on these types of recreation facilities was not providing for the recreation needs of the American people. Increasing environmental awareness, pursuit of nontraditional outdoor activities, social pressures in urban situations, improved technology in clothing and equipment, and an increase in leisure time have resulted in changes in outdoor recreation

pursuits. This has created a need for a different recreation management approach.

New direction in leisure research focused on the socio/psychological outcomes of recreation. Results show that the benefits derived from an activity were not specific to that activity but were common to a group of opportunities available in a particular environmental setting. Acceptance of this concept recognized that merely providing facilities for concentrated **uses** was not fulfilling the spectrum of recreation needs of the public. Outdoor recreation management need not be activity oriented, nor attempt to anticipate and manage every possible recreation activity. Instead, the approach is to manage recreation opportunities by managing the social and physical setting where various activities take place.

These concepts resulted in creation of the Recreation Opportunity Spectrum (ROS): a framework for defining the types of outdoor recreation opportunities the public might desire, and identifying that portion of the spectrum (from Primitive to Urban) a given National Forest might be able to provide. These classes are: Primitive (P), Semi-Primitive Non-Motorized (SPNM), Semi-primitive Motorized (SPM), Roaded Natural (RN), Rural (R), and Urban (U). The glossary contains a definition of these terms. The current, **as** well as potential supply, has been calculated for developed and dispersed activities by ROS classes and acres affected. (See Tables 3.20, 3.21 and 3.22.)

### c. Demand for Recreation

To analyze recreation demand, activity opportunities have been selected as key activities relative to specific ROS classes and to serve as identifiers of demand within a particular setting. In general, on a National level, snow and ice activities show the most pronounced increases in participation, projected to increase 140 percent by 2030. Demand projections for land and water activities also suggest that participation will continue to increase. However, except for developed and dispersed camping, which are projected to experience demands greater than those for several water and snow activities, increases in participation in these activities tend to be modest when compared with other activities.

The projections for land activities in the Pacific Southwest indicate large increases in participation. For the Sequoia NF, participation projections are based on projected 1.54 percent increases annually in the southern California population.

#### CAPACITY (PAOT) AND DEMAND (MRVD's) BY ROS CLASS

ROS CLASS	CAP.		DEMAND (MRVD's)					
	(PAOT)		1982	1990	2000	2010	2020	2030
P	1,055	2	2	3	3	3	3	3
SPNM	6,241	88	101	111	125	140	155	155
SPM	41,743	42	46	53	63	68	73	73
RN	767,749	1235	1668	1877	2166	2491	2831	2831
R	48,794		1235	1415	1576	1744	1921	1921
	865,582	2467	3052	3459	3933	4446	4986	4986

Projections of demand by activity group (land, water, snow) and selected types of activity were completed for the Sequoia. The projections for all activities suggest a substantial increase in use levels. For example, land activities show a 30 percent rise between 1980-2000, and a 45 percent rise between 2000-2030. Similar increases are shown for water (30 percent and 50 percent respectively) and snow (35 percent and 60 percent).

Demand for recreation opportunities in developed public sector sites can be met with existing facilities until shortly after 2000. This is based strictly on capacity figures and does not take into account the desirability of some sites (which are presently heavily used) and the fact that other sites, with no primary "drawing card" (e.g., water orientation), receive very little use. Some sites will reach capacity in the next few years. Beyond the year 2000, projected demand can only be met by construction of additional facilities. Recent budget trends have been to provide for rehabilitation of specific health and safety items within existing sites. Little funding has been available for total site rehabilitation or construction of new sites.

Demand for recreation opportunities on dispersed areas can be met throughout the planning period, although certain ROS classes will be used almost to capacity by the year 2030. The most critical of these areas are the river zones, areas which provide recreation opportunities most desired on the Sequoia NF.

d. Developed Recreation Opportunities

On public lands, site development focuses on facilities that serve the recreating public. Recreation use tends to be concentrated around special scenic or recreation features, facilities, or travel routes. In the Sequoia NF, developed recreational sites account for 36 percent of the total recreational use but occupy only 0.1 percent of National Forest System lands.

The following two tables display developed use by acres and capacity and potential sites.

Table 3.20 - Existing Capacity by Developed Sites (PAOT) Acres, and RVD's

Site Kind (No. of Sites)	Acres Affected	1982 RVD's	ROS Class		Total PAOT
			R-PAOT	RNPAOT	
Observation (5) (Vista Point)	5	4,900	20	137	157
Swimming (2)	4	24,800	300	---	300
Campgrounds - Family (48)	402	454,404	2,440	3,250	5,690
Campgrounds - Group (5)	26	13,300	150	280	430
Picnic Grounds (9)	30	56,500	385	145	530
Resort (6)	43	63,000	395	315	710
Organization (11)	182	143,200	0	1,735	1,735
Other Rec. Concessions (3)	18	21,700	700	110	810
Rec. Residences (19)	165	96,500	830	650	1,480
Information sites	---	3,900	---	---	---
Forest Totals	875	882,000	5,220	6,622	11,842

Thirty-five sites on the Forest have been identified as having the greatest potential for development since they **are** located on areas having **less** than 10 percent slopes and have attributes most desired by potential users.

Table 3.21 - Potential Developed Capacities

<u>No. of Sites</u>	<u>ROS Class</u>	<u>Total Acres</u>	<u>Estimated Capacity (PAOT)</u>
2	SNM	30	270
1	SM	11	99
31	RN	590	7670
1	R	2	<u>34</u>
			8073 Total

Sites on public lands are developed with facilities because of their specific capabilities (e.g., scenic values) **or** to permit use of areas otherwise unavailable because of fire hazards **or** fragile environments. Some sites, such as most of the family and group campgrounds and the picnic areas, economically provide services like safe drinking water, sanitation facilities, and/or other conveniences which are necessary for maintaining some recreation opportunities. **Many** of these sites will need modification to provide for the handicapped and elderly. As **new** sites are constructed, more attention must be paid to the needs of an increasingly older population.

Sites **may** also be developed on public lands at a central location, such as a visitor information center, in order to inform and educate visitors. For **many** people, these centers, with their associated interpretive services, are an important part of the outdoor experience. **On** the Sequoia **NF**, 12 information sites provided service **for** almost 4,000 RVD's in 1982. These facilities are located in areas of especially high use; and help to orient visitors to recreational opportunities, to interpret the natural and cultural history of the area, and to develop an appreciation for the basic ecology, management, **use**, and protection of the Forest. In so doing, interpretive services fulfill an important role by encouraging user self-regulation while enriching the recreational experience.

Providing information to recreationists using the Sequoia **NF** is an increasing challenge. **A** high percentage of Forest **users** come from the Los Angeles Basin and there are difficulties in disseminating recreation information. Low-power radio stations, centralized information kiosks, improved maps and leaflets describing opportunities on the Sequoia **NF** are techniques which could be used to more effectively provide recreation information.

Developed recreational sites provide a variety of opportunities which encourage private developers on either public **or** private lands. Six resorts, eleven organization camps, and nine outfitter-guide concessions presently provide recreation services to the public. Because developed and dispersed recreational activities are often complementary, such site

developments contribute to the availability of a wide range of recreational opportunities, which in turn promote a private operation's success.

Discussion continues over defining the proper roles of the private and public sectors in meeting demands for developed facilities such as campgrounds. Sentiment in the public sector has increasingly been one of leaving the development of more capital-intensive, convenience-oriented facilities to the private sector. Currently, however, competition from low-priced public facilities, the promotion of public facilities through interstate sign programs, and the tendency of the public sector's promotional and informational programs to overshadow those of the private sector appear to create obstacles for the provisions of developed camping by the private sector. Increases in fees at public sector campgrounds and lower level of services will tend to reduce this inequity. Thus, private sector developments will be more attractive and should be encouraged.

While there are large numbers of developed outdoor recreation areas throughout the United States owned by the private sector, the Sequoia NF provides almost all of the facilities for developed camping in the local area. Only three resorts on the National Forest provide camping facilities and **less** than a dozen campgrounds are adjacent to the Forest.

Although the rate of growth in the overall **use** has slowed to some extent over the last decade, increases have been reported for most developed recreational activities and are expected to continue. Sequoia NF campgrounds may accommodate tents, small recreational vehicles (**less** than 23 feet) or both. **The** tent has been the traditional shelter for many years; but by 1976, the **use** of recreational vehicles had surpassed that of tents. Nonetheless, there are some indications from recent surveys that tents may be regaining their former popularity. In 1982, tent camping comprised 46 percent of the total camping **use**.

On the 62 developed sites (family and group campgrounds and picnic areas), the occupancy rate varies between 5 and 80 percent of design capacity with an average occupancy of about 30 percent. This rate reflects a specific pattern of **use**. Recreationists like a water-oriented **use** in the generally hot southern Sierra **summer** climate. Subsequently, sites with a water source adjacent receive the most use. Further, most recreation visits take place on weekends during three months of the year. At these times, sites are often filled nearly to (and occasionally over) capacity. Meeting increased demand at these times will prove difficult without construction of new sites which would probably remain virtually empty during weekdays and off-season periods. Therefore, the Forest Service needs to create effective public information processes to encourage **use** during the present periods of low **use**.

The projected growth of the recreational properties market also has ramifications for the Sequoia NF. Currently there are 19 recreation tracts receiving 96,500 visitor days of use. This translates to an occupancy rate of about 15 percent of theoretical capacity. Use of the privately owned residences has dropped 25 percent since 1980, probably reflecting the cost of energy resources. **There** appears to be little need to allocate additional lands for these purposes.

Two hundred fifty-nine term permits authorizing recreation uses of the Sequoia NF will expire during this planning period. They include 253 recreation residence permits, two organization camp permits, and four resort permits. Three years prior to their expiration, Future Use Determinations will be completed to determine whether the lands occupied by these permittees are needed for a higher public use. If so, and if 10 years of advance notice has not been given, the use will be extended so as to provide a minimum of 10 years written advance notice.

Most vacation home developments on private land are located within or near environmentally attractive areas and can have significant impacts on those areas. For example, properties in proximity to especially scenic areas on the Sequoia NF are extremely appealing to developers who assume that this land will remain in an undeveloped primitive state. While these locations ensure the availability of a wide variety of recreational opportunities to the recreational property owner, they can create problems for others.

Impacts which can result include environmental problems (such as pollution), increases in person-caused fires, and the disruption of wildlife and important water sources. Increased use typically increases the visual impacts of roadways and power, pipe, and communication lines. Administrative problems, such as impacts on timber and other resource management activities, become more difficult to deal with and increase administrative costs. Obstacles to land acquisition are created including increased land values and are complicated by scattered ownership patterns of recreational property.

Equally important are the impacts of recreational property development on several local communities. Often local governments can derive substantial revenues from new developments, while the initial costs of utilities, roads, police and fire protection, and other services are low. These costs can be expected to rise over time, however. Other negative impacts may include the lack of commercial and industrial bases from which rural governments can draw taxes, and perhaps most significantly of all, the transformation of traditional rural cultures and lifestyles (which attract the property owner in the first place) to a more urban environment.

#### e. Dispersed Recreation Opportunities

Participation in dispersed land activities is significant. In 1982, for example, approximately 64 percent of the total Forest use was in this category. In spite of the data anomalies between 1977 and 1982, use of Forest trails remains high, and has appeared to remain constant during the 1980-82 period.

Even though recent use on the Sequoia NF has decreased, this trend is not expected to continue. Increases will likely take place due to a number of factors. Over a decade ago, the back-to-nature movement and mounting interest in physical fitness and outdoor activity together led to the resurgence of hiking, backpacking, mountain-climbing, and similar activities. The availability of recreational vehicles, both for camping and off-highway driving, has also added a completely new dimension to dispersed land recreation. Roadside camping has increased with the growing popularity of recreation vehicles such as truck campers, camping trailers,



and motor homes. **And** the development of lightweight, dependable, and high-performance off-highway vehicles (OHV's) (i.e., motorcycles, all-terrain vehicles, and four-wheel drive vehicles) has established motorized travel as a popular activity on forest and range lands. Off-highway bicycling has recently become a popular activity, as well. Equestrian use in the Forest has long been a popular pastime. **It** appears to be growing in popularity with the formation of organizations specifically promoting this activity.

The very freedom and lack of development which characterize dispersed land activities make any precise statements about the current supply situation for these opportunities difficult. Nonetheless, **it** appears that the potential supply of dispersed land opportunities -- both nonmotorized and motorized -- is considerable. The following table displays the Forest capability to supply recreation opportunities by ROS classes. The acreage is based on the assumption that few acres with slopes greater than 40 percent are useful for recreation opportunities.

Table 3.22 - Current Dispersed Area Acres, Capacity (PAOT), and RVD's by ROS Class

<u>ROS Class</u>	<u>Acres</u>	<u>PAOT</u>	<u>1982 RVD's</u>
P	35,900	1,100	2,000
SNM	122,400	6,200	88,000
SM	76,500	41,800	42,000
RN	340,400	761,100	761,000
R	<u>1,700</u>	<u>43,600</u>	<u>689,000</u>
Total	576,900	853,800	1,582,000

Much of the Sequoia NF area is usable for nonmotorized activities, including activities related to trails. Originally established as travel routes by Indians and early settlers, trail networks were improved and augmented by early land managers to help protect and manage forest and range resources. The exception to this is the Pacific Crest National Scenic Trail, which traverses the Forest in three locations for a total of 49 miles. This trail is generally constructed to a higher standard than most other trails. The three sections include the Piutes (7 miles), Scodies (21 miles), and Rockhouse Basin-Clover Meadow-Beck Meadow (21 miles). Other trails have only recently assumed their primary value as recreational resources. **For** this reason, many trails are not suited to recreation use and have been closed, reducing the total trail system since 1979 by 20 percent to approximately 900 miles at the present. With the expected increase in use, some additional trails will need to be constructed. Mostly, reconstruction/relocation of the existing network will be necessary. This may be necessary to resolve resource damage or to relocate trails in more popular areas in favor of retaining trails in little used locations. The estimated cost of construction presently averages \$8,000 per mile and maintenance costs average \$150 per mile. In 1982, 16 miles of trail construction were completed. In 1984, 19 miles were completed.

Especially important, reflecting the general aging of the population, is the need to provide trails and trailhead facilities, roadside camping spots and vistas of appropriate design for use by the elderly and the handicapped as well. At the present time, little attention has been paid to these groups' needs in the planning and management of dispersed recreation areas.

Much of the recreation on the Forest occurs in the vicinity of roads and as a result of roads. There are numerous opportunities for dispersed motorized activities on the Sequoia NF. A total of 1471 miles of Forest Service roads and 383 miles under jurisdiction of others provide a substantial opportunity base for activities including roadside camping and motorcycling: **OHV's** use many roads as part of the riding network. In addition, 408 miles of trail and 123,000 acres of open area are currently available for OHV use subject to restrictions based on land management objectives for local units. ("Off-highway vehicle" terminology is used to maintain consistency with the State of California Vehicle Code.)

In December, 1976, the Sequoia NF implemented an Off-Road Vehicle Management Plan. This Plan was designed to ensure that the use of off-road vehicles (ORV's, also known as OHV's) would be controlled and directed **so** as to protect the resources, to promote the safety of all users and to minimize conflicts among the various uses. This plan resulted in the designation of four zones:

Zone A - areas closed to **OHV's**:

Zone B - where wheeled **OHV's** are restricted to designated roads and trails, but where oversnow vehicles are not restricted:

Zone C - where cross-country travel of wheeled vehicles is not allowed and oversnow vehicle use is prohibited; and

Zone D - areas open to OHV's except that their use may be prohibited in specific locations to prevent damage.

In October, 1978, following a request for administrative review by the Sierra Club, the Chief of the Forest Service, affirming that the Management Plan was acceptable, required that the Sequoia develop a plan to monitor OHV use. This monitoring plan, made an integral part of the Management Plan, was completed in December, 1979. In keeping with the requirements of Executive Order 11989, annual monitoring of the effects of OHV use on the Sequoia serves to evaluate the effectiveness of the ORV Management Plan and may lead to:

- 1) amendment of zone designation:
- 2) temporary or permanent closure of specific areas or trails: and
- 3) identification and resolution of user conflicts.

Monitoring activities are based on funding levels.

Annual reports have been submitted based on monitoring accomplished at Level 1 (low level) funding. Seasonal trail closures and permanent closure

of an area within the "D" zone were recommended. At this low level of funding, it has not been possible to comprehensively evaluate the need for amendment of zone designations nor to search out areas of conflict beyond those immediately recognized. The increases in OHV use as well as hiking and equestrian use will likely result in increases in conflict as competition for trails increases. At the same time, decreasing trail maintenance funding makes it more difficult to maintain trails to the levels necessary for OHV and equestrian use. State "Green Sticker" funds are one supplemental funding source that will assist the Forest in achieving trail objectives.

Despite these difficulties, the need exists to reexamine zone designations, to seek solutions to administrative problems in providing higher levels of monitoring, and to resolve conflicts; between all types of wheeled vehicles (including the growing use of all-terrain vehicles) and hikers/equestrians and between oversnow vehicles and cross-country skiers.

As the popularity of dispersed land recreation has continued to grow, so have the problems associated with dispersed land activities. Environmental problems have intensified with continuing increases in recreation users. Soil and vegetation disruption by foot, horse, and vehicular traffic is adversely affecting the environmental integrity of some areas. Soil compaction has resulted at most heavily used campsites, leaving them barren of vegetation and often either dusty or muddy. Trails are threatened by erosion, which not only scars the land but also pollutes watercourses and impairs fisheries and aquatic wildlife. High desert lands and subalpine areas and meadows are especially fragile environments where resource damage can require decades of natural repair. Management is necessary to prevent unacceptable situations. It is for these very reasons that the Forest Service maintains a cooperative relationship with neighboring Sequoia and Kings Canyon National Parks and participates in such actions as assisting in permit issuance to users of the Park backcountry whose trips originate on the National Forest.

Off-highway vehicle use has intensified the recreational pressures on public lands and has resulted in some additional air and noise pollution. Noise pollution may disrupt wildlife and quiet recreational activities. This can reduce the esthetic quality of the environment.

Crowding can be a significant social problem at those times when users experience higher densities of use than they desire. Often it is not only the number of other recreationists encountered that decreases the user's satisfaction with the experience but also the type of use. Conflicts can arise between hikers and horseback riders and between these users and vehicle drivers. Other social problems, such as littering, rowdiness, vandalism, and even theft, have resulted from greater participation in dispersed land activities. Problems of public health and sanitation, including human injury and improper waste disposal, have also increased.

Managerial problems of maintenance and enforcement can be expected to increase, particularly on public lands where freedom from regulation has been an important element of dispersed recreation activities. On the Sequoia NF, for instance, restrictions are being placed on OHV use, while

limitations on backcountry use now include restrictive regulations on camping and open fires.

Managers are also faced with increasing conflicts between recreationists on public lands and the owners of adjacent private property who are sometimes plagued by trespassing and destructive behavior. These conflicts dissuade private property owners from allowing the access necessary to maximize dispersed recreation opportunities.

Recently various clubs (e.g., OHV groups, environmental groups, equestrian groups) and individuals have assisted the Sequoia NF in maintaining the existing trail system through the "Adopt-A-Trail" Program. This program is essential to keep up with the maintenance of the approximately 900 miles of trails on the Forest.

The three main user groups of Forest trails are equestrians, hikers, and OHV users. Generally these diverse groups attempt to minimize conflicts between each other by concentrating use in specific areas. For example, equestrians and hikers primarily use trails leading to and in wilderness where motorized vehicles are prohibited. Numerous trails outside wilderness are designated as OHV routes. However, they are not limited only to OHV use. Other trails, due to a variety of resource protection measures, restrict OHV use.

On occasion, the three principal trail user groups come in direct contact and conflicts arise. The Jennie Lakes and a portion of the South Sierra (now included as wilderness) have been classic examples. All three groups used these two areas prior to wilderness designation and the conflict occurred because these areas provide the recreation values most desired by all three groups.

There is a desire from all groups to have loop-trails to increase the recreation experience. OHV users want to implement the Statewide Off-Highway Vehicle Trails Plan (State of California, Department of Parks and Recreation) which portrays the Sequoia NF as a hub of a series of trails linking areas to the South and North. Two corridors on the Forest run north-south: one along the Western Divide, the other through the Kern Plateau. Two other corridors run east-west from the Western Divide to the Kern Plateau, and the other includes both private and public lands from the Scodie Mountains to the Piute Mountains. The Forest needs to coordinate with other management activities and consider the statewide vehicle trail in its OHV planning efforts. Regardless of the mode of travel, a majority of trail users desire the recreation opportunities and benefits of forest and meadow environments away from roads.

#### f. Winter Recreation Opportunities

The presence of snow significantly broadens the range of recreational opportunities that the Forest can provide with such activities as downhill skiing, cross-country skiing, snow play, and use of oversnow vehicles. Forested areas, roads, and cleared sites that may not be particularly desirable for recreation during the summer can assume high recreational value with the presence of snow and ice. For instance, logging roads

covered with snow are highly suitable for oversnow vehicles, cross-country ski trails, and the growing use of all-terrain vehicles over snow.

A significant indicator of interest in snow and ice activities is the increasing participation in cross-country skiing. Although studies of the current status of cross-country skiing are virtually nonexistent, public land managers and industry representatives agree that the number of these skiers has at least tripled over the last few years.

These cold weather activities attract a cross section of Americans, with a growing number of families and older individuals becoming participants. These trends are supported by the 1977 National Outdoor Recreation Survey which showed that downhill skiing, cross-country skiing, and oversnow vehicle use were among the top activities that individuals who are not currently participants would like to try in the future.

On the Sequoia NF, growth in these winter activities has only recently been recognized. Snow activities accounted for 34,700 recreation visitor days of use in 1982 on the Sequoia NF, approximately one percent of total recreational use. Although a downhill ski area, Shirley Meadow, has been under permit to Kern County since 1940, few other facilities are provided. Only 26 miles of oversnow vehicle trails have been identified and less than that number marked for cross-country skiing. The Hume Lake District and the Tule River District in particular receive heavy cross-country ski use.

Two Sno-Park sites, designated by the State of California and managed in cooperation with the Department of Parks and Recreation, currently exist along the Western Divide Highway on the Tule River Ranger District.

Shirley Meadow Ski Area has been a small area with two rope tows and a capacity of about 300 skiers at one time. The 1982 use was 3,700 RVD's on a permit area of less than 20 acres. During 1983, one rope tow was replaced with a chair-lift system to increase the safety of the ski area. The site is located at an elevation of 6,700-7,000 feet in the southern end of the Sierra Nevada range and, because of this relatively low elevation and lack of snowmaking, the operating season is often 60 days or less. Skiers are mainly from the local Bakersfield and Kern Valley area with some interest from Porterville.

A new 20-year term permit was issued for the Shirley Meadow Ski Area in January 1981. The decision to allow further expansion of the facilities was made via an Environmental Analysis and Decision Notice dated September 14, 1982. This Environmental Analysis is incorporated by reference. As this plan is being written, the permittee is in the process of completing required actions of the contractual agreement.

For many years the Forest has kept an inventory of potential downhill ski sites and has periodically updated these potential sites. While a number of factors has reduced the list somewhat, three appear to be most promising. These are: Peppermint, Mitchell-Maddox, and Sherman Pass.

Following is a representation of the supply in terms of Skiers-At-One-Time (SAOT) and Skier Days, which could be developed at these three areas:

	SAOT	<u>SKIER DAYS</u>
Peppermint	8,000	450,000
Sherman Pass <u>1/</u>	5,249	262,000
Mitchell-Maddox <u>1/</u>	10,335	<u>517,000</u>
		1,229,000

1/ Assumes a 100-day season and 50% utilization.

The Peppermint area is located on the east and north slopes of Slate Mountain, about eight road-miles southeast of Camp Nelson. The potential site encompasses about 3,000 acres of terrain on elevations from 7,200 to 9,200 feet. The Mitchell-Maddox area is located on the north and west slopes of Mt. Maddox and Mitchell Peak, then north along the western slopes of the ridge separating the National Forest from Sequoia and Kings Canyon National Parks. Elevations range from the highest point on Mitchell Peak, about 10,300 feet to the lowest point around Corral Creek, about 7,500 feet. The Sherman Pass site is found along the north and northeast-facing slopes of unnamed ridges between Durrwood Meadow and Boone Meadow, directly east of the Sherman Pass Vista. The elevations are 9,900 feet to the southwest to a suitable base area. An FEIS for the Peppermint Mountain Resort dated December 9, 1985, provided a decision to pursue development of a downhill ski area and other facilities. The Peppermint Mountain Resort FEIS is incorporated by reference so that the consequences of nondevelopment of the area will be known. These consequences are described in detail by the "No Change Alternative" in the FEIS dated December 9, 1985. Consideration of other downhill ski resorts with their attendant facilities would require following NEPA processes and would be undertaken only as demand warrants.

The problems associated with increasing opportunities for dispersed snow activities differ from the developed ones. Although land-use allocations can significantly affect such activities as oversnow vehicle use, environmental effects and social impacts caused by cross-country skiing and oversnow vehicle use are relatively minor when compared to winter sports complexes. However, with increasing interest in these activities, a loss in solitude and more frequent disruptions of wildlife are occurring in some locations.

g. Water-Oriented Recreation Opportunities

Water serves as the prime attraction for recreational activities on the Sequoia NF. People use rivers, lakes, and other wetlands for a wide variety of recreational activities. Many are directly water-based such as swimming, fishing, floating, and kayaking. Other activities, such as camping, hiking, driving for pleasure, picnicking, and relaxing, are often pursued with water as an important backdrop. For instance, in 1982, water activities accounted for 392,900 recreation visitor days of use, approximately 15 percent of all Sequoia NF recreational use. Almost all of this

use was directly water-oriented (e.g., floating, fishing and swimming) as opposed to onshore activities.

Whitewater floating on the Sequoia NF. nonexistent in 1976, is now a popular activity, with almost 20,000 people participating in 1982. Two rivers, the North Fork Kern and the Kings, have been discovered as offering outstanding whitewater floating opportunities. For example, 16 miles of the Kern from the Forks to three miles south of Johnsondale Bridge have become a prime and favored stretch from a technical standpoint and for the solitude and scenery. The stream gradient, rough water, and rocky terrain require highly skilled boaters. A whitewater floating management plan establishes quotas for both commercial floating (special-use permittees) and private floating. Permits are required for private floaters, and may be reserved in advance. The increasing popularity results in established capacities being reached on many weekends during the rafting season. A growing problem is the apparent overbooking and subsequent "No-Shows". Consequently, the full capability of the river is not really being utilized while people who could and would use the river are being denied the opportunity. Various steps are being taken to minimize this problem, including consideration of a permit reservation fee system.

The Kings River is characterized by a relatively mild gradient and large pools with stretches of exciting whitewater through a steep walled V-type canyon. In comparison with the Kern, the skill level is lower, making this stream available to more recreationists. Use is increasing rapidly. A floating management plan or permit system does not exist for this river.

Nationwide, 13 percent of National Forest recreation use is water related. On the Sequoia, an area of relatively few rivers, streams and reservoirs, it is 15 percent. Of the 8,900 acres of rivers, streams, lakes, and reservoirs on the Sequoia, most are small streams suitable for fishing but not developments. Most suitable sites have been developed and adding to this capacity will be difficult.

The continued popularity of rivers, streams, lakes, and reservoirs for recreation has created conflicts and problems, not only for users and managers, but also for many segments of society. Frequent debates have centered around the appropriate use of water resources. Efforts to curb pollution and to improve water quality have been based partly on demands for recreation. Also common are the conflicts between recreational uses and non-recreational uses arising over issues such as hydropower, irrigation, water supply, and waste-water treatment. Other conflicts that have risen among recreational uses and non-recreational riparian uses take place with regard to forest industries, mining, and residential land use. New problems, both social and environmental, have been created by the increased number of recreational users. Increased recreational use may adversely affect plants, birds, and animals along rivers. Erosion of banks, campsites, and boat landings is a common problem in some locations. Growth in use without proper administration may result in more littering and vandalism to public and private property along waterways. The extent of sanitation maintenance and law enforcement may also be expected to increase.

Periodic crowding on the Kings, Tule, and North Fork Kern Rivers may lessen the enjoyment of some **users**. Even small changes in the densities and kinds of river uses could greatly influence the quality of experiences for some visitors. In fact, people seeking low-density use and a solitary enjoyment of nature may be displaced altogether. Conversely, crowds appeal to some people, and certain river users may also enjoy the sociability afforded by crowds. The North Fork Kern between Kernville and the Johnsondale Bridge and the Tule River near Coffee Camp are examples of where this situation prevails.

Recreational use often generates other conflicts in addition to crowding. Conflicts have arisen between fishing and floating enthusiasts; also between recreationists and private landowners. As uses increase, conflicts will probably grow and so will debate over how to mediate such conflicts.

### 19. Research Natural Areas

The establishment of Research Natural Areas (RNA's) recognizes the need to promote and protect natural diversity in all its forms. Research natural areas typify important forest, shrubland, grassland, alpine, aquatic, and geologic types and other natural conditions that have special unique characteristics of scientific interest and importance. RNA's are for non-manipulative research and education. Their demand is national in scope and is primarily dictated by the National Forest Management Act (NFMA). **Uses** other than research and education are discouraged.

RNA's serve many purposes. These include:

- provide opportunities for the study of plant succession and other biological and physical phenomenon over long periods of time:
- provide a source of baseline data for monitoring changes in natural processes and systems brought about by human activities: and
- provide "benchmark" values to aid managers in their resource management activities.

The nature of RNA's preclude most management practices. Maintenance of RNA's depend on the exclusion of all but non-manipulative research and educational activities. All RNA's would be recommended for withdrawal from mineral entry. This will not significantly reduce the availability of minerals based on existing information. There are no RNA's currently established on the Sequoia NF. Target elements needed to complete the RNA system for the Sierra Nevada (south) Province were prioritized by the Region. The target elements selected for the Sequoia NF include Jeffrey pine, red fir, and giant sequoia.

In response, the Forest identified three areas possessing quality RNA characteristics. Each is accessible only by trails and is relatively pristine, generally unaffected by recreation uses. The areas were nominated as potential RNA's to the Regional RNA Committee and have since been approved (see Figure 3.3).



### Church Dome Jeffrey Pine RNA

Church Dome (Cannell Meadow District) has been identified as a recommended RNA for the Jeffrey pine element. The area is dominated by an open parklike Jeffrey pine forest within the Manter Creek Drainage, Dome Land Wilderness. The potential RNA is 1.380 acres in size.

### South Mountaineer Creek Red Fir RNA

South Mountaineer Creek (Tule River District) has been identified as a recommended RNA for the red fir element. An extensive red fir forest dominates the area. This RNA lies within the watershed of South Mountaineer Creek in the Golden Trout Wilderness. This potential RNA is 1,325 acres in size.

### Moses Mountain Giant Sequoia RNA

Moses Mountain (Tule River District) has been identified as a recommended RNA for the giant sequoia element. In addition to giant sequoia, the area contains sensitive plant habitat on the rocky east-facing slopes of Moses Mountain and aquatic habitat along the Wishon Fork Tule River. Of the 960-acre area, nearly two-thirds (610 acres) of the RNA lies within the Golden Trout Wilderness. The remaining 350 acres are outside of the wilderness boundary.

### Long Canyon Conifer Woodland RNA

Long Canyon (Greenhorn District) has been identified as a potential RNA for the conifer woodland element. Located in the northeast corner of the Piute Mountains, this 1,000-acre area is a transition between desert shrub communities, chaparral communities, and coniferous woodlands. It is dominated by pinyon pine, digger pine, California juniper and Piute cypress. Geologically, the area is dominated by metamorphic rocks with one prominent limestone outcrop rising over 1,500 feet along the north slope of Heald Peak. A large portion of this area burned in the Bodfish Fire of 1984.

## 20. Special Interest Areas

Special Interest Areas (SIA's) are classified because of their unusual or outstanding scenic, cultural, scientific, natural or other unique characteristics which merit special attention and management. They are managed to protect the resources: and, where appropriate, foster public use and enjoyment of their significant values. There are two existing SIA's on the Forest, the Bodfish Piute Cypress Botanical Area and the Packsaddle Cave Geologic Area (see Figure 3.3).

### a. Botanical Areas

The Sequoia NF is one of the most diverse botanical regions in California with over one-quarter of the State's flora occurring within its boundaries. Because of this diversity, several noteworthy botanical areas were identified during the inventory phase for the Plan. Demand for

botanical areas has been expressed by botanical organizations and concerned individuals.

Providing for exceptional vegetational diversity can be accomplished by the allocation of these areas as botanical areas. Besides the plant diversity issue, four of the five candidate botanical areas identified during the inventory process contain essential habitat for several sensitive plants which are candidates for Federal listing under the Endangered Species Act. Establishing botanical areas containing sensitive plants provides an area where they are protected from harm, thereby reducing the need for listing under the Act.

#### Bodfish Piute Cypress Botanical Area (established in 1970)

This area of **310** acres (with a potential 150-acre addition) is on the Greenhorn District and is part of the largest Piute cypress stand of this localized and endemic conifer of the Southern Sierra Nevada. **The** Botanical Area is bisected by the Piute Mountain road near Bodfish.

#### Ernest C. Twisselmann Botanical Area (proposed in 1979)

Comprised of 860 acres on the Cannell Meadow District, this area contains a subalpine coniferous ecosystem of foxtail, limber, western white, Jeffrey and lodgepole pine, and red and white firs. Located on the Kern Plateau at Sirretta Peak, this botanical area has several plant species with their southernmost occurrence in the Sierra. Scenic vistas are dramatic from East Sirretta Pass with views of Farewell Gap, Bald Mountain, Big Meadow, Olanca Peak, and Mt. Whitney.

**The** following Botanical Areas are candidates that were identified through an inventory process that contain SIA attributes on the Forest.

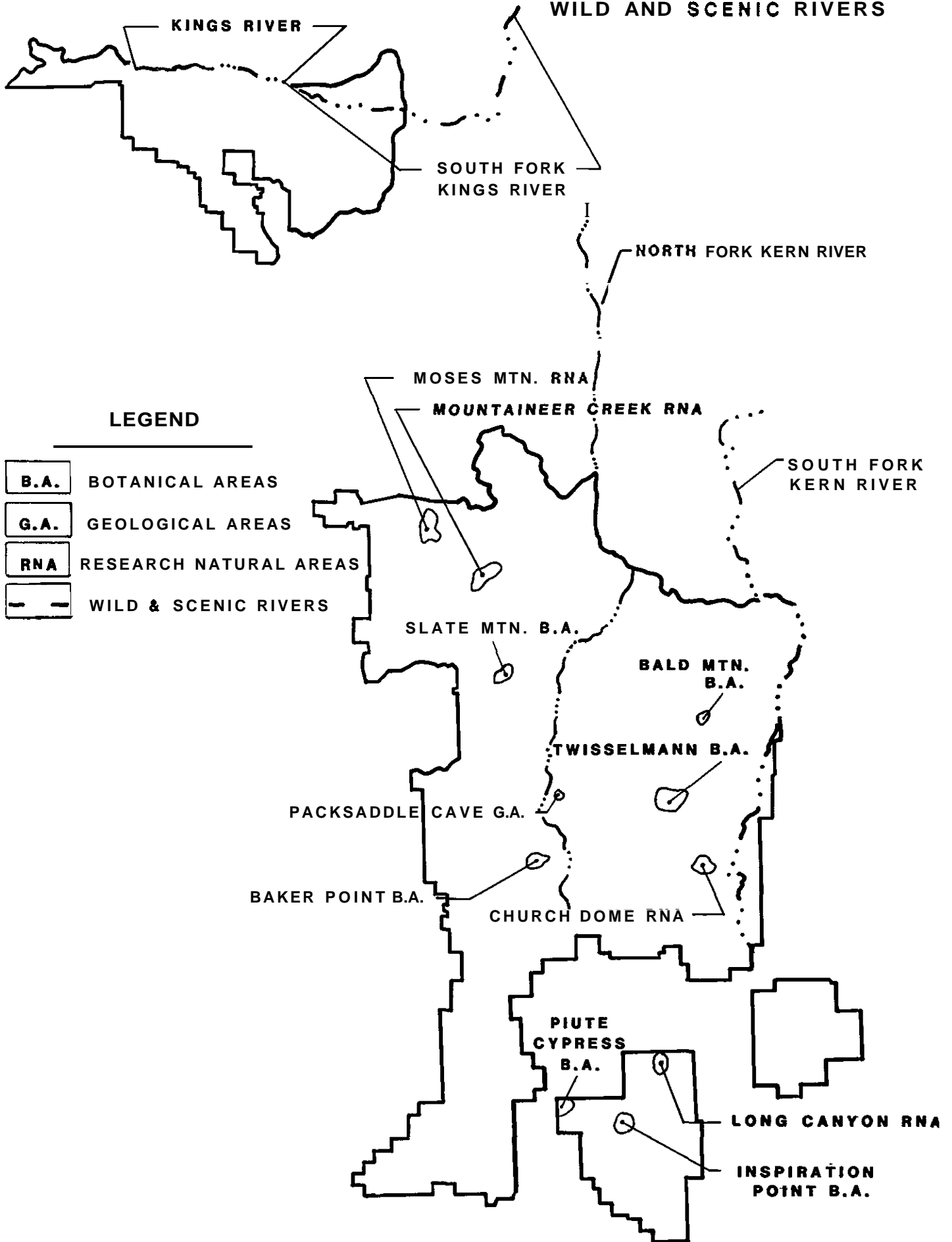
#### Bald Mountain Botanical Area (Cannell Meadow District)

This area, consisting of 440 acres, has been recognized by the scientific community as a most unusual botanical and geological island in the southern Sierra on the Kern Plateau. Bald Mountain is comprised of precretaceous metasedimentary rocks while the surrounding area for miles is composed of mesozoic granitic rock. Over **170** species of plants have been recorded on the rocky summit; and one sensitive species, the Bald Mountain Potentilla (Horkelia tularensis). occurs nowhere else.

#### Baker Point Botanical Area (Hot Springs District)

Baker Point is a granitic point overlooking the Kern River Canyon. This area encompasses **780** acres and contains many "rock-loving" plants. The area offers scenic views towards Lake Isabella and the Piute Mountains to the south; the Great Western Divide, Needles and the Sierran Crest to the north and east. **Three** sensitive plants are located within this botanical area.

**FIG. 3.3 SPECIAL INTEREST AREAS, RESEARCH NATURAL AREAS, WILD AND SCENIC RIVERS**



### Inspiration Point Botanical Area (Greenhorn District)

This area, containing 270 acres, occurs in the rugged Erskine Creek watershed. Several Sierran plants have their southernmost station at Inspiration Point, while other plants have their most northern station from the mountains of southern California. Limber pines are found growing on the steep limestone canyons with dwarf maples, pinyon pines, and giant mountain mahogany trees (an unusual botanical association).

### Slate Mountain Botanical Area (Tule River District)

Slate Mountain is uncommon because of an abundance of sensitive plants. The area comprises 490 acres along the rocky northern summit comprised of precretaceous metamorphic and metasedimentary rocks surrounded by granitic rocks. Nearly 95 percent of the total population of Twisselmann's buckwheat occurs on Slate Mountain. While this inventoried area is within the Peppermint Mountain Resort FEIS study boundary, it is outside of the proposed ski area and would not be impacted if a ski area were to be developed.

#### b. Geological Areas

The Forest is geologically dominated by granitics. Granite domes such as Dome Rock, Needles, and the Dome Land Wilderness are topographically important. Volcanic and sedimentary islands contain areas of special interest with roof pendants of marbles, basalts, and limestones being most noteworthy. The majority of geological features are already protected in wildernesses on the Forest. In addition, most of the candidate Botanical Areas are also geologically significant.

Packsaddle Cave is the only classified geologic SIA on the Forest and contains 40 acres. This cave has been vandalized despite attempts to manage access by gating the entrance. The Forest contains some noteworthy caves, but they would not benefit from classification. There has been little expression of need from the public for more geologic SIA's.

#### 21. Urban Interface

The definition of an "urban interface" is "an area of human settlement on private land, contiguous with the Forest that is developed or potentially developable to a density comparable to conventional subdivisions." No urbanized interface is now formally recognized on the Sequoia NF.

Developed areas are scattered along the edges of the Forest and concentrated on or near the larger parcels of private lands within the Forest boundary. These areas affect the management of adjacent public lands. The Forest has delineated interface areas on the basis of visual resources and increased fire suppression and prevention needs. These are: Hume Lake, Pinehurst, Hartland, Camp Nelson, Sequoia Crest/Alpine, Ponderosa, Hot Springs, Sugarloaf, Poso, Greenhorn Summit, Kernville, and Breckenridge.

Residential and commercial structures in these urbanized areas represent large investments. The flammable nature of many of the buildings, narrow roads, limited water, native and introduced vegetation, along with a wide

variety of human activities, combine to create a complex and demanding fire management problem. While fire suppression action must be rapid, the use of tractors and air tankers is often restricted. Fuelbreaks, access roads and the use of prescribed fire is limited by the need for rights-of-way and agreements from private landowners.

Demands for modified management direction in urban interfaces are increasing. Identified concerns and problems in urbanized areas relate to the threat that fire, demand for recreation, access, water quality and quantity, timber harvesting, visual effects, fiscal effects of Forest Service actions and a need for selected land exchanges. Many of these factors are currently interacting on several urbanized areas on the Forest. Current direction is limited to dealing with the problems of human settlement (encroachments, fire risk etc.) on a case-by-case basis.

## 22. Vegetation Management

### a. Chaparral

There are 245,700 acres classed as chaparral in the Planning Area. Montane chaparral (61,300 acres) is managed within the conifer forest vegetation. Part of the mixed chaparral area is intermixed with other vegetative types and managed as such (8,600 acres): 10,800 acres are in wilderness. The remaining 165,000 acres (this figure will vary as acreage is shifted to wilderness in some alternatives) is available for multiple-use management as a mixed chaparral vegetative type.

Approximately 75 percent of the mixed chaparral type in the Planning Area is in late or mature-to-decadent seral stages. The brush is tall and dense with high dead-to-live fuel ratios. It is often virtually impenetrable. Value for recreation, grazing, wildlife habitat, deer winter range, and water yield is low-to-moderate.

In the late sixties, it was realized that the existing policy of fire exclusion in this vegetative type was neither practical nor desirable. This practice contributed to the decadence of the brush stands. Controlled use of fire and mechanical treatment of brush in the chaparral zone offers potential to increase water yield, forage production, recreation potential and wildlife habitat diversity in addition to reducing wildfire hazards.

Current management treats an average of 2,500 acres for fuel reduction and fuelbreak maintenance in urban interface areas adjacent to tracts of private land (Hartland, Camp Nelson, Hume Lake). Some wildlife-oriented prescribed burns have been accomplished with outside funding (Sikes Act, Kern County Wildlife Resources Commission or California Department of Fish and Game). The wildlife projects average 1,300 acres per year. Most Districts have developed coordinated resource management plans for chaparral. Projects are implemented when funding is available.

Potential exists to increase water yield by 8,000 acre-feet per year in addition to prolonging the flow of springs and small tributaries. Additional opportunity exists to increase grazing capacity by 20,000 AUM's and increase habitat capability for deer on winter range by 5,000 animals.

Potential recreational benefits include increased hunter success, greater visual diversity and increased recreational access to the chaparral zone.

Another potential use **is** harvesting the chaparral for heat ("chaparral briquets") producing purposes. Harvesting chaparral on the Sequoia NF appears unlikely during this planning period due to very high harvesting and processing costs.

Benefits to resource protection from chaparral management are difficult to measure since wildfires will still occur. Actual benefits will be realized in terms of lower resistance-to-control and lower rates-of-spread which will substantially reduce suppression costs and the danger to life, property and high value Forest resources over time.

**The** greatest sustained benefits for range, wildlife, water yield and recreation can be gained by burning **or** treating the chaparral on a continuing **or** rotating cycle of 20- to 40-years. Protection objectives **may** require more frequent treatment to maintain hazard reduction values. Slopes, vegetation aspect, and resource objectives will control actual age when retreatment **is** needed. Burning on a rotational cycle maintains a broad diversity of habitat and vegetative age classes.

#### b. Giant Sequoia

Giant sequoia **or** sierra redwood (Sequoiadendron giganteum) grows in mixed conifer forests on the western slope of the Sierra Nevada at elevations ranging from 5,000-8,000 feet. ~~Cmmn~~ conifer associates are white fir, sugar pine, ponderosa pine, Jeffrey pine, and incense cedar.

The location of individual sequoia stands in the Sequoia NF **is** controlled by an interaction of soil moisture, temperature, and the ecological tolerance of the seedling stages. About 38 groves, totaling approximately 13,200 acres, are scattered within the Forest, primarily on the Hume Lake, Tule River, and Hot Springs Ranger Districts.

Giant sequoias are resistant to insects and disease because of the presence of tannin in the wood, which inhibits wood-boring insects and destructive fungi. Since these organisms are also responsible for the decomposition of dead timber, whether standing **or** fallen, toppled sequoias **may** remain virtually intact for decades **or** even centuries.

Unlike most trees, which eventually succumb to insects, fire, **or** fungal activity, the giant sequoia, is relatively resistant to all three. Giant sequoias **are** supported by vast but, for such large trees, remarkably shallow root systems that **make** the trees vulnerable to windthrow and undercutting by floodwaters. Their root systems **may** also **be** damaged by compaction.

The size of a giant sequoia is not a function of age so much as soil moisture. Sequoia groves receive between 45 and 60 inches of precipitation a year, which is typical for the mixed conifer forest type as a whole. However, sequoias are restricted to sites where soil moisture is ample throughout the dry summer months. Mature giant sequoias on the best sites grow at a rate unequalled by any other kind of conifer tree on the Forest.

Annual growth rings one-half inch thick are typical of large sequoias on good sites, amounting to an increase in trunk diameter of one inch a year. Thus, even though several giant sequoias in the Forest are estimated to be over 3,000 years old, age is not necessarily a criterion for size.

Bare mineral soil is essential for successful germination. Sequoia seeds are too light to sift down through the deep forest litter, which is characteristic of most stands. The seeds need to lie within a half-inch of the soil surface in order to survive. Periodic disturbance or fires which reduces litter depth and opens up the forest to more sunlight are essential for giant sequoia's reproduction. Although fire suppression in the last 80 years has minimized such disturbance, present stand boundaries are believed to have been influenced more by available soil moisture than local fire occurrence.

Preliminary timber type mapping and inventory of all 38 groves in the Forest is completed. Standing inventory is estimated at 960 MMB. Very few giant sequoias are less than 80 years old which correlates well to fire suppression activities since the establishment of the Sequoia NF. Nearly all of the existing young giant sequoia are the direct result of past logging activities at the turn of the century.

Direction is provided in Sequoia NF Supplements to the Forest Service Manuals and Handbooks. Current management direction is:

The management objectives for stands of giant sequoias shall be established by Management Category. The primary objectives shall be the perpetuation of the species, the preservation of old growth "specimen" trees, and sawtimber production. A "specimen" tree is defined as a standing giant sequoia, live or dead, that has mature characteristics such as: columnar form of stem, deeply furrowed bark, lower stem free of limbs, red bark, etc. In addition, it must be older than 150 years and larger than eight feet in diameter, measured at six feet above ground level.

1. Preservation. This Management Category will be reserved for those stands or groves of present or potential high aesthetic or scientific values. Although this designation is generally restricted to large, prominent groves, it may also apply to one, or a few, "specimen" trees, the protection of which is desirable because of unique size or location. It may also apply to Research Natural Areas or Botanical Areas. Groves or stands selected for Preservation Management shall have their exterior boundaries posted. No major activities that would be potentially harmful to the giant sequoia trees, such as campground or road construction, or timber cutting, will be permitted. Activities shall be limited to those needed to perpetuate the "specimen" trees and the natural conditions of the associated trees and ground cover, or to improvement such as foot trails to provide for public access. Dead and down giant sequoias shall be left in place. Deviation from these

restrictions may be made only with the written approval of the Forest Supervisor.

2. Non-intensive. Mixed conifer stands which contain large, old growth (older than 150 years) giant sequoias as a component and which have not been designated and approved for Preservation will be given special treatment to preserve the old growth giant sequoias in the stand.

The objectives of management shall be to perpetuate the species, improve stand vigor and develop replacement "specimen" trees. Management flexibility is allowed so that selected values may be emphasized, provided these objectives are met. Values selected for emphasis may vary between groves, and between stands within the same grove.

Silvicultural prescriptions shall be prepared for each stand to meet the objectives of non-intensive management as qualified by management emphasis. Any silvicultural system, even-aged or uneven-aged, may be used which will meet the objectives and the appropriate emphasis. Clearcutting of whitewoods to promote mixed species reproduction and thinning of giant sequoias to improve vigor and size are approved practices. Use of prescribed fire and all techniques for manipulating vegetation are also approved practices in these stands.

No "specimen" giant sequoia is to be cut or damaged. Management activities shall be conducted in a manner to insure protection of these trees from root damage, undue exposure to windthrow, or unacceptable damage which might occur from other trees felled into or against them. Deviation from these constraints shall be allowed only upon the approval of the Forest Supervisor.

3. Intensive. These are areas of National Forest System lands (primarily those acquired after logging) that support either pure stands of giant sequoia saplings, poles or large young trees, or mixtures of young giant sequoias and other species. In addition, there are areas that are outside of the present natural range of the species which, due to site quality or location, are capable of growing giant sequoias. There are no restrictions on management activities in these stands other than to promote expansion of the giant sequoia range where possible.



The potential future supply of products and public use could be enhanced by:

- (1) reducing excessive **fuels** within the groves;
- (2) producing a seedbed for natural regeneration by a combination of timber harvesting activities and prescribed burns;
- (3) increasing aesthetic values by selectively removing dense "whitewoods" so that the giant sequoias can easily be seen;
- (4) planting of giant sequoias in other mixed conifer stands or plantations;
- (5) selectively thinning young growth giant sequoias to promote growth of future specimen or museum trees;
- (6) constructing recreation trails through selected groves and providing interpretation; and
- (7) increasing publicity about giant sequoia groves.

Demand for giant sequoia is primarily for recreational use and for lumber. The wood in mature trees is more brash and brittle than coast redwood but is very resistant to rot. However, structural quality in young giant sequoia trees is similar, if not better than coast redwood. Rapid growth and commercial value make this species very desirable in the managed forest.

The giant sequoia groves have attracted visitors since their discovery in the mid-1800's. The size and grandeur of the old growth trees makes them unique and awe-inspiring. People still journey many miles to walk through the groves and look at the specimen trees. On the Sequoia NF in 1982, the groves received 70,000 visitor days of use. This use was concentrated in groves which are located near roads (Roaded Natural ROS Class).

There are several opportunities to increase recreational use of the giant sequoia groves. These include providing interpretive facilities such as trails and signs, improving access to the groves and encouraging reproduction to insure replacement of specimen trees. Management activities within the groves could include fuel reduction and removal of whitewood tree species to improve vistas and increase visitor mobility.

c. Meadows

The Forest currently has approximately 7,540 acres of mountain meadows ranging in size from about one-quarter acre to several hundred acres. All of these acres lie within the boundaries of the larger conifer ecosystem. They represent less than two percent of that ecosystem's gross acreage. In addition, meadows contain the greatest plant diversity and number of plant species per acre on the Sequoia NF. Although the total area of meadows is a small percentage of the mountainous terrain, they are among the most heavily used areas of the mountains for livestock grazing, wildlife habitat

and recreation. Meadows are separated from discussions of other riparian areas because of these different management activities.

Most meadows in the Forest are classified as wet meadows or wetlands. They are generally found scattered above 5,000 feet. The single most important factor in explaining their distribution is the existence of a shallow water table which provides for a high soil moisture content the year around. They are characterized as an open vegetation with a cover composed predominantly of perennial sedges, rushes and grasses. The soil is especially dark in color because of large amounts of organic material. Dominant species are primarily rhizomateous. These rhizome roots store large amounts of carbohydrates below ground and burst forth with quick flush of growth early in the spring shortly after snowmelt.

Another meadow type is the dry meadows. These meadows occur on the eastern half of the planning area and are relatively uncommon. They are comprised of deergrass, needlegrass and squirreltail grass associated with piñon pine woodlands and Jeffrey pine forests. Sagebrush is a common component of dry meadows. Some meadows are being damaged by concentration of uses, while others offer much potential but are receiving little use. Current management direction is to maintain or increase the overall quality of vegetation in and adjacent to existing meadows. There is some opportunity to enhance dry meadows by controlling the amount of brush species encroaching on these meadows.

The small acreage of the meadow ecosystem provides the bulk of forage on many of the Forest's grazing allotments. Overall, no increase in grazing in meadows can occur without going beyond the allowable use. This would be detrimental to the meadow carrying capacity. Livestock use begins July 1st. They typically graze 80 percent of the allowable use. Frequently, there is little forage available on slopes around the meadows.

Mountain meadows are important for the production of livestock, maintenance of wildlife populations and grazing of recreation and administrative stock. Meadows provide scenic vistas, and their timbered edges are favored campsites for Forest visitors. Also, meadows serve to filter sediments and bacteria from water. Thus, meadows function to provide clean water for human use and maintain suitable fish habitat in streams. Current demands for range, recreation and wildlife far exceed the capability of the ecosystem.

It is not possible to significantly increase the total acreage of mountain meadows on the Forest. The same conditions that create current demands for this ecosystem will increase in the future. Therefore, future demands will be greater than this fragile landscape will be capable of producing. Existing supply of meadow lands needs to be protected and enhanced.

Damage to the meadow ecosystem can be caused from increased runoff from surrounding watershed lands. Runoff can be increased or concentrated by transportation systems, recreation facilities and vegetative manipulation activities. Heavy trampling, grazing, OHV, and trail use in meadows along with changes in runoff patterns can accelerate erosion leading to meadow instability and a decrease in meadow productivity. These activities in meadows can affect the visual appearance. Some meadow damage can be

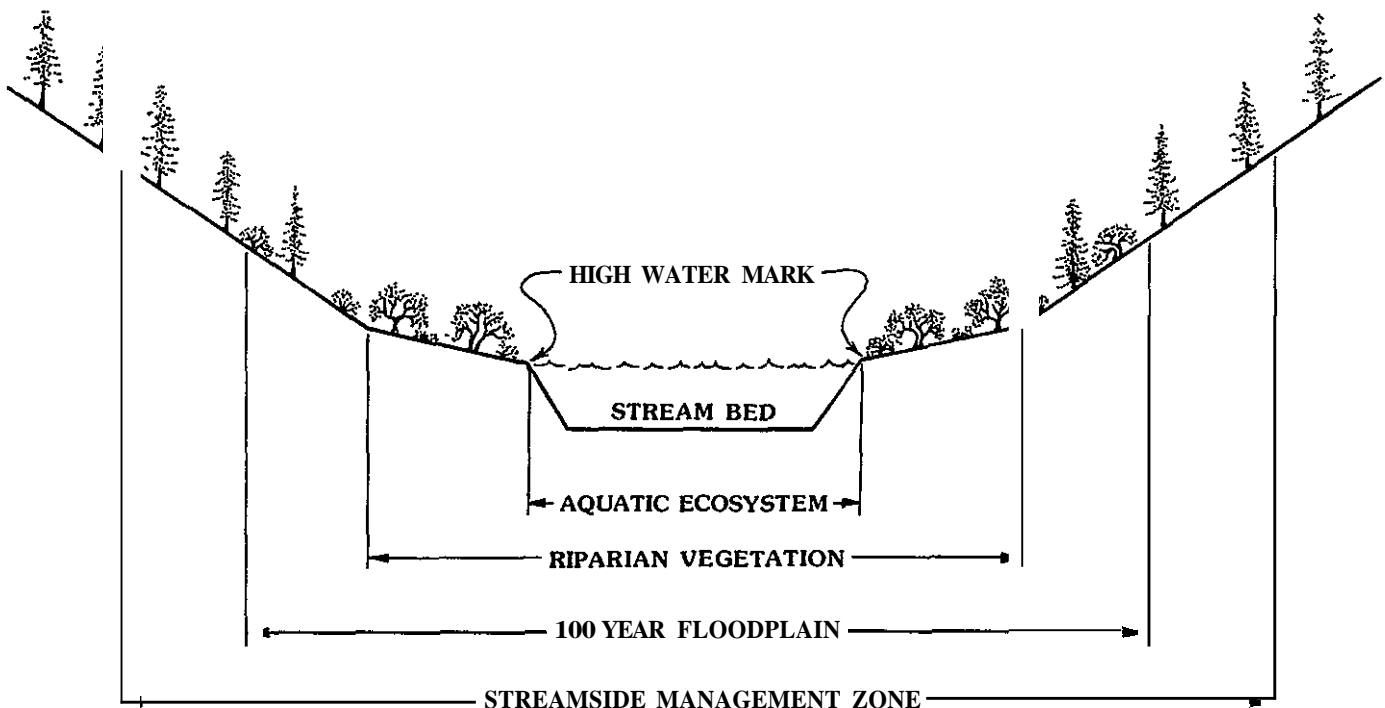
repaired as part of watershed improvement projects. Currently, meadows are protected through provisions to protect riparian areas.

In order to protect, enhance and **use** meadows better, an improved information base and a management system for meadows would be needed. Research could be used to develop management guidelines based on the sensitivity of the ecology and of the hydrologic properties of meadows. A management system could then be developed and used to coordinate and regulate the intensity and timing of multiple resource activities within meadows and their zones of influence.

d. Riparian Areas

**The** riparian area includes the aquatic ecosystem, riparian vegetation, 100-year floodplain and Streamside Management Zone. **The** aquatic ecosystem is bordered by the stream **or lake** bed and the normal bank high water mark of a **stream or lake**. Riparian vegetation are vegetation communities that require free or unbound water. **The** 100-year floodplain is the area along a **stream or lake** that has a one percent chance of being flooded in any one year. Figure 3.4 schematically illustrates the components within the riparian area and the Streamside Management Zone.

FIG. 3.4 RIPARIAN AREAS



Riparian areas have not been individually inventoried, identified or mapped. However, the total acreage can be estimated from miles of streams by stream class and size of lakes which have been inventoried.

About 1,300 miles of perennial streams and about 275 acres of lakes comprise the aquatic ecosystem in the Planning Area. Within this ecosystem lies a balance of microorganisms (such as bacteria, protozoa and algae), insects (such as water striders, backswimmers and various immature insect stages), flowering plants (such as bulrush and cattails), mammals (such as beavers), fish and various other plant and animal forms. Stream temperature, gravel substrates, oxygen and carbon dioxide levels, solar radiation and nutrients are critical to the life and health of the ecosystem.

Riparian vegetation is diverse and complex, and occurs along perennial and some intermittent streamcourses in the Planning Area. The extent of riparian areas is directly affected by the steepness of stream sideslopes. **The** steeper the slopes, the narrower the habitat. Dominant plant species include: willow, cottonwood, buttonwillow, Oregon ash, white alder, wild grape, dogwood, big leaf maple, sycamore and wild rose. Riparian habitats provide important ecotonal changes and edge areas that contribute greatly to wildlife habitat diversity. Nine amphibian, 130 bird, 44 mammal, 19 fish, and 19 reptile species utilize riparian areas for their livelihood. Seven of these species have been selected as Forest Indicator Species (peregrine falcon, California valley quail, acorn woodpecker, spotted owl, California mule deer, black bear, western gray squirrel, and rainbow trout). Riparian areas are an oasis at lower elevations where water is scarce, particularly during hot ~~summer~~ months.

The 100-year floodplain provides storage for flood flows. The storage capacity and vegetation of the floodplain help to reduce the velocity and peak flow which moderates downstream flooding. Reduced flows typically result in a deposition of sediment which increases the fertility of the floodplain and reduces deposition in stream channels.

Riparian areas protect the water quality by filtering sediment and providing vegetation needed to stabilize stream banks. Floodplain widths and vegetation associated with them help reduce flood intensities.

Current management of riparian areas is directed by many laws and policies which are designed to protect the characteristics of the resource. Prominent ones are Executive Order (E.O. ) 11988 on Floodplain Management and E.O. 11990 on Protection of Wetlands. They direct government agencies to avoid adverse impacts on, protect, preserve and enhance wetlands and floodplains. Also, rules implementing RPA and NFMA in 36 CFR 219.13(e) require:

Special attention will be given to land and vegetation for approximately 100 feet from the edges of all perennial streams, lakes, and other bodies of water and will correspond to at least the recognizable area dominated by the riparian vegetation. No management practices causing detrimental changes in water temperature or chemical composition, blockages of water courses, and deposits of sediment will be

permitted within these areas which seriously and adversely affect water conditions or fish habitat. Topography, vegetation type, soil, climatic conditions, management objectives, and other factors will be considered in determining what management practices may be performed within these areas or the constraints to be placed upon their performance.

In compliance with Public Law 92-500, Section 208, the Forest Service developed Best Management Practices (BMP's) to protect water quality. **BMP 1.8** deals with riparian areas. It requires designation of Streamside Management Zones along streams and wetlands to minimize the effects of nearby logging and related land disturbing activities.

Current management direction for the Sequoia NF applies these and other more general laws and policies to riparian areas. **The** Streamside Management Zone (SMZ) provides protection for watershed, wildlife and fisheries resources. Management zone width is determined on a project basis using appropriate Standards and Guidelines (S&G). These S&G'S, developed locally in consultation with the California Department of Fish and Game, are currently being tested as to their ability to meet riparian area management objectives. **The** Standards and Guidelines will be changed and updated as needed to assure achievement of the objectives. **The** need will be determined through a monitoring process. Average distance from the stream given special treatment is 100 feet. Timber harvesting equipment is prohibited from entering this zone except at designated stream crossings.

Riparian areas are important to a number of resources. They provide diversity and edge effect for wildlife species. *The* difference between riparian and adjacent vegetation, provides visual contrast and a fire barrier. Hardwoods in riparian areas could supply firewood; softwoods provide timber. Water and grassy meadows attract livestock to riparian areas. Streams and flat areas adjacent to them draw special recreation pursuits, such as camping, swimming, fishing and residential use. Riparian vegetation shade streams thereby maintaining lower water temperatures needed for trout fisheries. In riparian areas, conflicts between these resource needs and uses exist now and will increase as demands for goods and services increase. **Uses** and activities could further be directed within or located outside of riparian areas.

#### e. Timber

Providing a continuous supply of wood products from the National Forests has been a recognized management goal since their establishment. The Sequoia NF attempts to manage timber in a regulated manner producing annual harvests that can eventually approach the long-term sustained yield capacity. **The** essential requirements needed to develop a fully regulated forest are to apply strict controls over timber stocking levels, species composition and age class distribution. Current timber inventories are shown in Table 3.23.

Of approximately 679,000 acres inventoried as productive Forest land on the Forest, 420,000 acres are classified as tentatively suitable for timber

production.' Timber growth potentials can vary markedly from species to species and site to site due to available soil moisture, elevation, aspect, slope, soil, and localized climate.

Table 3.23 - Timber Strata and Standing Volume Inventory for the Sequoia NF\*

<u>Conifer Type</u>	<u>Acres</u>	<u>Volume (MMBF)</u>
mixed conifer	254,000	5,500
<i>ponderosa/Jeffrey</i>	59,000	1,000
red fir	40,000	1,300
lodgepole	11,000	200
giant sequoia	<u>3,000**</u>	<u>100</u>
Total conifer	367,000	8,100 MMBF
Other Forest land (hardwood, shrubs, non-stocked	53,000	---
Total lands tentatively suitable for timber management.	420,000	8.100 MMBF

\* data obtained from 1976 aerial photos and inventory plots established in 1980.

\*\* Approximately 10,000 acres are included within the mixed conifer type.

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**There** are two basic theoretical silvicultural systems used in timber management: even-aged and uneven-aged management. Both of these systems have biological and economic advantages and disadvantages. A detailed discussion of silvicultural systems can be found in Appendix G.

When applying the even-aged system, all trees within the boundaries of an identifiable stand are approximately the **same** age and size (see Figure 3.5). In applying the uneven-aged system, there will be a mixture **of** ages (see Figure 3.6). Over the entire Forest, with specified production goals, the total number of trees at each age will be approximately the **same** regardless of silvicultural system.

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<sup>1</sup>See Forest Plan, Appendix C, Section IV, Determination of Land Suitability, for method used to determine land base suitable for timber production.

FIG. 3.5

## ROTATION AND REFORESTATION PRACTICES IN EVEN-AGE MANAGEMENT ON THE SEQUOIA NF

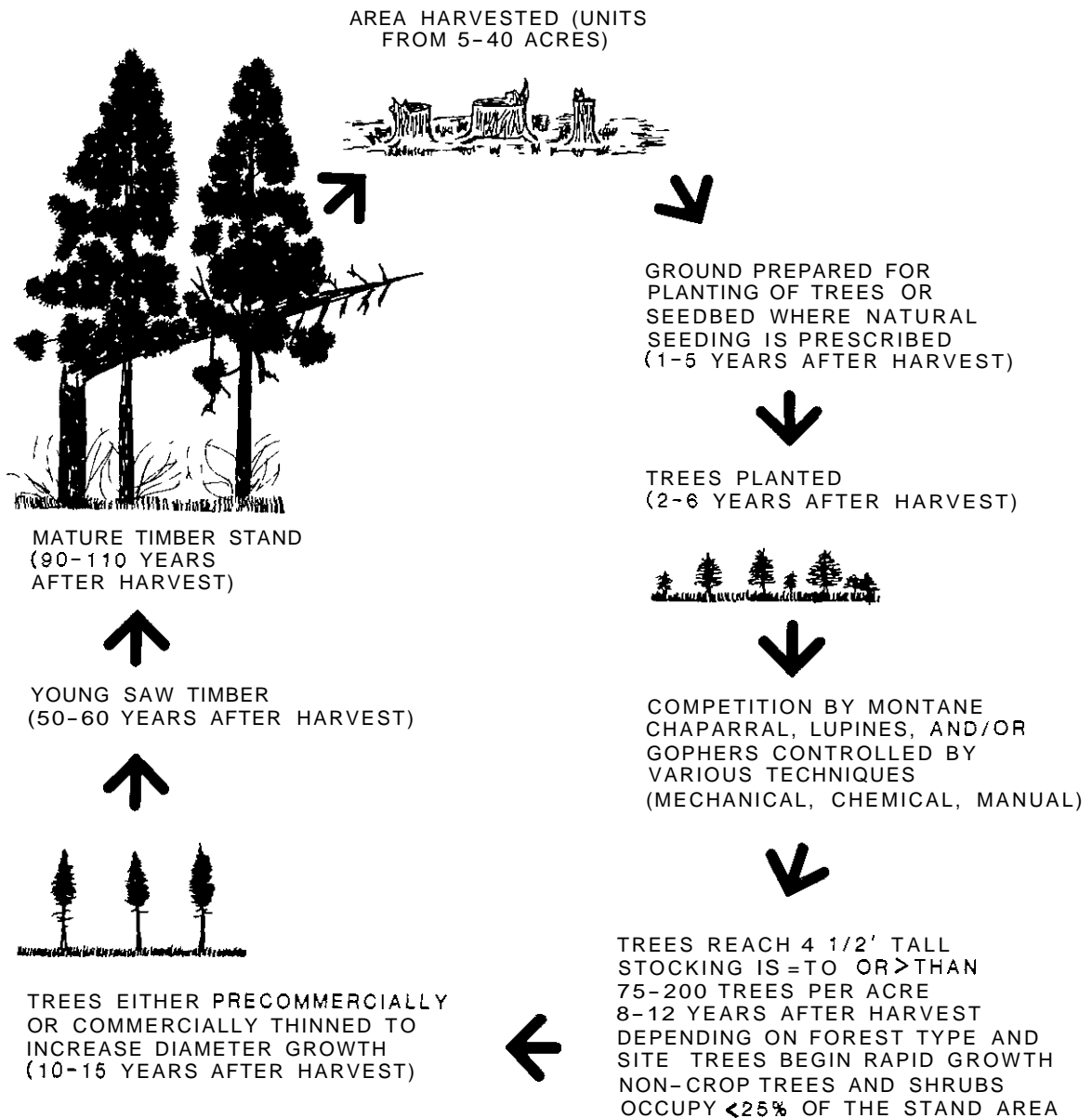
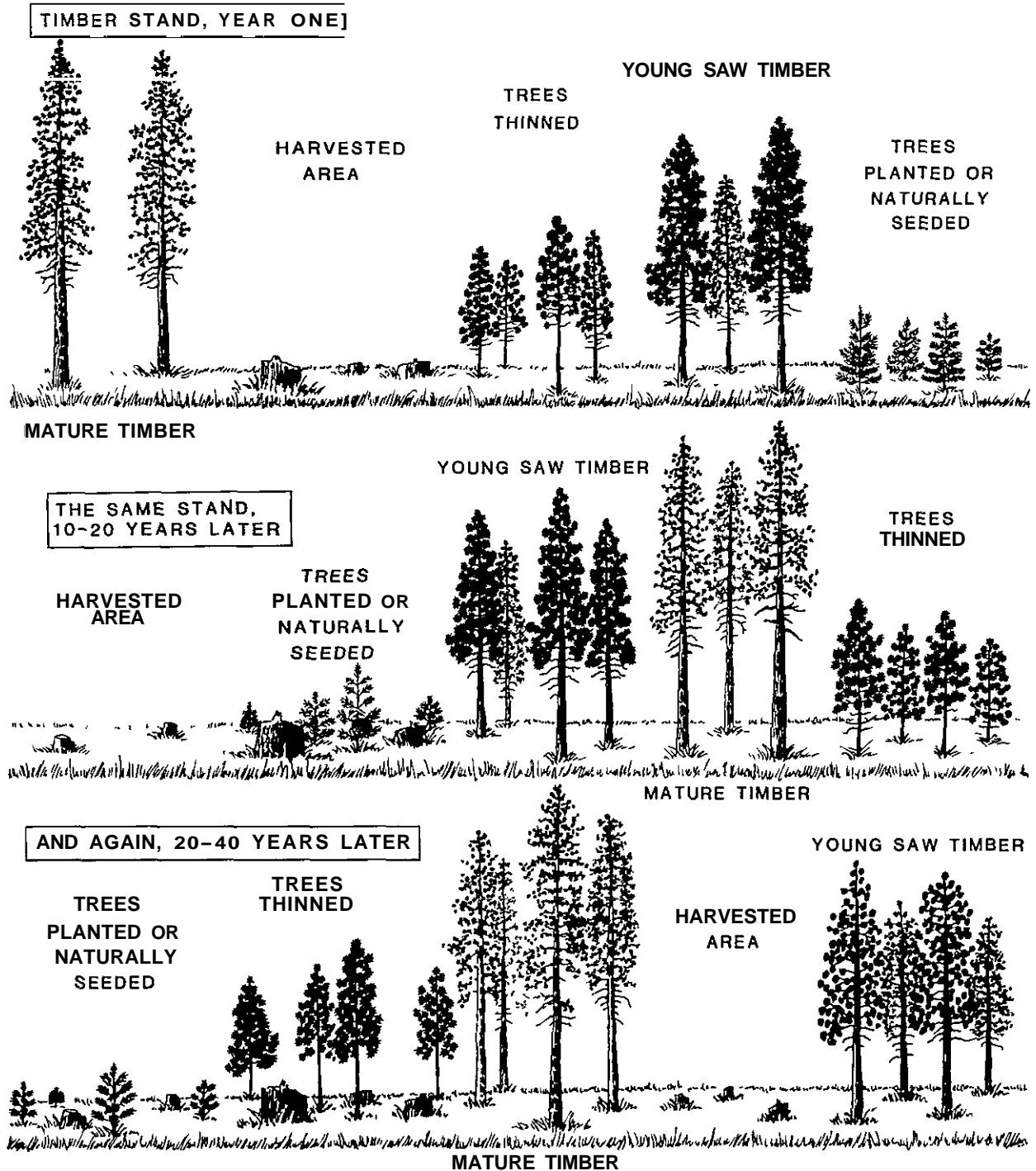


FIG. 36

### PERIODIC ENTRIES AND RESULTING CHANGES IN AN UNEVEN-AGE STAND ON THE SEQUOIA NF





On highly productive sites which are intensively managed, the even-aged system is favored. The uneven-aged system or some variation of it, is best applied to areas where a more natural visual appearance is desired or to retain wildlife habitat in a condition that favors certain mixtures of successional stage species.

Current management direction for the management of the timber resource is found in the amended Sequoia NF Timber Management Plan. The Timber Management Plan was originally approved on October 18, 1961. The objective of this plan was to sustain a maximum annual sawtimber harvest of the most desirable species to meet the Timber Resource Review goal for the Forest.

The 1961 Timber Management Plan directed that management in the mixed conifer, westside pine (general pine stand type found on the western side of the Sierra Nevada) and true fir types be carried out under Unit Area Control guidelines; and eastside pine (general pine stand type found on the eastern side of the Sierra Nevada) be managed under individual risk tree selection. The eastside pine was planned to phase into Unit Area Control at a later time. In Unit Area Control the condition of existing timber rather than topography dictates the stand boundary and cutting prescription. "Units" tend to be smaller in size than under normal even-aged management. Some would be equivalent to the small regeneration groups in uneven-aged stands. Since the distribution of "units" is left to nature, there would be a certain randomness of appearance more closely related to the uneven-aged forest character than even-aged.

Currently, timber is managed under the even-aged system incorporating such harvest practices as clearcutting, shelterwood and intermediate cutting methods. Modified even-aged practices are used where timber production is not the dominant use such as at recreation sites, visually sensitive areas or critical wildlife habitat.

In order to produce high levels of wood products, treatment of competing vegetation is usually required, both before and after seedling establishment. Grasses and herbaceous plants such as lupines (Lupinus spp.) and peavine (Lotus crassifolius) are particularly devastating to early survival because of their ability to remove soil moisture rapidly from the upper portions of the soil profile. In addition, these plants provide a summer food source for gophers. During the winter season when herbaceous food is not available, gophers often eat the conifer seedlings. Later in the life of tree seedlings, woody shrubs can threaten survival and growth because they compete for soil moisture at greater depths and can cast heavy shade which also retards growth. Finally, trees compete with each other and must be thinned when numbers are excessive, even if they are not of a size or quality that is commercially desirable.

A wide variety of techniques exists for the control of competing vegetation. Cost and efficiency, though, usually suggest the use of mechanical equipment or fire for initial land clearing, application of herbicides for controlling grasses and broadleaf weeds, and precommercial thinning with chainsaws. (Refer to Chapter 2, Section E.2 for a discussion of the effects on timber management if the use of herbicides is constrained.) Once seedling establishment and early growth is assured, only thinning and final regeneration harvests remain in the management of a

timber stand. Such silvicultural tending of timber stands also promotes tree vigor, which in turn promotes natural resistance to damaging insects and diseases. At the same time the risk of fire spread is minimized because the canopy formed by the crowns is relatively open and surface fuels from the understory of competing vegetation is relatively light.

Even with silvicultural treatments that ensure adequate survival and growth, regenerated forest stands are vulnerable to fire for several decades. This is so because silvicultural treatments rarely reduce fuels to the point where there will be no fire spread. Since young trees retain branches nearly to the ground ignition of the crowns is quite possible, even with light ground fires. For this reason some form of specific fire protection is needed if losses are to be kept within predetermined limits. This protection can be accomplished by more intensive silvicultural treatments such as complete fuel removal and pruning of lower branches, direct methods such as fuelbreaks around or through plantations, and indirect methods such as dispersing regenerated stands within relatively low fire hazard/risk areas.

Approximately 1,200-1,500 acres are artificially regenerated on the Sequoia NF each year. This acreage is expected to increase. An additional 4,000-5,000 acres of timber stand improvement work (such as precommercial thinning and plantation release) are accomplished each year. Principal methods used for stand improvement are mechanical, chemical, hand treatments and prescribed fire.

All of the kinds of treatments discussed above, from regeneration to final harvest, apply to intensively managed forests regardless of whether under the even-aged or uneven-aged system. Because of the mixture of ages within the uneven-aged stand, a number of different treatments are required at each entry in order to realize yields compatible with site potential. Within the even-aged stand, only one kind of treatment is generally required; and the economic advantage of the even-aged system is apparent. For this reason, nearly all intensively managed forests worldwide are controlled under the even-aged system.

A critical goal of a managed forest is to attain a specified distribution of timber age classes. This ensures an inventory from which regular continuous harvests can be made. The distribution takes the form of approximately equal numbers of acres of trees at each age between zero and the oldest age of crop trees just before final harvest.

Present distribution of age classes is far from the ideal in the Sequoia NF. Currently only about four percent of the tentatively suitable forest land base has timber stands between the ages of 70 and 80 years, only three percent has ages of 120 years, and all the remainder (93 percent) carries timber stands 130 years of age or older. Clearly there are large gaps and excesses in the present age class distribution.

One of the most important and basic decisions to be made in forest management is the maximum age that individual trees or stands will be allowed to attain or the "rotation age". Definition of the particular age class distribution goal, as well as the effect on other forest resource values depend heavily on this decision.

For the Sequoia NF, the maximum average annual yield could be attained if final crop trees were allowed to reach an age of approximately 170 years. At least 95 percent of this maximum yield could be attained if crop trees were allowed to reach only approximately 110 years of age. From a strict financial point of view, harvesting at 110 years rather than 170 years is advantageous even with the five percent reduction in volume produced: but certain other resource values would be enhanced if the rotation age was even more than 170 years. The rotation age of even-aged managed forests is a major point of contention among competing objectives that are affected by timber management. A secondary point is the frequency that stands are entered for periodic thinning. The more frequent the entries, the lighter the harvest at each. The rotation ages discussed above include thinning harvests at 20-year intervals. Longer intervals, or no thinning at all, would reduce rotation ages, where the objective is to maximize yield.

There are two major mills utilizing Sequoia NF timber: Sierra Forest Products at Terra Bella and Sequoia Forest Industries at Dinuba. In addition, there are approximately 10 to 15 small businesses and individuals which also purchase timber sales. During the period 1960 to 1986 the average annual harvest was 92.0 MMBF.

Harvest volumes are expected to remain relatively constant or increase slightly in the future. Annual fluctuations will occur due to economic factors. The RFA projects the demand for timber will nearly double by the year 2030.

Timber from adjacent National Forest and private land are also processed by these mills. Current demand is estimated to be about equal to the current allowable sale quantity (95 MMBF).

Demand for firewood from the Forest has increased dramatically over the past five years. The demand for firewood was 27,500 cords in 1978 and 34,700 cords in 1982. It is estimated that the demand in 2030 will be 60,000 cords.

Timber management activities often have a profound and conflicting effect on other resource values. A clearcut harvest of mature timber will reduce the amount of habitat available for wildlife species such as the pileated woodpecker, but on the other hand animals such as deer are generally favored by such activity. Likewise, the removal of competing vegetation to enhance timber growth may reduce forage for cattle, but at the same time increase water yield from the Forest. Any particular activity will enhance some resource values and degrade others. Conflicts between timber management activities and other resource values are resolved within three levels of management control.

The first level of control permits only those activities that are lawful. For example, a timber access road will not be built if it means destroying a significant archaeological site, regardless of how desirable it is for timber management. The second level of control comes about through the social/economic/ political process of allocating land uses. If a certain piece of ground is directed in the Land Management Plan to emphasize timber production, then any necessary activity may take place if it is coordinated with other resource values. And finally, there is professional Judgement.

For example, if timber can be hauled at a time other than during peak recreation use, then it makes sense to do so and minimize conflicts with recreation traffic.

Timber management activities are usually affected by: wildlife habitat requirements, visual quality concerns, protection of historic or prehistoric activities, Cumulative Watershed Effects, and many more resource needs. The planning of each harvest activity requires a careful consideration of a variety of resources and the mitigation of adverse effects. Likewise, many of these resources are benefited by a changing vegetative structure over time. Wildlife habitat can be improved by producing a mix of age classes and structure of vegetation by timber harvesting. Public access is usually improved when roads are constructed to intensively manage timber and visual diversity can be created by harvesting.

### Below-Cost Timber Sales

When a timber sale returns less money to the U.S. Treasury than the Forest Service spent in preparation and administration, the sale is classified as a "below-cost timber sale." National concern over below-cost timber sales has increased because of Federal budget deficit and adverse impacts when timber harvesting yields no apparent cash benefits to other forest resources. The issue is complex and there is controversy over actions the Forest Service should take to reduce below-cost timber sales. Proposals range from discontinuing below-cost timber sales to taking no action.

One argument against offering below-cost timber sales is that users of resources should pay the full costs. However, laws governing management of National Forests do not require the U.S. Treasury to be reimbursed for management costs. Users of other types of National Forest resources do not pay the full costs to the government. An important example is the Forest Service's recreational programs. In 1985, the National Forest's recreational program cost more than \$100 million and returned about \$30 million. This relationship of cost-to-revenue is true in this Forest.

Many benefits cannot be quantified; therefore, the issue is not only over annual cash flow from timber sales, but over their contribution to all goods and services produced by multiple-use management of National Forest System lands. The current definition for below-cost timber sales does not provide a measure of their contribution to other resources or the magnitude of economic benefits generated in the utilization and marketing of wood products.

Raising minimum timber sale prices to cover more of the costs are being considered. The Forest Service is currently implementing a new accounting system which will enable Forests to assign appropriate costs to other benefiting resources and to account for future returns from assets created by timber sales programs. Those assets are primarily the roads constructed for the timber sale. Current minimum rates for timber sales cover the cost of reforestation after harvesting. In addition, costs to prepare and administer timber sales can be reduced through simplifying and improving organizational efficiency. Reductions in timber sale operating cost will result in higher receipts.

Since 1979, the Sequoia NF timber sale program has demonstrated a positive cash flow when capital investments, such as roads, are evaluated as assets and not as costs. However, if roads are considered costs to the timber program with no residual value to the Forest, the timber program can be considered to be operating below cost. The strengthening of timber prices during 1986 and 1987 has had the effect of reducing the number of below cost sales offered by the Sequoia NF. Salvage sales and sales harvested with low-volume per acre and high planting costs are usually below cost sales. All fuelwood sales are also below cost sales. Yet, these have the most need for treatment or yield high public benefits not measured by cash flow to the U.S. Treasury.

f. Woodlands

Woodlands on the Planning Area are divided into various *oak* (hardwood) and pinyon pine woodlands. Major resource uses and opportunities include: wood production (firewood), wildlife habitat, recreation and range.

1) Oak Woodlands

There are three major species of *oaks* occurring in a variety of sites across the Planning Area. **These** are blue, black, and canyon live *oak*. Each type has uses and opportunities that are different from each other.

a) Black Oak Woodland

Black *oak* woodlands lie between the mixed chaparral and conifer forests and are primarily located on the western slope of the Forest. Black *oak* woodlands form a narrow transition zone where warm chaparral soils give way to cooler soils that are capable of growing conifer species.

In the past 80 years, intensive fire suppression activities have nearly eliminated ground fires in black *oak* woodlands that under natural conditions periodically burned out the understory vegetation. Today there is an understory of shade-tolerant incense-cedar and white fir trees.

Black oaks continue to be used for firewood production since this is a species desired by people who obtain firewood for home heating under special use permits. The demand for personal use firewood has increased significantly on the Forest in the past three years. This woodland is a critical area for wildlife diversity for birds and mammals due to the availability of nesting cavity openings in mature black *oak* trees. Mast (acorn) production is also extremely important for deer and other wildlife species. Recreation use is relatively high in the black *oak* woodlands and cattle utilize the herbaceous understory which is composed primarily of grasses.

Black *oak* has the potential to stump-sprout after harvesting or after a wildfire, making management of this woodland type easier compared to vegetative types lacking this attribute. Young age classes are generally lacking throughout the black oak woodland. Harvesting and thinning of black *oak* trees would increase the diversity of wildlife habitat and increase grazing opportunities. Black *oak* woodlands comprise about 45,900 acres on the Sequoia NF. Only 25 percent of this acreage is considered

accessible at this time. A minimum of 20-25 square feet basal area per acre is required to maintain wildlife habitat. An uneven-aged management approach could be implemented with a minimum of 120-year rotations. Based on biological potential, 10-25 cords per acre could be harvested and maintain wildlife habitat.

b) Blue Oak Woodland

Blue *oak* woodlands have traditionally been utilized for range production due to the extensive annual grass understory and the proximity to cattle ranches on the eastern edge of the San Joaquin Valley. This woodland occurs only on the western fringe of the Forest wedged between the floor of the San Joaquin Valley and the mixed chaparral. Blue *oak* is the dominant species in this woodland, but digger pine, California buckeye, interior live *oak* and valley *oak* can be common associates. The understory in the blue *oak* woodland is brome, oat and fescue grasses giving this woodland a savanna appearance.

The blue *oak* woodland currently has very little *oak* reproduction. In fact, in some areas, no new seedlings have been established for years. The two most probable causes are:

- 1] the lack of low intensity ground fires have not reduced competition of the annual grasses long enough for the acorn to germinate and become established, and
- 2] the increased use of the blue *oak* woodland for intensive grazing. During drought cycles, both cattle and deer will eat blue *oak* saplings generally causing mortality to the young trees.

Growth potential (like most *oaks*) is extremely slow. Wildlife habitat and range production will continue to utilize the blue *oak* woodland. Most firewood opportunities in the blue *oak* woodland have not been utilized. A potential problem is the difficulty of reestablishing blue *oaks* after harvesting. Unlike black *oak*, blue *oak* generally will not stump-sprout. As natural regeneration of blue *oak* seems unlikely, steps to artificially replace harvested blue *oak* trees need to be considered. Wood production (biomass) is much less in blue *oak* woodlands than in black *oak* woodlands because blue *oak* trees are considerably smaller, and occur in a savanna with fewer trees per acre. Firewood harvesting on the 43,000 acres of blue *oak* woodland on the Sequoia NF is not a priority for management; the cords per acre are low, the few trees are essential to many wildlife species, and provide shade for cattle during the hot summer months.

c) Live Oak Woodland

Live *oaks* are evergreen as opposed to the blue and black *oaks* which are deciduous. Geographically, live *oaks* occur scattered across the Planning Area from 1,000 to 8,000 feet. They generally occur on steep, rocky slopes or areas with relatively shallow soils.

There has been little utilization of live *oak* woodlands. Live *oaks* form a closed-canopy and usually no understory vegetation is present precluding range use. Wildlife habitat is also reduced significantly as compared to

the blue and black oak woodlands. Diversity of these woodlands is extremely minimal. Live oak woodlands comprise 124,100 acres on the Sequoia NF. Only 15 percent of this acreage is considered accessible due to steep rugged terrain and lack of existing roads. Due to the large crowns of live oaks, small clearcuts provide the most reasonable treatment method. Based on biological potential, yields of 15-25 cords per acre could be harvested with the number of acres available varying between the alternatives with rotation ages of 120 years.

Firewood production is the greatest potential use of this resource. Live oaks are stump-sprouting species making regeneration relatively easy. Steep, rocky slopes throughout much of the live oak stands will make harvesting and proper utilization difficult in most cases.

## 2) Pinyon Pine Woodland

This is another woodland type that has had utilization. Pinyon pine woodlands are found primarily east of the Kern River. Extensive pinyon pine woodlands occur on the eastern portion of the Piutes and the Kern Plateau. The majority of the Scodie Mountains are covered with pinyon pines. Precipitation is very low in the pinyon pine woodlands with an average of 10 inches (rarely exceeding 18 inches). Soils are rocky and shallow.

Generally, pinyon pine woodlands form pure stands but occasionally can be found with western juniper, California juniper, or even the rare Piute cypress. Canyon live oak is also a very common associate. Pinyon pine woodlands comprise 71,705 acres on the Sequoia NF and 28,938 acres on the BLM Rockhouse WSA. Only 20 percent of this acreage is considered accessible due to rugged terrain and lack of existing roads. A management approach utilizing uneven-aged silvicultural systems could be implemented with a minimum of 120-year rotation. Based on biological potential, 10 cords per acre could be harvested with the number of acres available varying between various alternative land allocations.

The pinyon pine woodland has received custodial management for the past 80 years. This woodland burns very hot under extreme fire weather conditions. Replacing a destroyed stand after a wildfire may take several hundred years under natural conditions. Primarily, this is due to a lack of pinyon seeds readily being supplied to the burned site since pinyon pine seeds are relatively large and heavy and generally are not carried by the wind like other conifer species. However, large wildfires in the pinyon pine woodlands historically are infrequent. Weather conditions necessary for conflagrations in pinyon pine woodlands require strong winds since there is considerable bare soil and/or rock throughout this vegetative type.

Range opportunities are minimal due to the lack of water supply and preferred browse. Recreation use in the form of OHV's have utilized this area heavily. Gathering of pinyon nuts attract Forest visitors to this woodland in the fall; and hunters also use the area in the fall. The pinyon pine woodland in many places could be thinned to release dense stands of pinyon pines and encourage perennial grasses and assorted browse species. Firewood potential exists; however, this resource remains lightly used at the present time.

### 23. Visual Resources

The Planning Area offers a wide range of scenic features that include desert-like, foothill and mid to high elevation landscapes. Elevations vary from 1,000 feet to over 12,400 feet above sea level, an indication of the diversity of the area's visual resource. Three landscape provinces are represented. The Sierra Nevada is the largest, encompassing nearly 90 percent of the landscape. The Sierra Foothill and Desert and Desert Mountain Provinces complete the Planning Area and are found along the western and southeastern boundaries, respectively.

Some of the most outstanding visual attractions include the Kings River Canyon with high, steep walls and massive rocky ridges; the Little Kern River drainage characterized by many streams, small lakes and alpine meadows surrounded by majestic mountain peaks; and the North Fork Kern River with steep canyon walls to a more "U" shaped pattern and clear water flowing in cascades over bedrock and into deep pools. Numerous geologic features throughout the Forest are highly photogenic and aesthetically significant. Farewell Gap, bordered by Mt. Florence and Vandever Mountain; Moses and Maggie Mountains; the Needles; Dome Rock and the granitic domes of the Dome Land Wilderness are a few. The vegetation includes typical desert species of annual grass, oak types, pine and fir forests, alpine vegetation and numerous giant sequoia groves. The abundance of this geologic and vegetative diversity combine to strengthen the visual importance of the Planning Area.

While no specific statistical analysis of the demand for visual quality is available, the presence of strong demand can be inferred from a variety of sources. One of these sources is the number of Federal laws, regulations, and policies which have cited visual quality or scenery as their primary or secondary purpose. The Wilderness Act of 1964, the Endangered American Wilderness Act of 1968, and the California Wilderness Act of 1984 are examples. The Wild and Scenic Rivers Act of 1968 with a 1978 amendment, the National Parks and Recreation Act, resulted in a study of the North Fork Kern River. Later the Nationwide Rivers Inventory of 1982 identified three additional rivers on the Sequoia NF for study within this Forest Plan. Two Acts passed late in November 1987, designated the Kings, South Fork Kings, North Fork Kern and South Fork Kern Rivers as Wild and Scenic Rivers.

The establishment of the State Scenic Highway Master Plan is an indication that the State Legislature perceives the demand for visual quality. In 1965, Regional Forester Charles Connaughton stated that National Forest System Lands would be managed to retain natural appearing conditions for public enjoyment by restricting or modifying timber harvesting in the immediate vicinity of and in the view from highways designated as "eligible" in the Master Plan. These actions suggest a need for scenic routes and highways, turnouts and vista points. State Highways 180 and 190 have been designated as eligible. Each has been recognized for their scenic values at a lesser level than state highways.

In addition, the local counties have recognized the importance of visual quality through designation of specific roads within the Scenic Highway



Element of their **General** Plan. Many of these roads either traverse the Forest **or** allow the traveler views into the Forest.

Another source of demand for visual quality is the level of recreation **use** in activities associated with the enjoyment of scenery. The State Parks and Recreation Information System have projected use by County participation in such activities as hiking and backpacking, nature appreciation and visiting scenic areas. For the eight counties from which about 98 percent of the Sequoia NF **users** originate, the projected increase in demand between 1980 and 2000 is 35 percent for hiking and backpacking, 40 percent **for** nature appreciation, and 52 percent **for** visiting scenic areas.

Because of this clear public concern and demand **for** natural scenic environments, a standardized method has been established to inventory and evaluate the visual attributes of a National Forest. The Forest Service Visual Management System provides the method.

Through this system, the existing supply of visual quality is measured by the relative degree of visual alteration (Existing Visual Condition) and in acres of variety class. **The** demand is determined by an assessment of the numbers and types of viewers, length of viewing time and distance to the viewed landscape (Sensitivity Levels). Definitive land areas are assigned an Initial Visual Quality Objective (IVQO) which is compared with other resource values during the planning process. The IVQO **may** be left as assigned **or** traded down **or** up, depending on the results of the comparison with other resource functions and the decision of the Forest Supervisor. A final Visual Quality Objective (VQO) is then applied to the land. This system has been used at project level since the mid-1970's and, now, is a part of the Land Management Planning Process.

The relative degree of visual alteration of the "naturally appearing" landscape is addressed through the Existing Visual Condition (EVC) process. The EVC classes become a baseline from which to measure future changes. (See Appendix J for a definition of EVC classes.)

Table 3.24 - Acres of Existing Visual Condition (EVC) by Variety Class

EVC Class*	VARIETY CLASS					
	DISTINCTIVE A		COMMON B		MINIMAL	
	USDAFS	BLM	USDAFS	BLM	USDAFS	BLM
I	285,400	500	467,400	33,500	101,900	1,600
II	17,200	-	138,700	-	11,200	-
III	3,500	-	37,400	-	3,200	-
IV	5,500	-	32,600	-	2,000	-
V	2,100	-	10,400	-	400	-
VI	-	-	-	-	100	-
Totals	313,700	500	686,500	33,500	118,800	1,600

\* See Figure 3.7 for visual condition examples.

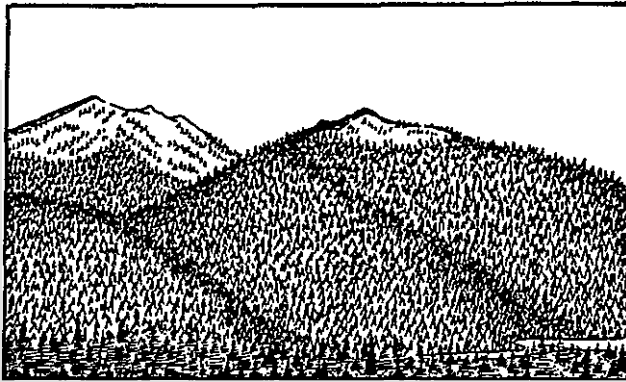
The Forest-wide EVC inventory was completed in 1980-81 using 1976 aerial photography and orthophoto maps. Attempts were not made to field verify the results. Since that time, it has become apparent that much of the Class I (Pristine) landscape has been managed but was not visible in the aerial photography. About 150,000 acres, then, may be properly reclassified as EVC Class II or III. This reclassification would affect the Visual Quality Index (discussed later in this section) of the Existing Visual Condition.

Since the Variety Classes are inherent to the natural landscape (the classes are a ranking of physical features and display visual importance), they remain constant. The Planning Area has a good inherent capability to supply visual resources. The Variety Class inventory shows 313,700 acres (28 percent) of National Forest System land and 500 acres (1.4 percent) of BLM land with potential to provide top quality scenery (Class A). Eleven percent or 118,800 acres of the Forest and five percent or 1,600 acres of BLM have a low capability (Class C). The remaining land, 686,500 acres (61 percent) of Forest and 33,500 acres (94 percent) of BLM, have an average capability (Class B).

Visual sensitivity levels are an expression of existing demand and are inventoried by distance zones. Of the land outside wilderness, about 60 percent is considered high sensitivity, 23 percent average and 17 percent low. Of the high sensitivity lands, 24 percent is foreground, 69 percent is middleground, and seven percent is background. In the average level, 31 percent is foreground, 65 percent is middleground, and four percent is background. Low sensitivity levels are not inventoried by distance zones.

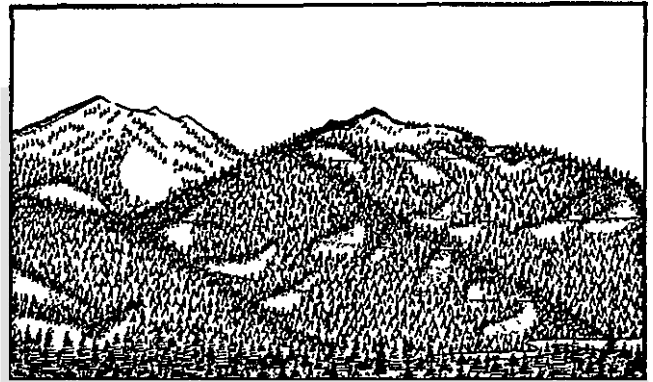
VQO PRESERVATION

VC I Untouched  
Predominantly ecological changes.



VQO MODIFICATION

VC IV Disturbance  
Changes are easily noticed and attract attention



VQO RETENTION

VC II Unnoticed  
Changes are not visually evident.



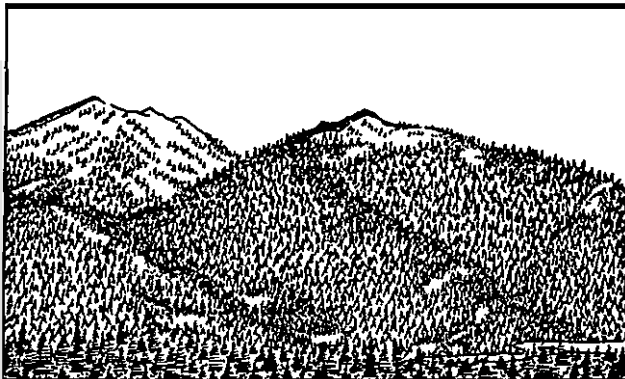
VQO MAXIMUM MODIFICATION

VC V Major Disturbance  
Changes are very strong and attract attention.



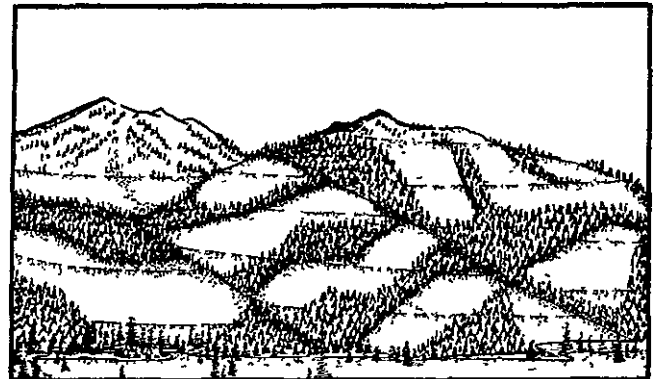
VQO PARTIAL RETENTION

VC III Minor disturbances  
Changes are noticed, but do not attract attention.



VQO UNACCEPTABLE MODIFICATION

VC VI Drastic disturbance  
Changes are in glaring contrast and disharmony with natural pattern



NATURAL CHARACTER DOMINATES

ALTERED CHARACTER DOMINATES

The most visually sensitive State, County, and Federal roads and trails in the Planning Area are:

- 1) State Highways 180\*, 190\*, 178, 155, 214, and 483
  - 2) County Roads:
    - a. The Western Divide (M107)
    - b. Parker Pass (M50) from California Hot Springs to the Lloyd Meadows Road (FS 22S82) intersection
    - c. Sierra Way (M99) from Lloyd Meadows Road to Kernville
    - d. California Hot Springs to Pine Flat (M56)
  - 3) Sequoia and Kings Canyon National Parks (NM528A, Generals Highway)\*
  - 4) Forest Service Roads:
    - a. FS 13S09 from Quail Flat to Princess Campground
    - b. FS 14S11 from Generals Highway to Big Meadow's Campground
    - c. FS 22S05 from Kern River to Blackrock Work Center and Southeast to Kennedy Meadows.
- (\*) All alternatives within the Forest FEIS will maintain Retention and/or Partial Retention Visual Quality Objectives within the foreground and middleground views of these roads.
- 5) Trails:
    - a. Pacific Crest Trail
    - b. That provide direct access to the National Park and designated Wildernesses.

With variety class and sensitivity levels assessed, the IVQO's were determined.

Table 3.25 - Initial Visual Quality Objectives by Variety Class

OBJECTIVE*	VARIETY CLASSES BY ACRES						TOTAL ACRES	
	A		B		C		USDAFS	BLM
	USDAFS	BLM	USDAFS	BLM	USDAFS	BLM		
P	206,700	-	50,300	-	7,100	-	264,100	-
R	78,900	50	92,600	400	-	-	171,500	450
PR	28,100	450	351,600	10,000	38,800	1,200	418,500	11,650
M	-	-	175,400	23,100	27,600	400	203,000	23,500
MM	-	-	16,600	-	45,300	-	61,900	-
TOTALS	313,700	500	686,500	33,500	118,800	1,600	1,119,000	35,600

\* See Figure 3.7 for VQO Examples.

To assist in the comparison of alternatives, R-5 has developed a Visual Quality Index (VQI). The index uses a weighted value assigned to VQO's and EVC's in each variety class and then multiplied by the number of acres (or decimal thereof) in each category. For the Planning Area, The VQI for Existing Visual Conditions (the result of past management) shows an index value of 76.6. The actual value is expected to be lower once the EVC's are updated and field verified, as explained earlier in this section. If all lands were left unmanaged and allowed to be restored to a wildland condition, the VQI would be 80.7. If, on the other hand, all lands outside wilderness were managed to the Maximum Modification (MM) VQO, the VQI would be 50.

Utilizing the VQI to rate total visual quality within the Pacific Southwest Region, it has been estimated that this resource has been reduced by 25 percent from the totally natural, unmanaged condition. For the Planning Area, the VQI for EVC's (results of past management) indicates a 13 percent reduction of visual quality. By this same method, the IVQO's (results of the Visual Management System before trade-offs) could allow a 45 percent reduction in visual quality. The IVQO's, then, recognize a great deal of alteration could be possible and still meet the visual objective.

Once the VQO is established, the ease or difficulty of a land unit to "absorb" management activities is identified through an inventory process called Visual Absorption Capability (VAC). Where the absorption capability is high, it is easier to meet the VQO; and, conversely, where the VAC is low, it is more difficult. Table 3.26 displays the absorption capability of National Forest System land and that of all lands capable and suitable to grow commercial timber outside wilderness.

Natural processes and management activities will change the visual condition of the Forest; although expectations are that the VQO's adopted by the Forest Plan will be met or exceeded and the degree of change will be within acceptable levels. About 460,000 acres of the Planning Area were inventoried during the USDAFS RARE II process as potential wilderness. These lands now meet EVC Class I or the equivalent of the Preservation (P)

Table 3.26 - Visual Absorption Capability (Outside Wilderness)

VAC CLASS	USDAFS*	% OF	
		TOTAL	TIMBERLAND
High	78,400	9	77.600
Medium	204,200	24	190,200
Low	<u>572,300</u>	67	<u>152,200</u>
Total	854,900		420,000

(\*) All BLM land in the Planning Area is Low VAC and not included in these figures.

■

VQO. The California Wilderness Act of 1984 released about 343,000 acres to non-wilderness uses and this Plan could release the remaining 117,000 acres. The results, then, could be a reduction of naturally appearing landscapes while still meeting adopted VQO's.

Past timber harvest practices in parts of the Sierra Nevada have not been conducive to optimum timber production. The move toward regulated, even-aged management on the Sequoia NF. can increase the challenge to maintain high levels of visual quality for several decades. Once the Forest is managed in a regulated state, however, studies now indicate that the visual resource could be maintained consistently Forest-wide at acceptable levels.

A regulated state is a condition where past and current activities will be evident in a consistent cycle and at the predetermined level of impacts as defined by the adopted VQO.

Other forms of management occur that potentially disturb the natural landscape. Construction of fuelbreaks and firebreaks, for example, may be necessary for the protection of human life and property. Yet, their presence may leave a linear pattern on ridgelines that is out-of-character with the surroundings. Chaparral management, through prescribed fire or mechanical methods, will often improve the visual attributes by rejuvenation of old growth; however, type conversion for range or water quantity purposes can change the natural character of the visual resource. Facilities, (such as communication towers, hydroelectric and cogeneration structures, windfarms and those associated with mining and geothermal operations) add artificial encumbrances to the landscape that are often difficult to blend into the Forest environment.

Beyond chaparral management, various other management practices actually protect and/or enhance visual quality. The revegetation of poorly growing sites or thinning of overstocked, visually impenetrable stands increase visual interest. The temporary closure of deteriorated land allows revegetation and visual "healing". Replanting in recreation sites and along roads reduces the visual impacts of unvegetated soil. In the design and construction of Forest facilities, every effort is made to enhance the quality of the aesthetic environment by blending the facility, as much as possible, into the naturally appearing landscape. In addition to the Acts mentioned earlier in this section, the National Forest Management Act of 1976 requires, for example, "Cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain" and "Identify, protect, and enhance the visual quality". Management actions that protect and enhance the visual resource are occurring throughout the Forest.

## 24. Wild and Scenic Rivers

The National Rivers Inventory of January 1982, identified three rivers on the Sequoia NF which may be suitable for inclusion in the National Wild and Scenic Rivers System. (See Figure 3.3). Those rivers on the Forest identified for study in the Land Management Plan were:

South Fork Kern River  
Kings River  
South Fork Kings River

(See Appendix E, FEIS for a detailed discussion of these rivers.)

In addition to the three rivers being studied, the North Fork Kern River was identified for study as a possible candidate for Wild and Scenic designation by an Amendment (PL 95-625, November 10, 1978) to this Act. The public comment phase of the Draft Environmental Impact Statement was completed and comments from the public were analyzed. A final Environmental Impact Statement was prepared. This report was evaluated by the Office of Management and Budget for a final recommendation. President Reagan recommended that 60.7 miles of the total 78.5 studied be included in the National Wild and Scenic River System.

During the course of preparing the Forest Plan and this EIS, a considerable amount of legislative action took place with respect to Wild and Scenic River status. In November 1987, legislation pending in Congress for all three rivers being studied and the North Fork Kern was enacted into law. This legislation designated all or portions of each river under the Wild and Scenic River Act, negating the need for further Wild and Scenic River consideration. In summary, legislation included the following:

South Fork Kern River -- 72.5 miles, from headwaters in Golden Trout Wilderness, Inyo NF, to south boundary of Dome Land Wilderness, Sequoia NF (Segments 2 through 6).

North Fork Kern River -- 78.5 miles from headwaters in Sequoia National Park through Sequoia NF to Kern-Tulare County Line (Segments 1 through 4).

South Fork Kings River -- 40.5 miles from headwaters in Kings Canyon National Park through Sequoia NF to confluence with Middle Fork and Main Kings Rivers (Segments 1 through 3).

Kings River -- 5.0 miles from confluence of Middle Fork and South Fork Kings Rivers to Garlic Meadow Creek (Segment 2). In addition, a 48,000-acre Special Management Area consisting of the Kings River Further Planning Area was designated. It includes the five miles of Wild and Scenic River (Segment 2) plus an additional 13.0 miles of the river (Segment 1), although this latter segment was not specifically designated Wild and Scenic.

## 25. Wilderness

Five wildernesses comprised of 264,071 acres have been designated in the Sequoia NF. This places approximately 24 percent of the Sequoia NF into established wildernesses (see Table 3.27).

Current direction is that within wildernesses, there will be no timber harvesting: no manipulation of vegetation for watershed, wildlife, or forage purposes: no use of motor vehicles, mechanical transport, or motorized equipment: and no installations or structures other than as specifically provided in the Wilderness Act.

Within the broad direction contained in the Act, the existing wildernesses are managed as directed by the management plan for each area (Dome Land and Golden Trout). These management plans provide appropriate direction for the planning period except for two situations: 1) the Dome Land Plan needs to be updated to include additions from the 1984 California Act: and 2) that a decision is needed on how fire will be managed in each wilderness. In addition, management plans need to be completed for the Monarch, South Sierra, and Jennie Lakes Wildernesses.

Wilderness ecosystems are constantly changing as a result of normal successional processes and patterns of periodic disruptions. Wilderness management should insure that natural processes proceed in as uninterrupted fashion as possible. Fire has been an historic force shaping the character of the wilderness. The restoration of fire to its natural role is one of the major challenges in wilderness management today.

Fire policy within wilderness areas on the Sequoia NF is consistent with the remainder of the Forest which is to contain fires at the smallest acreage possible. Suppressing all fires may greatly alter the characteristics of the wildernesses, especially when fire played a dominant role in ecosystem stability and maintenance over time.

Table 3.27 - Established National Forest Wilderness in the Planning Area

<u>Name</u>	<u>Year of Establish-ment</u>	<u>Gross Acres</u>	<u>Net Acres</u>	<u>Acres Admin-istered by Sequoia NF</u>
Dome Land	1964	62,695	62,695	62,695
Dome Land. (additions)	1984	32,000	31,920	31,920
Golden Trout	1978	305,464	303,287*	110,746
Monarch	1984	45,000	45,000**	23,800
Jennie Lakes	1984	10,500	10,500	10,500
South Sierra	1984	63,000	62,760***	24,410
Total		518,641	516,162	264,071

\* 192,541 net acres administered by the Inyo NF  
 \*\* 21,200 net acres administered by the Sierra NF  
 \*\*\* 38,350 net acres administered by the Inyo NF



There are opportunities to return certain areas of Wilderness to conditions that existed prior to implementation of the current fire control policy. A "confine" or "contain" suppression strategy for wildfires may be used when public safety will not be compromised, adjacent resources can be protected, and other management constraints (e.g., air quality, watershed, etc.) can be met. The use of prescribed fire, using either planned or natural (lightning) ignition, to meet specific objectives is also available.

a. Dome Land Wilderness

The Dome Land is the southernmost wilderness in the Sierra Nevada. It encompasses 94,686 acres. Located at the southern end of the Kern Plateau, the Dome Land Wilderness is about 70 miles northeast of Bakersfield.

The area is characterized by numerous granitic domes and unique geologic formations with generally rugged terrain. Elevation ranges from 3,000 to 9,730 feet. Vegetation is primarily pinyon pine woodlands on the eastern half and Jeffrey pine on the western half with red fir, lodgepole and foxtail pines at the higher elevations. The majority of the Dome Land is semiarid to desert-like in appearance. The South Fork of the Kern River Wild and Scenic River bisects the wilderness. The area adjacent to the river south of Rockhouse Basin to the Forest boundary is known as the "roughs." It is extremely rugged and is generally considered inaccessible.

Approximately 60 miles of trails are located in the Dome Land. Manter Meadow and Rockhouse Basin are the most popular camping spots in the Wilderness.

The original portion of the Dome Land has been managed under an approved Wilderness Management Plan since 1979 with the major thrust being to monitor recreation use and water quality at Manter Meadow and to encourage more use through loop trails and better trailhead facilities. The California Wilderness Act of 1984 added 32,000 acres of the Woodpecker RARE II and Dome Land Addition II areas into the Dome Land Wilderness. The Woodpecker Area was previously a popular area for OHV's, both two and four-wheel varieties. Update of the Management Plan will be necessary.

b. Golden Trout Wilderness

The 303,287 acre Golden Trout Wilderness on the Sequoia and Inyo NF's was designated by Congress in 1978. The Golden Trout Wilderness (GTW) gets its name from the brightly colored native trout (California State fish) and its subspecies - the Little Kern golden trout (a federally listed threatened species) - and the South Fork Kern golden trout.

In the Sequoia NF portion of the GTW, elevations range from 4,700 feet at the Forks of the Kern river to 12,432 feet on Mt. Florence (the highest peak on the Forest). Vegetation ranges from digger and pinyon pine woodlands at lower elevations: extensive parklike Jeffrey pine forests at mid-elevations: and red fir, lodgepole and foxtail pine at higher elevations. Portions of the GTW occur above timberline. The entire Little Kern River Drainage lies within the wilderness. The North Fork Kern and the South Fork Kern Wild and Scenic Rivers bisect the wilderness.

Approximately 150 miles of trails are located in the Sequoia NF portion of the GTW. Grey Meadow and Trout Meadow, with associated guard stations, are located on the major trail network system for the GTW and receive high use.

The Golden Trout Wilderness Interim Management Plan was approved by the Regional Forester on March 29, 1982. Key values addressed are fisheries, historical and cultural resources, visual quality associated primarily with meadows, and recreation stock use. The plan calls for restoration and enhancement of these values and uses while managing other resources so as to prevent their degradation.

c. Monarch Wilderness

Monarch Wilderness contains 45,000 acres with 21,200 acres on the Sierra NF and 23,800 acres on the Hume Lake District of the Sequoia NF. The Monarch Wilderness lies 70 miles east of Fresno via California Highway 180. Between November and April the access road is closed because of snow. This is a scenically dramatic area rising from 4,300 feet along the South Fork of the Kings River to 11,077 feet at Hogback Peak. The main drainage is Grizzly Creek. Vegetation ranges from Jeffrey-ponderosa pine forests and chaparral at the lower elevations to alpine conifer forests of whitebark pine above 10,000 feet (the only occurrence of this conifer on the Forest). Two small shallow lakes (Grizzly Lakes) occur in the Monarch Wilderness but contain no fish. Because of the steep, rugged character of the area, trail access is extremely limited. The only trail from California Highway 180 is the Deer Cove Trail which provides access to Wildman Meadow, Grizzly Lakes and the adjacent National Park backcountry to the east. The trail is very steep climbing 3,000 feet in four miles on a south-facing slope. The Monarch Wilderness Sequoia NF portion contains approximately 25 miles of trails. Use is very light with majority occurring during the hunting season. This wilderness was established by Congress in the California Wilderness Act of 1984 from the High Sierra Primitive Area and a portion of the Agnew RARE II area. A management plan will need to be developed for this area.

d. Jennie Lakes Wilderness

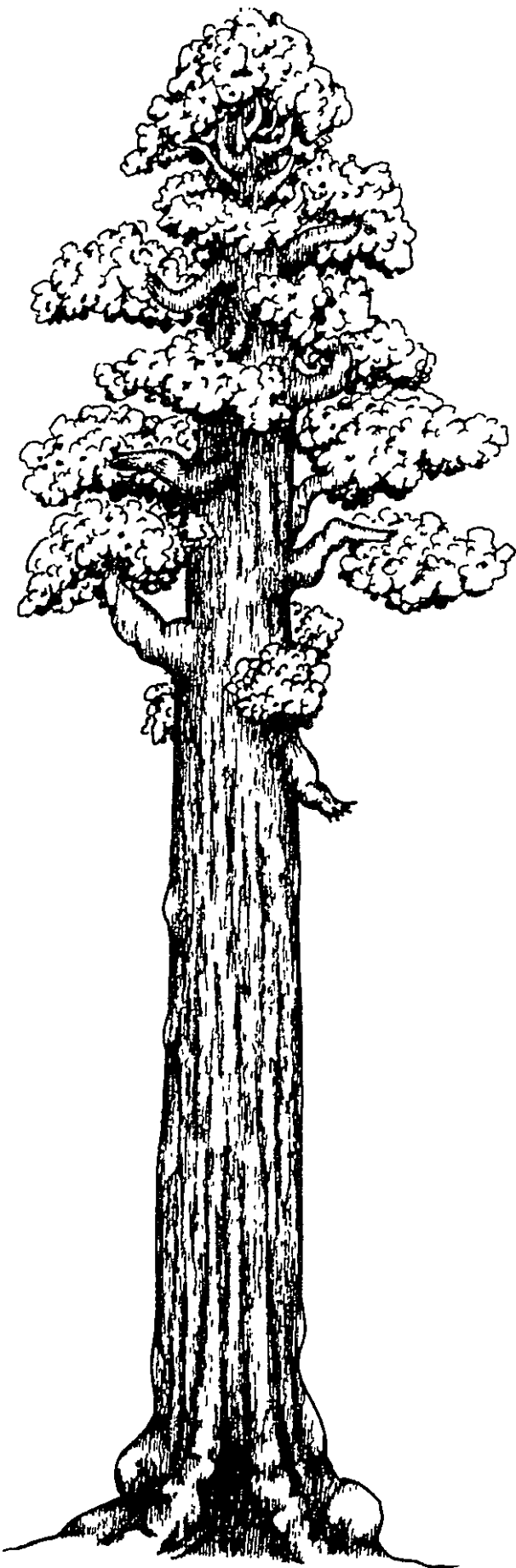
The 10,500-acre Jennie Lakes Wilderness on the Sequoia NF was designated by Congress in the California Wilderness Act of 1984. The wilderness is located on the Hume Lake Ranger District, primarily in the Kings River Drainage. This wilderness is a mixture of subalpine coniferous forests, meadows, and lakes.

Elevations range from 6,800 feet to 10,365 feet at the summit of Mitchell Peak. The two lakes, Jennie and Weaver, are popular destination points in the wilderness. Several trails provide access both east-west and north-south and a loop trail connects both lakes. There are approximately 25 miles of trail in the area. Some motorcycle use has been traditional in the area prior to wilderness designation. In addition, trails connect with the backcountry of Sequoia and Kings Canyon National Parks. A management plan will need to be developed for this area.

e. South Sierra Wilderness

The 63,000-acre South Sierra Wilderness on the Cannell Meadow District of the Sequoia NF (24,410 net acres) and Inyo NF (38,350 net acres) was designated by Congress in the California Wilderness Act of 1984. This Wilderness is located on the Kern Plateau on the eastern edge of the southern Sierra Nevada. A majority of the South Sierra Wilderness lies within the South Fork Kern River drainage.

In the Sequoia NF portion of the South Sierra Wilderness, elevations range from 6,000 feet near Kennedy Meadows to 9,455 feet at Crag Peak. Terrain is mostly rolling. Large meadows lie between low forested ridges of mixed conifers. Stands of quaking aspen border most meadows. There are over 30 miles of streams which contain trout. A portion of the South Fork Kern Wild and Scenic River bisects this wilderness. The wilderness contains approximately 25 miles of trails which were historically used by motorcycles. The Pacific Crest Trail bisects a majority of this wilderness. Development of a wilderness management plan is necessary.



## Chapter 4

# ENVIRONMENTAL CONSEQUENCES

## CHAPTER 4

### ENVIRONMENTAL CONSEQUENCES

#### A. INTRODUCTION

This chapter describes the Environmental Consequences of implementing the proposed action and alternatives. This chapter is also the scientific and analytic basis for the comparisons of the alternatives set forth in Chapter 2. Therefore, it may be helpful to refer to Chapter 2.E.5. (Comparison of Alternatives) while considering the Environmental Consequences described below.

The Environmental Consequences, or "impacts," for the proposed action and the other alternatives result from the application of a different mix of management prescriptions. In each alternative, a different mix of prescriptions produces different levels of resource outputs, goods, and services (such as recreation capacity, habitat diversity, firewood production, water yield, and grazing use). In turn, the level of outputs, the sites of their production, and their interaction yield distinct Environmental Consequences. In addition to using costs and benefits to express differences between alternatives, a final criterion, net public benefit (NPB), is used. See Appendix B of the EIS for explanation.

Environmental Consequences described in this chapter are grouped by the same resource elements that have been used in the previous two chapters. In Chapter 2, Table 2.22 displays a set of selected outputs for each of the alternatives. Reference to Table 2.22 may be useful while reviewing the consequences described in this chapter.

Predicted outputs for the end of five decades of the 50-year planning period were developed using the linear programming model and associated analysis models described in Chapter 2 and Appendix B in the EIS. These predictions are based on identifying the integrated relationships between the various renewable resources. Additional detail on the predictions for each alternative is included in the planning records.

The requirements for monitoring Management Prescriptions, management practices, and the effects of Plan implementation are found in Chapter 5 of the Forest Plan.

Maps for each of the alternatives, including the proposed action, are included as part of this document. For each alternative, these maps show the geographic location of management areas and show the differences in emphases between alternatives.

#### B. DIRECT, INDIRECT AND CUMULATIVE ENVIRONMENTAL CONSEQUENCES

##### 1. SOCIOECONOMIC CONSEQUENCES

In this section, the first decade socioeconomic effects of each alternative are assessed for each affected local group (see Chapter 2 for the effects on economic efficiency and Appendix B of the EIS for the analytic assumptions used to estimate these effects). The Affected Environment

describes the relevant social and economic characteristics of Fresno, Tulare and Kern Counties and identifies the indicators of effects used to assess the impact of plan alternatives on foothill social groups. In this section, the social and economic effects of plan alternatives are presented, first by social group, then by the three-county region, and finally by Plan alternative. The intent is first to detail how Forest Plan alternatives affect people and then to assess how the various groups fare under each alternative. In each case, the basic format is the same. The value of the indicator of effect is shown and then a symbolic indication of group welfare with respect to 1982 baseline conditions is noted below the indicator. The symbols and their meanings are as follows:

- ++ Considerably better off than under 1982 baseline conditions
- + Better off than under 1982 baseline conditions
- 0 No change, no effect
- Worse off than under 1982 baseline conditions
- Considerably worse off than under 1982 baseline conditions

A "+" is assigned if an indicator rises while a "-" is assigned if, with respect to the 1982 baseline value, the indicator falls. A "0" means no change. Generally, it is assumed that a given group as a whole is thereby better off if change in an indicator is positive: worse off if change is negative.

While it is clear in each case whether a given group is better or worse off (i.e. on the "+" or "-" side), judgement was used to distinguish the "+" from the "++" and the "-" from the "--".

a. Socioeconomic Impact by Social Group

1) Ranchers (Table 4.1)

In the three-county area defined by Kern, Tulare and Fresno Counties, some ranchers rely on the Sequoia for forage for livestock. Many also recreate (hunting and fishing) and gather firewood in the Forest. Recreation and livelihood, then, are the major aspects of the rancher's lifestyle related to the Forest. In terms of values, the conservation ethic (wise use of land and resources as opposed to preservation of them) is the one ranching value most likely to be associated with Forest management. This value is reflected in some rancher's opposition to the designation of wilderness and the subsequent, in their view, "locking up" of resources.

Table 4.1 - Ranchers: Socioeconomic Impact During First Decade

	Recreation Dispersed (MMRVD's)	Lifestyle Economics Grazing (M AUM's)	Grazing Earnings (M\$)	Firewood Thousands of Cords	Road Miles of Open	Values Conservation Ethic: M Acres in Wilderness	Comments
1982 Baseline	1.6	63	440	20	618	264.1	Establishes baseline against which to assess change.
PPF Indicator Impact	1.0 +	69 +	484 +	21 +	819 it	264.1 0	All indicators but Wilderness are improved.
CUR Indicator Impact	1.4 -	69 0	404 0	23 +	646 t	264.1 0	While RVD's down, grazing, firewood, and access up. Values unaffected.
RPA Indicator	1.8 t	70 t	497 t	25 t	810 tt	264.1 0	Other indicators improved except values which are unchanged.
AIN Indicator Impact	1.9 t	55 -	384 -	5 --	791 t	355.6 --	While RVD's and roads open up, all other indicators down.
MKT Indicator Impact	1.9 t	76 ti	531 H	32 ++	973 tt	264.1 0	All indicators except Wilderness are improved. Economics substantially improved.
PRO Indicator Impact	1.9 +	76 tt	531 ++	34 tt	988 tt	264.1 0	All indicators but Wilderness are improved. Economics substantially improved.
WFV Indicator Impact	1.9 +	60 -	419 -	15 -	740 +	264.1 0	AUM's, earnings, and firewood are reduced. RVD's and access improved.

Turning to the Plan alternatives, ranchers, as a group, do best under Alternatives MKT and PRO because economic opportunity as well as recreation and wood are substantially improved. However, additional recreation may mean heightened conflict between range permittees and recreational users in some local areas. Under AMN the ranching community fares worst since most indicators are down and significant additional acres are designated as wilderness.

## 2) Foothill Families (Table 4.2)

Forest management affects foothill families lifestyle to the extent that Jobs are supported, recreation provided, and firewood is accessible. A conservation ethic and value placed on visual amenity are the values most likely affected by forest management. Generally, the Forest is regarded as very important in the lifestyles of foothill families.

Generally, foothill families fare best under Alternatives MKT and PRO because of substantially expanded recreation, wood gathering and employment opportunities. The latter are in ranching, the timber industry and tourist related trade and services. In no case is visual amenity maintained at 1982 levels, but the change is so small as to be insignificant. Foothill families fare worst under AMN because a reduction in commodities spurs a decline in Forest-related jobs and available wood while acres in wilderness designation are increased by 25 percent.

## 3) Retired Foothill Residents (Table 4.3)

For foothill retirees, the Forest is a source of recreation, especially on a day-use basis and especially in developed areas. For retirees, vehicular access is of particular importance since many no longer have the strength for strenuous activity. Since many are on low, fixed incomes, wood is an important source of energy. Again, vehicular access to wood gathering areas is important. Retirees tend to be conservation rather than preservation minded. While they value the Forest for visual amenity, all alternatives show a slight decline in visual quality over 1982 baseline levels. The change is so slight that this variable virtually drops out for first decade analysis.

Foothill retirees fare best under PRF, RPA, and PRO Alternatives because of substantial increases in developed recreation opportunities, wood, and vehicular access. In all but PRO there is a day-use emphasis as well. Retirees fare worst overall under AMN. Lack of wood would negatively affect many retirees lifestyles.



Table 4.7 - Foothill Families: Socioeconomic Impact During First Decade

	Lifestyle				Values			Comments	
	Recreation Total RVD's (100 RVD's)	Day-Use Emphasis	Economics Total Annual Earnings (M\$)	Total Annual Employment (person-years)	Firewood Thousands of Cords	Miles of Road Open	Conservation Ethic: % Acres in Wilderness		Visual Amenity (VQI)
1982 Baseline	25	no	37.5	7500	20	618	264.1	76.6	Establishes baseline against which to assess change.
Indicator									
PRF									
Indicator	3.0	yes	41.4	2760	21	819	264.1	75.7	Lifestyle improved overall. Values marginally negative.
Impact	+	+	+	+	+	++	0	-	
CUR									
Indicator	25	no	37.3	7490	23	646	264.1	76.1	Compared to Baseline, slightly worse economically; slightly better in energy. No significant differences.
Impact	0	0	-	-	+	+	0	-	
RPA									
indicator	3.0	yes	42.2	2820	25	810	264.1	75.0	Lifestyle improved overall. Values marginally negative.
Impact	+	+	+	+	+	++	0	-	
AMN									
Indicator	3.1	no	30.6	7040	5	791	355.6	76.3	While recreation and access are improved, earnings and wood declined. Values negatively affected.
Impact	+	0	-	-	--	+	-	-	
PKT									
Indicator	3.1	no	48.4	3730	32	973	764.1	75.0	Lifestyle considerably improved overall. Values marginally negative.
Impact	+	0	++	++	++	++	0	-	
PRO									
Indicator	3.1	no	49.7	3310	34	988	264.1	74.9	Lifestyle considerably improved. Values marginally negative.
Impact	+	0	++	++	++	++	0	-	
WGV									
Indicator	3.0	yes	38.2	2550	15	740	264.1	76.0	Although wood decreased, other aspects of lifestyle improved. Values marginally negative.
Impact	+	+	+	+	-	+	0	-	

Socioeconomic Impact

Table 4.3 - Retired Foothill Residents: Socioeconomic Impact During First Decade

	Lifestyle				Values		Comments
	Recreation Developed (MM RVD's)	Day-Use Emphasis	Firowood Thousands of Cords	Miles of Road Open	Conaervation Ethic: M Acres in Wilderness	Visual Amenity VOI	
1902 Baseline	.9	no	20	610	264.1	76.6	Establishes baseline against which to assess change.
<b>PRF</b>							
Indicator	1.2	yes	21	819	264.1	75.7	Quality of life improved through increased recreation opportunity, wood and access.
Impact	+	+	+	++	0	-	
<b>CUR</b>							
Indicator	1.1	no	23	646	264.1	76.1	Compared to Baseline, slightly better in recreation and wood; slightly worse VOI. No significant difference.
Impact	+	0	+	+	0	-	
<b>RPA</b>							
Indicator	1.2	yes	25	810	264.1	75.0	Quality of life improved through increased recreation opportunity, wood and access.
Impact	+	+	+	++	0	-	
<b>AMN</b>							
Indicator	1.2	no	5	791	355.6	76.3	Although recreation and access improved, availability of wood greatly reduced. Values negatively affected.
Impact	+	0	--	+	-	-	
<b>FKI</b>							
Indicator	1.2	no	32	973	264.1	75.0	Quality of life substantially improved through increased recreation opportunity, access, and wood.
Impact	+	0	++	++	0	-	
<b>PRO</b>							
Indicator	1.2	no	34	988	264.1	74.9	Quality of life substantially improved through increased recreation opportunity, access and wood.
Impact	+	0	++	++	0	-	
<b>WV</b>							
Indicator	1.1	yes	15	740	264.1	76.0	Although recreation and access improved, wood availability decreased.
Impact	+	+	-	+	0	-	

#### 4) Foothill Second Homeowners (Table 4.4)

Total volume of recreation provided and visual amenity appear to be the most important ties between the Forest and foothill second homeowners. Visual amenity virtually drops out as a distinguishing variable because, under each alternative, there is a very small drop in the Visual Quality Index.

With respect to 1982 baseline, second homeowners are better off under all alternatives. Relatively speaking, second homeowners are better off under **MKT** and **RO** due to increased recreation and access to the Forest.

#### 5) Patients at Porterville State Hospital (Table 4.5)

Developmentally disabled patients at the Porterville State Hospital use developed recreation sites on a day-use basis. During the summer season about 80 residents per week visit these areas. They are benefited under all alternatives since all envision increased recreation opportunities in developed sites. They fare best under PRF, RPA, and WFV, where there is also a day-use emphasis.

#### 6) Hispanic Community (Table 4.6)

The Hispanic Community also tends to use the Forest as a source of developed site recreation, most often on a day-use basis. They benefit under all alternatives because of **an** increase in developed recreation opportunities. They fare best under PRF, RPA, and WFV where there is also a day-use emphasis.

#### 7) Native Americans (Table 4.7)

Native Americans use the eastside, pinyon-sage ecotype, as a source of pinyon nuts, a food. Extent of that ecotype and access to it are, therefore, very important. Through all alternatives, the acres of pinyon-sage remains constant: hence, there is no effect, good **or** bad, of forest management activities. Accessibility, however, does vary by whether the Scodies Further Planning Area is designated as wilderness. In the case of Native Americans, designation is a detriment to lifestyle. Alternative AMN provides for such designation. Under the other alternatives, pinyon gathering should proceed undisturbed.

Table 4.4 - Second Homeowners: Social Impact During First Decade

	Lifestyle Recreation		Values Visual Amenity (VOI)	Comments
	Total RVD's (millions)	Miles of Road Open		
<u>1982 Baseline Indicator</u>	2.5	618	76.6	Establishes baseline against which to assess change.
<u>PRF Indicator</u>	3.0	819	15.7	Recreation and access improved. Slight drop in Visual quality.
<u>Impact</u>	+	tt	-	
<u>CUR Indicator</u>	2.5	646	76.2	Only a slight change in VOI distinguishes CUR from 1902 baseline values.
<u>Impact</u>	0	t	-	
<u>RPA Indicator</u>	3.0	810	75.0	Recreation and access much improved. Slight drop in visual quality.
<u>Impact</u>	t	++	-	
<u>AFIN Indicator *</u>	3.1	791	16.3	Recreation and access improved. Slight drop in visual quality.
<u>Impact</u>	t	+	-	
<u>MKT Indicator</u>	3.1	973	75.0	Recreation and access improved. Very slight drop in visual quality.
<u>Impact</u>	t	tt	-	
<u>PRO Indicator</u>	3.1	988	74.9	Recreation and access improved. Slight drop in visual quality.
<u>Impact</u>	t	tt	-	
<u>WFV Indicator</u>	3.0	740	76.0	Recreation improved. Access reduced. slight drop in visual quality.
<u>Impact</u>				

Table 45 - Patients at Porterville State Hospital; Social Impact During First Decade

	Lifestyle		Comments
	Developed PVD's (millions)	Recreation Day Use Emphasis	
1982 Baseline Indicator	.9	no	Day-use is not emphasized.
PRF Indicator Impact	1.2 +	yes t	Recreation opportunities are increased. Day-use is emphasized.
CUP Indicator Impact	1.1 +	no 0	Recreation opportunities are increased, but day-use is not emphasized.
RPA Indicator Impact	1.2 t	yes +	Recreation opportunities are increased. Day-use is emphasized.
MLI Indicator Impact	1.2 +	no 0	While recreation opportunities are increased, day-use is <i>not</i> emphasized.
MKT Indicator Impact	1.2 +	no 0	While recreation opportunities are improved, day-use is <i>not</i> emphasized.
PPQ Indicator Impact	1.2 t	no 0	While recreation opportunities are increased, day-use is not emphasized.
WV Indicator Impact	1.1 +	yes +	Recreation opportunities <i>are</i> increased. Day-use is emphasized.

Table 4.6 Hispanic Community: Social Impact During First Decade

	<u>Lifestyle</u>		<u>Comments</u>
	Developed RVD's (millions)	Recreation Day Use Emphasis	
1902 Baseline <u>Indicator</u>	.9	no	Day-use is not emphasized.
PRF <u>Indicator</u>	1.2	yes	Recreation opportunities are increased. Day-use is emphasized.
<u>Impact</u>	+	+	
QR <u>Indicator</u>	1.1	no	Recreation opportunities are increased, but day-use is <b>not</b> emphasized.
<u>Impact</u>	+	0	
RPA <u>Indicator</u>	1.2	yes	Recreation opportunities are increased. Day-use is emphasized.
<u>Impact</u>	+	+	
AMN <u>Indicator</u>	1.2	no	While recreation opportunities are increased, day-use is not emphasized.
<u>Impact</u>	+	0	
MKT <u>Indicator</u>	1.2	no	While recreation opportunities are improved, day-use is <b>not</b> emphasized.
<u>Impact</u>	+	0	
PPO <u>Indicator</u>	1.2	no	While recreation opportunities are increased, day-use is <b>not</b> emphasized.
<u>Impact</u>	+	0	
WFV <u>Indicator</u>	1.1	yes	Recreation opportunities are increased. Day-use is emphasized.
<u>Impact</u>			

Table 47 - Native Americans; Social Impact During First Decade

	<u>Lifestyle</u>		<u>Comments</u>
	Subsistence: Acres of Pinyon Sage	Wilderness Classification for Scodies	
PRF			
Indicator	No change;	no	No change in use or
Impact	No effect	0	access, hence no impact.
CUR			
Indicator	No change;	no	No change in use or
Impact	No effect	0	access, hence no impact.
RPA			
Indicator	No change;	no	No change in use or
Impact	No effect	0	access, hence no impact.
AMN			
Indicator	No change;	yes	Wilderness classification
Impact	No effect	-	limits access to pinyon.
MKT			
Indicator	No change;	no	No change in use or
Impact	No effect	0	access, hence no impact.
PRO			
Indicator	No change;	no	No change in use or
Impact	No effect	0	access, hence no impact.
WFV			
Indicator	No change;	no	No change in use or
Impact	No effect	0	access, hence no impact.

b. Socioeconomic Impact on Fresno, Tulare and Kern Counties (Table 4.9)

As a whole, the residents of Kern and Tulare Counties relate to the Sequoia NF as a source of natural resource-oriented recreation, income, jobs, fire-wood, visual amenity, and tax revenue. For the most part, residents of Fresno County relate to the Sequoia NF primarily as a minor source of public funds. From Kern and Tulare County-wide perspectives, the Forest is a major source of resource-oriented recreation and wood. However, it is a minor source of jobs and income. The latter represent substantially less than one percent of total Jobs and income for the combined work forces of the two counties. That Kern and Tulare Counties are generally conservation rather than preservation minded is evident in the land regulating ordinances each has passed and in the Board of Supervisor's resolutions opposing creation of more wilderness. Since the mountains are an important visual backdrop in each county, they are a source of visual amenity. As explained in previous sections, the changes in the Visual Quality Index are small and nearly constant during the first decade. Hence, this measure drops out for the first decade.

Considering each of these facets of relationship and compared to 1982 baseline values, Kern and Tulare Counties are somewhat better off under all alternatives except AMN. This alternative, while showing an increase in recreation and access, shows also sharp decreases in wood, jobs and earnings, as well as an increase in designated wilderness. These impacts should not be exaggerated, however. From countywide perspectives, the changes proposed by any alternative are small indeed.

Table 4.8 shows the estimated annual amount of Forest Reserve Funds (25% Funds) to be shared among Fresno, Tulare, and Kern Counties in proportion to the amount of National Forest System land located within each county.

Table 4.8 - Forest Reserve Funds (millions of dollars)

	<u>1982 Baseline</u>	<u>Decade 1</u>
PRF	\$1.4	\$1.6
CUR	1.4	1.5
RPA	1.4	1.6
AMN	1.4	0.7
MKT	1.4	2.3
PRO	1.4	2.3
WFV	1.4	1.4

Table 4.8 shows that during the first decade each county is financially better off under all alternatives except AMN and WFV. The latter shows no change while the former shows a reduction of about 50 percent. In contrast, MKT and PRO show increases of over 60 percent. Taken in perspective, however, all of these amounts represent very small proportions of the total roads and schools budgets in each of the three counties.



Table 49 - Three County Region of Kern-Tulare-Fresno Counties: Socioeconomic Impact During First Decade

	Lifestyle		Economics			Energy: Thousands of Cords	Values	Tax Revenues	
	Recreation: Total RVD's Miles of (millions) Road Open	Total Earnings (M\$)	Total Jobs (person-years)	Conservation Ethic (M Ac. Wilderness)	Visual Amenity (VQI)		Forest Reserve Funds (Millions of dollars) Fresno Co-Tulare Co-Kern Co		
1932 Baseline									
Indicator	2.5	618	37,515	2500	20	264.1	76.6	1.4	
PRF									
Indicator	3.0	819	41,416	2760	21	264.1	75.7	1.6	
Impact	+	+	+	+	+	0	-	+	
CUR									
Indicator	2.5	646	37,305	2485	23	264.1	76.1	1.5	
Impact	0	+	-	-	+	0	-	0	
RPA									
Indicator	3.0	810	42,151	2810	25	264.1	75.0	1.6	
Impact	+	+	+	+	+	0	-	0	
AMM									
Indicator	3.1	791	30,649	2040	5	355.6	76.3	0.7	
Impact	+	+	-	-	-	-	-	-	
MKT									
Indicator	3.1	973	48,436	3230	32	264.1	75.0	2.3	
Impact	+	+	+	+	++	0	-	-	
PRO									
Indicator	3.1	988	49,696	3310	34	264.1	74.9	2.3	
Impact	+	+	+	+	++	0	-	+	
WVF									
Indicator	3.0	740	38,189	2550	15	264.1	76.0	1.4	
Impact	+	+	+	+	-	0	-	+	

c. Summary of Socioeconomic Effects for Each Alternative (Table 4.10)

Focusing now on each alternative, the relative welfare of each local, affected group may be compared to the 1982 baseline condition.

Alternative PRF

While Native Americans experience no change in availability of ~~or~~ access to pinyon, **all** other local groups are better off due to increased recreation opportunities (including day-use), jobs, earnings, access and firewood. No new wilderness is designated, thereby redeeming conservation values.

Alternative CUR

This alternative shows negligible change from baseline conditions. Therefore, **it** generates virtually no impact on any of the potentially affected groups.

Alternative RPA

Nearly all groups are better off under this alternative because of expanded recreation and economic opportunities. However, since there are somewhat fewer **AUM's** in the range program, some ranchers would be worse off economically. **The** magnitude of decrease, however, is not expected to affect the viability of the ranching community. Since no new wilderness is created, locally held conservation values are redeemed. There is no impact on Native Americans ability to gather pinyon nuts.

Alternative AMN

Only the local recreation users (the second homeowners, hospital patients, members of the Hispanic communities and other recreation users) are better off under this alternative. Ranchers, foothill families, and the counties see a decrease in economic opportunity, a decrease in availability of firewood, and an increase in preservationist values.

Table 4.10 - Summary of Socioeconomic Impact During First Decade

	Affected Local Social Groups								Impact by Social Group
	Ranchers	Retired Psople	Families	Srcond home Owners	Patients at State Hospital	Hispanic Community	Native Americans	Fresno Krrn & Tulare Counties	
PRF	+	+	+	+	±	+	0	+	While Native Americans experience no change in access to pinyon. all other groups are better off. primarily because of expanded recreational and economic opportunities. Tax revenues increased.
CUR	0	0	0	0	0	0	0	0	Negligible or no change from baseline. hence no impact.
RPA	-	+	+	+	+	+	0	+	Everyone but ranchers & Native Americans better off. No impact on Native Americans. Fewer AUM's for ranchers. Everyone else has expanded economic & recreation opportunity.
AMN	-	-	-	+	+	+	-	+	Only second home owners and day-users from hospital and Hispanic communities arc better off. Ranchers, families, and retired persons see a decrease in earnings, employment, and firewood. Native Americans have less access to pinyon.
MKT	++	++	+	++	+	+	0	+	Native American see no change in opportunities. Revenues increased.
PRO	++	++	++	++	±	±	0	+	While Native Americans experience no change in access to pinyon. all other groups are better off. primarily because of expanded recreational & economic opportunities.
WFV	-	+	+	+	+	+	0	+	Only ranchers and Native Americans are not betier off. For the latter, there is no change in access to pinyon. The former see about 6% less in AUM's. Other groups enjoy expanded recreation and economic opportunities.

ENVIRONMENT

### Alternative MKT

All groups, except Native Americans, are better off than they are under the 1982 baseline condition. Ranchers and families are considerably better off due primarily to expanded economic opportunities. Retirees, second homeowners, hospital patients, and members of the Hispanic community enjoy increased recreation opportunities. Native Americans are neither better off nor worse off. Their ability to harvest pinyon nuts is unchanged.

### Alternative PRO

Nearly all groups are better off due to expanded economic and recreation (including day-use) opportunities. Conservation values are redeemed through no more creation of wilderness. **The** Native American's ability to gather pinyon nuts is unchanged.

### Alternative WFV

While Native Americans experience no change in availability of or access to pinyon, and while ranchers experience a small reduction in AUM's, all other local groups are better off with respect to the 1982 baseline condition. **There** are increased recreation opportunities (including day-use), jobs, earnings, and access, although a reduction in firewood. New wilderness is not designated, thereby redeeming conservation values.

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In conclusion, during the first decade the lifestyle of virtually all potentially affected local social groups is enhanced under all alternatives except CUR and AMN. **The** former shows negligible change from baseline values. **The** latter while calling for increased recreation, shows reduced levels of earnings, jobs and cords of firewood. From the standpoint of community values, the CUR Alternative supports preservation values rather than conservation values.

From a county-wide perspective, the pattern generally holds. However, the significance of increases or decreases in recreation, earnings, jobs, cords of firewood, and tax revenue is much reduced. Earnings and jobs are far less than one percent the Kern-Tulare County totals. There are many other recreation opportunities in both counties. Firewood is cut on private range land as well as on public land. Regardless of the level of forest management, the level of Forest Reserve Funds remitted to the three counties -- Fresno, Tulare and Kern -- is so low as to be a minor source of revenue for these counties.

## 2. RESOURCE CONSEQUENCES

### a. AIR QUALITY

**The** characteristics by which air quality is evaluated are visibility and the concentration of pollutants. These standards are specified by the Clean Air Act and adhered to by the Forest. Major activities which can potentially affect air quality are:

1. Construction and **use** of unpaved roads;
2. Vehicular emissions, residential wood burning and generators associated with some large recreational developments;
3. Acres burned by wildfire: and
4. Acres burned by prescribed fire.

Unpaved Roads: Construction and the use of unpaved roads can produce enough dust to impair the visual quality of the air. These effects are localized and temporary and should not diminish the overall air quality. **As** a result, unpaved roads will not be used to analyze the alternatives.

Recreational Developments: Use associated with extensive recreational developments has the potential to affect air quality. Carbon monoxide and nitrogen dioxide from vehicular emissions near congested access roads and parking lots, nitrogen dioxide from diesel power generation, and total suspended particulates from fireplace and wood burning stoves can be produced at high concentrations if not properly mitigated. **The** use associated with each development must be analyzed independently since air quality concentrations can vary depending on climatic conditions, topography, elevation, distance from other sources, and specific site characteristics of each development alternative.

Wildfires: Air pollution from wildfires would continue to have the most significant effect on air quality in all alternatives. Wildfires would continue to occur during periods of poor air quality in the surrounding air basins, adding to the existing problem.

Major pollutant emissions from burning a ton of chaparral are estimated to be:

Total Suspended Particulates	- 16 pounds
Hydrocarbons	- 19 pounds
Carbon Monoxide	- 101 pounds

Timber emissions are estimated to be:

Total Suspended Particulates	- 42 pounds
Hydrocarbons	- 25 pounds
Carbon Monoxide	- 260 pounds

(Geomet, Inc., Impact of Forestry Burning on Air Quality 1978).

Prescribed Burning: The effects of prescribed burning on air quality are similar to those of wildfire. However, prescribed burning offers some advantages over wildfire. The timing of prescribed burns will allow for higher, more rapid dispersion of emissions. Prescribed burns above 5,000 feet elevation generally produce emissions of pollutants which disperse above natural basins. Prescribed burning is conducted only under suitable air quality conditions and in accordance with Federal and State standards. This ensures that prescribed burning will not be done under poor air quality conditions. Despite efforts to control smoke in designing and conducting prescribed burning treatments, some impairment to visibility may still occasionally occur to nearby residents or Forest visitors.

Major pollutant emissions from burning a ton of chaparral are estimated to be:

Total Suspended Particulates	- 15 pounds
Hydrocarbons	- 15 pounds
Carbon Monoxide	- 81 pounds

Timber emissions are estimated to be:

Total Suspended Particulates	- 9 pounds
Hydrocarbons	- 8 pounds
Carbon Monoxide	- 146 pounds

(Air Resource Board: Methods for Accessing Air Resource Emissions in California, December 1982)

Indicators used to evaluate alternatives: The projected acreage that would be burned by wildfire, acreage burned by prescription, and a comparison of recreational visitor days (RVD's) in developed recreation are used to evaluate the alternatives. Although developed recreation sites can normally be altered in size, configuration, or activities to conform to legal concentrations, they do represent a potential deterioration from the existing condition. RVD's provide a comparison of developed recreation intensities throughout the alternatives. Alternatives in which the projected average annual area burned by wildfire is reduced will be expected to produce the greatest improvement in air quality by reducing the amount of total suspended particulates (TSP), carbon monoxide (CO), and hydrocarbons (HC) released to the atmosphere.

Table 4.11 displays the projected average annual wildfire and prescribed fire acreages by fuel type and alternative. The acreage of prescribed fire for the chaparral type includes some acres specifically treated for fuel reduction that may be in another fuel type. Adjacent to each is the tons of TSP, CO, and HC produced by each. This allows for a simple comparison of alternatives. Each fire will have many complex variables resulting in unique effects on air quality.

The following is a ranking by alternative for total pollutant load from fire.

<u>Alternative</u>	<u>Total Pollutant Load</u> (tons)
PRO	45,981
MKT	45,456
RPA	39,287
PRF	38,703
CUR	35,419
WFV	34,562
AMN	28,395

Table 4.11 - Average Annual Burning and Projected Emissions

<u>Alternative</u>	<u>Wildfire Chaparral</u> (acres per year)	<u>Emissions</u> (tons)		
		<u>TSP</u>	<u>CO</u>	<u>HC</u>
PRF	3,922	706	4,456	838
CUR	3,586	646	4,075	767
RPA	3,936	709	4,359	841
AMN	3,977	716	4,519	850
MKT	3,872	697	4,400	828
PRO	3,831	690	4,353	819
WFV	3,911	704	4,444	836

<u>Alternative</u>	<u>Wildfire Timber</u> (acres per year)	<u>Emissions</u> (tons)		
		<u>TSP</u>	<u>CO</u>	<u>HC</u>
PRF	920	1,352	8,372	805
CUR	841	1,236	7,653	736
RPA	923	1,357	8,399	808
AMN	933	1,372	8,490	816
MKT	908	1,335	8,263	795
PRO	899	1,322	8,181	787
WFV	917	1,348	8,345	802

<u>Alternative</u>	<u>Prescribed Fire Chaparral</u> (acres per year)	<u>Emissions</u> (tons)		
		<u>TSP</u>	<u>CO</u>	<u>HC</u>
PRF	6,500	1,097	5,923	1,097
CUR	3,820	645	3,481	645
RPA	5,820	982	5,304	982
AMN	6,400	1,080	5,832	1,080
MKT	6,320	1,067	5,759	1,067
PRO	6,320	1,067	5,759	1,067
WFV	5,800	979	5,285	979

<u>Alternative</u>	<u>Prescribed Fire Timber</u> (acres per year)	<u>Emissions</u> (tons)		
		<u>TSP</u>	<u>CO</u>	<u>HC</u>
PRF	2,464	776	12,591	690
CUR	2,723	858	13,915	762
RPA	2,725	858	13,925	763
AMN	638	201	3,260	179
MKT	3,724	1,172	19,030	1,043
PRO	3,845	1,211	19,648	1,077
WFV	1,900	599	9,709	532

The following is a ranking by alternative of the five-decade average annual output of developed recreation. Alternatives that have comparatively high levels of developed recreation will not necessarily produce levels of air pollutants that would violate legal standards. However, the ranking provides a comparison of the alternatives potential to produce air pollutants.

<u>Alternative</u>	<u>MRVD'S</u>
RPA	1,547
PRF	1,542
AMN	1,529
MKT	1,493
PRO	1,478
WFV	1,471
CUR	1,306

Alternatives PRF, RPA, AMN, MKT, PRO, and WFV

A steady increase to a relatively high level in developed recreation occurs throughout the planning period. These alternatives provide fairly similar opportunity for developed recreation by reaching an estimated average annual range from 1,471 to 1,547 MRVD's throughout the planning period. **These** alternatives provide a fire management program which would increase wildfire acreage throughout the planning period resulting in periods of poor air quality. Emissions are slightly higher in these alternatives than the current level.

Alternative CUR

A moderate increase to a relatively low level in developed recreation occurs throughout the planning period. **The** CUR Alternative reaches an estimated average annual 1,306 MRVD's throughout the planning period. This alternative provides a fire management program which would not have an immediate affect on wildfire or air quality.

b. CULTURAL RESOURCES

Many activities on the Forest may affect cultural resources. An activity is considered to have an effect whenever the activity causes or may cause an adverse change in the quality of the characteristics that qualify a property for the National Register of Historic Places (NR). An effect occurs when changes occur in the integrity of location, design, setting, materials, artisanship, feeling, or association of the cultural resource that contribute to its significance in accordance with NR criteria.

Effects may be direct or indirect. Direct effects are caused by the undertaking and occur at the same time. Direct effects are generally caused by activities resulting in soil compaction, displacement, penetration; or removal. Other direct effects may be sustained by flooding, channelization of water flow and, in the case of wooden structures, the use of fire.



Indirect effects are those resulting from an undertaking but which are more removed in time or distance, but which are still reasonably foreseeable. The two most common indirect effects to cultural resources are the establishment or improvement of public access and the acceleration of naturally occurring erosional processes. Access can affect cultural resources because some members of the public pursue illegal collection of artifacts, either as a hobby or as a commercial activity.

Direct effects to cultural resources are mitigated by project redesign or by data recovery (excavation or other appropriate forms of data retrieval). Indirect effects from project-related erosion are normally foreseeable and can be mitigated by project redesign and erosion control. However, mitigation of vandalism resulting from increased access is much more difficult. Law enforcement actions are taken when possible; however, the more productive long-term solution must be a shift in public attitude so that vandalism becomes unacceptable behavior. This would require a considerable educational effort by both federal land managing agencies and public groups interested in land management issues.

Cultural resource management affects other Forest management activities in several ways. All proposed projects are inventoried for the presence of cultural resources. S.H.P.O. is consulted regarding the eligibility or noneligibility of the cultural resources found, as well as the potential effects to the eligible sites from the proposed project. Project redesign is normally the most cost-effective solution to the problem of mitigating effects: although, occasionally, redesign can also result in prohibitive cost increases, resulting in cancellation of a planned project. Nevertheless, cultural resource management objectives will not significantly affect other uses or resources in any alternative.

The effects of each alternative to cultural resources were evaluated in the following manner. Initially, consequences of the following activities by alternative were considered: wilderness acres, timber harvest acres, reforestation acres, grazing in AUM's, OHV trails and roads in miles, dispersed and developed recreation in Recreation Visitor Days (RVD's), acres of chaparral treated, acres burned by wildfire, number of mineral operating plans, and miles of road construction and reconstruction. Of all the outputs being compared, four were considered key indicators of the direct and indirect effects of an alternative on cultural resources. These four were acres of clearcutting, acres of regeneration, anticipated number of mineral operating plans, and miles of road construction and reconstruction.

With the introduction of uneven-aged management into consideration in the range of alternatives for the FEIS, restricting thinking to clearcut acres did not represent an accurate picture of the potential consequences to cultural resources. Therefore, a new calculation considering timber harvest acres (includes clearcut, group selection and shelterwood areas) was developed. Use of this information precludes the need to consider regeneration acres, since they fall within the total harvest acres. The three key indicators being used in the final analysis are timber harvest acres, miles of road construction and reconstruction, and the anticipated number of mineral operating plans.

Effects of Key Indicators on Cultural Resources

<u>Timber Harvest</u>	<u>Short-Term/Direct</u>	<u>Long-Term/Direct</u>
	Ground disturbance (vegetation removal)	Erosion
	<u>Short-Term/Indirect</u>	<u>Long-Term/Indirect</u>
	Illegal artifact collection	Increased public access leading to site disturbance.
<u>Road Construction and Reconstruction</u>	<u>Short-Term/Direct</u>	<u>Long-Term/Direct</u>
	Ground disturbance	Erosion
	<u>Short-Term/Indirect</u>	<u>Long-Term/Indirect</u>
	Illegal artifact collection	Increased public access leading to site disturbance.
<u>Mineral Operations</u>	<u>Short-Term/Direct</u>	<u>Long-Term/Direct</u>
	Ground disturbance	Erosion
		<u>Long-Term/Indirect</u>
		Vandalism

- The ground disturbance associated with these key activities may affect the depositional integrity of sites. In addition, they also involve increased public access. Thus, they will indirectly affect properties through actions such as increased vandalism and artifact collection. Other activities such as grazing, recreational use, vegetative treatments and/or fire suppression activities may also adversely affect properties, but their impacts are generally more dispersed. The levels of the key indicators, averaged over five decades **is** displayed in Table 4.12,

Table 4.12 - Effects on Cultural Resources  
(5 Decade Averages)

	<u>PRF</u>	<u>CUR</u>	<u>RPA</u>	<u>AMN</u>	<u>MKT</u>	<u>PRO</u>	<u>WFV</u>
Timber Harvest (M Acres)	2.6	3.9	3.0	.6	3.9	4.0	2.0
Road Construction/ Reconstruction (Miles)	39.9	42.9	42.7	8.1	56.9	60.6	29.5
Mineral Operating Plans	48	48	67	41	48	48	48

Alternatives PRO, MKT, and CUR

These alternatives have the greatest potential to adversely affect cultural resources. They have the largest area of timber harvest (at approximately 3,900-4,000 acres, almost 1000 acres a year more than any other alternative). Additionally, they have the highest road construction/reconstruction programs of any of the alternatives with PRO being by far the highest and MKT only slightly below. Mineral activities would be in the midrange of the alternatives. Therein, both direct and indirect impacts for both the short-term and long-term can be considered high.

Alternatives RPA and PRF

These alternatives fall somewhat below the highest level of potential for adverse impact on cultural resources. A rather narrow range of road construction/reconstruction (40-43 miles per year) and of timber harvest (2,600-3,000 acres per year), characterize these alternatives, so they are considerably less than the highest level. The RPA has the highest level of mineral activities of all alternatives, while the PRF Alternative has mineral activities in the midrange. Overall, both direct and indirect impacts can be considered moderately high for these alternatives over both the short-term and long-term.

Alternative WFV

This alternative falls somewhat below those listed above in that its timber harvest program is smaller (about 2,000 acres per year). This alternative also has a smaller road program (above 30 miles) than the previous alternative groupings. The mineral program is in the midrange. Overall, direct and indirect impacts for these alternatives can be considered moderate over both short-term and long-term.

Alternative AMN

This alternative has the smallest timber harvest program (about 620 acres per year), the smallest road program (8.1 miles per year) and the smallest mineral program (41 plans per year) of all alternatives. Therefore, it can

be considered as having the least potential for total impact on cultural resources.

c. DIVERSITY

Diversity is a measure of ecosystem stability and development (seral) stage. In general, with higher diversity, associations between species within the ecosystem become more complex. In forest ecosystems, diversity tends to peak during early or middle seral stages, then decline during ecosystem climax.

Vegetation diversity may be influenced by natural as well as human activities. Biological factors (such as insect infestation, disease attack, and plant succession) and physical factors (such as wildfire, changes in landform, and climate) are some of nature's "agents of change" which act upon vegetation diversity through time.

Human activities influence diversity through the management methods embodied in each alternative. Timber management practices and the use of prescribed fire have been identified as the indicators which can influence diversity. Table 4.13 displays diversity created in the conifer forest by reforestation. Table 4.14 displays diversity in the chaparral community created by prescribed fire.

To analyze change in diversity from the current situation, the above indicators are compared against diversity attributes of ecosystem pattern, species variety, and abundance. Pattern refers to spacial-age class organization of the ecosystem; species variety is the "richness" of all species found within the ecosystem; and species abundance is the population distribution within the ecosystem. The consequence of implementing any alternative would be the relative change in diversity during the span of the planning period.

1) CONIFER FOREST

Table 4.13 - Diversity - Conifer Forest Reforestation

Decade	Alternatives (acres per year)						
	PRF	CUR	RPA	AMN	MKT	PRO	WFV
1	2,475	787	2,516	687	4,707	4,790	2,034
2	2,132	4,293	2,963	629	2,797	3,155	1,781
3	1,426	830	1,939	586	3,169	3,487	1,530
4	3,023	2,854	3,271	602	3,363	3,309	1,890
5	2,813	2,233	2,252	587	3,865	3,953	1,731

### Alternatives PRF AND RPA

Over the first five decades, diversity has a modest increase over the 1982 level. Openings in the conifer forest would contain young conifers, hardwoods as well as many species of grasses and forbs.

### Alternative AMN

In the conifer forest, diversity declines as timber treatments are reduced. The younger stages of the forest are shifted toward the mature age classes during the planning period.

### Alternative CUR

Diversity under this alternative will be similar to the 1982 level at the end of the fifth decade.

### Alternative WFV

Seral stage diversity would decline under this alternative, particularly in the coniferous forest ecosystem as a result of decreased land treatments.

### Alternatives MKT and HRO

In the conifer forest, diversity would change dramatically. In these alternatives, accelerated timber harvest and reforestation would shift the forest towards the young seral stages early in the planning period. Openings created in the forest would contain young trees and brush.

## 2) CHAPARRAL

Table 4.14 - Diversity - Chaparral Prescribed Fire Treatments  
(Wildlife, Grazing, and Watershed)

Decade	Alternatives (acres per year)						
	PRF	CUR	RPA	AMN	MKT	HRO	WFV
1	1,100	1,000	3,300	3,800	800	800	3,300
2	1,900	1,000	2,500	5,000	--	--	2,500
3	1,000	1,000	2,500	3,000	--	--	2,500
4	1,100	1,000*	3,300*	5,800*	800*	800*	3,300*
5	1,900	--	--	2,900	10,000	10,000	4,000
5*		1,000*	2,500*	3,000*		--	1,800*

\* Denotes retreatment area

### Alternatives PRF and CUR

Diversity in the chaparral would remain stable to moderately improved. During the planning period, about 1,100 acres per year would be prescribed burned for resource improvement with area retreatments occurring during decades four and five. About 4,400 acres would burn due to wildfire and 1,500 acres per year would be burned for fire protection (2,500 acres for Alternative CUR). The distribution of the burn treatments through time would provide for a greater mix of age classes.

### Alternative RPA

This alternative would treat about 2,800 acres per year by prescribed fire methods for resource improvement. Another 7,900 acres per year are burned due to wildfire and fire protection treatments. The chaparral ecosystem would receive retreatments in decades four and five. The alternative would produce seral stages in the chaparral at an approximate mix of 40 percent early stage and 40 percent middle stage age class. Overall, species diversity would increase to the greatest extent in the early age class where a greater proportion of grass species would be included.

### Alternative AMN

This alternative would provide for a large change in vegetative diversity. The age-class of the ecosystem would shift toward the early stage during the first three decades of the planning period. Species variety increases, providing a greater number of niches.

### Alternatives MKT and PRO

These alternatives treat large areas of land during the fifth decade. During decade one through four, diversity is low, with approximately 90 percent of the ecosystem in the mature seral stage. Little variety in age or form class would be present. Few to no other species of plants would be intermixed within the stand. During decade five, almost 60 percent of the chaparral ecosystem would be shifted into the early seral stage. While age and form class diversity would again be low, other species of plants would increase within the stand to increase net species variety.

### Alternative WFV

This alternative would provide for a large change in vegetative diversity. The age class of the ecosystem would shift toward the early seral stages during the first three decades of the planning period. Species mix would increase during this time. Approximately 40 percent of the ecosystem would be in the early seral stage, 40 percent in the middle seral stage, and 20 percent in the mature seral stage.

## d. EARTH RESOURCES

### 1) SOIL RESOURCE

This section discusses the potential effects of management activities on soil productivity. The soil disturbing activities (negative effects) of

timber harvest, preparation of the ground for reforestation, and road construction are used as indicators for potential soil displacement or erosion. The activities of prescribed fire, road obliteration, and watershed restoration (positive effects) are used as indicators of soil protection or improvement.

Clearcut harvesting on slopes of less than 40 percent and all harvesting on slopes of greater than 40 percent were used to indicate the effect of timber harvesting. Ground preparation for reforestation exposes mineral soil and displaces the soil surface layer during removal of logging slash and undesirable vegetation. The construction of new roads takes additional land out of vegetative production. Soil productivity is protected from intense wildfires by reducing the amount and kind of fuels available to burn. Prescribed fire is used to reduce the amount of fuels, and to treat old dense stands of chaparral. The obliteration of unneeded roads puts land back into vegetative production and stops erosion. The restoration of damaged watershed land also puts land back into vegetative production and stops erosion.

These potential effects on soil productivity provide a relative indication of impacts that would occur in each alternative (Table 4.15). The sum in thousands of acres of clearcut harvesting on slopes of less than 40 percent, all harvesting on slopes of greater than 40 percent, ground preparation for reforestation, and construction of new roads were used to indicate the negative effects on soil productivity. The positive effects are indicated by the sum in thousands of acres of restoration of damaged watershed land, road obliteration, and prescribed burned areas.

Table 4.15 - Potential Effects on Soil Productivity  
(average annual acres in thousands)

Decade	Effect	PRF	CUR	RPA	AMN	MKT	PRO	WFV
1	Positive	5.3	5.8	9.4	7.3	9.8	9.9	8.2
	Negative	5.1	3.9	5.2	1.4	9.6	9.6	4.3
2	Positive	5.7	7.3	8.8	8.3	7.2	7.4	6.9
	Negative	4.3	6.9	5.9	1.3	6.0	6.6	3.4
3	Positive	4.5	5.5	8.2	6.1	7.5	7.7	6.7
	Negative	3.6	3.4	4.5	1.2	6.7	7.2	3.0
4	Positive	5.5	6.5	9.7	8.9	7.2	8.2	5.8
	Negative	5.3	5.1	6.0	1.2	6.2	6.5	3.8
5	Positive	6.3	6.4	8.5	9.0	18.0	18.1	10.2
	Negative	5.7	5.0	5.2	1.2	7.9	8.0	3.7

The overall negative or positive effects for the planning period are discussed by alternative.

#### Alternatives PRF, CUR, RPA, AMN, and WFV

Alternatives PRF, CUR, RPA, AMN, and WFV produce overall positive effects on soil productivity for the planning period.

Positive effects are produced in the CUR, WFV, and PRF Alternatives because of moderate-to-low amounts of disturbance from timber harvesting and moderate-to-high amounts of prescribed fire. These alternatives have a moderate likelihood of maintaining long-term soil productivity.

The RPA Alternative has a moderately high likelihood of maintaining long-term soil productivity. The overall positive effects of the RPA Alternative are produced by high amounts of watershed restoration and prescribed fire.

Low amounts of ground preparation for reforestation, low amounts of disturbance from timber harvest, and high amounts of prescribed fire produce the positive effects on soil productivity in the AMN Alternative. The AMN Alternative has a high likelihood of maintaining long-term soil productivity.

#### Alternatives PRO and MKT

The MKT and PRO Alternatives also have an overall positive effect on the soil resource. Due to the lower difference between the positive and negative effects over the first three decades, the long-term soil productivity will be lower than with other alternatives.

These alternatives have a moderate to high potential of incurring a loss of long-term soil productivity. This is the result of low amounts of road obliteration and watershed restoration, and low-to-moderate amounts of prescribed fire.

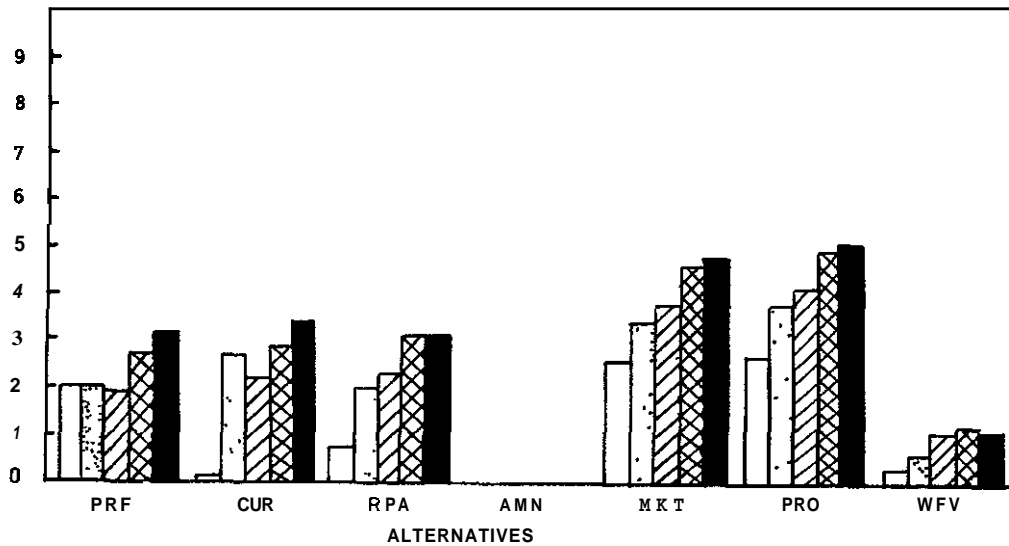
#### 2) SURFACE WATER RESOURCE

Figure 4.1 shows the increases in water yield by alternative. Chaparral treatment and timber harvest produce the increases. They would occur mostly in the Kings, Tule, western North Fork Kern and smaller watersheds north of Greenhorn Summit. Increased yields would benefit municipal, hydroelectric power, fisheries, and agricultural uses. Increasing water yield could have negative effects by accelerating flooding and erosion: but the extent is **unknown** and would need to be determined on a project basis.



FIGURE 4.1

## WATER YIELD INCREASES



Various activities can have negative impacts on water quality such as timber harvesting, preparing ground for reforestation, road and trail construction, vegetative treatments, wildfire, grazing, ski area development, OHV use, and camping. Road obliteration, wildernesses, Streamside Management Zones, and watershed restoration projects help improve water quality.

The most significant effect of Forest management on water quality is on sediment production. Municipal water use, fish habitat, swimming and wading, aesthetic enjoyment, and dispersed camping are sensitive to high sediment levels. The following will focus on activities which affect sediment yield.

Table 4.16 displays the major indicators of increased sediment yield. Timber harvest includes regeneration harvesting and preparation of the ground for reforestation. New roads refer to construction of local and collector roads. Recreation includes cross-country OHV use and ski area development. All these activities have the potential to disturb the watershed, (e.g., exposing bare soil, and concentrating overland flow). Exposing bare soil and concentrating overland water flow can increase the likelihood of sediment entering the stream. Watershed restoration can be accomplished through project design and mitigation, natural processes, watershed improvement projects, and road obliteration. These restoration projects in the first decade can decrease the likelihood of sediment yield in future decades by revegetating bare soil and stabilizing stream banks.

Table 4.16 - Indicators of the Potential to Increase Stream Sediment by Alternative for the First Decade

Indicators of Sediment Yield	PRF	CUR	FPA	AMN	MKT	PRO	WFV
Timber Harvest (average annual acres)	2,604	3,020	2,684	687	4,801	4,790	2,195
New Roads (average annual miles)	28.0	24.5	20.2	0.9	31.1	32.2	22.9
Recreation Cross-Country OHV (M acres open /limited)	0	588	0	0	855	855	549
Ski Areas (number of new)	2	2	1	1	2	2	0
Watershed Restoration (average annual acres)	153	153	368	250	250	250	250

Alternative PRF

Water yield would increase two percent the first three decades and increase three percent in the last two decades due to the treatment of chaparral and timber. Limiting OHV use to roads and trails would reduce the potential sediment yields particularly in the North Fork Kern and Kern River below Lake Isabella.

Alternative CUR

Water yield would not increase the first decade. Then it would climb to about three percent in the second decade. The yield would dip to about two percent the third decade and then up to about three percent the last two decades. Special provisions would not be made to increase water yield. Potential to increase sediment yields in the streams would increase some due to development of ski areas.

Alternative FPA

Water yield would increase about one percent the first decade. During the second and third decades it would increase to about two percent and rise to three percent the last two decades. Most of this increase would be from areas managed to improve water yield: Deer Creek, Oat Mountain, and Samson

Areas (agricultural benefit): and Salmon Creek (hydropower and agriculture benefit). Timing would be improved in these watersheds.

Road obliteration and watershed improvement projects would mitigate increased sedimentation from timber harvesting and road construction. Limiting OHV use to roads and trails would reduce sediment yields particularly in the North Fork Kern and Kern River below Lake Isabella. Ski areas in the Kings and North Fork Kern drainages would need mitigation to provide water quality protection. Overall, likelihood of sedimentation would be reduced resulting in better water quality for a number of beneficial uses.

#### Alternative AMN

Water yield would show little change during the planning period. Water quality would improve Forest-wide as a result of reduced timber harvesting, road obliteration, more watershed improvements, and less cross-country OHV use.

#### Alternative MKT

Water yield would increase from 2.6 to 4.8 percent over the existing yield during the five decades as a result of chaparral and timber treatments for various resource purposes. Management of the Tule River watershed for improved water yield would benefit agricultural, hydropower and municipal use.

The potential to increase sediment in streams would be higher than present as a result of more timber harvesting, road construction, cross-country OHV use, and ski area development during the planning period. Potential would be highest in the North Fork Kern and Kings watersheds. Increased watershed restoration would help to mitigate the likelihood of overall impact.

#### Alternative PRO

Water yield would increase from three to five percent over the existing yield. Yields would increase and timing would improve in particular watersheds. In the Kings River drainage, Tornado and Lightning Creek would be managed to improve water yields for primarily agricultural benefit. In the North Fork Kern River watershed and South Creek drainages would be managed to improve water yields primarily for hydroelectric power, fisheries and agricultural benefit.

In this alternative, the potential of increasing sediment to streams would be much higher than present management as a result of timber harvesting, road construction, cross-country OHV use, and ski area development throughout the planning period and would affect a number of beneficial uses. High levels of road obliteration and watershed improvement would help to maintain water quality.

## Alternative WFV

Water yield would increase from 0.3 to 1.1 percent over existing, during the planning period as a result of chaparral and timber treatments for various resource purposes. The potential to increase sediment would be lowered as a result of increased watershed restoration. Timber harvesting would be **less** intense and spread throughout the Forest. This would further decrease the likelihood of increased sedimentation particularly during the **first** three decades.

### 3) GROUNDWATER RESOURCE

The 1982 average annual groundwater use was about 46 acre-feet. Forest-wide, the changes in groundwater due to management activities would be minor. Groundwater use by range and wildlife programs would be insignificant. Alternatives with increased water yield (see the Surface Water Resource section) would generally have more springs in areas of intense timber harvesting and chaparral treatment.

The primary demand for groundwater during the planning period would be from developed recreation sites, particularly ski areas. Recreationists at developed sites use groundwater primarily for domestic purposes. The more the developed recreation use, the more the groundwater use and the greater the potential impact to wells and springs in the vicinity. Based on developed recreation, estimated groundwater use in acre-feet annually by the fifth decade by alternative would be:

<u>1 Ski Area</u>	<u>2 Ski Areas</u>			<u>3 Ski Areas</u>		
<u>VN</u>	<u>PRF</u>	<u>RPA</u>	<u>AMN</u>	<u>CUR</u>	<u>MKT</u>	<u>PRO</u>
165	265	265	265	365	365	365

### 4) GEOLOGIC HAZARDS

The frequency of geologic hazards (landslides) have been very low on the Forest. The following breakdown of landslide hazard into high, moderate, and low, is only for comparing alternatives. The landslide hazard overall for the Forest is very minor. Landslide hazards become more important as steeper terrain is accessed and managed. To assess landslide hazard, each alternative has been assigned a rating of low, moderate, or high. The ratings are based on the amount of timber regeneration harvesting on slopes with a gradient of greater than 40 percent, and of new roads. A low rating is given if the total acres effected is less than 500 per year; a moderate rating is for 500 to 1,000 acres per year; and a high rating is for more than 1,000 acres per year. Table 4.17 displays the ratings by decades for the planning period.

Table 4.17 - Landslide Hazard  
(L=Low, M=Moderate, H=High)

<u>Alternative</u>	<u>Decade</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
PRF	H	H	L	L	L
CUR	L	L	L	L	L
RPA	H	M	L	L	L
AMN	L	L	L	L	L
MKT	H	H	L	L	L
PRO	H	H	L	L	L
WFV	M	L	L	L	L

### Alternative PRF

The PRF Alternative has a high hazard in decade one and two compared to the low hazard for the following decades. This is because of 1,358, 1,110, 309, 100, and 77 acres, respectively, in regeneration harvesting on slopes of 40 percent or greater and new road construction.

### Alternative CUR, AMN, and WFV

The CUR and AMN Alternatives have identical low ratings of hazard for landslide hazard for all decades. The WFV Alternative is similar, except in decade one; it has a rating of moderate because of 653 acres in regeneration harvesting on slopes of 40 percent or greater and new road construction.

### Alternatives RPA, MKT, and PRO

These alternatives are similar. They are high the first two decades, except for RPA with a moderate rating in the second decade; and are all low in the last three decades.

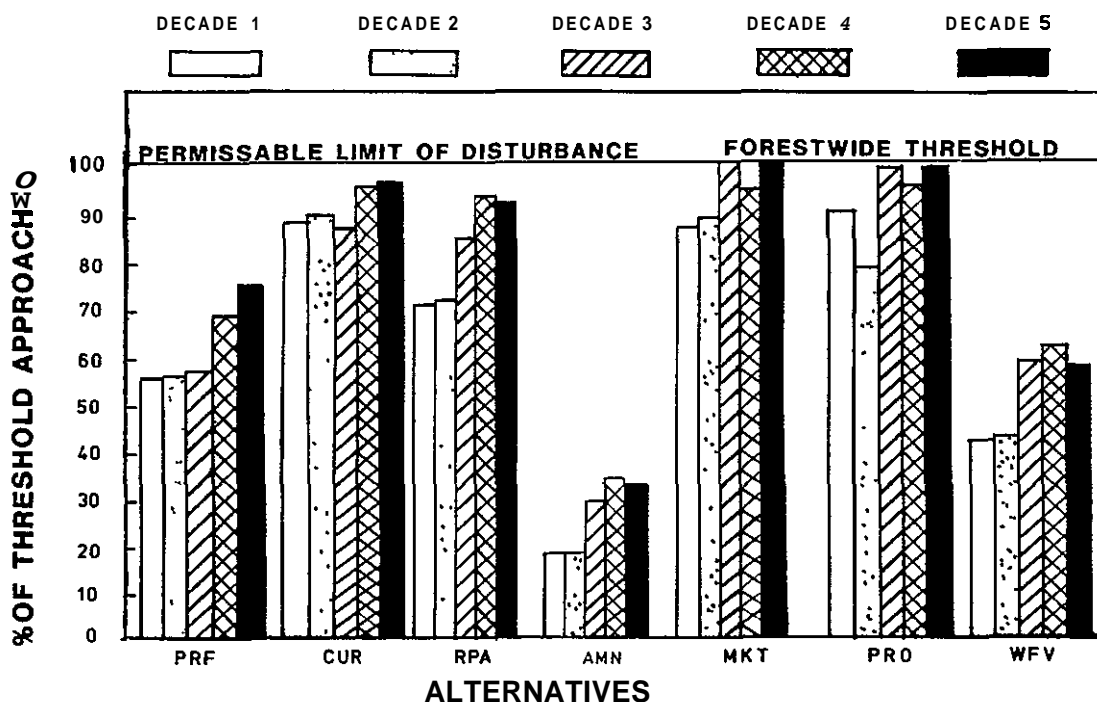
## 5) CUMULATIVE WATERSHED EFFECTS

As discussed in Appendix B of the EIS, the Cumulative Watershed Effects methodology uses Equivalent Roaded Acres (ERA's) to determine the extent of watershed disturbance. The upper permissible limit of disturbance that can occur without an unacceptable risk of incurring off-site cumulative watershed impacts to water quality is the Forest-wide threshold. As alternatives approach this threshold, the concern for realizing off-site water quality impacts gets higher. Timber harvesting, road construction and wildfire have the potential to significantly affect watershed conditions due to the extent of disturbance resulting from their occurrence. Figure 4.2 represents for each alternative the impacts of harvesting, road construction, and wildfire expressed as a percent of threshold approached. This threshold was empirically derived. Based on 106 stream evaluations taken on the Sequoia National Forest, the average rating revealed that streams on the Forest have a high to moderate sensitivity rating and can tolerate a 10 to 12 percent increase in water yield without exceeding carrying capacity. The more conservative factor of 10 percent was selected for purposes of analysis.

On the opposite side of potential adverse impacts from land disturbance, direct watershed improvement and other activities (such as road prism stabilization and road obliteration) improve the overall condition of the watershed and tend to mitigate or lessen the impact of other disturbances. These improvements were incorporated into the calculations of cumulative watershed effects.

FIGURE 4.2

### CUMULATIVE WATERSHED EFFECTS



To understand the response of a watershed to soil disturbing activities it is necessary to understand first the trend over time in those activities. then the potential effects, both positive and negative of those activities. Accordingly, for each alternative analyzed below, average annual road miles constructed over the five decade period is displayed as a percent change from the base 1982 year to serve as a proxy for the five decade trend in soil disturbance. Timber acres harvested are displayed as a percent change from the current annual rate of harvest. Watershed improvements are discussed as acres of ground improved per year. Disturbance levels are expressed as the percent of total available ERA's accounted for by proposed activity.

To understand the effects of alternative management activities on watersheds, it is necessary to analyze changes in those activities (i.e., rates of road construction and timber harvest). The resultant cumulative watershed effects and, on the positive side, the nature and rate of watershed improvements is summarized for each alternative.

### PRF Alternative

Comparison of the PRF Alternative to the base 1982 year indicates there will be a decrease of 30 percent in average road miles constructed annually over the first five decades. Comparison of average annual harvest rates in the PRF Alternative and the base year indicates a 32 percent decrease in timber acres harvested. As shown in Figure 4.2, disturbance levels are at 55 percent, 56 percent, and 57 percent of threshold during decades one, two, and three, respectively. The fourth and fifth decades are at 69 percent and 75 percent of threshold, respectively.

Watershed improvement is accomplished at the rate of 140 acres per year in the first decade, 100 acres in the second decade, 50 acres in the third decade, and 30 acres in the fourth and fifth decades. Road obliteration occurs at a rate of 6.5 miles per year for all decades.

Taking into account both soil disturbing and watershed improvement activities, the fifth decade average percent of threshold approached is approximately 62 percent of the permissible limit of disturbance. This alternative has a moderate risk of decreasing soil productivity as a result of the disturbance levels and potential risk for soil erosion which are partially offset by watershed improvement.

### CUR Alternative

Comparison of the CUR Alternative to the base 1982 year indicates there will be a decrease of 35 percent in average road miles constructed annually over the first five decades. Timber acres harvested remain the same. As shown in Figure 4.2, disturbance levels are at 88 percent, 90 percent, and 87 percent of threshold during decades one, two, and three, respectively. The fourth and fifth decades are at 96 percent and 97 percent of threshold.

Watershed improvement is accomplished at the rate of 140 acres per year in the first decade, 100 acres in the second decade, 50 acres in the third decade, and 30 acres in the fourth and fifth decades. Road obliteration occurs at a rate of 6.5 miles per year for all decades.

Taking into account both soil disturbing and watershed improvement activities, the fifth decade average percent of threshold approached is approximately 91 percent of the permissible limit of disturbance. This alternative has a moderately high risk of decreasing soil productivity as a result of the disturbance levels and potential risk for soil erosion which are partially offset by watershed improvement.

### RPA Alternative

Comparison of the RPA Alternative with the base 1982 year indicates that there will be a decrease of 39 percent in average road miles constructed annually over the first five decades. Comparison of average annual harvest rates in the RPA Alternative with the base year indicates a 23 percent decrease in timber acres harvested. As shown in Figure 4.2, disturbance levels are at 71 percent, 72 percent, and 85 percent of threshold during decades one, two, and three, respectively. The fourth and fifth decades are at 94 percent and 93 percent of threshold, respectively.

Watershed improvement is accomplished at the rate of 270 acres per year in the first decade, 290 acres in the second decade, 300 acres in the third decade, and 310 acres in the fourth and fifth decades. Road obliteration occurs at a rate of 48.9 miles per year in the first decade and 0.5 miles per year for the following four decades.

Taking into account both soil disturbing and watershed improvement activities, the fifth decade average percent of threshold approached is approximately 83 percent of the permissible limit of disturbance. This alternative has a moderately high risk of decreasing soil productivity as a result of the disturbance levels and potential risk for soil erosion which are partially offset by watershed improvement.

#### AMN Alternative

Comparison of the AMN Alternative with the base 1982 year indicates there will be a decrease of 98 percent in average road miles constructed annually over the first five decades. Comparison of average annual harvest rates of the AMN Alternative with the base year indicates a 82 percent decrease in timber acres harvested. The level of disturbance under this alternative is generally lower than under the other alternatives. As shown in Figure 4.2, disturbance levels are at 18 percent of threshold for decades one and two, and 29 percent for decade three. The fourth and fifth decades are at 34 percent and 33 percent, respectively.

Watershed improvement is accomplished at the rate of 200 acres per year in the first decade, 50 acres in the second decade, 20 acres in the third and fourth decades, and 10 acres in the fifth decade. Road obliteration occurs at a rate of 25 miles per year for the first decade, 24 miles per year for the second decade, and 0.5 miles per year for the remaining three decades.

Taking into account both soil disturbing and watershed improvement activities, the fifth decade average percent of threshold approached is approximately 26 percent of the permissible limit of disturbance. This alternative has the least impact on soil productivity, since disturbance and potential erosion would be the least of any alternative.

#### MKT Alternative

Comparison of the MKT Alternative with the base 1982 year indicates there will be a decrease of 12 percent in average road miles constructed **annually** over the first five decades. Comparison of average annual harvest rates of the MKT Alternative with the base year indicates a one percent increase in timber acres harvested. As shown in Figure 4.2, disturbance levels are at 87 percent, 89 percent, and 100 percent of threshold during decades one, two, and three, respectively. The fourth and fifth decades are at 95 percent and 100 percent of threshold, respectively.

Watershed improvement is accomplished at the rate of 200 acres per year in the first decade and 50 acres per year for the remaining four decades. Road obliteration occurs at a rate of 25 miles per year **for** the first decade, 24 miles per year for the second decade, and 0.5 for the remaining three decades.



Taking into account soil disturbing and watershed improvement activities, the fifth decade average percent of threshold approached is approximately 94 percent of the permissible limit of disturbance. This alternative has the second highest level of disturbance and soil productivity loss.

#### PRO Alternative

Comparison of the PRO Alternative with the base 1982 year indicates there will be a decrease of one percent in average road miles constructed over the first five decades. Comparison of average annual harvest rates of the PRO Alternative with the base year indicates a three percent increase in timber acres harvested. As shown in Figure 4.2, disturbance levels are at 90 percent, 92 percent, and 99 percent of threshold during decades one, two, and three, respectively. The fourth and fifth decades are at 95 percent and 100 percent of threshold, respectively.

Watershed improvement is accomplished at the rate of 200 acres per year in the first decade and 50 acres per year in the remaining decades. Road obliteration occurs at a rate of 25 miles per year for decade one, 24 miles per year for the second decade and 0.5 miles per year for the remaining three decades.

Taking into account both soil disturbing and watershed improvement activities, the fifth decade average percent of threshold approached is approximately 95 percent of the permissible limit of disturbance. This alternative has the highest level of disturbance and soil productivity loss of any of the alternatives and the highest potential risk for soil erosion which are partially offset by watershed improvement.

#### WV Alternative

Comparison of the WV Alternative with the base 1982 year indicates there will be a decrease of 53 percent in average road miles constructed over the first five decades. Comparison of annual average harvest rates of the WV Alternative with the base year indicates a 49 percent decrease in timber acres harvested. As shown in Figure 4.2, disturbance levels are at 42 percent, 43 percent, and 59 percent of threshold during decades one, two, and three, respectively. The fourth and fifth decades are at 62 percent and 58 percent of threshold, respectively.

Watershed improvement is accomplished at the rate of 160 acres per year in the first decade, 70 acres in the second decade and third decades and 50 acres in the fourth and fifth decades. Road obliteration occurs at a rate of 19 miles per year for the first decade, 16 miles per year for the second and third decades and 0.05 miles per year for the remaining two decades.

Taking into account both soil disturbing and watershed improvement activities, the fifth decade average percent of threshold approached is approximately 53 percent of the permissible limit of disturbance. This alternative has the second lowest impact on the soil resource, with fewer acres being disturbed and subject to erosion.

In summary, the ranking of these alternatives from lesser to greater relative potential risk to watershed and soil productivity is as follows:

- AMN Alternative
- WFV Alternative
- PRF Alternative
- RPA Alternative
- CUR Alternative
- MKT Alternative
- PRO Alternative

e. ENERGY PRODUCTION AND CONSERVATION

Energy production sources consist primarily of hydroelectric and firewood. The availability of firewood is dependent upon the degree of silvicultural treatments. Hydroelectric development is limited by wilderness, wild and scenic river designation, and recreation and wildlife requirements. Energy consumption is affected by the amount of use, by the age and condition of vehicles and structures, and by the demand for facilities to support Forest activities. Conservation is primarily dependent upon the funds available to maintain energy efficient facilities. A 1979 study indicated that by implementing a retrofitting program the Forest could save as much as 1,555 million BTU's per year. This would result in a 19 percent savings in energy consumption in Forest Service buildings.

Alternatives MKT and PRO

Development and production of energy sources, especially firewood and hydroelectric, would be encouraged under these alternatives. Firewood availability would be high due to increased timber yield. Hydroelectric development could be maximized since there are no wild and scenic river recommendations under these alternatives. Conservation would be achieved through improved maintenance, replacement, and the retrofitting of structures.

Alternatives PRF and RPA

Development and production of energy sources, especially firewood, would be encouraged under these alternatives. In PRF and RPA, firewood availability would be moderately high due to planned timber harvesting utilizing a combination of even-aged and uneven-aged management. Hydroelectric production would have some opportunity for expansion since wild and scenic river designations leave portions available for development. One proposed hydroelectric facility in Alternative RPA would be forgone or require mitigation to develop. Conservation would be achieved through improved maintenance, replacement, and the retrofitting of structures.

Alternative CUR

**There** would not be an immediate effect on energy production, consumption, or conservation. During the planning period, energy consumption would increase because of a lack of funds for replacement or retrofitting of structures at a level that would conserve energy.

### Alternative AMN

**Energy** production would respond to demand only when compatible with the amenity emphasis of this alternative. This alternative has low potential for hydroelectric due to increased wild and scenic river designations which preclude hydroelectric development. Two proposed hydroelectric facilities would be forgone or require mitigation to develop. Low timber yield would reduce availability of firewood. Conservation would be achieved through improved maintenance, replacement, and the retrofitting of structures.

### Alternative WFV

Reduced timber yield would diminish firewood availability. Hydroelectric production would have some opportunity for expansion since wild and scenic river designations would leave portions available for development. One proposed hydroelectric facility would be forgone or require mitigation to develop. Conservation would be achieved through improved maintenance, replacement, and the retrofitting of structures.

#### f. FACILITIES

The Forest road system provides access to the public and for the administration of resources. **The** transportation system proposed under each alternative is developed in response to resource management demands, primarily timber production and recreation use. Under each alternative, aspects of the road system that will vary include: new construction and reconstruction of local roads, new construction of collector roads into unroaded areas, and road closures. Under all alternatives, maintenance will provide for public and/or administrative access and an environmentally acceptable road system. In all alternatives, road construction will decrease through the planning period (Figure 4.3)

Year-round road closures are normally based on ability to maintain the roads and the demand on resources. Alternatives that emphasize an increase in dispersed recreation will result in fewer closures to allow road to accommodate the activity. Roads closed on a seasonal basis are primarily roads not maintained during the winter snow season. Approximately 425 miles of roads are currently closed each season. **The** closure of these roads effectively results in the closure of many other connecting roads throughout the Forest. **The** development of winter recreation facilities throughout the various alternatives will result in fewer roads closed on a seasonal basis.

The majority of the 136 buildings on the Forest are 36 years or older, and many need to be replaced or rehabilitated. Inability to provide needed maintenance and replacement will result in continued deterioration of buildings. **When** buildings can no longer function to support Forest management, they will be abandoned resulting in an inability to provide support to management activities. Management activities supported by these buildings will become less efficient or very costly to accomplish. **The** conditions and usability of administrative facilities will be affected by budget allocations and the need to support forest management.

The number of dams on the Forest are not planned to change in any of the alternatives throughout the planning period. Sequoia National Forest will react to specific proposals for dam construction such as hydropower projects.

#### Alternatives MKT AND PRO

The expansion of recreational opportunities and an increased emphasis on commodity production will result in significant extension of the road system over the current level (Figure 4.3). In these alternatives, traffic will be relatively high (Figure 4.3A) as an emphasis on marketable items and production results in the highest traffic levels projected in the alternatives. Congestion is deterred somewhat by a high level of roads open to provide for an emphasis on dispersed recreation (Figure 4.4). An administrative facilities replacement and rehabilitation program would be implemented to provide efficient support services.

#### Alternatives PRF, CUR, and RPA

Expansion of recreational facilities and a moderate emphasis on commodity production will result in extension of the road system as shown in Figure 4.3. Traffic in PRF would be moderate in the first few decades and relatively high in latter decades (Figure 4.3A) as a result of moderate emphasis on commodity production. Congestion is compounded by fewer roads open than the MKT and PRO Alternatives (Figure 4.4). Traffic in the CUR and RPA Alternatives is moderate and steady through the planning period (Figure 4.3A). An administrative facilities replacement and rehabilitation program will be implemented to provide efficient support services.

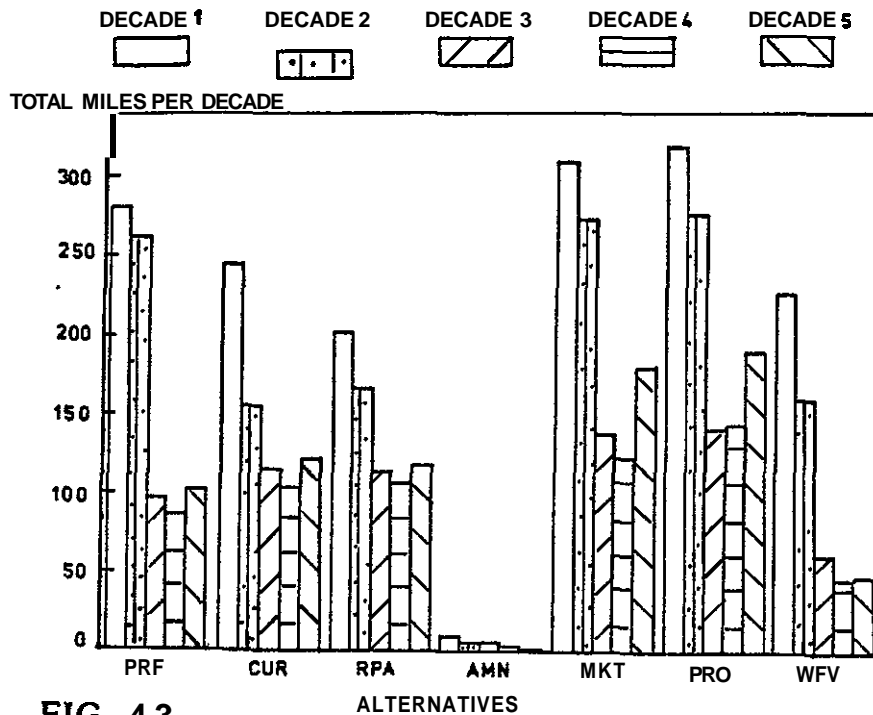
#### Alternative AMN

This alternative produces few new roads as the emphasis shifts to nonmarket resources (Figure 4.3). Traffic will be less than the current level (Figure 4.3A) as roads available for public use are increased significantly from the current level to provide for an emphasis on dispersed recreation (Figure 4.4). An administrative facilities replacement and rehabilitation program will be implemented to provide efficient support services. Facilities will be constructed to meet the needs of the developed recreation program.

#### Alternative WFW

Total new construction and reconstruction of roads will vary little from the current level although the timing is different as seen in Figure 4.3. Traffic will be moderately high (Figure 4.3A) as a moderate amount of road closures will be enacted due to an inability to provide maintenance that will allow user comfort, prevent resource damage, and provide an emphasis on fish and wildlife improvement (Figure 4.4). An administrative facilities replacement and rehabilitation program will be implemented to provide efficient support services.

## PLANNED ROAD CONSTRUCTION IN MILES PER DECADE



**FIG. 4.3**

Figure 4.3A - Index of Traffic Density

	PRF	CUR	RPA	AMN	MKT	PRO	WFV
1	820	884	842	834	723	701	869
2	927	701	839	836	900	859	1,061
3	1,086	898	840	836	931	894	1,201
4	1,115	860	837	834	1,007	1,020	1,272
5	1,219	958	833	833	1,076	1,047	1,373

NOTE: This table considers available road mileage including new roads constructed and roads closed.

Figure 4.4 - Roads Open For Public Travel (Miles)  
and Percent of Total Road System Open

DECADE	PRF	CUR	RPA	AMN	MKT	FRD	WV
1							
Miles	819	646	810	791	973	988	740
Percent	47	38	48	53	55	55	44
2							
Miles	807	828	915	871	875	904	706
Percent	40	44	50	59	43	44	38
3							
Miles	751	707	1,013	995	909	935	706
Percent	36	36	52	67	42	42	37
4							
Miles	906	817	1,156	1,131	935	954	752
Percent	41	39	56	76	40	40	38
5							
Miles	893	790	1,316	1,261	1,026	1,056	755
Percent	39	36	61	84	41	41	37
Planning Period Average							
Miles	835	758	1,042	1,010	943	967	732
Percent	41	39	53	68	44	44	39

g. FIRE AND FUELS MANAGEMENT

Each plan alternative requires the use of prescribed fire and the protection from wildfire in order to meet a variety of resource management objectives. The Environmental Consequences of different fire management programs will be determined by the amount (acres), intensity, and location of both prescribed and wild fires.

Prescribed fire involves the intentional burning of forest fuels under predetermined conditions in order to achieve specific management objectives. The use of prescribed fire is included in all alternatives as a part of timber harvesting and regeneration activities. Fire is also used to improve wildlife habitat, to increase range forage and water production, and to enhance wilderness characteristics in most alternatives.

Wildfire protection is composed of fire prevention, detection, and suppression forces including lookouts, fire engines, air tankers and helicopters. The construction and maintenance of fuelbreaks and the use of prescribed fire to reduce wildfire hazards is also a part of the fire protection program.

All fire, whether prescribed or wild, will effect the environment in many ways. Some are harmful, while others may be beneficial. The effects of the various fire programs proposed in the alternatives are discussed in relation to the portion of the environment affected in the following sections of this chapter.

Air Quality - Air quality will be effected by the number of acres burned, weather conditions during the fire, and fire intensity. As a general rule, since prescribed fire can be timed to coincide with favorable smoke dispersion conditions, there will be less impact on air quality than from wildfire.

Timber - Prescribed fire is used for a variety of purposes in the management of commercial forest land. The environmental consequences of prescribed burning in each alternative are discussed in the timber section. Wildfire damage to commercial timber is primarily restricted to the acres of young growth timber that cannot be salvaged if burned. Planned protection measures and protection priorities common to all alternatives will keep this damage to acceptable limits.

Wilderness - Various prescribed fire treatments and wildfire suppression alternatives are proposed in several alternatives. The effects of wilderness vegetation and characteristics are displayed in the wilderness section of this chapter.

Earth Resources - Fire size, location and intensity will effect both soil productivity and water yield. Since these factors can be planned for and controlled with prescribed fire, the effects are more favorable than when the vegetation is burned with wildfire. As a rule, only larger (greater than 1,000 acres) and more intense wildfires will have a measurable effect on these resources. Alternative comparisons are found in the Earth Resources section of this chapter.

Wildfire Acres - Acres burned by wildfire are determined by such uncontrollable factors as the weather, and planned management actions such as hazard reduction, law enforcement, fuelbreak construction and the size and composition of the fire suppression force.

Planned fire management actions in each alternative respond to the management emphasis and resource values of the particular alternative. The resultant environmental consequences - as discussed in the appropriate resource sections (timber, wilderness, soil, etc.) - will occur on those lands treated for hazard reduction including fuelbreaks. on those acres burned by wildfire, as well as on those lands protected from wildfire. Protection of high value and/or priority resources is dependent upon the completion and annual maintenance of the Sequoia NF's planned fuelbreak system. The schedule for this item varies between alternatives.

Table 4.18 displays the management/protection emphasis, the acres burned by wildfire and treated for hazard reduction, and the decade in which the fuelbreak system is finished. Table 4.19 displays fuelbreak construction and maintenance schedule.

Table 4.18 - Environmental Consequences Indicators: Fire Protection

ALT	Management/Protection Emphasis	Wildfire (Average Acres/year)		Hazard Reduction (Acres/year)	Fuelbreak Completion (Decade)
		1st Decade	5th Decade		
PRF	Immature Timber, Improvements	4,606	5,230	1,500	3
CUR	All Resources	4,534	4,319	2,500	Not Completed
RPA	Immature Timber, Improvements	4,606	5,230	3,000	3
AMN	All Timber, Improvements	4,606	5,374	2,500	4
MKT	Immature Timber, Improvements	4,606	5,063	4,000	2
PRO	Immature Timber, Improvements	4,606	4,895	4,000	2
WFV	All Timber, Improvements	4,606	5,095	2,500	4

Table 4 19 - Fuelbreak Construction and Maintenance Schedule

	Decade	PRP	CUR	RPA	AMN	MKT	PRO	WFV
Fuelbreak Construction (Miles per year)	1	30	10	30	20	40	40	20
	2	30	10	30	20	35	35	20
	3	15	10	15	20	0	0	20
	4	0	10	0	15	0	0	15
	5	0	10	0	0	0	0	0
Fuelbreak Maintenance (Miles per year)	1	175	175	175	175	275	275	175
	2	275	180	275	190	325	325	200
	3	325	185	325	230	325	325	250
	4	325	190	325	300	325	325	300
	5	325	195	325	325	325	325	325
Miles existing (1982)	- 225							
Total Miles Planned	- 975							



## h. FISHERIES, WILDLIFE AND SENSITIVE PLANTS

### 1) FISHERIES

The major direct and indirect impacts on the "accessible" fisheries will result from the vegetation manipulation associated with timber harvest, reforestation projects, fuel reduction, wildfire, grazing, and increased recreation use. These resource activities directly effect the quality and diversity of fish habitat. The indirect effect of these changes will be reflected in changes in species and relative numbers of fish associated with the streams over time.

To measure the consequences of the alternatives on the fishery resource, the designation and treatment of the Streamside Management Zone, the amount of cumulative watershed disturbance, and miles of potentially affected streams are evaluated.

The Forest will implement fishery habitat improvement programs under each of the alternatives. These programs include such activities as the restoration of the Little Kern golden trout, meadow rehabilitation, watershed improvements, road closures, erosion control, road design, and direct fisheries habitat improvement. Their primary objective is control of sediment in the streams.

Riparian Standards and Guidelines and Best Management Practices will be used to protect and improve fish habitat and water quality.

Many of the Forest streams are of small size with steep gradients and bedrock substrates. These physical restraints limit the Forest's ability to realize a substantial increase in pounds of native fish through construction of fish habitat structures. However, the long-term direction will be to produce high quality habitat where it is feasible to do so.

Riparian vegetation is essential in providing shade to keep water temperatures from becoming lethal to fish during periods of minimum water levels in the summer and early fall. The combination of streamside vegetation, shade, sediment, and water quantity affects the potential trout production in forest streams.

#### Alternatives CUR, MKT, AND PRO

Minimum Management Requirements protect the quality of the existing fisheries habitat. The physical limiting factors are not changed in these alternatives. Native trout production will remain constant through the planning period.

#### Alternatives WFV, AMN, RPA, AND PRF

Minimum Management Requirements protect the quality of existing fisheries habitat. However, structural habitat improvement projects will be implemented on 46 miles of stream in WFV and AMN and 32 miles of stream in RPA and PRF. This action will provide for a one to two percent increase in the pounds of trout produced.

## 2) WILDLIFE

With over 300 species of wildlife found on the Sequoia National Forest, a vast array of physical features in the environment combine to meet their specific habitat needs. The type of vegetation, its age, proximity to other vegetation, availability of water, and inherent special components (i.e., snags, rock outcrops, mast-producing trees, and amount of human disturbance) are the major factors that combine to form specific habitats.

Wildlife that utilize these various habitats can be grouped into six major groups :

- a) Species associated with early successional stages of vegetation.
- b) Species associated with late successional stages.
- c) Species associated with riparian areas.
- d) Species associated with snags.
- e) Species associated with mast-producing vegetation.
- f) Threatened and Endangered (T&E) species.

Potential habitats for these species groups are predicted for each alternative by combining the alternative's special management direction (standards and guidelines) with the activities projected to occur that would affect the groups. These activities, or "indicators" of change, used in this analysis are:

- a) To indicate early successional stages: acres timber regenerated, and acres chaparral burned or type converted.
- b) To indicate late successional stages: acres timber regenerated.
- c) To indicate riparian areas: size of Streamside Management Zone (SMZ).
- d) To indicate snag availability: acres of timber regenerated and snag retention.
- e) To indicate amount of mast-producing trees: acres regenerated and oak retention levels.

Spotted Owls - **There** are some environmental consequences common to all alternatives as a result of spotted owl management. Conversely there are some environmental consequences to spotted owls as a result of implementation of all alternatives. Management of the Spotted Owl Habitat Areas under a "No Scheduled Timber Harvest" alternative causes a potential drop in the timber ASQ of approximately 9 MMBF regardless of the alternative considered. With the exception of the Amenity Emphasis Alternative, all alternatives fragment suitable habitat outside the network as a result of timber harvest causing a drop in total Forest estimated habitat capability. **The** approximate drop in estimated habitat capability will be from 75 pairs at the end of the first decade to 55 pairs at the end of the fifth decade. This rate of drop varies among the alternatives.

All alternatives provide for the management of 40 Spotted Owl Habitat Areas under a "No Scheduled Timber Harvest" management scheme. Because the estimated habitat capability exceeds these 40 acres throughout the planning

horizon, the Forest will have the option of establishing additional network habitat areas **if** future information indicates greater protection is needed to ensure population viability.

Threatened and Endangered species are handled separately by following existing recovery plans **or** coordinating with California Department of Fish and Game, the appropriate Recovery **Team**, and the USDI Fish and Wildlife Service.

Habitat Capability (HC) for the above species groups (except T&E species) will change from the 1982 **level** (over the planning horizon of five decades) by the following percentages displayed in Table 4.20.

Table 4.20 - Percentage Change in Habitat Capability

<u>Species Group</u>	<u>Alternatives</u>						
	PRF	CUR	RPA	AMN	MKT	PRO	WFV
a) Early successional stage	+27	+17	+15	+10	+22	+27	+30
b) Late successional stage	-30	-30	-32	- 7	-37	-48	-28
c) Riparian	+10	0	+10	+20	0	0	0
d) Snags	-15	-15	- 5	- 5	-20	-22	- 5
e) Mast trees	-15	-10	-10	- 5	-15	-27	-10

Alternative PRF

The overall 27 percent increase in Habitat Capability (HC) for wildlife species associated with early successional stages is due to group selection, clearcut, and intermediate harvesting of timber: prescribed burning of brush and seasonal road closures. Brush treatment occurs in all decades with a total of 26,000 acres to be burned in the first year. The 20 percent decrease in HC for species associated with mature-to-overmature timber is due to timber harvesting of approximately 26,000 acres per decade. With increased protection of riparian areas and inclusion of intermittent streams, the overall HC for mature stage associated species will increase 10 percent in riparian dependent species. The 15 percent reduction in HC for snag associated wildlife species is gradual over the planning horizon. The HC for species associated with mast-producing trees will decrease 15 percent overall.

This alternative will cause a drop in the total Forest estimated habitat capability for spotted owls as a result of fragmentation of suitable habitat outside the network. The drop in habitat capability, caused by timber

harvest activities, will be from 75 pairs at the end of the first decade to 55 pairs in the fifth decade.

#### Alternative CUR

The overall 17 percent increase in HC for species associated with early successional stages is due to regeneration harvest and prescribed burning of brush. The overall 30 percent decrease in HC for wildlife associated with late successional stages is due to regeneration harvesting 175,000 acres of timber over the five decade period. Riparian area protection remains the same as in 1982 with approximately 33,500 acres managed for riparian dependent species. The 15 percent reduction in overall HC for species associated with snags is due to regeneration harvest of timber. The HC for species associated with mast-producing trees will decrease approximately 10 percent over the planning horizon.

This alternative will cause a drop in the total Forest estimated habitat capability for spotted owls as a result of fragmentation of suitable habitat outside the network. The drop in habitat capability, caused by timber harvest activities, will be from 75 pairs at the end of the first decade to 55 pairs in the fifth decade.

#### Alternative RPA

The 15 percent increase in HC for wildlife species associated with early successional stages is due to regeneration harvest and prescribed burning of brush. The 22 percent reduction in HC for wildlife associated with late successional stages is due to regeneration harvesting of 145,000 acres of timber. Riparian area protection is increased to encompass ground managed for riparian dependent species, a 10 percent increase. An overall decrease in HC of five percent will occur for species associated with snags. Due to regeneration harvest of timber, the HC for mast tree associated species will drop 10 percent overall, evenly distributed over the planning horizon.

This alternative will cause a drop in the total Forest estimated habitat capability for spotted owls as a result of fragmentation of suitable habitat outside the network. The drop in habitat capability, caused by timber harvest activities, will be from 75 pairs at the end of the first decade to 55 pairs in the fifth decade.

#### Alternative AMN

The 10 percent increase in HC for wildlife associated with early successional stages is due mainly to prescribed burning of brush and season road closures. The seven percent reduction in HC for wildlife associated with late successional stages is caused by group select harvesting, affecting approximately 3,091 acres over the planning horizon. The amount of acreage managed for riparian dependent species is increased by 20 percent. An overall decrease in HC of five percent will occur for species associated with snags. Because of little regeneration harvest and high retention of existing oaks, the HC for species associated with mast trees will only decrease by about five percent.

This alternative will result in a modification to suitable habitat for spotted owls outside the network. The modification would occur as a result of uneven-aged timber management which may temporarily decrease vertical diversity of timber stands in some areas. **As** the seedlings become established and grow in the openings created from this timber harvest, vertical diversity will increase and eventually approximate current stand structure.

This alternative will cause a minor drop in the total Forest estimated habitat capability for spotted owls **as** a result of removal of potential decadence and overall decline in stand diversity of suitable habitat outside the network. **The** drop in habitat capability, caused by timber harvest activities, will be from 75 pairs at the end of the first decade to 70 pairs in the fifth decade.

#### Alternative MKT

The overall 22 percent increase in HC for wildlife associated with early successional stages is due to regeneration harvest and prescribed burning of brush. **The** overall 37 percent reduction in HC for species associated with late successional stages will occur due to regeneration ,harvesting, affecting approximately 225,000 acres.

**The** amount of acreage managed for riparian dependent species remains the same, providing some habitat for wildlife associated with late successional stages. **The** overall 20 percent reduction in HC for wildlife associated with snags will occur due to regeneration harvest. **The** overall 20 percent reduction in HC for species associated with mast-producing trees will occur due to regeneration and fuelwood harvesting.

This alternative will cause a drop in the total Forest estimated habitat capability for spotted owls as a result of fragmentation of suitable habitat outside the network. The drop in habitat capability, caused by timber harvest activities, will be from 75 pairs at the end of the first decade to 55 pairs in the fifth decade.

#### Alternative PRO

The overall 27 percent increase in HC for wildlife associated with early successional stages occurs due to regeneration harvesting of timber and prescribed burning of brush. The overall 48 percent reduction in HC for wildlife associated with late successional stages is due to regeneration harvest of 326,000 acres over the planning horizon. **The** amount of acreage managed for riparian dependent species receives no change. The overall 22 percent reduction in HC **for** wildlife associated with snags is due to regeneration harvest. **The** overall 27 percent reduction in HC for wildlife associated with mast-producing trees will occur due to regeneration harvest.

This alternative will cause a drop in the total Forest estimated habitat capability for spotted owls as a result of fragmentation of suitable habitat outside the network. **The** drop in habitat capability, caused by timber harvest activities, will be from 75 pairs at the end of the first decade to 55 pairs in the fifth decade.

## Alternative WFV

The overall 30 percent increase in HC for species associated with early successional stages is due to regeneration harvest; retention of grass, forbs, and brush in clearcut units; prescribed burning of brush; and seasonal road closures. The overall 28 percent decrease in HC for wildlife associated with late successional stages will occur due to regeneration harvesting of 271,000 acres. The amount of acreage managed for riparian dependent species remains the same. The five percent increase in HC for wildlife associated with snags occur due to increased amount of land retained for snags. The HC for wildlife associated with mast trees will decrease by 27 percent due to fuelwood harvest.

This alternative will cause a drop in the total Forest estimated habitat capability for spotted owls as a result of fragmentation of suitable habitat outside the network. The drop in habitat capability, caused by timber harvest activities, will be from 75 pairs at the end of the first decade to 55 pairs in the fifth decade.

### 3) SENSITIVE PLANTS

Forest Service direction requires that all sensitive plants on the Regional Forester's Sensitive Plant List are to be conserved. In addition, the Forest Service assures that management activities do not Jeopardize the continued existence of these species or result in the destruction or modification of their essential habitat until such time as their status for possible listing under the Endangered Species Act is determined. Known populations of sensitive plants and their essential habitats will be protected under all alternatives.

#### i. INTEGRATED PEST MANAGEMENT

The Integrated Pest Management (IPM) approach will be used for each alternative. With IPM, vegetation management provides the best opportunities to prevent and reduce the amount and impact of pest-related damage. Direct action against pests may be necessary in specific situations.

Forest pests are managed primarily through silvicultural treatments which improve the health, vigor, and diversity of the forest (which reduce the susceptibility to pest infestation and resource loss). Direct control is usually limited to areas with high value improvements (such as developed recreation sites) and plantations where rodent control and site preparation are needed to protect the seedlings.

Thus, the need for control of pests is indicated by the number of acres planned for intensive forest management (Regulation Class I and II under Timber, this section) and the number of visitor days expected in developed recreation site (listed in Chapter 2, Alternatives) under each alternative.

#### 1) Pest Management Related to Timber Production

The magnitude of pest management activities is expected to be proportional to the intensity of timber management activity. The intensity of timber

management can be judged by the amount of reforestation that is carried on under each alternative. Since pest management is an integral part of both forest establishment and maintenance, the measure of pest management is best described by the accumulated acres of reforestation through the planning period of five decades (Table 4.22).

Table 4.22 - Accumulated Regeneration by Decade

ALTERNATIVE	ACRES BY DECADE (M acres)				
PRF	24.8	46.1	60.4	90.4	118.5
CUR	0.8	43.7	44.5	73.0	95.3
RPA	25.2	54.8	74.2	106.9	129.4
AMN	0.7	1.3	1.9	2.5	3.1
MKT	47.0	77.0	108.7	142.3	181.0
PRO	47.9	79.5	114.4	147.5	186.8
WFV	20.3	38.1	53.4	72.3	89.6

Implementation of the alternatives would involve different levels of pest management opportunities and would likely result in varying severities of pest-related damage on the Forest. Indicators of pest-related damage include tree mortality, reduced growth, top-kill, and reduced quantity of seed production. Damage can result in sawtimber defect, understocking, failure and delay of regeneration, reduced site productivity, degradation or closure of recreation sites, increased incidences of hazardous trees, and undesirable vegetation changes.

The effects on pest damage of implementing each alternative cannot be quantitatively predicted because of the lack of adequate methodologies. In order to compare alternatives, the intensity of vegetation management is used as a proxy to indicate the opportunity to prevent and reduce damage. With greater opportunity to manage vegetation, less damage would be anticipated. Areas managed with a timber emphasis would present the greatest opportunity to reduce or prevent pest related losses. Wildernesses, on the other hand, would present limited opportunities when pests threaten resources on surrounding lands or affect the wilderness resource itself. Areas where condition of vegetation is important to the resource (such as developed recreation sites) would also have significant opportunities for pest management; even though timber management is not a primary objective. Areas managed for other resources would have limited pest management opportunities.

The following narrative provides more details on the types and magnitude of anticipated losses for each alternative.

### Alternative PRF

Mortality losses will decrease from current with increased amount of plantations. Vegetation in fee-sites will remain healthy, while vegetation in non-fee sites will decline in condition.

### Alternatives CUR and WFV

Mortality losses will remain the **same or** decrease as more of the forest becomes managed. Condition of the vegetation in developed recreation areas will decrease as they are maintained at low standard levels.

### Alternative RPA

Mortality **losses** will decrease as more of the forest becomes managed. Vegetation in developed recreation areas will remain healthy and improve as sites are rehabilitated.

### Alternative AMN

Mortality losses will increase over more of the forest and become especially noticeable during drought periods. Vegetation in developed recreation areas will decline in condition as sites are managed at low standard level.

### Alternative MKT

Mortality losses will decrease in areas where market resources are produced. **Much** of the forest will be in a healthy condition. Vegetation in developed recreation areas will remain healthy and improve as sites are rehabilitated.

### Alternative RO

Mortality losses will be the **least** of all alternatives as **much** of the forest becomes managed. Vegetation in developed recreation areas will remain healthy and improve as sites are rehabilitated.

### Alternative WFV

Mortality **losses** will decline with time as increasing amounts of the forest become managed. Vegetation in developed recreation areas will remain healthy and improve as sites are rehabilitated.

## 2) Pest Management Related to Developed Recreation Sites

Pest management effort needed to protect visitors and to enhance enjoyment is expected to be proportional to the number of visitor days in developed recreation sites. These are displayed in Table 4.23.



Table 4.23 - Recreation Visitor Days at Public Sector Sites

ALTERNATIVE	MRVD'S BY DECADE					
	Base 1982	1	2	3	4	5
PRF	557	650	655	695	800	820
CUR	557	567	567	615	655	690
RPA	557	639	739	778	960	1,037
AMN	557	652	686	863	1,002	1,117
MKT	557	651	754	754	804	990
PRO	557	582	692	696	874	990
WFV	557	652	806	901	1,004	1,020

All Alternatives

For pest management in developed recreation sites, all alternatives begin the planning period at a slightly higher level than experienced in 1982 on the Sequoia NF. During the planning period, there is a general increase. Except for CUR, all end in the fifth decade at a level approximately 2.5 to 3.0 times that experienced in 1982. The increase for CUR is about 1.2 times over the 1982 levels.

j. LANDS

There are five major activities in the Lands program: land line location, land adjustments, special-use permits, rights-of-way acquisition, and status (including withdrawals). All of these are affected in some way by the alternative actions under consideration. Emphasis on production of commodities or amenities is the major influence in determining the Lands program direction.

Alternative PRF

This alternative selectively increases the current programs. As such, land line location and rights-of-way programs will slightly increase. There would be little change in the land acquisition program or in the administration of special-use permits. Response to status requests and work to complete the review of withdrawals would continue.

Alternative CUR

This alternative continues current management direction. Administration of special-use permits will continue at a low level. Occupancy resolution will continue at a level of two to three cases per year. The land line location program would continue at about 24 miles per year. Few adjustment cases will be done. Few rights-of-way will be acquired.

### Alternative RPA

This alternative emphasizes increases in some commodity production. This would result in **an** increase in the land line location program and a slight increase in the acquisition of inholdings. Rights-of-way acquisition and administration of special-use permits would continue at a low level.

### Alternative MKI

In response to the accelerated commodity production on the Forest, the land line location program would be at a high level (perhaps 50 percent above current levels). All available private lands (whose acquisition would benefit timber, range, **or** developed recreation needs) would be acquired. Special-use permit administration would continue at a low level. There may be some increase in rights-of-way acquisition to meet resource needs. Work in status and withdrawals could be expected to increase.

### Alternative AMN

In response to a reduced level of commodity production on the Forest, the land line location program would be at a low level (perhaps 33 percent below current levels). Certain private lands would be acquired if they became available. Administration of special-use permits would be at a low level. Those which tend to restrict dispersed recreation would be discouraged.

### Alternative WFV

This alternative emphasizes amenity enhancement, particularly in wildlife harvest species. The land line location and land adjustment program would be a relatively high level. Rights-of-way acquisition, administration of special-use permits, and status work (including withdrawals) would be at a low level.

### Alternative PRO

This alternative emphasizes commodity production. **There** will be high levels of range, recreation, and timber activity on the Forest. As a result, the land line location, rights-of-way, and land adjustment programs would be in high gear. Special-use administration and status would **be** responsive to case-by-case needs.

## k. MINERALS AND GEOLOGY

Classification as wilderness **or** other withdrawal of land from mineral entry limits the location, development, and production of minerals. Wilderness areas have been withdrawn by Acts of Congress. All mineral withdrawals prohibit the location of new mining claims. However, mineral production and development can occur subject to valid existing rights. Mineral production may be limited in order to maintain the integrity for which the area was classified.

Table 4.24 displays the acres of locatable mineral materials potentially foregone by alternative. These are for areas which would be withdrawn from mineral entry. Leasable mineral potential is so low that it is not considered. Administrative sites, roadside strips, and developed recreation (including ski) areas are included in the acres proposed to be administratively withdrawn from mineral entry. In addition to the acres displayed, 11,660 acres are presently withdrawn for other agencies' uses.

Differences between the CUR Alternative and base year 1982, wilderness acreage are the result of the California Wilderness Act of 1984. Five Special Interest Areas are recommended for classification. They are recommended in all alternatives. These areas have no known past or present mining activity. There has not been any on-the-ground mineral examination of the areas. Generalized mapping of the vicinity shows the mineral potential to be low to medium. All of these areas will be considered for mineral withdrawal according to the management prescription.

Based on minimal mining activity in the areas proposed to be withdrawn, supply of minerals locally or regionally would not be substantially affected by actions proposed in the alternatives.

#### Alternatives PRF, CUR, MKT, and PRO

In these alternatives, just under 277,000 acres (24 percent of the Forest) would be withdrawn from mineral entry. Recommendations for withdrawal from mineral entry for administrative purposes in these alternatives are to protect capital investments in developed recreation sites, primarily ski areas. New wildernesses will not be recommended.

#### Alternatives RPA and WFV

The overall extent of mineral potential foregone is between 272,000 and 275,000 acres (24 percent of the Forest) in these alternatives. Alternative WFV would have one ski area withdrawn from mineral entry; and the RPA Alternative would have two.

#### Alternative AMN

In this alternative, over 320,000 acres (28 percent of the Forest) would be withdrawn from mineral entry. The increases in the acres withdrawn in these alternatives would be mainly due to recommending new additions to wilderness.

Table 4 24 - Mineral Potential Foregone by Alternative  
 (in gross acres allocated over the planning period)

	Mineral Potential	Base Year 1982	PRF	CUR	RPA	AMN	MKT	PRO	WFV
Withdrawn for Admin Purposes	V High/High	1,100	3.300	3.300	1,100	1,100	3.300	3.300	1,100
	Medium	2.260	3.760	3,760	3,760	3,760	3.760	3,760	2.260
	LOW	610	4,410	4,410	4,410	4,410	4.410	4,410	3.610
Wilderness	V <sup>h</sup> High/High	1.760	12.260	12.260	12.260	20.320	12.260	12,260	12.260
	Medium	140,496	195.786	195,786	195,786	224.342	195.786	195,786	195.786
	LOW	46.885	56.584	56.584	56.584	111,427	56,584	56,584	56,584
Total Foregone	V High/High	2,860	15,560	15,560	13,360	21.420	15,560	15,560	13.360
	Medium	142.756	199,546	199,546	199,546	228,102	199.546	199,546	198.046
	LOW	47,495	60.994	60,994	60,994	115.837	60.994	60,994	60.194

## 1. NATIONAL NATURAL LANDMARKS

Six sites have been identified in Forest-wide Standards and Guidelines for each alternative as requiring on-site evaluations prior to a decision. **The** potential status of these sites would not be affected by any management actions proposed in the alternatives.

### m. OFFICE OF INFORMATION AND INTERPRETIVE SERVICES

**The** kind and level of public **use** of the Forest has a direct impact on the need for information and interpretive services (OI/IS), **Users** demand and need information about opportunities to attain their desire for enjoyable **use** of National Forest System lands.

Primary indicators of public **use** on the Sequoia National Forest are: Recreation **use** at developed sites and dispersed areas, ski area development, and sawtimber harvest levels (which provide the opportunity for gathering firewood for personal **use**).

Each Alternative reflects the need for changes in the level of specific OI/IS activities to meet the alternative objectives. Consequences below show that change from the 1982 base level during the first decade and for the entire planning period to 2030.

#### Alternative PRF

High increases in developed site recreation use, and moderate increases in dispersed uses and timber harvest would raise OI/IS to a high level for recreation site and trailhead bulletin boards, publications, media releases, and information stations during the first decade. Other programs would rise to the moderate level. **The** alternative will emphasize self-service rather than personal contact. By 2030, maximum recreation uses, moderate timber harvest, and development of two additional ski areas in periods two and three would require high level year-round programs which are now **summer** seasonal. OI/IS programs would increase 20 percent in the first decade and 100 percent by 2030. **The** development of two ski areas would require year-round moderate level of programs which are now summer seasonal only.

#### Alternative CUR

Maintain OI/IS at current moderate levels with continued emphasis on self-service for recreation site bulletin boards, publications and media releases during the first decade. Other programs would continue at current low levels. Efficient public contact programs would continue at this level to 2030. By 2030, two additional ski areas would require year-round high level programs that are now summer seasonal only. OI/IS programs would increase 10 percent during the first decade and 60 percent by 2030.

#### Alternative RPA

Moderate increases in developed site **use**, dispersed recreation use, and wood harvest would generally raise OI/IS programs from low to the moderate level during the first decade. Maintenance of recreation site bulletin

boards at the high level would assist user dispersion and reduce user conflicts. By 2030, moderate increases in wood harvest, high increases in recreation **uses** and potential ski development in the third decade would require high **level** year-round programs which are now generally **summer** seasonal. **OI/IS** programs would increase 20 percent in the **first** decade and 70 percent by 2030.

#### Alternative AMN

Emphasis would be placed on **maximum** opportunities for communication with the public about **use** of the Forest. This means a high level of personal communication with potential and actual forest **users**. **OI/IS** would **use** all available programs at a high level increasing 35 percent in the **first** decade and 120 percent by 2030. Programs other than timber harvest would maximize opportunities for gathering personal **use** firewood.

#### Alternative MKT

**Maximum** increase in developed site recreation use, and high increases in dispersed use and timber harvest would **raise** **OI/IS** to a high level. This level would be reflected by seven-day information desks, recreation site bulletin boards, interpretive signs, publications, exhibits, media releases, outdoor programs, and specialized media during the **first** decade. By 2030, **maximum** recreation **use**, high timber harvest, and potential development of two additional ski areas in the third and fourth decade would demand high levels of all **OI/IS** programs. **OI/IS** programs would increase 35 percent in the **first** decade and 90 percent by 2030. **Two** ski developments would require year-round programs which are now generally summer seasonal.

#### Alternative PRO

A high increase in developed site recreation **use**, a **maximum** increase in dispersed use and wood harvest, plus the development of an additional ski area would demand high program levels for seven-day information desks, bulletin boards at recreation areas, interpretive signs, publications, exhibits, news releases, outdoor programs, and specialized media during the **first** decade. Potential ski development would require year-round programs which are now generally **summer** seasonal. By 2030, **maximum** recreation uses, timber harvest, plus the development of two additional ski areas would demand high levels of all **OI/IS** programs. **OI/IS** programs would increase 65 percent in the **first** decade, **and** 100 percent by 2030.

#### Alternative Wfv

A decrease in timber harvest, moderate increases in developed site recreation use, and **maximum** increase in dispersed recreation use (especially hunting and fishing) would increase programs to high level programs at information stations, publications, seven-day information stations and exhibits during the **first** decade. Emphasis would be to facilitate wildlife enjoyment through self-service programs. Other **OI/IS** programs would be at the moderate or low level. By 2030, **maximum** dispersed **use**, high developed site recreation use, **and** wood harvest would require high levels of **OI/IS** programs. **OI/IS** programs would increase 15 percent in

the first decade and 75 percent by 2030. The Forest would not develop any ski areas, except Peppermint.

#### n. LIVESTOCK GRAZING

A resource analysis approach was used to determine how the Sequoia's livestock grazing program is effected by the alternatives. For each alternative, a set of indicators were identified that strongly influence livestock management:

- 1) Intensity of dispersed recreation.
- 2) Miles of new road constructed.
- 3) Acres of chaparral treated.
- 4) Acres of timberland clearcut.
- 5) Acres of land burned by wildfire.
- 6) Local livestock industry stability.

To measure productivity, the above indicators are grouped as they directly relate to livestock production animal unit months (AUM) output, forage condition, and degree of soil damage.

The intensity of dispersed recreation and construction of new roads affect forage condition and degree of soil damage by causing livestock to herd closely together. When this takes place, the pattern of grazing use can become more concentrated and results in localized overuse of the rangeland. The net effect is a decline of forage condition and greater soil damage.

Indicators 3, 4 and 5 are associated with AUM output through differing chaparral and timber treatments, or by land burned due to wildfire. These indicators influence forage production, utilization, and opportunities for new grazing areas. Clearcut timberland (Indicator 4), in particular, is related to availability of dry upland (hillside) forage, and affects the condition and trend of adjacent wet meadows.

For alternatives which call for AUM increases above the current level, increased grazing use of the wet meadow type would be minimal. Therefore, output increases under discussion refer to the development of chaparral, annual grassland, and use of transitory range.

Indicator 6 is a measure of the local livestock industry stability. It is related to the ranching economy through forage supply and demand. Demand is expected to increase at a greater rate than supply throughout the planning period. Various grazing outputs made available in the alternatives influence industry stability by how closely demand is met.

The indicators having the greatest affect to increase adverse impact on the range environment are dispersed recreation and new road construction.

#### Alternative PRF

Under this alternative, continued use of available forage from the annual grassland ecosystem combined with chaparral, timber and wildfire treatments increase production to approximately 89,000 AUM's per year by the end of

the planning period. Local demand for forage supply is more closely met. Livestock industry stability is increased due to improvement in forage supply. However, this is somewhat offset by site-specific declining forage and soil conditions in the conifer zone as a consequence of intensity of dispersed recreation and road construction activities.

#### Alternative CUR

This is the no change alternative. A stable level of production, due to unchanged chaparral and timber treatment is maintained at the present 69,000 AUM's per year, throughout the planning period. Forage conditions and soil erosion, as a function of the low intensity of dispersed recreation use and low road construction, remain stable. Due to projected industry growth, forage demand would greatly exceed forage supply. The alternative would have an adverse effect upon the local industry stability.

#### Alternative RFA

Livestock industry stability declines from the current level, due to a reduction in permitted AUM's. However, demand continues to be greater than forage supply. Forage condition declines and soil damage increases, as a function of the increased intensity of dispersed recreation and moderate road construction resulting in somewhat increased adverse impact on the range environment. RFA production targets are met under this alternative at 100,000 AUM's per year by the end of the planning period. The alternative would have a reduced AUM output through decade three, compared to the base level. During decade five, AUM output reaches the 100,000 AUM's level.

#### Alternative AMN

This alternative would set AUM output at approximately 66,000 AUM's per year by the end of the planning period. Although overall forage production on the Forest would increase due to chaparral treatments and wildfire, the emphasis for forage allocation is made toward wildlife production. Timber clearcut acres decline in favor of non-clearcut timber harvest methods. At this level of use, forage demand would be much greater than supply. The alternative would drastically reduce local industry stability due to reduced forage supply. Elimination of meadow and riparian grazing in the conifer zone would adversely impact 15 grazing permittees Forest-wide. Limitations on annual grassland (allowing use from February through June only) would further impact the livestock industry. The impact of new road construction is unchanged from the base level. Adverse impact from increased levels of dispersed recreation, however, increase greatly over the current.

#### Alternatives MKT and PRO

These two alternatives propose AUM output at or slightly higher than 92,000 AUM's per year by the end of the planning period. For each alternative, demand is closely met compared to the base level. The local livestock industry would increase stability. Permittee investment in range improvement maintenance and labor would increase. Range environmental



conditions, as expressed by forage condition and soil damage, decline only on a site-specific basis in response to the intensity of dispersed recreation and road construction in the conifer zone. Increased chaparral and timber treatments and the increase incidence of wildfire greatly improve forage quantity and quality over the base levels.

Alternative WFV

The scope of this alternative emphasizes high output levels of recreation, uses of native wildlife, and fish species. Combined chaparral treatments and wildfire somewhat improve the forage supply to approximately 71,000 AUM's. Forage provided through timber treatments remain stable compared to the base level. Slight, site-specific decline in forage and soil conditions occur due to moderate road construction and dispersed recreation activity. The extent of the impact is confined mostly to the conifer zone and wet meadows.

o. RECREATION

The primary factors influencing recreation on the Sequoia National Forest are a complex mixture of the following: demands for other commodity resources; a wide range of competing recreation activity opportunities; the level of road and trail access; the limited opportunities for water-oriented recreation opportunities; the limited useable terrain because of vegetation and slope; an obvious use pattern which shows heavy weekend use and light use during weekdays; and a short season of high-country use where many recreation capital investments exist. Some or all of these factors may have an impact on the quality of the recreation experience.

Following are key environmental consequences and the indicators which will be used to focus attention on the consequences.

<u>Consequence</u>	<u>Indicators</u>
1) Meeting/falling short of recreation demand.	- RVD's provided - developed - RVD's provided - dispersed
2) Degree or level of recreation opportunity provided.	- Relative program emphasis-- developed or dispersed.  - Standard of recreation management provided-- standard or low standard service.  - Diversity in kinds of opportunities provided.
3) Ease of access through the NF-- providing for user dispersal and driving opportunities.	- Miles of road available

- 4) Change in Recreation Opportunity Spectrum (ROS) available to users. - Acres of ROS class change.

Consequence

Indicators

- 5) Amount and type of OHV use provided. - Acres of open/available land.  
 - Miles of trails available for use (when open areas restricted)
- 6) Impact on recreation experience and/or opportunity by other key resource activities. - Grazing use - AUM  
 - Fish stocking programs  
 - Giant sequoia groves management

Alternative PRF

Demand: This alternative will meet basic demand for recreation use on the Sequoia National Forest. Available developed site opportunities will match demand in the first decade, lag behind to a low of about 86 percent in the third decade, then rebound to meet or exceed demand in the fourth and fifth decades. Dispersed use opportunities will essentially match demand throughout the planning period (see Table 4.25). This will result in an average annual output of approximately five million RVD's by the year 2030 (an increase of about double current levels).

Recreation opportunities provided: This alternative represents a shift from current management which will increase the level of recreation opportunities on the Forest. Developed sites will be managed to facilitate dispersed recreation opportunities. Fee sites will be managed at standard rather than low standard service levels - with non-fee sites shifting toward standard levels before the end of the first decade. Small, underutilized sites will be eliminated and heavily used water oriented sites will be expanded. All developed sites will be rehabilitated using an average 20-year cycle adding barrier-free facilities for the handicapped at the time. Construction of new sites will primarily be limited to those associated with Federal Energy Regulatory Commission (FERC) licensing or to facilitate wilderness activities. The result of these actions will be more dispersed area camping with increased need for sanitation facilities in the dispersed area and will increase the risk of wildfire.

Management of the Lower Kern Canyon, between Lake Isabella and the mouth of the canyon near Bakersfield, will move from a mixture of overnight and day-use toward day-use only. The three developed sites in Kings Canyon will be consolidated into one site.

Existing permittee-operated sites (e.g., resorts and camps) will continue at the current level. Termination will occur only when a future use determination demonstrates a higher public need for the sites. Review of their continuance will occur during each Plan update.

Demand for downhill skiing will be met by permitting the construction of the Peppermint resort and allowing expansion of Shirley Meadow. Two other sites with high potential (Sherman Pass and Mitchell-Maddox) will be

studied for possible development in the second and third decade. Additional emphasis will be placed on expanding cross-country skiing and oversnow vehicle use opportunities in harmonious settings.

Heavily used dispersed areas will be managed at standard service levels, in contrast to less than standard as is currently done. Sanitation facilities will be provided as necessary. During the first two decades, all existing trails will be reconstructed; and, then, maintained to designed levels (therein providing for an improved quality of experience).

Increased use of the Sequoia NF's major rivers is expected. Plans for Wild and Scenic Rivers and the Kings River Special Management Area, including updated whitewater floating elements, will help to manage conflicts between users. Updates to ensure currency will be made periodically as necessary.

To add to the spectrum of opportunities available to the public, about 2,840 acres (Twisselmann, Slate, Bald Mountain, Inspiration Point, Baker Point) of land will be established with a Special Interest-Botanical Area classification. Under this alternative, 12,500 acres of the BLM Rockhouse Wilderness Study Area are recommended for additional wilderness designation.

Access Through the Forest: Road driving opportunities over the planning period will be responsive to recreation demand. The percentage of the total Forest road system open to public use will involve about 47 percent of the total mileage in the first decade. Although the percentage will decrease over the planning period, the actual mileage available will increase (see Tables 4.28 and 4.29).

Recreation Opportunity Spectrum Change: Timber harvest practices will result in a change in the present mix of ROS acres. Over the five-decade planning period, approximately 51,000 acres of the present Semi-primitive Non-Motorized and Semi-Primitive Motorized area will move to Roded Natural (see Table 4.27). Capacities of ROS classes after this shift are sufficient to sustain use increases that are expected.

Off-highway Vehicle Use: This alternative will provide a revised OHV Plan. Opportunities will be enhanced by designating routes for OHV use in areas outside wilderness and the PCT. This will help ensure resource protection and minimize user conflicts. OHV emphasis areas have been identified where management efforts will be increased to provide OHV opportunities. Management priority will help improve OHV road and trail opportunities through information, education, and a better riding system (all achieved with the assistance of users). Increased management of vehicle speed, noise, proper spark arrester, and Green Sticker usage will further help solve many visitor complaints. This approach will result in a slight (estimated 5-10 percent) increase in available opportunities Forest-wide, with approximately 475 miles of less than 24-inch trails and 70 miles of greater than 24-inch trails (e.g., Jeep trails) available for OHV's. Roads may add to these total miles. The use of oversnow vehicles will be allowed areawide outside wilderness and the PCT (both closed by law) except where seasonal closures may be initiated to prevent resource damage or conflicts between users.

Other Program Influence on Recreation: Wildlife management actions will generally positively affect recreation opportunities. Habitat manipulation will improve conditions which will offset adverse consequences. The increase in recreational activity throughout the planning decade may result in increased conflict with cattle. Fencing of developed sites and public pastures will likely be needed. Giant sequoia management will increase recreation opportunities in these areas.

#### Alternative CUR

Demand: User opportunities under this alternative will fall behind demands over the planning period. It continues present management programs to provide recreation opportunities at the present level of use. For developed sites, available opportunities will drop about seven percent below demand during the first decade, and drop to 25 percent below demand by the fifth decade (see Table 4.25). Dispersed area availability will be about 73 percent of demand in the first decade and fall to a low of 61 percent in decade five.

Recreation Opportunities Provided: This alternative represents a continuation of present management which will not capitalize on providing the range of opportunities available. Developed site management will remain an emphasis, although Forest Service campgrounds will continue to be managed at low standard management levels at the present occupancy rates. These sites will be rehabilitated only as needed to protect capital investments. The "Pack-in, Pack-out" policy will be utilized in the more lightly used facilities and areas. Construction of new sites will be limited to those associated with HERC licensing or to facilitate wilderness use. Current diversities of overnight and day-use will be continued.

The present amount of resorts, recreation residences, organization camps, and recreation special uses will be retained. The Shirley Meadow Ski Area will continue and expansion under the approved master plan will be authorized. The ski area at Slate Mountain (Peppermint) with its associated facilities will be permitted to be developed. Two other potential sites (Sherman Pass and Mitchell-Maddox) will be studied for potential development.

Dispersed areas will continue to be managed at low standard service levels with "Pack-in, Pack-out" policy emphasis. Cross-country skiing and over-snow vehicle conflicts will continue to be managed under the existing special designations. Implementation of the Kern River Whitewater Floating Management Plan will continue.

Trails will be maintained at a maximum of Level II in order to protect the resource and to provide access for users (except for a very few miles which will be maintained at higher levels). Rehabilitation and reconstruction of all trails will be limited to Volunteer, Adopt-A-Trail, and Green Sticker programs with only a slight amount of appropriated money made available for these purposes. The quality of the experience will remain the same as it is at present. About 2,840 acres of land will be established with a Special Interest-Botanical Area classification.

The spectrum of recreation opportunities will not be broadened since additional wildernesses are not recommended.

Increased use of Sequoia NF's major rivers is expected. Plans for Wild and Scenic Rivers and the Kings River Special Management Area, including updated whitewater floating elements, will help to manage conflicts between users. Periodic updates to ensure currency, will be made as necessary.

Access Through the Forest: Decisions regarding road driving opportunities will be driven by budget considerations and will not be responsive to recreation demands. Approximately 38 percent of the total Forest road mileage system will be open to public use in the first decade. This total will fluctuate through the fifth decade when 36 percent will be open (see Tables 4.28 and 4.29).

Recreation Opportunity Spectrum Change: Present ROS class acreages are:

Primitive	Semi-primitive Non-Motorized	Semi-primitive Motorized	Roaded Natural	Rural
106,000	282,000	244,000	478	8,000

Over the planning period, approximately 100,000 acres of the Semi-Primitive Non-Motorized will shift to Roaded Natural area as roads are constructed to serve other management purposes (see Table 4.27). Capacities of ROS classes after this shift are sufficient to sustain use increases to be expected.

Off-highway Vehicle Use: OHV opportunities will remain as designated in the 1976 ORV Management Plan, as amended in subsequent years. This involves two categories of use:

- 1) Areas where use is restricted to designated routes only.
- 2) Areas generally open to use with restrictions in specific instances involving user conflicts and/or resource damage.

Seasonal closures and area closures will occasionally occur to prevent or halt resource damage. Some trails will be lost to roads constructed to provide access to timber sale areas. Reconstruction will occur when possible. Completion of loop systems will occur through application of "Green Sticker" funds. This alternative will result in 421 miles of trail open to OHV use, 482 miles closed to OHV use, and 588,000 acres of the Forest available for cross-country use of OHV's. As a consequence, other Forest users might expect ~~OH~~ use to occur in areas categorized as Semi-primitive Non-Motorized. Total trail mileage is increased by 13 miles during the five decades. The conflict between grazing, wildlife, and OHV users will continue, as well as the conflicts between OHV and other trail users.

Other Program Influence on Recreation: The prescribed burning program will provide slightly improved wildlife habitat. It will only serve to improve the quality of wildlife-oriented recreation opportunities, not the quantity

of RVD's. The grazing program will involve a slight upward trend in AUM's during the five decades. Conflicts in unfenced developed sites and to trail resources will continue. Giant sequoia management will increase recreation opportunities.

### Alternative RPA

Demand: Under this alternative, available recreation opportunities will basically match the demand. Developed site availability will be slightly below demand, while dispersed opportunity will essentially equal demand for the planning period (see Table 4.25). This will result in an average annual output of approximately five million RVD's by the year 2030 (about double existing use).

Recreation Opportunities Provided: This alternative will build on current programs and increase the level of recreation opportunities on the Forest. Emphasis will be on developed site management. All sites will be managed at standard levels. Sites will be rehabilitated using an average 20-year cycle. Those which can not be brought up to fee standards will be dropped. Campground rehabilitation and new construction utilizing barrier-free concepts for handicapped will be limited to water-oriented sites.

Winter sports demand will not be met since only Peppermint will be permitted to be developed. One other new downhill ski area (Mitchell-Maddox or Sherman Pass) would be studied for potential development. Shirley Meadow would expand under the approved master plan. Sites operated by permittees (including resorts, recreation residences, and organization camps) will be maintained; except those utilized at less than 10 percent will be closed.

Dispersed areas will be managed at standard levels of management. Trail maintenance and construction will be emphasized over current levels. Thirty new miles of trail will be constructed. All trails will be rehabilitated to designed standards in the first decade. Equestrian opportunities will be expanded.

Winter sports opportunities will be expanded to emphasize day-use activities along the Generals Highway, the Western Divide, and the Kern Plateau. Overnight-use supported by commercial enterprises will not be authorized.

Increased use of Sequoia NF's major rivers is expected. Plans for Wild and Scenic Rivers and the Kings River Special Management Area, including updated whitewater floating elements, will help to manage conflicts between users. Periodic updates to ensure currency, will be made as necessary.

River management actions will increase from the present situation. Additional commercial floating opportunities will be made available on both the North and South Fork Kern, including segments of these rivers in the wilderness. A greater range of opportunities will occur with five areas totalling 2,840 acres will be established for classification as Special Interest-Botanical Areas. Special actions to manage use will be required

and will include careful design of trail systems that both protect and enhance use of the area.

Under this alternative, a 12,650-acre portion of the BLM Rockhouse Wilderness Study Area is recommended for wilderness. This will result in closure of a road leading to a present Dome Land Wilderness trailhead.

Access Through the Forest: Road driving opportunities over the planning period will be responsive to recreation demand. The percentage of the total Forest road system open to public use will begin at about 48 percent in the first decade and increase to 61 percent by the fifth decade (see Tables 4.28 and 4.29).

Recreation Opportunity Spectrum Change: As a result of other resource management objectives, approximately 70,000 acres of Semi-primitive Motorized and Non-Motorized acres will become Roaded Natural ROS classified acres during the planning period (see Table 4.27). Capacities of ROS classes after this shift are sufficient to sustain use expected.

Off-highway Vehicle Use: This alternative will confine OHV use to designated roads and trails Forest-wide. A total of 281 miles of trail would be available for OHV use, a decrease of 169 miles from the existing situation. However, additional miles could be made available as demand warrants and rehabilitation of the trail system permits use by OHV's.

Other Program Influence on Recreation: Wildlife and fish management actions will support increased dispersed area recreation opportunities. The increased grazing outputs over the planning period will be a source of conflict with recreation users of the Forest. Developed sites will need fencing to preclude cattle. Trails will be damaged by cattle. Recreation management objectives of emphasizing overnight camping opportunities for equestrian users (including increased establishment of public pastures) will be in conflict with grazing objectives which make all meadows available for grazing use. Giant sequoia management will increase recreation opportunities in these areas.

#### Alternative AMN

Demand: This alternative will meet demands for recreation. Developed site management fluctuates with available opportunities falling to a low of 93 percent in the second decade before rebounding in following decades. Dispersed area demand will be met throughout the planning period (Table 4.25). This will result in an average annual output of approximately 4.9 million RVD's by the year 2030 (approximately double the existing use).

Recreation Opportunity Provided: This alternative would emphasize dispersed area recreation opportunities, maintaining developed sites only at that level needed to enhance dispersed recreation opportunities. Developed site operation in both the private and public sector would remain essentially in its present state, managed at low standard levels. Sites utilized at less than 10 percent of theoretical capacity would be closed. New sites and permitted special uses will be authorized only if present net value can be increased. A downhill ski area at Peppermint will be permitted to be developed. One other ski area (either Sherman Pass or

Mitchell-Maddox) will be studied for potential construction. This will only partially meet demand. The Shirley Meadow area will continue to the limits of the presently authorized expansion. Needs of the handicapped and elderly will be met through rehabilitation and reconstruction of existing facilities, as appropriate, and through the construction of barrier-free trails for handicapped at such locations as Indian Basin, Horse Meadow Campground, and at the Trail of the 100 Giants.

Dispersed area management will be increased from the present low standard levels to the standard level. Trails will be maintained to their established design standards. All trails will be rehabilitated or reconstructed over a 10-year period (a considerably higher maintenance level than at present) which will improve the quality of the experience. Sixty-three miles of new trail will be constructed over the presently existing 890 miles. Trailhead and trailside camping facilities will be constructed to serve the PCT.

Nordic skiing opportunities will be improved utilizing existing resorts and associated downhill developments, as well as expanding existing opportunities on the Hume Lake District, the Western Divide, and the Kern Plateau.

Increased use of Sequoia NF's major rivers is expected. Plans for Wild and Scenic Rivers and the Kings River Special Management Area, including updated whitewater floating elements, will help to manage conflicts between users. Periodic updates to ensure currency, will be made as necessary. Special Areas recommended for designation include about 2,840 acres of land in five Special Interest-Botanical Areas. This area will be subject to special management that will protect and, where appropriate, foster public use and enjoyment. Developed sites would be located away from the area. Careful designing of trails, parking, and other needed facilities will occur.

All Further Planning Areas including the BLM Rockhouse WSA would be recommended for wilderness designation, for a total of 127,020 additional acres of wilderness (91,460 acres on the Sequoia NF and 35,560 on BLM). Management of these areas would be at standard levels. Fire will be used to enhance wilderness values.

Access Through the Forest: Road driving opportunities over the planning period will be responsive to recreation demand. The percentage of the total Forest road system open to public use will involve about 53 percent in the first decade and increase to 84 percent in the last decade (see Tables 4.28 and 4.29).

Recreation Opportunity Spectrum Changes: Because of the recommended wilderness additions, the mix of ROS classes would change from the existing. The Semi-primitive Non-Motorized class would increase by 22 percent; the Semi-primitive Motorized class would decrease by 20 percent and the Primitive, Roded Natural, and Rural classified acres will remain essentially unchanged (see Table 4.27). Demand for all ROS class areas will not exceed capacities.

Off-highway Vehicle Use: The use of OHV's will change from the present mix of open areas and designated trails to designated roads and trails only



Forest-wide. Certain seasonal restrictions on **use** will be applied to protect wildlife and soil resources. Oversnow vehicle opportunities will be expanded on the Kern Plateau. Utilizing a hut system for overnight-use and **day-use** opportunities will be expanded on the Hume Lake District and along the Western Divide.

Other Program Influences on Recreation: In spite of recreation management actions to meet demand for dispersed recreation opportunities, hunter and angler success ratios will decrease from the present situation with this alternative. Wildlife management actions will favor nongame species. Fish stocking will be limited to **50** percent of the present amount and will be concentrated near developed sites.

The **40** percent reduction in timber harvesting from the present amount will reduce the amount of firewood available by a similar amount.

Grazing restrictions in new wildernesses, meadows, and riparian areas in conifer zones will greatly reduce conflicts with recreation users from the present situation.

#### Alternative MKI

**Demand:** This alternative will meet basic demand for recreation opportunities on the Sequoia National Forest. It provides for management of developed sites that will match demands in decades one and two, then fall slightly below demand. Dispersed opportunities will match demands throughout the remainder of the planning period (**see** Table 4.25). This will result in an average annual output of approximately five million RVD's by **2030** (about double the present level).

Recreation Opportunity Provided: This alternative emphasizes developed recreation opportunities at higher levels than at present. Management of these sites will be at standard levels, rather than low standard levels. All sites will be rehabilitated using an average 20-year schedule. All sites not presently fee sites will be converted to such **or** eliminated if they cannot be brought to fee standards. Sites will be expanded and new ones built when average utilization at water-oriented and OHV use-oriented sites exceeds a **40** percent utilization rate. The needs of handicapped and elderly will be met through rehabilitation of existing sites and new construction.

Permittee operated sites will remain at least at the existing level with opportunity to expand **or** develop new sites as demand requires. The Shirley Meadow area will be expanded to meet downhill skiing demand. Peppermint would be permitted to be developed. The remaining two priority sites (Sherman Pass and Mitchell-Maddox) will be studied for potential development.

Dispersed area recreation opportunities will be managed at low standard levels, continuing present management actions. The trail system will be rehabilitated once each **20** years. Between times, trails will deteriorate and the quality of the experience with it.

Increased use of Sequoia NF's major rivers is expected. Plans for Wild and Scenic Rivers and the Kings River Special Management Area, including updated whitewater floating elements, will help to manage conflicts between users. Periodic updates to ensure currency, will be made as necessary.

Water-oriented recreation opportunities will continue at a high demand. To accommodate this, commercial floating will be authorized on the South Fork Kern and continue on both the main Kern and the North Fork Kern including those floatable river segments in the Golden Trout Wilderness.

About 2,840 acres of land will be established with Special Interest-Botanical Area classifications. These areas will receive heavier than normal use. Special considerations must be given for management. Developed sites will not be built adjacent to these areas. Trails that access the area will be designed to enhance appropriate use. National Forest Further Planning Areas are not recommended for wilderness designation. About 9,710 acres of the BLM Rockhouse Wilderness Study Area are recommended for wilderness designation.

Access Through the Forest: Road driving opportunities over the planning period will be primarily responsive to annual budgets. Although they will generally meet demand, the percent of the roads open to use will decrease from 55 percent in the first decade to 41 percent by 2030. Generally, available mileage will increase between the first and fifth decades (see Tables 4.28 and 4.29).

Recreation Opportunity Spectrum Changes: Significant increases in timber harvesting will change recreation opportunities over the five-decade planning period. Approximately 103,000 acres of Semi-primitive Non-Motorized and Semi-primitive Motorized area will move to the Roaded Natural areas as areas are roaded to serve timber harvesting. Capacities of areas after this shift are sufficient to support demand (see Table 4.27). Increased access will improve firewood gathering opportunities (increasing about 100 percent over the existing amount available).

Off-highway Vehicle Use: This alternative will provide a revised OHV plan from the present situation and will increase OHV opportunities. Except for areas closed to OHV use by law (wilderness and PCT) and areas of specific concern managed to prevent resource damage and conflict, the remainder of the Forest will be open and available for OHV use, including oversnow vehicles. Consequently, users might expect to see OHV use occurring in Semi-primitive Non-Motorized areas. Only 13 miles of new OHV trail will be constructed. Trail maintenance will be limited to resource protection.

Other Program Influences on Recreation: In contrast to present practices, fish and wildlife resources will be managed at levels and places that will enhance developed site recreation. Consequently, dispersed area fishing, hunting and nonconsumptive wildlife uses will not meet demand. The increase in AUM's from their present levels will create conflict between cattle and recreationists. In the dispersed area, trails will receive increased impacts. Conflicts will be resolved in favor of the range resource. Developed sites will be fenced to eliminate cattle during the managed recreation season. With increased use and levels of law enforcement to assure compliance with regulations, Forest visitors will

experience both a higher level of security and greater restriction. Giant sequoia grove management will emphasize timber production while minimizing dispersed recreation use.

### Alternative PRO

Demand: This alternative will meet basic demand for recreation on the Sequoia NF during the planning period. Developed site opportunities lag slightly below demand in decades one through four, then rebound. Dispersed area management actions will meet demand for recreation opportunities in all decades (see Table 4.25). This will result in approximately 4.9 million RVD's (about twice current levels).

Recreation Opportunities Provided: This alternative maintains the current emphasis on developed sites and will enhance opportunities in this particular area.

Under this alternative, developed site management will be emphasized with management at standard levels. Dispersed area management will be at low standard levels continuing to emphasize "Pack-in, Pack-out" policy.

All developed sites will become fee sites, as opposed to the mix of fee and non-fee sites currently provided. Those which cannot be brought to fee standards will be removed. When water- and OW-oriented sites are used in excess of 40 percent, existing facilities will be expanded and new facilities constructed utilizing barrier-free designs for handicapped needs.

Downhill skiing demand will first be met by permitting construction of Peppermint, expanding the Shirley Meadow Ski Area, then studying the potential for constructing two other sites (Sherman Pass and Mitchell-Maddox) as demand dictates over the five decades. Resorts and organization camps may be added as demand exceeds supply.

Dispersed area use will be de-emphasized from current levels. Trails will be maintained at a maximum of Level II, with hiking trails at Level I. The entire trail system will be rehabilitated during the first decade with half of the system rehabilitated each decade afterward. Low maintenance levels will allow trails and the quality of the experience to deteriorate in between times. Additional wilderness recommendations will not be made. About 2,840 acres of Special Interest-Botanical Areas will be established. Cattle will be excluded from the Botanical Areas to prevent disturbance.

Increased use of Sequoia NF's major rivers is expected. Plans for Wild and Scenic Rivers and the Kings River Special Management Area, including updated whitewater floating elements, will help to manage conflicts between users. Periodic updates to ensure currency, will be made as necessary.

Access Through the Forest: Road driving opportunities under this alternative will generally meet or exceed demand. Driven by resource production emphasis and funding, 55 percent of the roads will be open to public use during the first decade. This percentage will decrease over time, although the mileage available will actually increase (see Tables 4.28 and 4.29).

Recreation Opportunity Spectrum Change: Increased timber production by approximately 80 percent over the five-decade planning period will result in changes in the present mix of ROS classified acres. Approximately 104,000 acres of the presently categorized Semi-primitive Non-Motorized and Motorized ROS classes will shift to Roaded Natural by the fifth decade as new roads are constructed to serve timber sales (see Table 4.27). This additional access will increase present firewood opportunities by about 80 percent. Capacities of ROS classes after this shift remain sufficient to sustain use.

Off-highway Vehicle Use: Under this alternative, the entire Forest is open to OW use except those areas closed by law. Seasonal closures associated with resource damage may be implemented. Approximately 494 miles of trail and 855,000 acres of National Forest will be available for use (a 10 percent and 45 percent increase, respectively, over the existing situation). As a consequence, users might be expected to see OW use in Semi-Primitive Non-Motorized areas.

Other Program Influences on Recreation: Wildlife and fish habitat manipulation actions will not meet hunter and angler demands. Fishing and hunting success in dispersed areas will decrease from the present situation. The increase in grazing throughout the five decades will result in trail deterioration and reduced quality of recreation opportunities. Fencing campgrounds will be needed. Giant sequoia grove management will emphasize timber production while minimizing dispersed recreation use.

#### Alternative WFV

Demand: This alternative will meet basic demand for dispersed recreation. (see Table 4.25). It provides developed recreation opportunities at levels five to six percent below demand in the first two decades; matches demand in decade three; and, then, falls behind again in decades four and five. This will result in an average annual output of approximately 4.8 million RVD's in the fifth decade (resulting in a change of about double the 1982 use).

Recreation Opportunity Provided: This alternative is a deviation from current management by emphasizing wildlife. As such, it emphasizes dispersed recreation opportunities associated with recreational uses of native wildlife and fish species. Developed sites will be maintained at standard levels. Those occupied at less than 10 percent of theoretical capacity will be closed. But others may be expanded or new ones built to meet hunter and angler demands. Rehabilitation of sites would take place according to the current prioritization. During rehabilitation, the needs of the handicapped and elderly will be met.

Existing recreation special-use developed sites will be retained except for those utilized at less than 20 percent of theoretical capacity. Shirley Meadow Ski Area will continue operations with expansion as authorized under the approved master plan. Peppermint ski area will be permitted to be developed. This will only meet part of this demand.

Dispersed area management will be managed to enhance fish and wildlife recreation opportunities. Approximately 13 miles of new trail will be

constructed. Approximately 890 miles of trail will be rehabilitated to designed standards during the first decade. This will improve the quality of the experience over the existing situation. The dispersed recreation areas will be managed at standard levels in those areas where fish and wildlife recreation opportunities are greatest. With fish stocking planned only adjacent to developed sites, fishing pressure will increase commensurate with increased use. The catch ratio Forest-wide will likely decrease. Habitat manipulation will result in increased use and an increase in the hunter success ratio.

Oversnow vehicle **use** and cross-country skiing recreation opportunities will emphasize day-use opportunities where compatible with wildlife and fish recreation opportunities. Hikers and equestrians will be restricted from using key fawning and winter range areas during specified seasons.

Increased **use** of Sequoia NF's major rivers is expected. Plans for Wild and Scenic Rivers and the Kings River Special Management Area, including updated whitewater floating elements, will help to manage conflicts between users. Periodic updates to ensure currency, will be made as necessary.

To enhance the spectrum of opportunities available under this alternative, special area designation recommendations include about 860 acres of land in one Botanical Area. Further Planning Areas are not recommended for wilderness designation.

Access Through The Forest: Road driving opportunities over the planning period will not be responsive to recreation demand. The percentage open will decrease from 44 percent in the first decade to 37 percent in the fifth. Actual mileage available remains quite constant in the 700-750 mile range, generally the lowest of all alternatives (see Tables 4.28 and 4.29).

Recreation Opportunity Spectrum Change: With reduced timber harvesting, the existing ROS acreage mix will change only slightly. About 6,000 acres of presently classified Roded Natural and Semi-primitive Motorized area will become Semi-Primitive Non-Motorized (see Table 4.27). Capacities of ROS classes are sufficient to sustain **use** increases during the five decades.

Off-highway Vehicle Use: The intent of the existing OHV plan will generally be followed, but areas available will be greatly modified because of the wildlife emphasis. OHV **use** will not be allowed in the Scodie and Piute Mountains. This will result in 29 fewer miles of trail and 191,000 fewer acres available for OHV **use**. In addition, certain key wildlife areas (fawning and winter range areas) will be seasonally closed to OHV use. Users can expect to see OHV **use** in areas categorized as Semi-primitive Non-Motorized as demand for riding opportunities increase.

Other Program Influence on Recreation: Wildlife habitat management will result in improved conditions **so** the variety and population of wildlife will increase; therein, providing additional recreation opportunities (particularly hunting and viewing). Management of grazing via controls in chaparral and meadows will reduce conflicts with recreationists in these areas. Over the five decades, increased total AUM's will result in heavier **use** away from these areas. A potential to adversely impact recreation

trails to a greater degree exists. Giant sequoia management will generally fall under Non-intensive methods to emphasize enjoyment of specimen trees.

Table 4.25 - Alternative Output/Recreation Demand Comparison  
Expressed in Terms of RVD's and as a % of Demand for RVD's

(Demand = 100 %)

<u>DEVELOPED SITES</u>										
	<u>1990</u>		<u>2000</u>		<u>2010</u>		<u>2020</u>		<u>2030</u>	
	<u>MRVD</u>	<u>%</u>	<u>MRVD</u>	<u>%</u>	<u>MRVD</u>	<u>%</u>	<u>MRVD</u>	<u>%</u>	<u>MRVD</u>	<u>%</u>
REC DEMAND	1234		1364		1501		1760		1987	
PRF ALT	1233	(100)	1250	(92)	1296	(86)	1945	100+)	1987	(100)
CUR ALT	1147	(93)	1147	(84)	1305	(87)	1433	(81)	1499	(75)
RPA ALT	1222	(99)	1354	(99)	1413	(94)	1760	100)	1987	(100)
AMN ALT	1232	(100)	1276	(93)	1498	(100)	1722	(98)	1917	(96)
MKT ALT	1234	(100)	1364	(100)	1364	(91)	1514	(86)	1987	(100)
PRO ALT	1162	(94)	1292	(95)	1296	(86)	1654	(94)	1987	(100)
WVU ALT	1162	(94)	1296	(95)	1501	(100)	1635	(93)	1779	(89)

<u>DISPERSED AREAS</u>										
	<u>1990</u>	<u>%</u>	<u>2000</u>	<u>%</u>	<u>2010</u>	<u>%</u>	<u>2020</u>	<u>%</u>	<u>2030</u>	<u>%</u>
REC DEMAND	1900		2158		2438		2712		3000	
PRF ALT	1818	(96)	2161	(100)	2429	(100)	2712	(100)	2994	(100)
CUR ALT	1391	(73)	1421	(66)	1508	(62)	1681	(62)	1824	(61)
RPA ALT	1828	(96)	2103	(97)	2639	(100)	2632	(100)	2993	(100)
AMN ALT	1890	100)	2162	(100)	2432	(100)	2716	(100)	2998	(100)
MKT ALT	1888	100)	2160	(100)	2429	(100)	2712	(100)	2993	(100)
PRO ALT	1888	100)	2161	(100)	2429	(100)	2712	(100)	2993	(100)
WVU ALT	1888	100)	2161	(100)	2429	(100)	2712	(100)	2993	(100)

Table 4.26 - Relative Emphasis - Developed vs. Dispersed and Service Levels by Alternative

	<u>Overall Emphasis</u>	<u>Developed Site Management Standard</u>	<u>Dispersed Area Management Standard</u>
PRF	Dispersed	Standard - Fee Sites Low Standard - Non-Fee Sites	Standard - Heavy Use Areas Low Standard - Light Use Areas
CUR	Developed	Low Standard	Low Standard
RPA	Developed	Standard	Standard
AMN	Dispersed	Low Standard	Standard
MKT	Developed	Standard	Low Standard
PRO	Developed	Standard	Low Standard
WVU	Dispersed	Standard	Standard

## 1) ROS Class Changes by Alternative

The following table identifies the changes that will occur in ROS classes as a result of alternative implementation. Generally, the Forest has a range in ROS classes from Primitive to Rural. There are no Urban areas on the Sequoia National Forest.

The following are permitted in the various ROS classes. Detailed ROS Class descriptions are included in the Glossary (Appendix J).

- Primitive (P) - Activities characteristic of a remote setting essentially free from evidence of human induced change - no motorized use (e.g., hiking, cross-country skiing, viewing scenery, camping, fishing, and horseback use).
- Semi-primitive Non-Motorized (SPNM) - Activities characteristic of a predominantly natural environment - no motorized use.
- Semi-primitive Motorized (SPM) - Activities characteristic of a predominantly natural environment with minimal evidence of resource management - with motorized use (e.g., **OHV's**, oversnow vehicles, power boating).
- Roaded Natural (RN) - Activities characteristic in a predominantly natural setting where human evidences and/or sights and sounds are present - resource modification and utilization are evident but harmonious with environment (e.g., organization camping, resorts, lodging).
- Rural (R) - Activities characteristic of a setting where the natural environment is substantially modified, a considerable number of facilities exist and a large number of people interact.

Table 4.27 shows the change between existing and future ROS classes. Thus, when acres are removed from one class, they are added to another or vice versa. When acres are added to a class, they are subtracted elsewhere. As noted in the text, capacities of ROS classes after this shift are sufficient to sustain use increases expected during the planning period for all alternatives.

Table 4.27 - ROS Acre Change at End of Fifth Decade - By Alternative

	ROS CLASS				
	<u>P</u>	<u>SPNM</u>	<u>SPM</u>	<u>RN</u>	<u>R</u>
1982 <u>1/</u> Existing Acres	106,114	282,253	244,211	478,477	7,990
Alternative					
PRF	0	- 7,993	-43,017	+ 7,993 +43,017 + 144	-144
CUR	0	-55,725	-43,830	+55,725 +43,830	0
RPA	0	-31,730	-37,670	+31,730 +37,670	0
AMN	0	- 1,210 +18,760 +46,290	- 1,540 -46,290	+ 1,540 + 1,210 -18,760	0
MKT	0	-70,335	-42,150	+70,335 +42,150	0
ROO	0	-47,060	-56,345	+47,060 +56,345	0
WVU	0	- 1,410 + 6,680	- 2,740	+ 1,410 + 2,740 + 6,680	0

1/ 1982 acres adjusted to reflect 1984 California Wilderness Act.

2) Roads Available--Providing For User Dispersal and Driving Opportunities

Table 4.28 identifies the availability of local and collector roads on the Forest as a result of alternative implementation. The trends by decade are identified.

Recognizing many of the roads closed will be short spurs and low standard dead-end roads, there will be fewer places for people to drive, to get to firewood, to get away from others to camp. or to get to a place to hunt, reflect on nature, bird-watch or whatever. On the other hand, access to main areas of the Forest will be maintained. While getting to a place may be a bit more crowded: once folks get to "their area," they should find fewer disruptions and more of the amenities they are seeking. Both positive and negative consequences can result depending upon the desired experience of the user.



Table 4.28 - Roads Open for Public Travel (miles) and Percent of Total Road System Open

	PRF	CUR	RPA	AMN	MKT	HRO	WFV
<u>Decade</u>							
1							
Miles	819	646	810	791	973	988	740
Percent	47	38	48	53	55	55	44
2							
Miles	807	828	915	871	875	904	706
Percent	40	44	50	59	43	44	38
3							
Miles	751	707	1013	995	909	935	706
Percent	36	36	52	67	42	42	37
4							
Miles	906	817	1156	1131	935	954	752
Percent	41	39	56	76	40	40	38
5							
Miles	893	790	1316	1261	1026	1056	755
Percent	39	36	61	84	41	41	37
<u>Planning Period</u>							
Ave. Miles	835	758	1042	1010	943	967	732
Ave. Percent	41	39	53	68	44	44	39

Note: Road mileages displayed in Table 4.28 as "open" are generally those roads available to public travel through the summer months.

Table 4.29 - Roads Open and Seasonally Closed After the Fifth Decade (miles)

	PRF	CUR	RPA	AMN	MKT	HRO	WFV
Total Mileage	2293	2205	2173	1493	2478	2546	2014
Open	893	790	1316	1261	1026	1056	755
Closed in Winter	624	552	920	881	717	738	528
Open in Winter	269	238	396	380	309	318	227

Note: Road mileages displayed in Table 4.29 as "open" are generally those roads available to public travel through the summer months. Road mileages displayed in Table 4.29 as "closed in winter" represent that portion of "open" roads generally closed throughout the winter months.

p. RESEARCH NATURAL AREAS

The four potential Research Natural Areas have been identified and their potential for classification will be protected under each alternative.

q. SPECIAL INTEREST AREAS

There are two existing classified Special Interest Areas (Bodfish Piute Cypress Botanical Area and Packsaddle Cave Geologic Area). There are five potential Botanical Areas which have been identified and will be established in each alternative.

r. URBAN INTERFACE

The environmental consequences of the alternatives on urban interface areas are primarily the changes in the natural appearance of Forest land and the level of fire threat to improvements on private land or the fire threat to Forest resources presented by private land development and use.

The indicators of these changes are:

- 1) For the natural appearance of Forest land, the Visual Quality Objectives (VQO's) which will be met; and
- 2) For the threat of fire to and from private land, the amount of fuelbreaks which are constructed and maintained.

The amount of fuel treatment completed on Forest land adjacent to urban interface will vary only slightly. This is because fuel treatment around urban interface areas where the value of improvements is high receives priority consideration in all alternatives. Funding levels for fuelbreak construction, maintenance, and suppression may vary but the threat from fire in the urban interface will remain relatively constant.

These slight changes in fire threat are compared to the CUR alternative and are indicated by the length of time required to have a Forest fuelbreak system constructed.

The following information describes the changes which would occur over the 50-year planning period.

Alternative PRF

Change in Forest appearance: The Visual Quality Objectives (VQO's) for the urban interface areas will follow the Visual Management System for Sensitivity Level 1. In most instances, changes in the natural appearance of the conifer zone may be detected, but will not dominate. Site-specific project analysis will be completed for activities within these areas; and the Visual Quality Objective could be lowered to Modification (M) if approved in the analysis. Two examples of when the Modification VQO might be approved are:

- 1) The combination of earth resources, silviculture and landscape architecture determine that the long-term aesthetics/productivity of the site would benefit, and
- 2) An unexpected threat to property requires the location/design of a fuelbreak

Change in fire threat: A Forest fuelbreak system will be completed by period three.

#### Alternative CUR

Change in Forest appearance: The VQO's for urban interface seen areas are Retention (R) and Partial Retention (PR), but these may be traded off on a project basis. Changes in the natural appearance of the landscape will be subtle with small openings and less conspicuous activities. In the seen areas outside the conifer zone, landscape activities may be apparent for short durations but will not disrupt the natural appearance over time. In the Camp Nelson area, additional direction is provided by State Highway 190, where R in the immediate foreground and PR in the remainder of the foreground and in the middleground may not be reduced.

Change in fire threat: A Forest fuelbreak system will not be completed.

#### Alternative RPA

Change in Forest appearance: The VQO's for all urban interface seen areas are R and PR. Changes to the natural appearance of the landscapes will be subtle with small openings and less conspicuous activities in the conifer landscapes. In seen areas outside the conifer zone, activities may be apparent for short duration but will not disrupt the natural appearance over the long-term.

Change in fire threat: A Forest fuelbreak system will be completed by period three.

#### Alternative AMN

Change in Forest appearance: The VQO for the urban interface areas is R or PR. Activities will be subtle and will not distract from the natural appearing landscapes.

Change in fire threat: A Forest fuelbreak system will be completed by period four.

#### Alternatives MKT and PRO

Change in Forest appearance: The VQO's for the urban interface seen areas will be lowered to M where foreground and middleground seen areas are within the conifer landscape. Changes in the natural appearance of the landscape will be evident from timber harvesting and related activities. In the Camp Nelson area, additional direction is provided by State Highway 190 where R in the immediate foreground and PR in the remainder of the foreground and in the middleground may not be reduced. In those areas seen

from the highway, the changes from the natural appearance will be subtle with small openings and less conspicuous activities. PR will be the VQO for all middleground seen areas outside the conifer landscape where activities may be apparent for short durations but will not disrupt the natural appearance over time. M will be the VQO in the foreground where structures, related facilities, and fuelbreaks will be allowed to dominate the natural appearance.

Change in fire threat: A Forest fuelbreak system will be completed in period two.

#### Alternative WFV

Change in Forest Appearance: The VQO's for all urban interface seen areas are R and PR. Changes to the natural appearance of the landscapes will be subtle with small openings and less conspicuous activities in the conifer landscapes. In seen areas outside the conifer landscapes, activities may be apparent for short duration but will not disrupt the natural appearance over time.

Change in fire threat: A Forest fuelbreak system is completed by period four.

### s. VEGETATION

#### 1) CHAPARRAL

Chaparral responds to various management methods which have been identified from the alternatives as indicators of impact. The indicators recognized which strongly influence chaparral are the use of prescribed fire, wildfire, grazing, and mechanical treatments. The indicators act upon chaparral to alter age class, abundance, species variety, and productivity.

#### Alternatives PRF, CUR, RPA, AMN, and WFV

Under these alternatives, productivity and diversity of the chaparral ecosystem increases through the third decade. After the third decade, productivity and diversity are maintained since the areas burned in the first decade are reburned. A fairly even mix of age classes results from burning an average of 1,320 to 3,900 acres per year for resource improvement. Approximately 40 percent of the ecosystem will be in a young seral stage, 40 percent in middle seral stages, and 20 percent in mature brush. Chaparral in the urban interface and adjacent to tracts of private land is maintained in young seral stages to maintain fuelbreaks.

#### Alternatives MKT and PRO

These alternatives treat large areas using prescribed fire and grazing in the fifth decade. Productivity and diversity decline through the fourth decade. In the fifth decade, productivity for grazing and watershed increase almost to maximum production. Diversity of the ecosystem remains low as more than 60 percent of the chaparral is converted to young seral stages in one decade. Chaparral in the urban interface and adjacent to tracts of private land is maintained in young seral stages to reduce fire

hazard. Diversity at the end of the planning period will approximate 60 percent young, five percent middle, and 35 percent late or mature seral stages.

## 2) GIANT SEQUOIA

There are 13,200 acres of land on the Sequoia NF that contain the giant sequoia species as a major component of the vegetation. Chapter 3 of this document describes management categories which may be applied. They are: Preservation, Non-intensive and Intensive management.

By definition, Intensive management emphasis applies only to that land where large, old giant sequoia trees are absent. This is land which was in private ownership and was cut over during the late 1800's and early 1900's. This land was mostly on the Hume Lake Ranger District. Full timber yields, including harvest of the giant sequoia species are expected.

Since regular and predictable yields cannot be expected from lands under Preservation management, this particular category is assigned to lands placed in the Unregulated Class by each alternative and to lands within designated wildernesses where the giant sequoia species occurs. All alternatives contain at least 800 acres of Preservation management category wildernesses because this is the number of acres within wildernesses. Even though Preservation does not allow regular timber yields, it does not imply no management activity at all. The species has evolved over many thousands of years along with natural disturbances such as fire. To withhold such disturbance would be to create an unnatural ecological force detrimental to the giant sequoia. Prescribed fire and other cultural practices, including timber harvest, may be necessary to accomplish the Preservation objective.

The management category of Non-intensive applies to all the acres not included under either of the previous two categories. As can be seen from the description in Chapter 3, the Non-intensive management category provides for accomplishing a broad range of management objectives. Management practices, except for the maintenance of large, old trees, is neither specifically constrained nor directed. Thus, prescriptions can be designed for a multitude of purposes; all the way from creating spectacular views of specimen trees to maximizing timber yields. The assignment of acres to management category by alternative is shown in Table 4.30.

■

Table 4.30 - Giant Sequoia Management Category

Management Category	M Acres by Alternative						
	PRF	CUR	RPA	AMN	MKT	PRO	WFV
Preservation	3.9	8.9	1.9	5.9	0.9	0.8	3.3
Non-Intensive	9.3	3.3	10.3	6.3	11.3	11.4	8.9
Intensive	0	1.0	1.0	1.0	1.0	1.0	1.0
Total	13.2	13.2	13.2	13.2	13.2	13.2	13.2

Alternative PRF

This alternative establishes the approximate allocation for each grove and management category. These allocations are: Preservation, 1,600 acres: Non-intensive, 7,500 acres: and intensive, 4,100 acres. These allocations are estimates based on available information and professional judgement. Grove boundaries and the final allocation by management category will be established in a Giant Sequoia Management Implementation Plan. The plan will be developed under NEPA procedures.

Alternative WFV

This alternative is similar in that it assigns approximately 3,000 acres to Preservation, 9,000 acres to Non-intensive, and 1,000 acres to Intensive management categories.

Alternatives CUR and AMN

These alternatives assign the largest number of acres to Preservation, between about 6,000 and 9,000 acres. Then, between about 3,000 and 6,000 acres will be assigned to Non-intensive, and 1,000 acres will be assigned to Intensive.

Alternative RPA

Approximately 2,000 acres will be managed under Preservation, 10,000 under Non-intensive. and 1,000 under Intensive.

Alternatives MKT and PRO

All of these alternatives assign approximately 1,000 acres to Preservation, 11,000 to Non-intensive, and 1,000 to Intensive management.

3) MEADOWS

Accelerated runoff from surrounding watershed lands can damage meadows. Recreation facilities, vegetative manipulation, overuse by livestock, transportation systems, and recreation use can increase or concentrate runoff. These changes in runoff characteristics accelerate channel

gullying which lead to instability and reduced productivity. In addition, various concentrated uses in meadows can affect their visual attractiveness.

Table 4.31 displays major factors of the alternatives which have the potential to affect meadows. Even though they will be designed to protect the meadow ecosystem; the more **roads**, the greater their likelihood of impacting runoff patterns near meadows. OHV's are restricted from cross-country travel in meadows. However, the more cross-country **use**, the greater the likelihood of unauthorized O W trails through meadows which would reduce plant productivity, concentrate runoff, and be visually unattractive.

Table 4.31 - Factors that Affect the Condition of Meadows  
(Average Annual for the Planning Period)

Factor	PRF	CUR	RPA	AMN	ALTERNATIVE		
					MKT	PRO	WFV
New Local Roads (miles)	15.3	14.1	13.0	.4	19.5	20.4	10.2
Increased Water (M Acre-Feet)	17.4	16.6	21.2	-2	28.8	30.6	6.4
Cross-country OHV (M acres open/limited)	0	588	0	0	855	855	549
Watershed Restoration (acres for Decade 1)	140	140	270	200	200	200	200

Increased water yield and other hydrologic changes can add to stream energy resulting in channel downcutting. Downcutting in a meadow lowers the water table. A lower water table produces drying of the meadow, a change in species composition (e.g., brush and lodgepole encroachment), and a loss of vegetative vigor.

Watershed restoration includes watershed improvement projects and road obliteration for the first decade only (which affects the entire planning period). Obliterating roads reduce the likelihood of impact from the road network. Many watershed improvement projects deal directly with improving meadow conditions by correcting gulling and raising water tables.

In addition to the factors in Table 4.31, grazing intensities as well as the distribution of livestock in meadows can have an effect. Long-term increases in intensity beyond the range capacity will produce less vegetative cover which increases susceptibility to erosion and decreases diversity. Long-term decreases in intensity can trigger lodgepole pine and brush encroachment and can produce an older age class of plants.

Concentrated livestock use can have the same effects as changes in intensities but in a much shorter time over localized areas. Variation in the livestock utilization of meadows in some alternatives will be used as an indicator of changes in intensity.

Although other alternatives, including CUR, do not indicate a change in livestock use in meadows, increased transitory forage and improved livestock management systems in the conifer ecosystem will better livestock distribution.

#### Alternatives PRF, CUR, and WFV

Under these alternatives, the overall effect would vary from the present level of management to an improvement of condition. New road construction would decline by 50 percent, as measured on a mile of road per acre basis. This would result in **less** of an increase in gullying in meadows caused by roads. Cross-country OW areas open for use would remain at base level with CUR and WFV Alternatives. Cross-country OHV travel is not permitted with the PRF Alternative. **The** potential for gully formation in meadows would occur in areas with increases in water flows for each alternative. However, watershed restoration activities would either stay the same or increase to 200 acres per year. Reduced grazing levels under the WFV Alternative would lead to lodgepole pine encroachment on some meadows. Plant composition and vigor would be maintained, however, for PRF and CUR.

#### Alternatives MKT and PRO

Relatively little watershed restoration activity, compared to the large increases in road construction and moderate-to-large increases in water flow, would add to the overall likelihood of accelerated gully formation in meadows. As a result, plant productivity would be reduced. OHV use would be expanded over a large area of the Forest (an increase of 32 percent), leading to potential changes in drainage patterns, gullying, and aesthetics.

#### Alternatives RPA and AMN

**These** alternatives provide for the greatest watershed activity among all alternatives. With OHV use restricted to designated routes and little or no increase in water flow, the likelihood of drainage pattern changes and gullying will be reduced substantially. However, reduced grazing levels on meadows would alter the meadow ecosystem through decreased plant diversity and lodgepole pine encroachment.

#### 4) RIPARIAN AREAS

Riparian areas are affected primarily by resource activities, such as timber harvesting, overuse by livestock, recreation, and prescribed fire. **The** effects of these activities can be mitigated by protecting the characteristics of the stream and nearby land - the streamside management zone. To measure the consequences of the alternatives on riparian areas, those characteristics which protect streams from sedimentation and provide habitat necessary to maintain the majority of the indigenous species are evaluated.



The structure of the timber stand, canopy cover, elevation of terrain, and water are the primary elements that determine the potential occurrence of wildlife species utilizing a particular portion of the riparian area. The relationship between these physical characteristics and the number of vertebrate species inhabiting the areas is such that the greater the acreage of riparian area, the better the quality of the habitat for the majority of the indigenous species. For perennial streams, the potential riparian habitat is met at the 100-foot width. Riparian Areas (Streamside Management Zones) were set at approximately 100 feet from the edges of all perennial streams. Timber harvesting activities are limited to five percent or less per decade in the Streamside Management Zones for all of the alternatives.

## 5) TIMBER

Timber management activities on the Sequoia NF are guided by three principal factors: economic growth and yield, the need to provide for diversity in the forest environment, and the need to maintain a healthy forest community where timber harvest is not a primary objective.

On the Sequoia NF, a total of 420,000 acres of Forest land is estimated to be tentatively suitable for growing crops of industrial quality wood. Each alternative for management of the Forest stresses different sets of resource values. This results in different combinations of lands being guided by the principal factors for each alternative. The indicator for Environmental Consequences in the timber resource, then, is any kind of management emphasis that would shift lands guided by those factors away from the current distribution.

This distribution is measured by the number of acres assigned to each Regulation Class:

- Regulation Class I = Lands where timber growth and yield are unconstrained. Production is guided by the principle of economic growth and yield.
- Regulation Class II = Lands where the total amount of regeneration harvest during any single decade is limited by a need for more physical dispersion of that harvest than allowed for in Regulation Class I. This results in longer rotation ages and a broader range of timber age classes. It also provides for more diversity than Regulation Class I.
- Regulation Class III = Lands where both the amount of acres and size of regeneration harvest openings are limited because of other resource value emphasis. This applies to areas where timber harvest volume is of less importance than the maintenance of a continuous and healthy forest cover.
- Unregulated (UNREG) = Timber land determined to be unsuitable for regular sustained harvest because of other resource values.

The distribution of lands, in thousands of acres, by Regulation Class for each alternative is shown in Table 4.33.

Table 4.33 - Area in Each Regulation Class  
(M acres)

REG. CLASS	<u>PRE</u>	<u>CUR</u>	<u>RPA</u>	<u>AMN</u>	<u>MKT</u>	<u>PRO</u>	<u>WFV</u>
<u>I</u>	220	184	146	0	247	282	0
<u>II</u>	104	14	76	115	43	16	217
<u>III</u>	21	99	107	163	15	28	54
<u>UNREG</u>	75	123	91	142	115	94	149
TOTAL TENTATIVELY SUITABLE: 420 for all alternatives							

Consequences of concern are those that relate to timber issues identified during public involvement and the NEPA scoping process in 1979-80. These issues are further developed in the Affected Environment (Chapter 3) section of this EIS. Specific consequences discussed here are those that relate to:

- a) amount of land used for timber management;
- b) management system used;
- c) regeneration method; and
- d) rotation age.

a) Amount of Land Used for Timber Management

Within the planning horizon (160 years for timber analysis) none of the alternatives project timber harvest or silvicultural activity on all of the land that is physically suitable and administratively available for timber management. In Table 4.33, the UNREG class represents unused, but otherwise suitable, timber land. The most suitable land is used by those alternatives that stress commercial products, and least where other resource values or economics are constraining.

Alternative PRF

This alternative utilizes approximately 345,000 acres for timber production. In the first decade, regeneration harvest occurs on 26,000 acres. This increases to 30,000 acres in the fifth decade.

Alternative CUR

This alternative utilizes approximately 298,000 acres for timber production. Regeneration harvest the first decade is 30,000 and 42,000 acres in the fifth decade.

Alternative RPA

This alternative utilizes approximately 329,000 acres of timber production. In the first decade, regeneration harvest occurs on 27,000 acres. This increases to 31,000 acres in the fifth decade.

Alternative AMN

This alternative utilizes approximately 279,000 acres for timber production. In the first decade, regeneration harvest occurs on 7,000 acres. This decreases to 6,000 acres in the fifth decade.

Alternative MKT

In the long run, this alternative utilizes about 305,000 acres for timber production. **MKT** begins with a first decade regeneration of 48,000 acres and ends the planning period with regeneration on 41,000 acres for the fifth decade.

## Alternative PRO

This alternative utilizes 326,000 acres over the planning horizon. This alternative harvests the most land during the planning period. It begins with regeneration on 48,000 acres in the first decade of the planning period and ends with harvests on 44,000 acres in the fifth decade.

## Alternative WFV

This alternative utilizes approximately 271,000 acres for timber production. In the first decade, regeneration occurs on 22,000 acres. This decreases to 21,000 acres in the fifth decade.

### b) Management System Used

In Alternative AMN, most of the land used for timber management is in Regulation Classes II and III. Most harvest planned under all alternatives except PRF, RPA, AMN, and WFV, makes extensive use of even-aged management on both Regulation Class I and II lands. Regeneration cutting could create openings up to 40 acres in size. Regenerated areas will generally average less than 25 acres in PRF.

In the AMN Alternative, the uneven-aged system is used exclusively. A combination of single-tree selection and group selection is used under this alternative. The resulting harvest will provide a more or less continuous cover of trees except for small openings of up to two acres in size.

None of the alternatives anticipate the classical form of individual tree selection uneven-aged management wherein an intimate mixture of tree ages and sizes is maintained on every acre.

On land that is labeled UNREG in Table 4.33, only occasional and opportunistic timber harvest entries will be made. The main purpose will be to salvage mortality and maintain general stand vigor when economically feasible. All alternatives contain some UNREG land.

Since Regulation Classes I through III are designed for continuous, predictable timber production, the maintenance of tree health and vigor is a primary objective. Treatments to minimize growth-reducing stresses will be routinely applied. On lands in the UNREG class, such treatments will be applied. On lands in the UNREG class, such treatments will be applied when the opportunity exists: but more trees of lower vigor will be found than in the other regulation classes.

Under any system of management, fire will continue to be a factor in the forest environment. Where the more intensive even-aged system apply (Regulation Classes I and II), fire will be introduced deliberately under prescribed conditions to fulfill the management objective of site preparation for reforestation. This accomplishes the added benefit of reducing fuel accumulations, which in turn reduces the chances for the ignition and spread of wildfire. Where timber is managed less intensively, as in Regulation Class III and UNREG, fuels will not be routinely reduced as a result of reforestation site preparation. The chances of wildfire ignition and spread are higher. Thus, regardless of management system, the

total amount of acreage burned under any alternative may very well be about the same in the long run. The difference is that alternatives with higher amounts of Regulation Class I and II lands will burn more acres under controlled conditions than those with higher amounts of Regulation Class III and UNREG.

#### Alternative PRF

Approximately 20 percent of the land used for timber would be managed under the uneven-aged system. The remainder would be managed under the even-aged system.

#### Alternatives CUR, MKT, and HRO

All of these alternatives apply the even-aged management system to 70 percent more of the land used for timber production. The total amount of land regenerated by clearcutting and shelterwood harvesting in each decade of the plan period is discussed in the next section, Regeneration Method. For these alternatives, even-aged management applies in approximately the same proportion throughout the five decade planning period as during the 1982 base year.

#### Alternative AMN

All of the lands used for timber production under this alternative are managed under the uneven-aged system. All of the timber harvest would occur under prescriptions that select individual trees or small groups for cutting.

#### Alternative RPA

This alternative applies even-aged management to only about 70 percent of the land used for timber production. The remainder is in a form of uneven-aged management as described in Regulation Class III, above.

#### Alternative WFV

This Alternative would utilize uneven-aged management, primarily group selection, on approximately 50 percent of the land used for timber harvest.

#### c) Regeneration Method

All alternatives make use of a combination of natural and artificial regeneration methods. The acres in Table 4.34 identified will be planted after final harvest and site preparation. On those acres scheduled for shelterwood, natural seeding is desired but planting may be undertaken if seedlings fail to become established within a reasonable time. For those acres scheduled for special cutting, resource objectives other than timber management are the driving Objectives. Harvest objective will be stand maintenance. Reforestation of those acres will normally result from natural seeding or planting of small openings that are the result of timber harvest designed to meet the desired resource objectives. In all alternatives, Regeneration and Soil and Water Standards and Guidelines assure regeneration success while protecting the basic Forest resource.

Regardless of the alternative or regeneration method, silvicultural prescriptions will be developed that ensure a mixture of species similar to what occurs naturally. Species that will receive emphasis on appropriate sites are ponderosa pine, Jeffrey pine, sugar pine, western white pine, white fir, red fir, and giant sequoia.

Table 4.34 - Annual Acres by Regeneration Harvest Method

Decade	Harvest Method	PRF	CUR	RPA	AMN	MKT	PRO	WFV
	Clearcut	1734	787	1847	0	4382	4627	1048
1	Shelterwood	128	2233	168	0	94	0	160
	Selection	742	0	669	687	325	163	987
	Clearcut	1460	1820	2197	0	2435	2935	777
2	Shelterwood	232	2757	298	0	566	242	298
	Selection	544	241	597	629	267	220	843
	Clearcut	693	282	1291	0	2449	3097	656
3	Shelterwood	946	2723	894	0	1270	653	254
	Selection	629	24	518	586	249	148	736
	Clearcut	1711	466	1750	0	2289	2858	573
4	Shelterwood	946	3747	942	0	1035	715	261
	Selection	470	189	757	602	275	40	1201
	Clearcut	2000	617	1554	0	3360	3337	453
5	Shelterwood	253	3561	990	0	459	706	479
	Selection	709	68	520	587	268	312	1133

In all alternatives except those where objectives emphasize continuous forest cover (such as AMN), clearcutting is the dominant regeneration harvest in the early decades of the planning horizon. Later, economics tend to favor the shelterwood method except under PRF.

Alternatives PRF, RPA AND WFV

These alternatives use a combination of clearcutting and shelterwood harvest during the first decade where even-aged management is prescribed. Where uneven-aged management is prescribed, a combination of single tree and group selection is utilized. Regeneration harvest prescriptions in the later decades shift somewhat from even-aged to uneven-aged.

Alternatives CUR, MKT, and PRO

All of these alternatives begin the planning period with clearcutting as the dominant method of regeneration where even-aged management applies to timber production. Later, economics tends to favor the shelterwood method.

### Alternative AMN

Group selection and tree selection (uneven-aged management) are used exclusively for this alternative throughout the planning horizon.

#### d) Rotation Age

As discussed in Chapter 3, Rotation Age, when analyzed solely from a timber management point of view, is simply a compromise between harvest yield and economic return. However, rotation age also influences the amount of forest land being regenerated at one time, the range in tree sizes, and the maximum size attained by crop trees. The longer the rotation age, the less acres regenerated at one time and the larger the final crop tree. The concept of increasing rotation age to accommodate other resource values is illustrated in the table of alternatives by Regulation Class (Table 4.33). Alternatives that emphasize values which benefit from more older trees and less openings show correspondingly high values in Regulation Class 11. Rotation ages for stands subject to Regulation Class II are on the order of 140 years or more. For Regulation Class I, it is approximately 80 to 110 years. Tree size can be expected to reach 40 inches or more in diameter and a height in excess of 100 feet under Regulation Class II; while 30 inches and 100 feet is more likely with Regulation Class I.

### Alternative PRF

Approximately 64 percent of the land is assigned to Regulation Class I, even-aged management. The trees on these lands will rarely exceed 110 years of age when harvested. The trees on the remaining lands will normally be 140 years or older when harvested.

### Alternatives MKT and PRO

On lands managed under the even-aged system, nearly all are assigned to Regulation Class I. Less than 20 percent are assigned to Regulation Class 11. Therefore, in the long run, on lands managed for timber production, the oldest trees will rarely exceed 80 years. Guidelines in effect during the base year of 1982 provided for rotation ages on the order of 130 years.

### Alternative CUR

About two-thirds of the land managed for timber yield is assigned to Regulation Class I. Therefore, about one-third of the oldest trees will exceed 140 years when the Forest is fully regulated. The other two-thirds will attain an age of approximately 80 years.

### Alternatives AMN and WFV

All land managed is assigned to Regulation Class II or 111. The oldest trees on these lands will usually exceed 140 years when the Forest is fully regulated.

### Alternative RPA

About 44 percent of the land managed for timber yield is assigned to Regulation Class I. Therefore 56 percent of the land will have rotations of 140 years or longer.

#### e) Herbicide Constraint

If the use of herbicides are constrained, the following effects would be expected: (See also EIS Appendix M, Effect of Herbicide Constraints on Timber Management, for a more detailed discussion of yield/cost effects.)

### Annual Sell Quantity

Alternative PRF would have a 26 percent reduction in LISY if the use of herbicides were prohibited. Reductions ranging from 22 percent to 30 percent would be expected in the other alternatives, with Alternative PRO affected the most and AMN the least (see FEIS, Chapter 2, Table 2.3a). The difference in LISY reductions between alternatives is a reflection of the amount of land in each assigned to the different regulation classes. Alternatives with large amounts of Regulation Class II lands are affected the least because longer rotation ages mask large growth losses suffered early in timber stand development. Some differences are also caused by differing proportion of land that becomes unsuitable when herbicides are prohibited. In all alternatives it was assumed that 18 percent of the mixed conifer type would become unsuitable because of bearclover competition. Those alternatives with higher proportions of mixed conifer in the suitable land base are affected the most.

There will be little (one percent) or no reduction in LISY in any of the alternatives if herbicide application is limited to ground methods only. In most cases ground application is nearly as effective as aerial, and no land is removed from the suitable land base.

### Suitable Land Base

Alternative PRF would have a 15 percent reduction in suitable land base if the use of herbicides were prohibited. Reductions ranging from 14 percent to 18 percent would be expected in the other alternatives, with Alternative AMN affected the most and CUR, MKT and PRO the least (see Table 2.3a). The difference in land base reductions between alternatives is caused by the amount of land with bearclover competition, as described above.

There will be no reduction in land base in any of the alternatives if herbicide application is limited to ground methods only.

### Annual Budget

Alternative PRF would have a three percent increase in annual reforestation and stand improvement budget if the use of herbicides were prohibited. Increases ranging from negligible to six percent would be expected in the other alternatives, with Alternative MKT affected the most and AMN and WCV the least (see Table 2.3a). A similar range of increases would be expected if herbicide application is limited to ground application methods only.



Alternatives are affected differently though, with Alternative **WFV** affected the most and **PRF**, **AMN** and **RO** the least.

### Cost Per Thousand Board Feet

Another way to evaluate the economic impact of constraining herbicide **use** is to compare the total cost of timber production with the potential harvest volume. In terms of cost per thousand board feet **LTSY**, Alternative **PRF** would increase by 39 percent **if** herbicides were prohibited. Increases ranging from 27 percent to 49 percent would be expected in the other alternatives, with Alternative **MKT** affected the most and **AMN** the least (see Table 2.3a). Those alternatives with a high proportion of suitable land in shorter rotation ages are affected the most primarily because of high growth **loss** early in the life of timber stands where competing vegetation is a factor.

If herbicide application were limited to ground application methods only, the average cost per thousand board feet would increase by one percent for Alternative **PRF**. Increases would range from negligible for Alternative **AMN** to six percent for **WFV**.

## 6) WOODLANDS

### a) OAK WOODLANDS

The *oak* woodlands are divided into the black, live, and blue *oak* vegetation types. From each alternative, indicators have been identified that influence the *oak* woodland ecosystem. Prescribed fire, wildfire, grazing, and firewood harvest influence the *oak* woodlands only slightly. The nature of the effects analyzed relate to seedling establishment and ecosystem diversity.

In all alternatives, during the term of the planning period, small acreage treatments for the black and live *oak* types result in no change to slight increases in seedling establishment and diversity. Blue *oaks* would continue unchanged throughout the planning period.

### b) PINYON-SAGE

The Pinyon-Sage association forms an ecosystem characterized by low rainfall and shallow, rocky soils. Other associated vegetation included in this ecosystem are western juniper, California juniper, and canyon live *oak*. From the alternatives, indicators have been identified as having the ability to influence the Pinyon-Sage.

Prescribed fire use, firewood cutting, and OHV use influence diversity and habitat quality. Diversity refers to species variety, abundance, and spacial pattern. Habitat quality relates to soil disturbances due to compaction and loss.

### Alternative PRF

Diversity would remain approximately unchanged during the planning period for the pinyon component. Prescribed fire treatment during decade five would produce a change to a younger seral stage for the sage component. The younger

stage growth would increase age class and species variety diversity within the ecosystem. **There** would be no decline in habitat quality due to OHV use since OHV's would be restricted to designated roads and trails only.

#### Alternative CUR

Diversity would remain approximately unchanged during the planning period for the pinyon component. Prescribed fire treatment during decade five would produce a change to a younger **seral** stage for the sage component. **The** younger stage growth would increase age class and species variety diversity within the ecosystem. Habitat would slightly decline in highly localized areas from soil compaction and loss due to OHV pressure.

#### Alternatives RPA and WFV

Diversity would remain approximately unchanged during the planning period for the pinyon component. Prescribed fire treatment during decade five would produce a change to a younger seral stage for the sage component. The younger stage growth would increase age class and species variety diversity within the ecosystem. Habitat quality declines throughout the ecosystem during the planning period. The nature of impact is due to increased soil compaction, soil loss, and overall degradation of habitat due to greater OHV use.

#### Alternative AMN

Diversity would remain approximately unchanged during the planning period for the pinyon component. Prescribed fire treatment during decade five would produce a change to a younger seral stage for the sage component. The younger stage growth would increase age class and species variety diversity within the ecosystem. Habitat quality is increased due to inclusion of the Scodies into the Wilderness Preservation System. OHV use would be eliminated.

#### Alternatives MKT and BRO

Diversity would remain approximately unchanged during the planning period for the pinyon component. Prescribed fire treatment during decade five would produce a change to a younger seral stage for the sage component. The younger stage growth would increase age class and species variety diversity within the ecosystem. Habitat quality would decline throughout the ecosystem during the planning period. The nature of impact is due to increased soil compaction, soil **loss**, and overall degradation of habitat due to greater OHV use.

#### t. VISUAL RESOURCES

Outside existing wildernesses, the trend of visual quality is to move from a natural landscape character to that of a managed state in varying degrees of alteration. The degree of alteration is based on a comparison of resource values, which includes an analyses of the importance of aesthetics as measured by natural variety in the landscape, visual sensitivity, and distance from the observer. As outlined in the visual resource section of Chapter 3, three-quarters of the total area (264,000 wilderness acres and 590,700 non-wilderness) is inventoried as Existing Visual Condition (EVC) Class I. **When** management practices extend into these non-wilderness natural landscapes, visual quality will be affected: the appearance will be altered from its

present condition. As these practices of varying degree occur throughout the Forest, the visual quality will change to a predetermined level of alteration as defined by visual quality objectives. In most alternatives, the natural character of the land will continue to dominate the scenery as viewed by the average Forest visitor, even though management activities may be occurring throughout the landscape.

In those alternatives with substantial percentages (20 percent +) of uneven-aged prescriptions (PRF, AMN and WFV), the Forest visitor will be aware of management activities at a smaller scale with fewer visual contrasts than the alternatives with largely even-aged prescriptions. (See Appendix G, FEIS, Section V. B -- Effects on Scenic Quality.)

The Visual Quality Index is used to measure the magnitude of the change in Future Visual Condition created by each alternative. Figure 4.6 shows, that the index range could vary from 50 to 80.7. The lower figure would result if the entire 855,000 acres outside of designated wilderness were managed for Maximum Modification (visual condition Class V). This level would result in major visual disturbances. Note that the visual condition Class VI (drastic disturbance) could result in lower index values: but this condition is considered Unacceptable Modification by the Visual Management System and is never planned. The higher figure represents the index if all management were stopped and all encumbrances were removed. The land would be returned to a wild land condition (FVC Class I).

The index values reflect the future visual condition in the first and fifth decades. The first decade change displays little difference between alternatives (e.g., 74.9 to 76.3), but by the fifth, the range of effects vary from 63.9 to 74.3. It was assumed that the Forest would be in a fully managed state by the fifth decade, reaching the visual condition of the adopted Visual Quality Objectives. All lands outside wilderness would be affected by management practices either directly or indirectly; that is, within view from any one particular vantage point, but not necessarily on-the-ground for every acre.

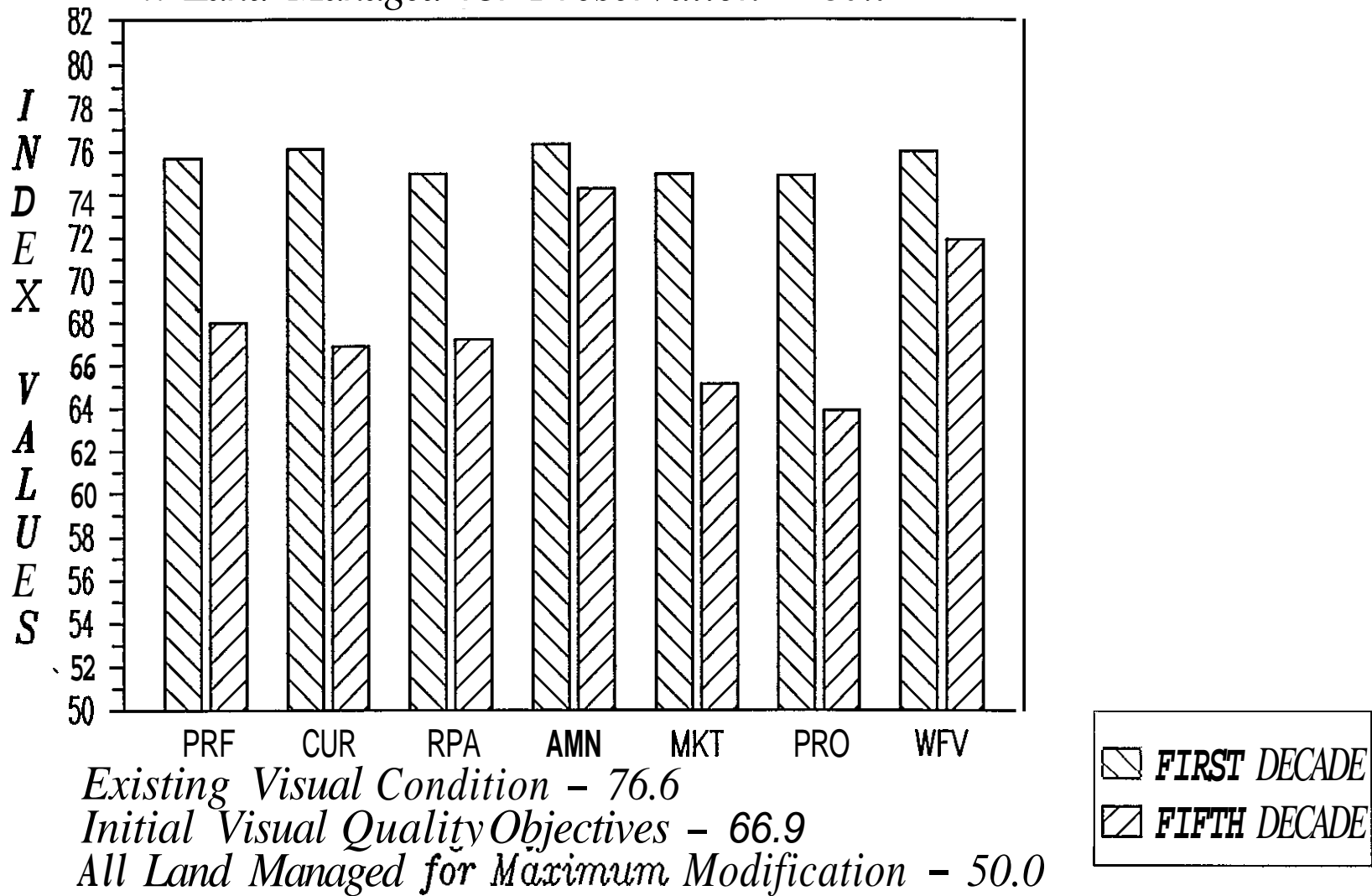
Using the range of 50 to 80.7, the maximum change that would be planned is 30.7. The Existing Visual Condition (EVC), as inventoried, has an index value of 76.6 (a 4.1 change in visual quality Forest-wide when compared with the totally natural landscape). The Initial Visual Quality Objective (IVQO) had a value of 60.6 prior to the California Wilderness Act of 1984. It was raised to 66.9 after the Act; and therefore, allows a 9.7 change from existing conditions.

Fig. 4.6

# VISUAL QUALITY INDEX

*first & fifth decades*

*All Land Managed for Preservation - 80.7*



The comparison between the alternative Future Visual Condition and the Existing Visual Condition is used as the primary indicator of visual change. A secondary indicator is the comparison between the IVQO and the FVC.

To compare alternatives, the amount of timber harvested, in particular, the number of acres clearcut by decade are the primary reasons for visual change. Roding will create a change but is considered along with timber harvesting. Prescribed burning and mechanical treatment in chaparral will alter the appearance of the landscape. Because the change is of short duration and generally results in a more diverse landscape, they are not considered a factor.

Alterations from the construction of fuelbreaks and firebreaks are long-term. Their design and location, however, can often be adjusted to meet the adopted VQO's in the conifer zone but create visual impacts in the chaparral. Facilities associated with geothermal, hydroelectric, mining, cogeneration, and wind farm operations were considered for their total effect upon the resource. There appears to be little interest in geothermal, cogeneration, or wind farms development in the Planning Area. The effects of hydroelectric and mining operations are potentially significant. However, on the Sequoia NF, proposals for additional hydroelectric facilities are few; and the likelihood of large scale mining is low.

Table 4.35 displays a series of outputs for visual resources. The acres of decline that would result in a landscape where management practices are detectable by the average Forest visitor (e.g., visual condition Class III, IV or V) are shown on the last line of the table. In each alternative, the Existing Visual Condition Class I may be lowered to Future Visual Condition (FVC) Class II, but is not reflected as acres decline because FVC Class II defines a landscape where alterations are essentially unnoticed. None of these acres are included in the table.

Table 4.35 is a compilation of acres of each Future Visual Condition for all alternatives. Note that these Future Visual Conditions will be reached by 2030 and do not reflect total Forest conditions in the short-term. Also, broad scale planning at the Forest level has resulted in generalized acreage of Visual Quality Objectives. Within the conifer zone, for example, those alternatives that allow FVC Class IV or V will contain inclusions that will be maintained at higher condition classes because of other resource values. Spotted Owl Habitat Areas, giant sequoia groves, and Streamside Management Zones are typical areas where these inclusions occur.

In each alternative, there will be acres of Existing Visual Conditions that would not meet the adopted Visual Quality Objective. These acres will require rehabilitation and are shown in Table 4.35. Some of these acres would be rehabilitated during plan implementation. Others would be left to heal by natural means until they meet the adopted VQO.

Table 4 35 - Acres of Future Visual Conditions by Variety Class by Alternatives by Year 2030  
(Includes Visual Quality Index, Rehabilitation and Visual Decline)

Visual Condit- ion	Existing Visual Variety Class	Existing Condition (acres)	Alternatives Future Visual Condition (Acres Rounded to 100)						
			PRF	CUR	RPA	AMN	MKT	PRO	WFV
I	A	285.400	206,700	206,700	206,700	225,200	206,700	206,700	206,700
	B	467,400	50,300	50,300	50,300	109,700	50,300	50,300	50,300
	C	101.900	7,100	7,100	7,100	20,700	7,100	7,100	7,100
II	A	17.200	32,600	70,700	82,100	88,500	31,100	21,700	44,800
	B	138.700	125,900	127,900	123,100	425,000	133,800	122,900	254,000
	C	11.200	3,500	--	12,000	34,300	19,800	23,500	38,000
III	A	3,500	44,900	21,900	24,900	-	27,600	24,100	62,200
	B	37,400	308,200	276,800	341,800	151,800	177,700	168,600	382,200
	C	3,200	81,500	30,900	33,100	63,800	62,000	39,100	73,700
IV	A	5,500	23,500	14,200	--	-	44,300	57,600	--
	B	32,600	152,100	211,500	179,200	-	257,700	289,700	--
	C	2,000	19,600	30,300	21,900	-	9,800	24,300	--
V	A	2,100	6,000	--	--	-	4,000	4,400	--
	B	10.400	50,000	28,600	19,100	-	67,000	54,400	--
	C	400	7,100	42,100	44,700	-	20,100	24,600	--
VI	A	--	--	--	--	-	--	--	--
	B	--	--	--	--	-	--	--	--
	C	100	--	--	--	-	--	--	--
Visual Quality Index (2030)		7 6 6 1	68 0	66 9	6 7 2 1	7 4 3 1	6 5 1	6 3 9 1	7 1 9
Rehabilitation (2030)		--	52,700	43,500	54,800	87,100	39,400	44,300	52,600
Decline (2030)		--	595,700	559,100	540,500	65,400	573,000	589,600	377,800

### Alternative PRF

In this alternative, the natural landscape character will dominate 77 percent of the Forest and an 8.6 change from the EVC index value will occur. The result will exceed by 1.1 the magnitude of change Forest-wide that is allowed by the IVQO's. Visual impacts are greatest during the second (2.2) and the fifth (2.4) decades. Twenty-four percent of the Forest will be in Class I or the Preservation Visual Quality Objective.

In the conifer zone, the average Forest visitor will be aware of a Forest with uneven-aged management practices and occasional timber activity in the foreground of most moderately sensitive (Sensitivity Level 2) travelways. Activities will be more apparent in middleground and background views from these travelways. The uneven-aged appearance will dominate the foreground and middleground views of the Sensitivity Level 1 roads and trails. Diversity and often an improved scenic quality in the chaparral areas will occur from years of prescribed fire. Color and textural changes due to the moderate amount of fuelbreaks will also occur.

### Alternative CUR

In this alternative, the natural landscape character will dominate 71 percent of the Forest land and a 9.7 change from the EVC index value will occur. This alternative equals the IVQO change. Visual impacts are low in the first decade and rise rapidly in the second, then they remain steady through the fifth decade. The greatest impacts to the naturally appearing landscapes occur in the fifth decade. Twenty-four percent of the Forest will be in Class I or the Preservation Visual Quality Objective.

Timber activities will generally be scattered throughout the conifer zone. The average Forest visitor will be aware of a managed forest having an uneven-aged appearance along all but the most sensitive roads and trails where change will not be evident. The uneven-aged appearance results from the greatest amount of shelterwood harvest when compared to other alternatives. Improved scenic quality and greater diversity in the chaparral will occur from prescribed fires. Some fuelbreaks will be constructed but will be seldom seen by most visitors.

### Alternative RPA

In this alternative, the natural landscape character will dominate 76 percent of the Forest land and a 9.4 change from the EVC index value will occur. The result will exceed the IVQO by 0.3. Visual impacts show a steady increase from 1.6 in the first decade to 2.0 by the fourth and fifth. The greatest impacts to the naturally appearing landscapes occur in the fourth and fifth decade. Twenty-four percent of the Forest will be in Class I or the Preservation Visual Quality Objective.

Timber harvesting will be highly dispersed and produce an uneven-aged appearance in many areas of the forest. Activities will be evident along most roads and trails in the conifer zone, but will remain subordinate to the natural character along those that receive moderate-to-heavy use. Activity will often dominate in other, lesser seen, areas. Prescribed burning in the

chaparral will result in visually diverse vegetation. Fuelbreaks will be commonly seen.

#### Alternative AMN

In this alternative, the natural landscape character will dominate the total Forest landscape. A 2.3 change from the EVC index value will occur. The results will exceed the IVQ0 by 7.4. Visual impacts are greatest during the second and third decades with slightly less impacts during the fourth and fifth decades. Thirty-two percent of the Forest will be in Class I or the Preservation Visual Quality Objective.

The average Forest visitor will be aware of the uneven-aged management activities in nearly 30 percent of the conifer zone. In most cases, the activity would not dominate the natural appearance. However, there will be instances where group selection occurs in the foreground of moderate or low use travelways and will dominate the immediate scene. Chaparral areas will be diverse in age and size classes and color combinations due to prescribed burning. Many fuelbreaks will be built and easily seen as linear patterns within the chaparral.

#### Alternative MKT

In this alternative, the natural landscape character will dominate 64 percent of the Forest land and a 11.5 change from the EVC index value will occur. The results will be 1.8 below the IVQ0. Visual impacts show an increase from a 1.6 decline in the first decade to a 2.5 decline in the second and third decades. By the fifth decade, an increase to 2.6 is experienced. The greatest impacts to the naturally appearing landscape occur in the fifth decade. Twenty-four percent of the Forest will be in Class I or the Preservation Visual Quality Objective.

The average Forest visitor will be well aware of timber activities throughout the conifer zone. Openings will be seen and changes in the natural appearance will be evident along most travelways. A moderate amount of visual diversity will occur in the chaparral from type conversion, prescribed burns, and wildfire. Fuelbreaks will be noticed throughout the chaparral zone and will be evident, in places, within the conifer.

#### Alternative PRO

In this alternative, a natural landscape character will dominate 59 percent of the Forest land and a 12.7 change from the EVC index value will occur. The result will be 3.0 below the IVQ0. Visual impacts show an increase from a 1.7 decline in the first decade to a 2.8 in the third, to a 2.9 in the fifth. The greatest impacts to the naturally appearing landscape occur in the third and fifth decades. Twenty-four percent of the Forest will be in Class I or the Preservation Visual Quality Objective.

The average Forest visitor will be well aware of timber activities' throughout the conifer zone. Openings from harvesting will be common. Changes in vegetative appearance will be evident along all of the heavily used travelways and dominant along most. The chaparral zone will appear uneven and diverse



from type conversion, prescribed fires, and wildfire. Fuelbreaks will be noticed throughout the chaparral but only occasionally in the conifer.

### Alternative WFV

In this alternative, the natural landscape character will dominate the total Forest landscape. A 4.7 change from the EVC index value will occur. The result will exceed the IVQO by 5.0. Visual impacts are the greatest in the second decade with a rate of decline of 1.1. During the next three decades, the rate is steady with a slightly greater impact in the fifth. Twenty-four percent of the Forest will be in Class I or the Preservation Visual Quality Objective.

The average Forest visitor will be aware of timber activities in about half of the conifer zone: but the activity will remain subordinate to the naturally appearing landscape. Since half of the conifer zone will be in a continual state of regeneration, the forest will have an uneven appearance with generally small openings scattered throughout. The chaparral will show a great deal of age and color diversity from prescribed burning and wildfire. Fuelbreaks will be commonly seen in the chaparral but seldom seen in the conifer.

#### u. WILD AND SCENIC RIVERS

Enactment of Wild and Scenic River legislation in November 1987, resolved the question of river designations for the Kings, South Fork Kings, North Fork Kern, and South Fork Kern Rivers. With this resolution, additional evaluation of alternatives is not required in this FEIS (refer to Chapter 3 and Appendix E, FEIS for additional discussion of this matter. Chapter 4, Plan includes classification information for the individual river segments.).

The decision to study Segment 2 of the Lower Kern River for suitability as a possible addition to the Wild and Scenic River system will result in the maintenance of Wild and Scenic River values along this segment of the river.

During the public response periods for this EIS, there was a considerable amount of public interest in the Kern River below Lake Isabella for Wild and Scenic River status. This river corridor was not identified in the initial National Wild and Scenic River inventory process nor was it identified as an issue in the initial scoping for this EIS. As a result of recent public interest, the Forest has studied the approximately 30 miles from Lake Isabella Dam to the National Forest boundary above Bakersfield (see Appendix E of the FEIS). This review indicates that two of the identified three segments are ineligible for inclusion in the Wild and Scenic River system. Specifically, Segments 1 and 3 on either end of the studied area have impacts which affect their eligibility. As a result, it has been determined that it is illogical to consider just the middle segment of this river complex and that the entire river will not be considered further for Wild and Scenic River status. However, the value of this river for water-oriented recreation is well understood, so management direction indicating this emphasis has been included in the Plan (see Chapter 4 -- Water-oriented use).

v. WILDERNESS, FURTHER PLANNING AND WILDERNESS STUDY AREAS

Recognizing the purpose of this chapter **is** to identify the Environmental Consequences of the alternatives on Further Planning and Wilderness Study Areas, **it is** important to have an understanding of the areas involved. That information **is** contained in Appendix C of the FEIS where descriptive material and the environmental consequences of the various allocations are discussed in detail. The following summaries pertain specifically to the Further Planning **and** Wilderness Study Areas. First, to help facilitate **an** understanding of proposed wilderness designations, Table **4.37** (Wilderness Allocation by Alternative) **is** included. Second, to help facilitate an understanding of how management of these areas would occur under a non-wilderness designation, Table **4.38** (Allocation of Further Planning Area by Summary of Alternatives and Emphasis Area) **is** included. Review of these tables, while applying the description of the prescriptions, will give a relative comparison of the Environmental Consequences of each alternative for Further Planning and Wilderness Study Areas.

The total resource output production potential from all Further Planning and Wilderness Study Areas (including BLM Rockhouse) **if** the areas were managed for non-wilderness uses **is** shown in Table **4.39**.

Table 4.37 - Wilderness Allocations of Further Planning and Wilderness Study Areas By Alternative (Forest and BLM Lands)

<u>Area Name</u>	<u>Alternatives</u>						
	<u>PRF</u>	<u>CUR</u>	<u>RPA</u>	<u>AMN</u>	<u>MKT</u>	<u>PRO</u>	<u>WFV</u>
Oat Mountain	--	--	--	12,400	--	--	--
Dennison	--	--	--	6,700	--	--	--
Moses	--	--	--	24,400	--	--	--
BLM Rockhouse	12,500	--	12,650	35,600	9,710	--	--
Scodies	--	--	--	48,000	--	--	--
Totals	12,500	--	12,650	127,020	9,710	--	--

Table 4.38 - Summary of Allocations of Further Planning Area by Alternative and Emphasis Area (Forest Lands Only)

Prescription (Acres)									
ALT.	Wild-erness Mgmt	Gen. Disp. Rec	Water Orien. Rec	DVLP Rec,	WL/Disp.	RG	TBR	Water Yield	Further Planning Area
	(A)	(1)	(2)	(3)	(5)	(6)	(7)	(8)	Total
PRF	--	4,000	--	--	52,500	19,360	15,600	--	91,460
CUR	--	4,000	--	--	50,700	19,160	17,600	--	91,460
RPA	--	52,500	--	--	7,900	15,260	13,300	2,500	91,460
AMN	91,460	--	--	--	--	--	--	--	91,460
MKT	--	3,160	--	--	48,000	15,890	--	24,410	91,460
PRO	--	3,160	--	--	48,000	19,990	20,310	--	91,460
WFV	--	1,800	--	--	89,660	--	--	--	91,460

TABLE 4 39 - Further Planning and Wilderness Study Area Evaluation  
(Oat Mountain. Dennison. Moses. BLM Rockhouse. Scodies)  
Average Annual Outputs  
Decades 1 and 5

OUTPUT	DECADE	FRF	CUR	RPA	AMN	MKT	FRO	WFV
Recommended Wilderness (Acres)	-	12.500	0	12.650	127,020	9.710	0	0
Nan-Wilderness (Acres)	-	114.520	127.020	114,370	0	117.310	127.020	127.020
Total Developed Recreation (MRVD)	1	15	15	0	0	15	15	0
	5	15	.15	0	0	15	15	0
Dispersed Recreation (MRVD)	1	3 7 6	4 7 6	3 7 6	1 8 6	3 7 6	4.76	4 7 6
	5	8 0	10 0	8 0	4 8	8 0	1 0 0	10 0
Wilderness Recreation (MRVD)	1	2	0	2	3	2	0	0
	5	3	0	3	5	3	0	0
Total Wildlife and Fish User Days (WFUD)	1	1,176	2,176	1,176	1,186	1,176	2,176	2,176
	5	3,500	3,500	3,500	2,540	3,500	3,500	3,500
Grazing (AUM)	1	4,158	3,243	2,553	2,565	3,966	3,993	3,537
	5	4,677	3,357	3,290	2,596	5,639	5,657	4,226
Suitable Timber Land (Acres)	1	11,859	99	9,433	0	11,676	11,727	7,732
	5	11,859	99	9,433	0	11,676	11,727	7,732
Timber Volume (MMCF)	1	1 1	0	111	0	075	08	0
	5	0 1	002	1 86	0	108	41	1 34
(MMBF)	1	6 93	0	72	0	488	05	0
	5	0 9 3	013	12 06	0	702	66	8 68
Mineral Potential Forgone (Acres of high and medium)	1	360	0	330	12,480	950	0	0
	5	360	0	330	12,480	950	0	0
Gross Revenue (MM\$)	1	3 5 1	3 05	3 96	1 57	3 88	3 88	3 10
	5	1 5 2	3 12	4 17	1 64	2 53	2 54	3 92
Net Revenue (MM\$)	1	1 6 1	2 32	2 23	63	2 24	2 23	1 90
	5	38	1 28	2 78	65	1 23	1 21	2 45
Total Cost (MM\$)	1	1 31	44	98	34	90	90	44
	5	40	45	96	31	55	57	71

Finally, to help facilitate understanding of the timing of potential management actions in specific Further Planning and Wilderness Study Areas, a brief discussion for various alternatives is included.

1) Timing of Non-Wilderness Management Actions in Further Planning and Wilderness Study Areas - A Summary by Alternative

Refer to Appendix C of the **FEIS** for specific information and timing of impacts.

a) Scodies and Oat Mountain

Additional roading of these areas is not anticipated under any alternative during the planning period. Therefore, the naturalness of these areas will generally be maintained. Some use of prescribed fire for vegetative treatment will result and be used to improve range and wildlife habitat at varying times during the planning period.

b) Dennison Peak

All Alternatives: Some prescribed fire will be used for range and wildlife habitat vegetative treatment/improvement purposes at varying times during the planning period.

Alternatives PRF, CUR, WFV, and AMN

Will not be roaded under these alternatives during the planning period. Therefore, naturalness will generally be maintained. A small amount of timber would be removed under the PRF Alternative utilizing systems not requiring roads: this would slightly decrease naturalness.

Alternative RPA

Roading is expected to occur primarily during the first three decades when timbered areas would be accessed. Little additional roading will occur during the planning period. Most timber would be harvested during the third decade.

Alternatives MKT and PRO

Roading will begin in the first decade and continue in the third decade: then, basically end. Approximately 27 percent of the timberland would be accessed in decade two, and 63 percent in decade three. Under the MKT Alternative, the final 10 percent is planned to be accessed in decade five. While under PRO, it is in decade four.

c) Moses

All Alternatives: Some prescribed fire will be used for range and wildlife habitat vegetative treatment/improvement purposes at varying times during the planning period.

### Alternative PRF

Roading is expected to begin in the first decade, then decrease significantly in decades two through four. Roding is not scheduled in decade five. Timber harvest would occur in **all** five decades, being highest in the first and third.

### Alternative CUR

Virtually no roading will occur under this alternative during the planning period. Therefore, naturalness will generally be maintained except for the first and fifth decades when approximately one percent of the area might be accessed.

### Alternative RFA

Roading is expected to begin in the first decade. The greatest amount would be constructed in the first decade with lesser amounts continuing throughout the planning period. A small amount of timber would be harvested in each of the first two decades, then increase in the last three with decade five being about double of the amounts in decades three and four.

### Alternative AMN

Roading will not occur under this alternative during the planning period. Therefore, the natural appearance will be maintained.

### Alternatives MKT and PRO

Roading is expected to begin in the first decade and continue through the planning period for each of these alternatives. Under MKT, timber harvest spans all five decades and peaks in the second and third. Under PRO, timber harvest also spans all five decades, but peaks in decades three and four.

### Alternative WFV

Roading is expected to begin in the first decade and continue to increase: then stop until decades four and five when **some** additional roads will be constructed. A small amount of timber would be harvested in decade two and a larger amount in decade five.

## **2) Overview**

Following here is the discussion of Environmental Consequences for each alternative as they apply to the existing Sequoia NF Wilderness Resource as well as the Further Planning and Wilderness Study Areas which would be recommended for wilderness in that alternative.

Again, to facilitate understanding and focus on the area of concern, the Sequoia NF has five existing wildernesses. **Two** (the **Dome Land** and the **Golden Trout**) have been in existence since 1964 and 1978, respectively. The 1984 California Wilderness Act designated three **new** areas (South Sierra, Monarch and Jennie Lakes) plus added a significant expansion to the **Dome Land**. Generally, use in existing areas has been light (98,000 RVD in 1983 for four percent of the Forest total). Use in new wildernesses is expected to decrease from that

which has occurred prior to designation since most of the use was motorcycle and OHV oriented. Over time, use is expected to climb back toward current level as people learn the values and become familiar with these areas.

The maximum potential for wilderness within the planning unit is approximately **392.000** acres. This acreage includes all existing wildernesses and Further Planning Areas (including the BLM Rockhouse WSA which is immediately adjacent to the National Forest boundary and the existing Dome Land Wilderness). It does not include the Kings River area, which was established as the Kings River Special Management Area in Kings River Wild and Scenic River legislation enacted November **3, 1987**, or the Cypress area which was addressed by the BLM.

In all alternatives, those Further Planning and Wilderness Study Areas not recommended for wilderness would be allocated to non-wilderness management. As such, they could lose their wilderness characteristics as more management practices are implemented. Recognizing rugged terrain would limit many opportunities, uses possible in these areas include OHV's and dispersed recreation, timber management with associated road construction, wildlife and range habitat improvement, and water yield improvement measures.

a) Environmental Consequences

When addressing the consequences of an alternative on the wilderness resource, consequences need to be viewed in two ways. First is the impact to the wilderness/resource user. Second is the impact on others. These consequences can best be illustrated by focusing on activities/factors which will tend to result in these consequences. These activities/factors are termed indicators.

In the following text, consequences are addressed at two levels. First is the general level, where broad, variable and indeterminable degrees of impacts will occur. Second is the specific level, where several key indicators will be used to focus attention on environmental consequences.

b) General Environmental Consequences

Under all alternatives, it is possible to identify a number of actions/management activities/situations which will occur and have effects on the wilderness resource. These will occur in indeterminable amounts, either inside the wilderness or in areas immediately adjacent to wildernesses, and have varying consequences to the user and/or the resource. To some extent, they will vary by alternative. They can be summarized as follows:

- 1] Burning timber sale and road right-of-way slash and/or prescribed fires will add smoke to the atmosphere which could, under adverse conditions, drift into and affect wilderness air quality.
- 2] Wildfire control actions inside wilderness can require the use of mechanized equipment (e.g., helicopter, chainsaw, and pump) causing temporary loss of wilderness characteristics.
- 3] Noise from motorized vehicle use of roadways and/or OHV trails immediately adjacent to a particular wilderness will carry into the wilderness.

- 4] Noise from low-flying military aircraft will periodically break the silence, occasionally in an alarming fashion if one happens to be near a flight path.
- 5] Occasional search and rescue efforts will continue in wilderness areas, necessitating the use of helicopters and introducing undesirable activities and noise.
- 6] Motorized equipment, particularly wheeled OHV's and oversnow vehicles, will violate wilderness boundaries until drivers are educated about the boundaries. This will be most important in situations where OHV use was a permitted activity prior to wilderness designation and where wilderness boundaries are not clearly definable (e.g., where they follow a contour, cut across a hillside or bisect a meadow area).
- 7] Access to private lands within established boundaries may be inconsistent with wilderness (e.g., helicopter) and create undesirable noise.
- 8] Use on private lands within the wilderness may not be consistent with the wilderness setting (e.g., chainsaw noise).
- 9] Ongoing range administration may result in the use of methods or improvements not designed to encourage a primeval character of the land.
- 10] It will be possible to view surrounding non-wilderness National Forest System lands from within wildernesses. These lands may have management activities which will offend some wilderness users.

c) Specific Consequences

The following key indicators will be used to focus attention on environmental consequences:

<u>Consequence</u>	<u>Key Indicators</u>
Nature of the wilderness experience provided to users	<ul style="list-style-type: none"> <li>- Range of vegetative diversity and opportunities available by area designation</li> <li>- Use of fire to enhance vegetative diversity within areas</li> <li>- Other attractions provided (e.g., trailhead facilities)</li> <li>- Nearby developments (e.g., resorts)</li> </ul>
Effects on actions by others	<ul style="list-style-type: none"> <li>- Mining activities</li> <li>- Outfitter-guide services</li> </ul>
Increased management problems	<ul style="list-style-type: none"> <li>- Inappropriate use</li> </ul>



## Alternative PRF

This alternative would recommend 12,500 acres of the BLM Rockhouse Wilderness Study Area as wilderness. Further Planning Areas would not be added to the existing wilderness system in the National Forest.

Existing National Forest wildernesses will provide the users with a variety of experience levels, varying from mixed chaparral and pinyon-sage to high alpine conifer and rock. A wilderness of continuous pinyon pine woodland (represented by the Scodies) would not be provided. This vegetative community is not currently within the State of California wilderness component. Existing areas do provide a complete range of opportunities from Roaded Natural (adjacent to road corridors) to Primitive (many miles from areas with human influences in truly remote settings with opportunity for solitude).

Long-term vegetative diversity within wildernesses will be maintained through the use of prescribed fire, where appropriate. This action will periodically add smoke to the airshed.

Recreation use in existing areas is expected to increase over time as people learn of additional wilderness opportunities, particularly within the newly established areas. Use increases will be facilitated by wilderness trailhead development at key locations. This will affect solitude.

Two additional ski areas (Sherman Pass and Mitchell-Maddox) will be studied for possible development in proximity to both the existing Jennie Lakes and Dome Land Wildernesses. Development could result in increased impacts on air quality within these vicinities, possibly beginning in the second decade.

Additional opportunities will be provided for outfitter and guide services in newly designated wildernesses, providing both social and economic benefits.

Mining activities utilizing mechanized equipment will continue in the Golden Trout Wilderness and could impact the Dome Land Wilderness if the validity of existing claims is established.

Manageability will remain at current levels.

## Alternatives CUR and PRO

These alternatives would not recommend any Further Planning or Wilderness Study Areas for wilderness, therein maintaining the existing wilderness system. Existing wilderness will continue to provide users with a variety of experience levels, varying from mixed chaparral and pinyon-sage to high alpine conifer and rock. They would not provide for a wilderness of continuous pinyon pine woodland (represented by the Scodies). This vegetative community is not currently within the State of California Wilderness component. Existing areas do provide a complete range of opportunities from Road Natural to Primitive.

Long-term vegetative diversity within wilderness may be diminished over time as full fire control measures are continued and prescribed fire is not used.

Recreation use in existing areas is expected to increase over time as people learn of opportunities, particularly within the newly established areas. This will affect solitude.

Two additional ski areas (Sherman Pass and Mitchell-Maddox) will be studied for possible development in close proximity to the existing Jennie Lakes and Dome Land Wildernesses. This could result in increased impacts on air quality within these vicinities, possibly beginning in the second decade.

Additional opportunities will be provided for outfitter and guide services in newly designated wildernesses, providing both social and economic benefits. Mining activities utilizing mechanized equipment will continue in the Golden Trout Wilderness (**GTW**) and could impact the Dome Land if claims are proven valid.

Manageability will remain at current levels.

#### Alternative RPA

This alternative would add 12,650 acres of the BLM Rockhouse Area to the existing wilderness system.

Long-term vegetative diversity would diminish over time as full fire control measures are implemented and prescribed fire is not used.

Recreation use in the five existing areas is expected to increase over time as people learn of opportunities, particularly within the newly established areas. This will affect solitude.

This wilderness system would provide users with a variety of experience levels, varying from mixed chaparral and pinyon-sage to high alpine conifer and rock. It would not provide for a wilderness of continuous pinyon pine woodland (represented by the Scodies). This vegetative community is not currently within the State of California wilderness component. Existing areas do provide a complete range of opportunities from Roaded Natural to Primitive.

If the ski area at Sherman Pass was developed in proximity to the Dome Land Wilderness, increased impacts on air quality within this vicinity could result.

Mining activities utilizing mechanized equipment will continue in the GTW and could impact the Dome Land if claims are proven valid.

Outfitter and guide opportunities will be judged on their **own** merits in providing a necessary public service/benefit.

Manageability of existing areas would remain at current levels.

## Alternative AMN

This alternative would add 127,020 acres to the existing wilderness system. This includes all Further Planning and Wilderness Study Areas, including all 35,560 acres of the BLM Rockhouse area.

Adding the Scodies would add an area of biotic diversity to the system. It provides a transition between the Mojave Desert environment and the higher elevation lands of the Forest. This pinyon pine forest area has no commercial timber or mineral value. It is known to have archaeological values. It receives very little use and would provide an area where opportunities for extreme solitude abound. Use is not expected to change appreciably with wilderness designation. Administration costs and law enforcement costs would increase significantly with wilderness designation to prevent inappropriate use.

Moses has two sections, both of which border the existing GTW but are separated by lands with intensive development. This alternative recommends wilderness designation for the northern parcel only. It is a diverse area which extends from chamise chaparral to high country timber and rock. Access within the area is limited by steep terrain. Use is very light. Use would not be expected to increase regardless of designation. Manageability of the boundary to prevent inappropriate uses would be difficult and increase administrative costs. Some OHV conflicts would possibly result.

This wilderness system will result in users having a complete range of experience levels by vegetational types available in California. Further, a complete range of opportunities from Roaded Natural to Primitive will be available.

Long-term vegetative diversity within wildernesses will be maintained through the use of prescribed fire, where appropriate. This action will periodically add smoke to the airshed. Recreation use in existing areas is expected to increase over time as people learn of opportunities, particularly within newly designated areas, and even with these designations. This will affect solitude.

Development of another ski area at Mitchell-Maddox or Sherman Pass could result in increased impacts on air quality in either the Jennie Lakes or Dome Land Wilderness. If studies result in development proposals.

Constraining commercial recreation special uses in wilderness to ensure compatibility with the themes of the wildernesses would limit opportunities in some instances. This may cause economic and/or social impacts.

Mining activities utilizing mechanized equipment will continue in the Golden Trout Wilderness and could impact the Dome Land Wilderness if claims prove valid.

Grazing prohibitions in all new wildernesses. in meadow areas, and in riparian areas in the conifer zones within existing wildernesses, would greatly enhance immediate recreational enjoyment of these areas by ensuring vegetation naturalness and lack of user conflicts with cattle. Long-term

affects would evolve around more natural vegetative change (vs. one "controlled" by grazing). Adverse economic impacts would result to the cattle industry.

Manageability of existing areas will remain at current levels.

#### Alternative MKT

This alternative would add 9,710 acres of the BLM Rockhouse Area to the existing wilderness system.

This wilderness system would provide users with a variety of experience levels, varying from mixed chaparral and pinyon-sage to high alpine conifer and rock. It would not provide for a wilderness of continuous pinyon pine woodland (represented by the Scodies). This vegetative community is not currently within the State of California wilderness component. Existing areas do provide a complete range of opportunities from Roaded Natural to Primitive.

Two additional ski areas (Sherman Pass and Mitchell-Maddox) will be studied for possible development on the Forest. Both would be located adjacent to established wilderness and could result in an increased impact on air quality within these vicinities. This would occur by the fourth decade.

Additional opportunities will be provided for outfitter and guide services in newly designated wildernesses, providing both social and economic benefits.

Long-term vegetative diversity within wilderness will be diminished over time as full fire control measures are continued and prescribed fire is not used.

Recreation use in existing areas is expected to increase over time as people learn of opportunities, particularly within newly established areas. This will affect solitude.

Mining activities utilizing mechanized equipment will continue in the Golden Trout Wilderness and could impact the Dome Land Wilderness, if claims are proven valid.

Manageability of existing areas would remain at current levels.

#### Alternative WFV

This alternative would not add any additional acreage to the present wilderness system. It is similar to the CUR and PRO, with the following exceptions:

- Resorts would not be developed adjacent to wildernesses. Air quality would not be impacted from this source and would remain at current standards.
- Prescribed fires will be used to enhance wilderness values. This action will periodically add smoke to the airshed.

- Outfitter and guide service applications would be judged on their own merit in providing a necessary public service/benefit.

#### C. MEANS TO MITIGATE ADVERSE IMPACTS

Mitigation measures are an inherent part of each alternative. They are applied as constraints, standards and guidelines. Constraints are stated in both Chapter 2 and Appendix C of the FEIS. Forest-wide and Management Area Standards and Guidelines are stated in detail in Chapter 3 of the Forest Plan.

#### D. ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Despite the application of mitigating measures to Forest management activities, some adverse environmental effects cannot be avoided. These effects would be common to all alternatives unless otherwise noted. The most significant of these include:

- A slight reduction of air quality due to auto emissions and residential wood burning would result from increased residential use. Improved technology could offset these effects.
- A continuing short-term adverse effect on visual quality resulting from regeneration timber harvest methods and road construction. A typical conifer stand returns to an unaltered appearance, as seen from a middleground distance, in approximately 30 years.
- Short-term increases in sediment yield to streams would occur from vegetation management activities despite the application of erosion and water quality control measures and the avoidance of highly erosive soils. Increases would stay within acceptable levels. Road construction proposed in some alternatives would result in permanent loss of productivity of the roadbed.
- Additional roading which would increase public access, would also subject areas of cultural and historic resource to increased vandalism, and pothunting.
- All alternatives would adversely reduce habitat for late seral stage and mast associated wildlife species. All alternatives except for the AMN, AMU, RPA, and WFV adversely reduce habitat for snag associated species.

#### E. RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Some short-term practices and activities proposed in the alternatives could produce benefits at the expense of long-term productivity of the land. These uses are short-term in the sense that they may occur for a relatively short duration while their effects may last beyond the planning horizon, or possibly in perpetuity.

Long-term productivity refers to the continued ability of the land to provide resource outputs. This inherent ability is lost if soil productivity and hydrologic characteristics are impaired.

The Forest-wide Standards and Guidelines and much of the specific direction are directed toward maintaining long-term productivity. Nevertheless, under all alternatives, there would be unavoidable effects and irretrievable resource commitments which do affect long-term productivity, such as development of ski areas and construction of arterial/collector roads. Creating substantial areas of bare ground in the high commodity production alternatives, especially PRO, would produce short-term increases in timber volume and livestock numbers, but would greatly increase the risk of loss of long-term soil productivity. In all alternatives, the economic preference for shorter timber rotations would eventually produce larger logs in the short-term, but would result in smaller logs (less than 24 inches in diameter) in the long-term.

#### F. IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible commitments of resources are decisions that cause changes which cannot be reversed. Once used, the resources cannot be reinstated nor can the opportunities be renewed. Irreversible commitments apply to activities or events such as mining, some road construction, cultural and historical resource disturbance, and dam construction that affect non-renewable or depletable resources.

Irretrievable commitments refer to the opportunities for production or use of resources which are foregone for a period of time because of land use decisions, allocations, or constraints. Examples include loss of timber, livestock grazing, or developed recreation outputs to provide for nonquantifiable benefits such as enhanced wildlife habitat or visual quality. The decisions are reversible; but the production opportunities foregone while the constraints are in effect are irretrievable.

Minerals extraction and dam construction are possible irreversible actions that are outside of the scope of Forest planning, since their initiation is external to Forest Service authority. In the event of proposals stemming from external sources, site-specific environmental analyses would explore the extent and consequences of irreversible commitments. The role of the Forest Service would be to mitigate impacts on associated resources and would seek to hold irreversible commitments to a minimum.

- The PRO and **MKT** Alternatives have the highest risk of irreversible loss of soil productivity because of various management activities.
- The AMN Alternative would contain the greatest volume of timber that would decay and be an irretrievable commitment of volume.
- The **MKT** and PRO Alternatives pose the greatest threats of irreversible losses of cultural and historical resources that otherwise might remain undisturbed.
- Energy used to implement each of the alternatives would be an irreversible resource commitment.
- In all alternatives except AMN (in which all Further Planning and Wilderness Study Areas would become wilderness), irreversible losses of wilderness values could occur on Roadless Areas that were allocated to

non-wilderness uses. The construction of permanent facilities allowed by non-wilderness prescriptions (including roads, fuelbreaks, and major above-ground facilities such as hydropower plants) impair wilderness values. Such facilities would eliminate these areas from future wilderness consideration.

- Areas designated for wilderness or Research Natural Area status would cause some irretrievable loss of production opportunities from those areas. In particular, potential mineral and timber production opportunities from these areas would be foregone.

G. POSSIBLE CONFLICTS WITH FEDERAL, REGION, STATE, AND LOCAL LAND USE PLANS

For all alternatives, there are no **known** conflicts between federal, regional, state and local plans, and the Sequoia NF land management planning effort.

H. ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

With the emphasis on energy conservation as well as greater production, Forest management activities and energy programs have become major concerns, meriting explicit consideration. The objective of this evaluation is to provide additional considerations through which forest planning alternatives can be assessed and compared. The following analysis provides descriptive means for determining the net energy balance characteristics of forest based resources. Its purpose is to supplement economic and environmental considerations rather than replace them.

Net energy balance calculations: The net energy balance is the difference between the energy produced and energy expended in utilizing a forest resource or service.

Complete energy consumption calculations include the energy content of the consumed fuels and lubricants, the energy of the lubrication of required materials and fuels, and the prorated energy of manufacture of the machinery used. The energy consumption component of forest planning alternatives encompasses the energy required to produce and utilize forest resources and to provide services and protection from natural disasters.

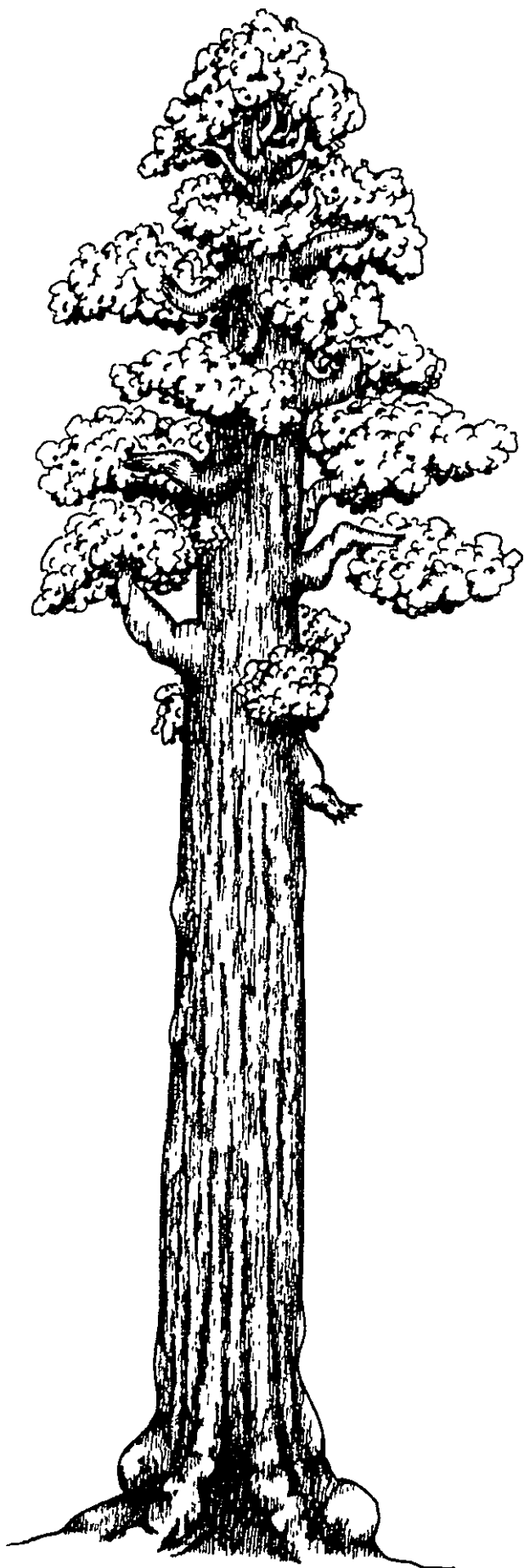
Energy yields considered in this evaluation relate to direct fuels values, direct power generation, energy savings over substitute materials, or energy savings due to a reduced need for energy expenditure. Savings due to successful prevention through management activities (such as fire prevention) are not considered as energy yields: but rather they are included in the analysis as reduced energy consumption.

Table 4.40 provides an energy consume/yield comparison for all alternatives in the first decade. These relationships will remain consistent throughout the planning period.

TABLE 4 40 - Energy Balance by Resource Group and Alternatives  
 (10 Year Consumption and Yield in Trillion B T U 's)

Resource Group	Action	A	B	C	D	E	F	G
		PRF	CUR	RPA	AMN	MKT	PRO	WFV
Timber	Consume	22 5120	21 8880	23 4840	10 2600	29 4120	30 7800	19 1520
	Yield	10 6920	10 3680	11 1240	4 8600	13 9320	14 5800	9 0720
Biomass	Consume	0 0177	0 0195	0 0185	0 0042	0 0269	0 0287	0 0130
	Yield	1 6094	1 1138	1 6797	03830	2 4444	2 6084	1 8070
Grazing	Consume	0 1022	0 0907	0 0801	0 0792	0 1090	0 1090	0 0864
	Yield	0 1420	0 1260	0 1112	0 1100	0 1514	0 1514	0 1200
Recreation	Consume	18 4988	4 4064	8 3842	8 2850	18 6742	7 9409	17 5349
	Yield	0 0010	0 0010	0 0010	0 0010	0 0010	0 0010	0 0010
water	Consume	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000
	Yield	20 3342	19 9551	20 0908	19 8738	20 4425	20 4699	19 9822
Non-Fuel Minerals	Consume	0 0069	0 0069	0 0069	0 0069	0 0069	0 0069	0 0069
	Yield	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000
Roads	Consume	0 6826	0 5417	0 5325	0 0852	0 8301	0 8530	0 4991
	Yield	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000
Fire Mgmt	Consume	5 1500	5 1500	5 1500	5 1500	5 1500	5 1500	5 1500
	Yield	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000	0 0000
Totals	Consume	47 0302	42 1032	47 6562	33 8705	54 2091	54 8685	42 4423
	Yield	32 7786	32 2239	33 0067	25 2278	36 9713	37 8107	30 9822
Net Energy Balance	Net Consume	14 2516	9 8793	14 6495	8 6427	17 2378	17 0578	11 4601
Yield-Consumption Ratio		0 691 1	0 765 1	0 693 1	0 745 1	0 682 1	0 689 1	0 730 1





**Chapter 5**  
**LIST OF PREPARERS**

## CHAPTER 5

### LIST OF PREPARERS

#### Introduction

Nearly everyone working for the Sequoia NF has been affected by the Land Management Planning effort to some degree. A strong commitment of time, money, and personal effort was required to finish the documents within the allotted time. It is not practical to list everyone who has participated. The list of preparers contains those who were most heavily involved. There are four general groups of people who participated. These are:

- a. Technical Specialists -- provided functional information
- b. Planning Team Members -- coordinated the inclusion of functional information into the EIS and Plan
- c. Interdisciplinary Team Members -- produced the documents in the final form
- d. Management Team Members (Forest Supervisor, District Rangers & Staff) -- served as Board of Directors
- performed specific tasks required by the Planning Regulations
- approved the interim and final products

#### List of Preparers

- ADAMS, VIRGINIA  
Word Processor Operator
- Eight and one-half years experience with the Forest Service.
- Responsible for data entry.
- ADDISON, ROBERT D.  
District Ranger  
Cannell Meadow RD  
B.S. Forest Management
- Twenty-three years Forest Service experience on nine National Forests; two NF's in Region 4, and seven in California. Experience includes timber, recreation, and lands. District Ranger for eight years. California Registered Professional Forester #437.
- ALLEN, JAMES L.  
Forest Engineer  
B.S. Civil Engineering
- Twenty-five years *civil engineering* experience in planning, managing, designing, surveying, and constructing of public facilities such as roads, water and waste water systems, trails, buildings, dams, bridges and related improvements. California Registered Engineer #17232.
- Member of the Interdisciplinary and Management Teams. Provided civil engineering input on Forest improvements.

<p>ALLEN JULIE  Land Management Planning Specialist  1986 to present  Assistant Land Management Planner  1976 to 1982  B.A. Political Science  M.C.P. Master of City and Regional Planning</p>	<p>Eleven years experience with the Forest Service in Region 5. Experience includes various planning assignments including unit, Forest, and project planning.</p> <p>Responsible for the overall coordination of technical aspects of the FEIS and Forest Plan. Responsible for the social and economic impact assessment, wilderness study area analysis, and publication of <u>The Sequoian</u>. Coordinator of public and agency involvement.</p>
<p>ANDERSON, KEN W.  Resource Assistant  Hot Springs RD  B.S. Natural Resource Management</p>	<p>Six years experience with the Forest Service on the Sequoia NF.</p> <p>Provided wildlife input to the Final EIS and Plan.</p>
<p>ANDERSON, STEVEN W.  Range Conservationist  Hume Lake RD  B.S. Range/Wildlands Science</p>	<p>Eight years experience with the Forest Service on the Sequoia NF. Experience includes range and wildlife management.</p> <p>Provided wildlife input to the EIS and Plan.</p>
<p>ARMSTRONG, BERNIE  Program Analyst  until August 1982  B.S. Financial Management</p>	<p>Eighteen years experience with the Forest Service in Regions 1, 3, and 5. Experience included assignments with the Food and Agricultural organization, United Nations; and the Agricultural Research Service, USDA, with responsibilities for management analysis, program analysis, and computer management.</p> <p>Member of the Management Team. Coordinated the development of the Forest LMP data base. Provided information on selection and development of the benchmark mathematical programming models. Formulated the initial models to incorporate biological and economic data.</p>
<p>ARSENEAULT, NORMAN  Recreation Staff Officer  until October 1982  B.S. Forestry</p>	<p>Twenty-one years experience with the Forest Service in New England, Appalachians, Lake States, California, and Oregon. Experience included six years in recreation and wilderness programs at the Regional and Forest SO levels; and six years as a District Ranger with large recreation programs.</p>

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Member of the Interdisciplinary and Management Teams. Provided recreation and wilderness information for the early stages of the planning process.

BARBER, KLAUS  
System Analyst  
Regional Planning and  
Budget Staff  
B.S. Forestry  
M. Business Administration

Twenty-one years of Forest Service experience on the Stanislaus and Six Rivers NF's, and in the Regional Office. Experience includes timber management, timber planning and inventory, and LMP.

Provided assistance to the Sequoia NF in data bases, GIS, and FORPLAN. Provided assistance in developing and analyzing uneven-aged timber management. Updated Forest model to include uneven-aged options. Added District implementation analysis to the process.

BELAU, LEE R.  
Fire Management Officer  
B.S. Forest Management

Twenty-seven years of Forest Service experience in California. Experience includes twelve years as District Ranger on two Ranger Districts; and ten years as Fire Management Officer on the Sequoia NF.

Member of the Management Team. Provided fire management and fire related information used to develop standards, prescriptions, and alternative development and evaluation.

BRETT, LINDA C.  
Forest Archaeologist  
B.S. Biology  
M.S. Anthropology

Two years experience with BLM as the Resource Area Archaeologist; five years experience in Contract Archaeology; and three years experience in University and grant funded research.

Provided cultural resource information for the Final EIS and Forest Plan.

BROWN, JOE J.  
Forest Supervisor  
until April 1982  
B.S. Forestry  
M.A. Public Administration

Twenty years experience with the Forest Service. Experience included six years on Ranger Districts in Region 8; three years as Director of Job Corps Center of the Ouachita NF; five years as Deputy Forest Supervisor of Ozark-St. Francis NF's; two years in Planning and Budget in Regional Office of Region 8; and four years as Supervisor of the Sequoia NF.

Leader of the Management Team. Provided overall direction for the early stages of the planning process.

BUCKLEY, E. ALICE  
Information Assistant  
B.S. Human Relations  
and Organization  
Management

Fourteen years experience with the Forest Service. Experience includes public affairs duties on the Sequoia NF, and public involvement analysis at the Regional and Washington Offices.

Responsible for analysis process. Received, acknowledged, and logged responses. Analyzed and synthesized the responses. Assisted with editing the Final Plan and EIS.

CARPENTER, NORMAN M.  
Landscape Architect  
B.S. Landscape Architecture

Sixteen years experience with the Forest Service. Experience includes landscape architecture (recreation) and planning on two National Forests in California. Experience also includes three years experience in State Park planning and design.

Member of the Planning Team. Coordinated the inclusion of the following information into the EIS and Plan: engineering, facilities, graphics, mapping, special interest areas, research natural areas, wild and scenic rivers, and recreation resource planning. Developed all categories of Forest-wide input for visual resource management. Coordinated Forest responses to the public comments made to the Draft EIS and Plan. Coordinated the preparation of the Final EIS and Forest Plan.

COWLEY, ARTHUR P.  
Forest Public Affairs  
Officer  
B.S. Forest Management  
M.E. Recreation Administration

Thirty-two years experience with the Forest Service on five National Forests in Regions 1, 5, and 8. Twenty years experience in resource management, three as District Ranger, and ten years as Forest Public Affairs Officer.

Member of the Management Team. Provided overall direction, coordination, and analysis of public involvement and public responses. Provided Interpretive Services and Office of Information input for the alternatives.

CRATES, JAMES A.  
Forest Supervisor  
B.S. Forestry  
Graduate work in  
Hydrology

Twenty-seven years experience with the Forest Service. Experience includes four years on Ranger Districts in Region 6; eleven years in the SO in Region 6; four years as District Ranger; in Region 6; three years as Deputy Forest Supervisor on the Mark Twain NF in Region 9; and five years as Forest Supervisor on the Sequoia NF.

	<p>Leader of the Management Team. Provided overall direction for the planning process.</p>
<p>DAVIS, HARLEY H. Hydrologist until February 1986 B.S. Soil and Water Science MS. Wildland Resource Science</p>	<p>Ten years experience in soils, hydrology, watershed management modeling, and LMP.</p> <p>Member of the Planning Team. Coordinated the inclusion of the following information into the Draft EIS and Plan: watershed, minerals, geology, cultural resources, energy, and air quality. Managed the data base. Coordinated development of watershed coefficients.</p>
<p>DERBY, JEANINE A. District Ranger Greenhorn RD B.A. Biology MS. Plant Ecology</p>	<p>Eleven years experience in the Forest Service on two National Forests in California. Experience includes botany, ecology, and land management planning. Experience also includes one year as District Ranger.</p> <p>Member of the Management Team. Provided input for the monitoring plan.</p>
<p>DIVITTORIO, JOSEPH Range Conservationist Tule River RD until March 1986 B.A. Environmental Management M.S. Range and Soil Sciences</p>	<p>Eight years experience with the Forest Service on the Sequoia NF. Experience included range, wildlife, and watershed management.</p> <p>Provided assistance in range data base development during the early stages of the planning process. Developed the environmental consequences sections of the DEIS dealing with range management, diversity, and chaparral, oak woodlands, and pinyon-sage ecosystems.</p>
<p>DUSTIN, HILARY Sale Planner Hume Lake RD until August 1985 B.A. Biology MS. Range Management</p>	<p>Seven years experience with the Forest Service. Experience included range and wildlife management and timber sale planning.</p> <p>Assisted with development of the Ten Year Timber Sale Action Plan for the Draft Plan.</p>
<p>DYMKOSKI CATHERINE HUGHES Wildlife Biologist Tule River RD B.S. Wildlife Management</p>	<p>Eleven and one-half years of experience with the Forest Service. Experience includes two and one-half years as range conservationist on the Cleveland NF, and nine years as wildlife biologist on the Sequoia NF.</p>

Provided input to the Draft EIS and Plan. Worked on various developmental stages of the wildlife AMS. Assisted in identifying SOMA's and available habitat required for wildlife indicator species. Interpreted effects of various management activities on wildlife.

DYMKOSKI, MARK S.  
Assistant Forest  
Recreation Staff  
Officer  
until May 1986  
B.S. Forest Management  
M.S. Outdoor Recreation  
Management

Thirteen years experience with the Forest Service in Regions 4, 5, and 8. Experience includes recreation, timber, range and fire control.

Developed recreation capability coefficients for the AMS. Coordinated development of the recreation planning methodology. Provided direction for integration of recreation and wilderness in the draft Forest Plan.

EATON, JACK L.  
Fuels Specialist  
Hot Springs RD

Twenty-two years experience with the Forest Service on the Six Rivers, Sierra, and Sequoia NF's in California. Experience includes fire and fuels management.

Provided fire and fuels management and related information for the data base development.

FISK, KENNETH E., JR.  
Forest Timber Management Officer  
B.S. Forest Management

Twenty-eight years experience with the Forest Service on four National Forests in California. Experience includes seven years as timber forester on the Mendocino NF; eight years as District Timber Management Officer on the Shasta-Trinity NF; five years as District Timber Management Officer on the Tahoe NF; six years as Assistant Forest Timber Management Officer on the Tahoe NF; and two years as Forest Timber Management Officer on the Sequoia NF.

Member of the Management Team. Provided timber input for the Final Plan and EIS.

FOSBERG, STEPHEN L.  
Archaeologist  
until July 1985  
B.A. Anthropology and  
History  
M.A. Anthropology

Seven years experience with the Forest Service in Regions 1 and 5. Two years experience with the National Park Service in the Southwest Region.

Developed cultural resources AMS. Provided cost estimates for survey and data recovery programs. Provided background cultural resource management data for the Draft Plan.

FRAZIER, RUSSELL F.  
Program Analyst  
B.A. Political Science  
M.A. Government

Sixteen years experience with the Forest Service. Experience includes ten years as Administrative Assistant on Ranger Districts in California; and six years as program/budget analyst on the Sequoia NF.

Provided assistance in data base development for recreation and range. Assisted in data base QWIK-QWERY searches.

GANDI, JOHN  
Computer Systems  
Analyst  
until May 1985  
A.A. Business Management

Three years experience with the Forest Service on the Olympic NF in Region 6. Experience included three years as data manager/computer specialist. Experience also includes three years as data support/computer specialist with the US Department of Energy, NURE Project office.

Provided computer assistance and support with information selection and modeling of the data base for the planning process.

GEAR, SANDRA  
Clerk-typist  
Hot Springs RD

One and one-half years experience with the Forest Service on the Sequoia NF.

Responsible for typing written documentation into FLIPS for storage and retrieval, page layouts and formats for final printout.

GELOCK, JEROME A.  
Forest Recreation  
Officer/Land Management Planner  
B.S. Forestry  
Masters of Forestry

Twenty-five years experience with the Forest Service in Regions 4 and 5. Experience includes eight years Ranger District administration, seven years as recreation specialist, two years as management analyst, and two years as Sequoia NF Planning Officer.

Member of the Management Team. Provided recreation management input for management prescriptions, standards, direction, alternatives, and evaluation of consequences. Coordinated overall planning effort following the issuance of the DEIS to the development of the Final EIS and Plan.

GOSS, ROD  
Associate Wildlife  
Biologist  
B.A. Vertebrate Biology  
Graduate work in  
Wildlife Management

Worked on the Sequoia NF for two years through an Interagency Personnel Agreement. Experience includes two years in wildlife planning (development of California Fish and Game Plan) and five years in state-wide wildlife research and management programs.



Member of the Interdisciplinary Team. Provided fish and wildlife input during the early stages of the planning process.

GOULD, WALTON  
Mining Geologist  
South Zone Minerals  
Unit  
B.S. Geology

Over seven years experience with the Forest Service and the National Park Service as a mining engineer and geologist. Twenty-three years experience in private mining industry.

Provided mineral potentials and input to the Affected Environment of the DEIS.

GRENZ, JOHN W.  
Civil Engineer  
B.S. Civil Engineering

Fifteen years of experience with the Forest Service. Experience includes eleven years in transportation planning; and four years in construction, surveying, and road design. **Also**, seven years experience with CAL TRANS.

Developed total energy consumption figures for each resource group for the Environmental Consequences section of the EIS.

GRIFFIN, SIDNEY V.  
Timber Management  
Officer  
Tule River RD

Twenty-eight years of experience with the Forest Service on five National Forests. Experience includes fire, range, wildlife, silviculture, and timber management. Also, includes four years as planning and inventory forester on the Sequoia NF.

Responsible for the sample design of timber type mapping and computer mapping systems. Coordinated automated data processing and computer mapping needs. Organized and directed resource inventory data base collection. Provided timber analysis and coefficients for future yield prediction and project yields per acre by stratum and site group.

GUZMAN, JOHN L.  
Civil Engineer  
until March 1984  
B.S. Civil Engineering

Five and one-half years experience with the Forest Service. Experience included two years in transportation planning.

Developed the analysis of alternative transportation strategies and the integration of the transportation analysis into Forest planning and FORPLAN models. Provided information for transportation and facilities ~~AMS~~ of the Draft EIS and Plan.

<p>HANES, RICHARD O.          Soil Scientist          until July 1985          B.S. Soil Science</p>	<p>Fifteen years experience with the Forest Service on the Modoc, Sequoia and Tahoe NF's in Region 5. Experience includes soils, watershed, and land management planning. Certified Professional Soil Scientist #1282.</p> <p>Provided soils information for the planning process. Assisted with the delineation of capability areas. Coordinated the watershed information. Developed overview for earth resource AMS.</p>
<p>HARGETT, DARLEEN J.          Word Processor          Operator</p>	<p>Four years experience with the Forest Service on the Sequoia NF.</p> <p>Responsible for typing written documentation onto FLIPS for storage and retrieval and setting up structural formats for graphics, page layouts, matrices, etc. for final printout.</p>
<p>HEEBNER, GORDON C.          Resource Staff Officer          B.S. Zoology and Botany          M.S. Wildlife Management</p>	<p>Thirty years experience with the Forest Service. Experience includes eight years as a wildlife biologist and range conservationist, eight years as District Ranger on the Modoc NF, and fourteen years as Resource Staff Officer on the Sequoia NF.</p> <p>Member of the Interdisciplinary and Management Teams. Provided wildlife, watershed, and range input into the planning process.</p>
<p>HEINLE, JAMES F.          Forest Landscape          Architect          until 1982          B.S. Landscape Architecture          M. Landscape Architecture</p>	<p>Seven years experience with the Forest Service in Regions 2 and 5. Experience included recreation and landscape architecture.</p> <p>Developed the wild and scenic river AMS for the Draft Plan and EIS. Coordinated the development of landscape architecture, visual resource, and recreation planning methodology. Provided and assisted in the integration of recreation and wilderness in the Draft Plan.</p>
<p>HOPKINS, PATTI A.          Soil Scientist and          Community Planner          until 1979          B.S. Soil/Water Science          M. City and Regional          Planning</p>	<p>Six years experience with the Forest Service on the Los Padres and Sequoia NF's. Experience included planning, environmental analysis, and soils.</p> <p>Member of the Planning Team. In the early stages of the planning process, organized and</p>

analyzed public input in the development of issues, concerns, and opportunities. Assisted with the development of the methodology for determining capability areas.

HUDSON, LINDA  
Computer Assistant  
until January 1985

Five years experience with the Forest Service on the Sequoia NF. Experience included eight years in computer related fields.

Responsible for entering and editing data input. Assisted in QWIK-QWERY and FORPLAN runs.

JENSEN, TIM  
Drafting Technician  
until 1983

Five years experience with the Forest Service in Region 5. Experience included layout, graphics, illustrations, and lettering techniques.

Responsible for preparing maps, graphics, and illustrations for the Draft EIS and Plan.

JUMP, LEWIS H.  
Silviculturist  
Greenhorn RD  
B.S. Forest Land  
Management

Ten years experience with the Forest Service. Experience includes six years as Forest Silviculturist, and as a FORPLAN model development and analysis team member on the Dixie NF in Region 4.

Assisted in the FORPLAN analysis of uneven-aged timber management alternatives for the Final EIS and Forest Plan. Coordinated table input for the Final EIS and Forest Plan.

KAPLANHENRY, TERRY A.  
Forest Hydrologist  
B.A. Geology  
M.S. Geology

Seven years experience with the Forest Service on the Mendocino and Sequoia NFs. Twelve years experience in physical sciences concentrated in hydrology and geology.

Responsible for development of the Cumulative Watershed Effects sections of the Final EIS and Forest Plan.

NELSON, WAYNE  
Range Conservationist  
Greenhorn and  
Cannell Meadow RD's  
B.S. Range Management

Nine years experience with the Forest Service on the Sequoia NF. Experience includes eight years as a District. and one year as a Zone Range Conservationist.

Provided input for range management.

PAULSEN, STEPHEN J.  
Forest Timber Management Officer  
until December 1984  
B.S. Forest Management  
Advanced Economics and Appraisals

Fifteen years experience with the Forest Service on four National Forests in California. Experience included forester, sales preparation, sale administration, forest silviculturist, and district and south zone timber management officers.

Member of the Interdisciplinary and Management Teams. Coordinated timber, wood production, and integrated pest management components into the Draft EIS and Plan.

PENGILLY, DEL A.  
District Ranger  
Tule River RD  
B.S. Forest Management

Twenty-two years experience with the Forest Service on National Forests in California. Experience includes seven years as forester on two districts of the Mendocino NF; seven years as Resource Officer on the Nevada City District, Tahoe NF; and ten years as District Ranger on two Districts of the Sequoia NF.

Member of the Management Team. Assisted in the public involvement meetings.

PICKERING, CHARLES R.  
Planning Staff Officer  
until December 1985  
B.S. Forestry

Twenty-five years experience with the Forest Service on four National Forests in California. Experience included five years as Resource Officer; ten years as District Ranger on three National Forests; and ten years as Planning Officer and Environmental Coordinator for the Sequoia NF.

Planning Team Supervisor, Interdisciplinary Team leader, and member of the Management Team. Coordinated overall development of the Draft EIS and Plan. Coordinated the inclusion of the following functions information into the Draft Plan: public information, timber, insects and disease, fire management, and agency coordination.

PLOCHER, SARAH E.  
Soil Scientist  
Tule River RD  
until June 1985  
B.S. Soil and Water Science  
M.S. Earth Resources

Five years' experience with the Forest Service on the Tongass (Alaska) and the Sequoia NF's. Experience included soil scientist and timber sale planner.

Responsible for editing the Draft EIS and Plan.

PROBASCO, JAY M.  
District Ranger  
Hot Springs RD  
B.S. Forest Management

Twenty-five years experience with the Forest Service on four National Forests in California. Experience includes six years as timber forester on the Stanislaus and Sequoia NF's; eight years as Resource Officer on the Sequoia NF; two years as Planning Officer on the Los Padres NF; and nine years as District Ranger on the Sierra and Sequoia NF's.

Member of the Interdisciplinary and Management Teams. Member of the task force group to develop uneven-aged and recommended alternatives.

PROCTER, C. TRENT  
Transportation Planner  
and Air Quality  
Coordinator  
B.S. Natural Resource  
Management

Nine years experience with the Forest Service on the Sequoia NF.

Developed transportation and facility analysis for the Draft and Final EIS. Coordinated Federal, state, and local air pollution regulations into the planning process. Provided air quality data and analysis for the Draft and Final EIS.

PRODAN, NICK C.  
Fuels Management  
Technician  
Cannell Meadow RD

Seventeen years experience with the Forest Service on the Sequoia NF. Experience includes fire and fuels management.

Functional team leader of fire and fuels management related analysis for the planning process.

ROBBINS, INEZ A.  
Assistant Forest  
Recreation Officer  
B.S. Landscape Archi-  
tecture  
MS. Forestry

Fifteen years experience with the Forest Service on four National Forests in Regions 3 and 5. Experience includes business management, fire prevention and management, computer operations, timber management, recreation, and environmental planning processes. Experience also includes publishing and editing.

Responsible for the editing of the Final EIS and Forest Plan.

ROGERS, ROBERT R.  
Forest Silviculturist  
B.S. Forestry

Nineteen years experience with the Forest Service on three National Forests in California. Experience includes four years in timber management on the Sequoia NF, five years as District Timber Management Officer on the Stanislaus NF, five years as District Silviculturist on the Stanislaus NF.

culturist on the Tahoe NF, and five years as Forest Silviculturist on the Sequoia NF.

Assisted with the development of timber emphasis prescriptions. Provided data and timber ~~AMS~~ overview.

SALLEE, RODNEY K.  
District Ranger  
Greenhorn RD  
until May 1985  
B.S. Forest Management  
M. Public Administration

Fifteen years experience with the Forest Service on three National Forests in California. Experience included timber and administration. Four years as District Ranger on the Sequoia NF.

Member of the Management Team.

SALMON, ARMANDO  
Computer Operator

Seven years experience with the Forest Service on the Sequoia NF.

Responsible for setting up the original structural formats for graphics, matrices, page layouts, etc. Managed the Comments Data Base program. Provided needed data and support.

SCHARF, ROBERT M.  
Forest Lands Officer  
until January 1987

Thirty years experience with the Forest Service in Region 5. Experience included twenty-two years in the Supervisor's Office in various aspects of lands (classification, rights-of-ways, acquisition, exchange status, land uses and boundary marking).

Member of the Management Team. Provided lands and minerals input.

SELF, STEVEN E.  
Planning Biologist  
until September 1985  
B.S. Wildlife Management

Seven years experience with the Forest Service on the Sequoia NF. Experience included four years as the Range, Wildlife, and Watershed Specialist on the Hot Springs RD.

Developed threshold levels for wildlife. Directed model formulation. Coordinated the inclusion of wildlife, T&E species, fisheries and range into the Draft EIS and Plan.

SHEVOCK, JAMES R.  
Ecologist/Forester  
B.S. Botany  
M.A. Biology and Botany

Six years experience with the Forest Service on the Sequoia NF. Experience includes thirteen years studying the vegetation of the Southern Sierra; and two years with the Natural Diversity Data Base, Planning Branch, California Department of Fish and Game,

Sacramento, California.

Provided input on plant community structure, dynamics, and management into the Draft EIS and Plan. Mapped forest vegetation to series level for capability areas. Provided input for chaparral, woodlands, giant sequoias, sensitive plants, botanical areas, and research natural areas. Editor of the Draft EIS and Plan.

SISEMORE, PAM  
Computer Assistant  
until 1983  
B.A. Sociology

Five years experience with the Forest Service on the Sequoia NF. Experience included computer operations. Experiences also included seven years of data entry.

Developed source document for raw data program and entry. Key punched, edited and updated the data base. Assisted in QWIK-QUERY and FORFLAN.

SPANN, CHARLES L.  
Resource Officer  
Tule River RD  
B.S. Hydrology

Nine years experience with the Forest Service on the Sequoia NF. Experience includes six years as Forest Hydrologist and three years as District Resource Officer.

Provided water, soil, and geology input to the Final EIS and Plan.

STANDAGE, RICHARD W.  
Fisheries Biologist  
Tule River RD  
until September 1984  
B.S. Fisheries Management

Five years experience with the Forest Service on the Sequoia NF. Experience included five years experience in State fisheries management and planning.

Developed fish habitat analysis and fisheries AMS for the Draft EIS and Plan.

SUITT, SIEVE C.  
Mining Geologist  
South Zone Minerals  
Unit  
B.S. Geology

Over seven years experience with the Forest Service in Regions 5 and 6. Experience included engineering and mining geology.

Reviewed mineral potentials.

TANK, JAMES B., JR.  
Administrative Officer  
Business Administration

Over nineteen years experience with the Forest Service on National Forests in Region 5 and 8. Experience includes four years as Administrative Officer on the Tahoe and Sequoia NF's; and fifteen years as Personnel Officer on the Six Rivers, Tahoe. and Sequoia NF's in Region

5, and on the National Forest in Texas (Region 8.)

Member of the Management Team.

TUNGATE, WILLIAM A.  
Engineering Technician

Nine years experience with the Forest Service on National Forests in California. Experience includes fire and engineering on the Plumas, Shasta-Trinity, and Sequoia NF's.

Prepared alternative base maps, color overlays, graphics, and illustrations for the Draft and Final Forest Plan and EIS.

WALDRON, BRUCE A.  
District Ranger  
Hume Lake RD  
B.S. Forestry  
M.S. Organization  
Development

Twenty-nine years experience with the Forest Service in Region 5. Experience includes one year in fire management: three years in range, recreation, lands, wilderness, and wildlife; and four years in timber management. Experience also includes twenty-one years as District Ranger.

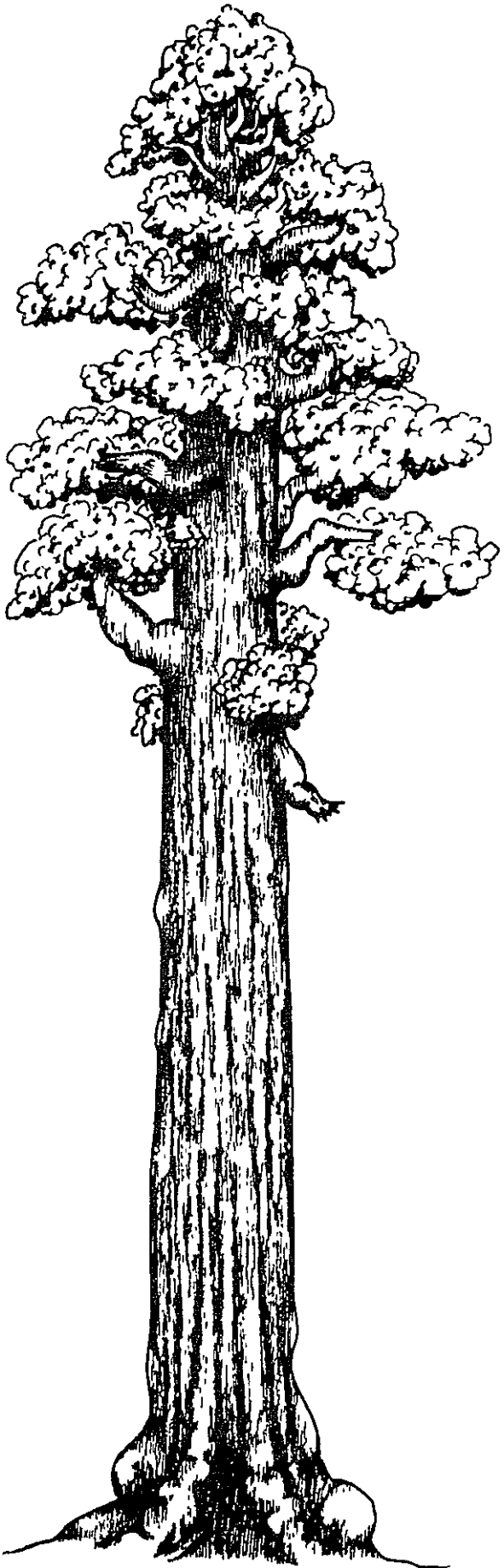
Member of the Management Team.

WOODRUFF, WILLIAM C.  
Logging Systems  
Specialist  
B.S. Forestry  
M.S. Forest Engineering

Nine years experience with the Forest Service. Experience includes four years as District Timber Management Assistant on the Dixie NF, and two years timber management experience on the Sequoia NF. Graduate of the Forest Service two-year Advanced Logging Systems Program at Corvallis, Oregon.

Assisted with the development of the Timber Management Plan. Coordinated table input for the Final EIS.





## Chapter 6

# CONSULTATION AND MAILING LIST

## CHAPTER 6

### CONSULTATION AND MAILING LIST

Copies of the Final Environmental Impact Statement and Forest Plan were distributed to elected officials, agencies, and organizations listed on the following pages. A similar list was used in distributing the draft documents.

#### Elected Officials

##### U.S. Congress

Senator Alan Cranston  
Senator Pete Wilson  
Representative Nancy Pelosi  
Representative Tony Coelho  
Representative Richard Lehman  
Representative Charles "Chip" Pashayan  
Representative William Thomas

##### State of California

Assemblyman Bruce Bronzan  
Assemblyman Trice Harvey  
Assemblyman Bill Jones  
Assemblyman Phillip D. Wyman  
Senator Ken Maddy  
Senator Don Rogers  
Senator Rose Ann Vuich

##### County

Fresno County Board of Supervisors  
Inyo County Board of Supervisors  
Kern County Board of Supervisors  
Kern County Supervisor, Roy Ashburn  
Kings County Board of Supervisors  
Madera County Board of Supervisors  
Tulare County Board of Supervisors

#### Federal Agencies

Environmental Protection Agency  
Region 9, San Francisco, CA  
Washington, D.C.

##### Federal Highway Administration

##### U.S. Department of Agriculture, Forest Service

Washington, D.C.  
Region 5, Regional Forester and Staff, San Francisco, CA  
Forest Supervisors:  
Angeles NF  
Cleveland NF  
Eldorado NF  
Inyo NF

Klamath NF  
Lassen NF  
Los Padres NF  
Mendocino NF  
Modoc NF  
Plumas NF  
San Bernardino NF  
Shasta-Trinity NF  
Sierra NF  
Six Rivers NF  
Stanislaus NF  
Tahoe NF  
Lake Tahoe Basin Management Unit  
Pacific Southwest Forest and Range Experiment Station  
Rocky Mountain Forest and Range Experiment Station

U.S. Department of Defense  
U.S. Air Force  
Army Corps of Engineers  
Lake Isabella  
Sacramento  
Los Angeles

U.S. Department of the Interior  
Fish and Wildlife Service  
National Park Service, San Francisco, CA  
Sequoia and Kings Canyon Parks  
National Park Service Environmental Quality  
Bureau of Indian Affairs  
Bureau of Reclamation  
Bureau of Land Management  
Caliente Resource Area  
Bakersfield District  
Sacramento State Director  
Ridgecrest Resource Area

#### California State Agencies

California Resources Agency  
California Department of Conservation  
California Department of Fish and Game  
California Department of Fish and Game, Region IV  
California Department of Forestry and Fire Protection  
Mountain Home State Forest  
California Department of Health Services  
California Department of Parks and Recreation  
California Department of Transportation  
California Department of Transportation, District 6  
California Department of Water Resources  
California Energy Commission  
California Office of Planning and Research  
Reclamation Board  
California State Lands Commission  
State Board of Forestry

## California Regional Water Quality Control Board

### Local Agencies

#### Tulare County

Council of Governments  
Department of Education, SCICON  
Economic Development Corporation  
Parks Division  
Planning and Building Department

#### Fresno County

Department of Parks and Recreation  
Planning Department

#### Kern County

Board of Trade  
Council of Governments  
Parks and Recreation  
Planning Department

#### Bakersfield

Department of Planning and Development Services  
Department of Water

#### City of Dinuba

Mayor  
Planning Department

#### City of LaMirada, Community Services

#### City of Porterville, Department of Parks and Recreation

#### Alta Irrigation District

#### Angeola Water District

#### Kings River Conservation District

#### Riverdale Irrigation District

#### Tulare Lake Basin Water Storage District

### Libraries

#### Bakersfield College Library

#### California State University, Fresno. Library

#### College of the Sequoias Library

#### Denver Public Library

#### Fresno County Free Library

#### Kern County Library

Bakersfield

Kernville

Lake Isabella

Wofford Heights

#### Kings River Community College Library

#### Lancaster Library

#### Long Beach Library

#### Los Angeles County Library

#### Marin County Free Library

#### Miramonte Library

#### Pomona Public Library

#### Porterville College Library

#### Porterville Public Library

#### Redwood City Public Library

Ridgecrest Branch Library  
Riverside Public Library  
San Bernardino City Library  
San Bernardino County Library  
San Diego Public Library  
San Francisco Public Library  
Santa Cruz Public Library  
Three Rivers Library  
Tulare City Library  
Tulare County Library, Visalia  
Miramonte Library  
University of California, Berkeley, Forestry Library  
University of California, Davis  
    Institute of Government Affairs Library  
    Shields Library  
    University Library, Government Documents Department  
University of California, Santa Barbara, Library  
University of California, Santa Cruz, Environmental Studies Library  
University of Minnesota, Forestry Library, St. Paul, Minnesota

#### Media

Bakersfield Californian  
Daily Independent  
Fresno Bee  
Kern Valley Sun  
KKRVFM  
KVLI  
River Runner Magazine  
The Live Oak Press  
Tule River Times  
Visalia Times Delta

#### Organizations

American Mining Congress  
American Motorcycle Association - District 37  
American Motorcycle Association Racers Under the Sun  
American Motorcycle Association (National)  
American Wilderness Alliance  
Associated California Loggers  
California All-Terrain Vehicle Association  
California Association of 4WD Clubs  
California Association of 4WD Vehicle, Incorporated  
California Cattlemen's Association  
California Licensed Foresters Association  
California Mining Prospectors Association  
California Native Plant Society  
California Nevada Snowmobile Association  
California ORV Association  
California Sport Fishing Protection Alliance  
California Trout  
California Wilderness Coalition  
California Women in Timber

Center for Natural Resource Studies  
Central Valley Sportsman's Club  
Chamber of Commerce  
    Inyokern  
    North Fork  
    Porterville  
    Reedley  
    Ridgecrest  
    Springville  
Committee to Save the Kings River  
Defenders of Wildlife  
Equestrian Trails, Incorporated, Corral #56  
Federation of Fly Fishers  
Fly Fishermen for Conservation  
Fresno Audubon Society  
Friends of the Earth  
Friends of the River  
Friends of Wildlife  
High Sierra Stock Users Association  
Izaak Walton League of America  
Kaweah Delta Water Conservation  
Kern Audubon Society  
Kern County California Native Plant Society  
Kern County Cattlemen's Association, Incorporated  
Kern Plateau Association  
Kern River Fly Fishermen  
Kern River Valley Audubon  
Kern River Wildlife Sanctuary  
Kern Valley Indian Council  
Kern Valley Wildlife Association  
King's River Water Association  
Marin Conservation League  
National Audubon Society  
National Audubon Society, Kerncrest Chapter  
National Forest Products Association  
National Parks Conservation Association  
National Timber Faller's Association  
National Wildlife Federation  
Native American Heritage Committee  
The Nature Conservancy  
Northeast Californians for Wilderness  
Northern California Council Federation of Fly Fishers  
Northern California Log Scaling and Grading Bureau  
North Kern Property Owners Association  
OHV Advisory Committee  
Pasadena Casting Club, Incorporated  
Placer County Conservation Task Force  
The Planning and Conservation League  
Porterville Area Environmental Council  
Prince Associates, Incorporated  
San Gabriel Fly Fishers  
Scenic Shoreline Preservation Conference, Incorporated  
Sierra Center for Preservation of Biotic Diversity  
Sierra Club

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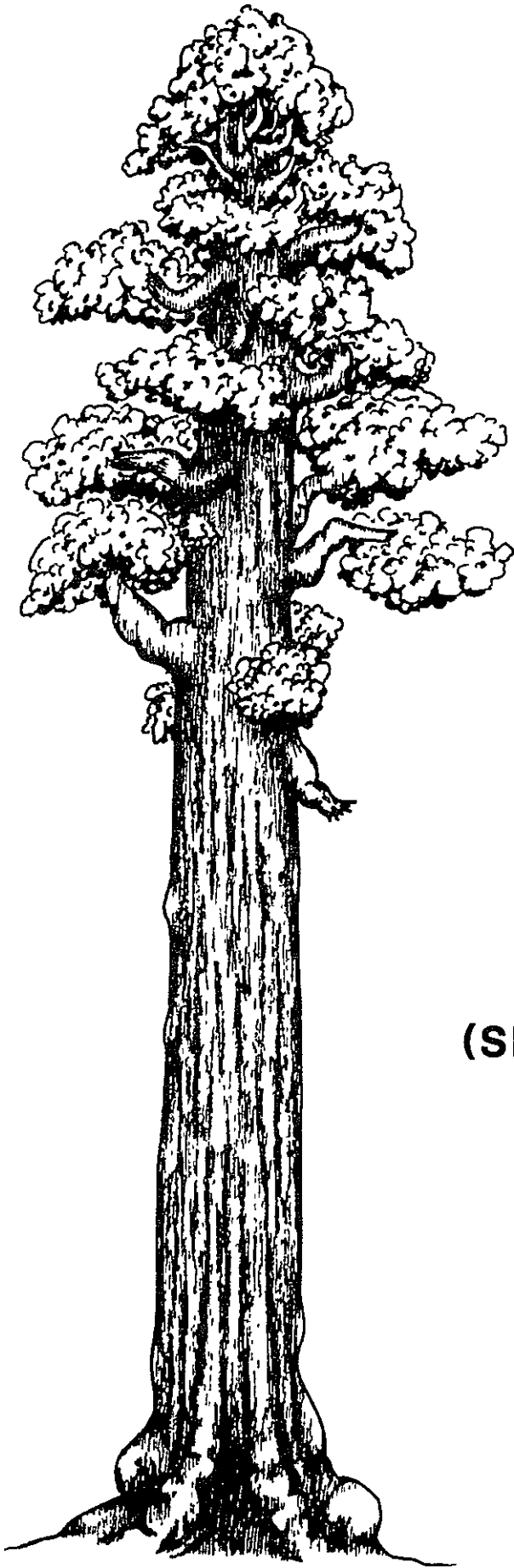
Angeles Chapter  
Kern/Kaweah Chapter  
National  
San Francisco Bay Chapter  
Southern California Water Resources  
Tehipite Chapter  
Sierra Pacific Flyfishers  
Society of American Foresters - Southern San Joaquin Chapter  
Southern Tulare County Sportsmen's Association  
South Sierra Mining Council  
Sportsmens Council of Central California  
Tulare County Audubon Society  
Tulare County Cattlemen's Association  
Tulare County 4-Wheel Drive Club  
Tulare County Taxpayers Association  
Tule River Tribal Council  
United States Recreational Skiers  
Upper Tule Association  
Western Forest Industries Association  
Western Region National Speleological Society  
Western Timber Association  
Western Wood Products Association  
The Wilderness Society

#### Industries and Permittees

Al Lowe Associates, Incorporated  
Armstrong Manufacturing Company  
Auberry Logs, Limited  
Larry Ballew, Forest Consultant  
D. M. Balman  
Bank of Yucca Valley  
**Bass** Fork Mini Mart  
Bates and Leslie Contractors  
Business Service System  
California Republic Bank  
Dennis Carver  
Chapman Chemical Company  
Collins Grading and Trucking  
Columbia Helicopters, Incorporated  
Copeland Lumber Yards  
Dale Ulsh Logging  
Don Baack and Associates  
"D" Stake Mill, Incorporated  
Economy Shoes  
Electrical Motor Shop  
Equestrian Trails, Incorporated  
F. A. Preuss Company  
Frank's Mountain Drilling Company  
Fred S. James and Company of California  
Gerald F. Bliss Landscaping  
Girl Scouts of America, Joshua Tree Council  
Graylift  
J. Less Guthrie

Hafenfeld Ranch  
H and W Tractor Company  
Hume Lake Cabin Owners  
Hume Lake Christian Camp  
Jad Canning Foundation  
J. C. Timber Company  
Ken's Stakes and Supply  
Kings River Expeditions  
Lavers Ranch  
Louisiana-Pacific Corporation - Standard, California  
Messer Logging, Incorporated  
Montecito-Sequoia Camp, Incorporated  
Muller Irrigation, Incorporated  
Munnell and Sherrill, Incorporated  
Norby Lumber Company, Incorporated  
Norco Windows, Incorporated  
Office Overload and Printing  
Orvis San Francisco  
Outdoor Adventures  
Pacific/Hoe Saw and Knife  
Pacific Gas and Electric  
Pennington Enterprises  
Porterville Ready Mix, Incorporated  
Quaker Meadow Camp  
R. M. Pyles Boys Camp  
Reliance Metalcenter  
Rogers Machinery Company, Incorporated  
Salvage Logging, Incorporated  
Sequoia Forest Industries - Dinuba  
Sequoia Saw and Supply Company  
Shannon Ranch  
Sierra Forest Products  
Stephen Smith  
Southern California Edison Company  
South Fork Timber Industries  
Spring Water Company  
Kermit L. Wagner, Agricultural Consultant  
Whitewater Voyages  
Winkenbach Logging  
Zephyr River Expeditions

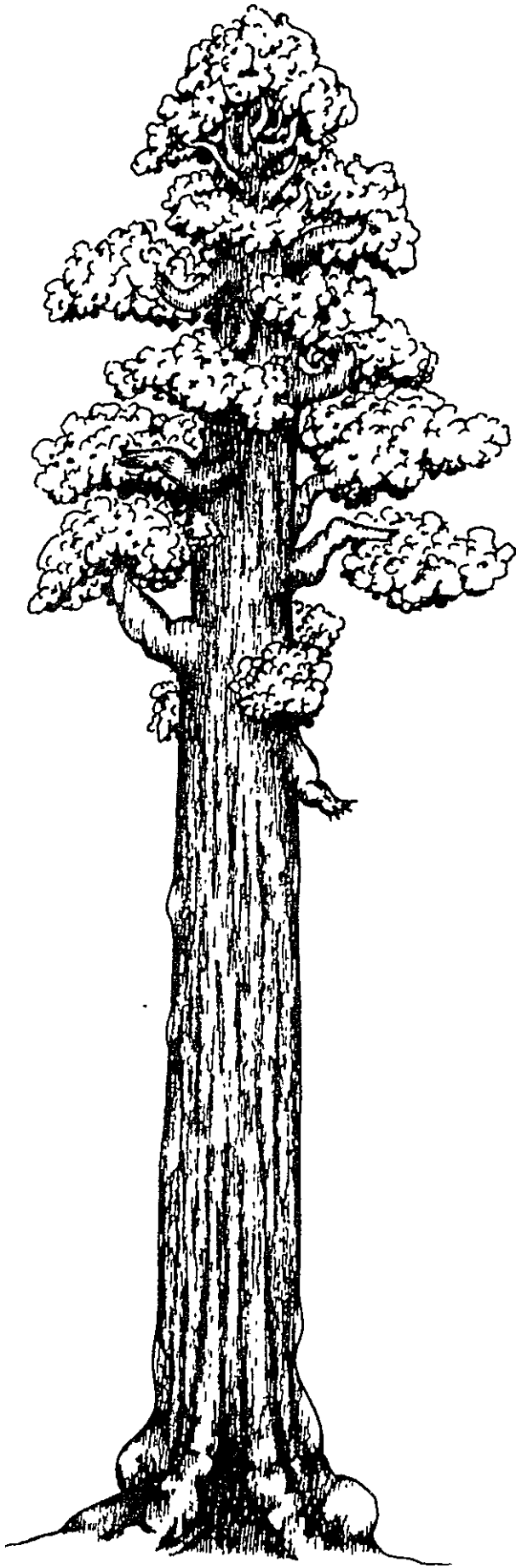




## Chapter 7

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**(SEE SEPARATE DOCUMENT)**



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United States  
Department of  
Agriculture



**Forest  
Service**

Pacific  
Southwest  
Region



# Sequoia National Forest Land and Resource Management Plan

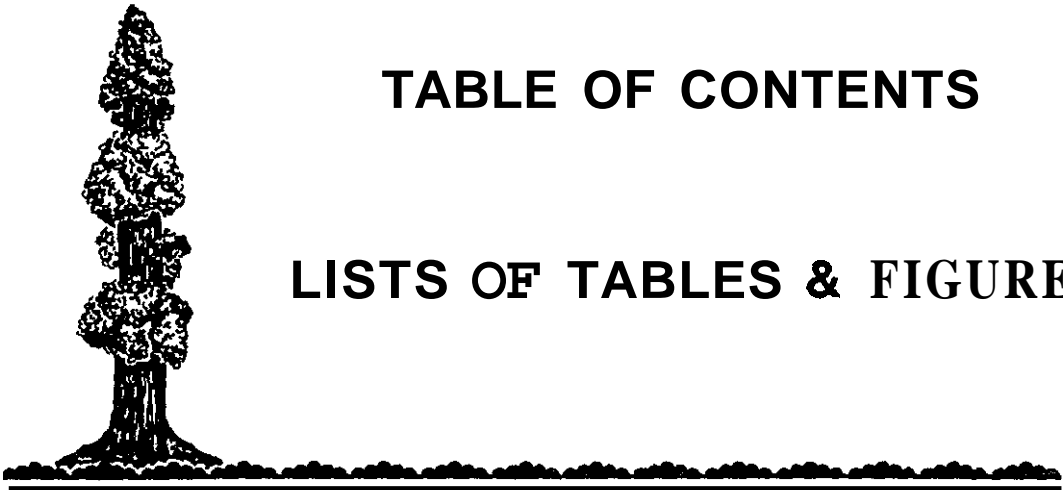
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**VOLUME 1**





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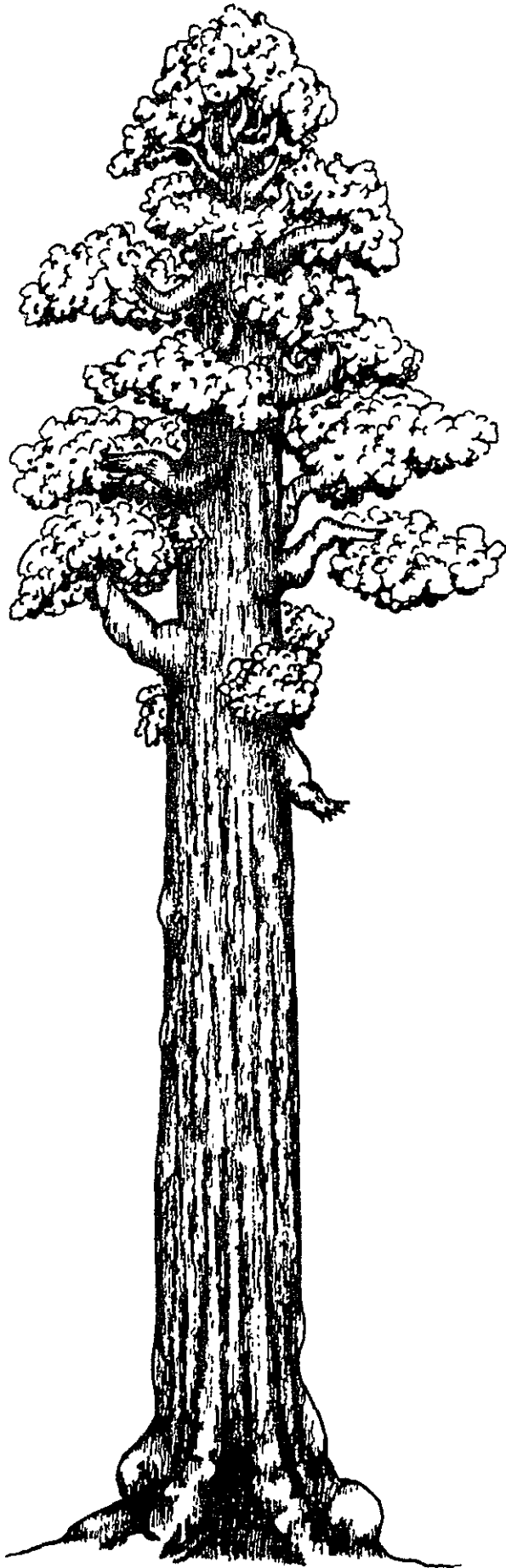
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**Appendix A**  
**ISSUES, CONCERNS**  
**AND**  
**OPPORTUNITIES**



## APPENDIX A

### ISSUES, CONCERNS, AND OPPORTUNITIES

#### I. Issues, Concerns, and Opportunities Identification Process

The following is a summary of the steps completed by the Forest to identify issues, concerns, and opportunities (ICO's). A more detailed description of the process follows in narrative form. Full documentation is located in Forest planning records in "Documentation of the Issues Identification Process Used by the Sequoia NF for Land Management Planning" - October 8, 1980. Further documentation is in the FEIS Appendix N "Summary of Public Response" to the Draft Plan and DEIS which summarizes critical issues.

#### SUMMARY OF THE SEQUOIA ISSUE IDENTIFICATION PROCESS

1. Preliminary issues package is developed by the Planning Team (PT) with Ranger/Staff review.
2. News releases made public, employee meetings held, and the issues package is distributed to obtain public input.
3. PT organizes and IDT reviews public comment on the preliminary screening criteria to provide final criteria.
4. PT organizes and makes preliminary analysis of public input on issues and questions.
5. IDT analyzes public input (as organized by PT) to revise the issues and questions and to produce preliminary Forest issues list.
6. PT organizes "identified" issues from public input and adds to IDT's preliminary Forest issues list.
7. The package from Step 6 is sent to Rangers/Staff for review and the addition of management concerns.
8. PT organizes management concerns and aggregates them with package from Step 6 to produce an issues and concerns package for IDT screenings.
9. IDT uses final screening criteria for screening issues and concerns package and produces draft Sequoia issues and questions.
10. IDT uses final screening criteria for screening draft issues and questions and produces Sequoia issues.
11. Sequoia issues sent to Rangers/Staff for final review and comment.
12. IDT considers Rangers/Staff comments and Sequoia issues package is recommended to the Forest Supervisor.
13. Forest Supervisor recommends issues to Regional Forester.

14. Regional Forester approves issues.
15. Rescoping of eight non-wilderness areas because of Ninth Circuit Court decision.
16. Responses reviewed by IDT and no new issues passed screening criteria.
17. Forest Supervisor recommends original issues without change.
18. Regional Forester approves original issues without change.
19. Public response on Draft Plan and DEIS.
20. Responses reviewed by Resource Specialists.
21. Forest Supervisor recommends the addition of two issues "Budget" and "Pesticides".
22. Regional Forester approves the two additions.

A. Narrative Description of the Scoping Process

Scoping for the planning process was formally started November 1, 1979, when a Notice of Intent (NOI) to prepare an environmental statement for the Forest Plan for the Sequoia National Forest was published in the Federal Register. At that time the nation-wide RARE II (Roadless Area Review and Evaluation) FEIS had been completed and the selected plan implemented. When scoping for Forest planning, the Forest Service was directed in 36 CFR 219.17 (September 30, 1982) that non-wilderness designated areas would be managed for uses other than wilderness. Because of the initial scoping done in late 1979 and through mid-1980, the Sequoia NF assumed that non-wilderness areas would be managed for non-wilderness uses and would not be considered in Forest planning as being available for possible Wilderness recommendation. This direction was subsequently changed in 1983 and rescoping was necessary. (This rescoping will be described in detail later in this section.) A schedule of four public meetings were included with the primary purpose of encouraging public participation in the initial identification of issues, concerns and opportunities.

The State Clearing House was sent 15 copies of the NOI on October 24, 1979, for distribution to State agencies. The Board of Supervisors in Kern, Tulare and Fresno counties were mailed the NOI on November 13, 1979. The Chairman of the Tule River Indian Reservation was mailed the NOI on November 13, 1979. The NOI was also mailed on November 13, 1979, to 12 additional persons representing the Native American Community within the Forest zone of influence. The names of these individuals are contained in the planning records.

In November 1979, the Sequoia NF Land Management Planning mailing list of approximately 1,000 people was screened by post cards and was updated in an effort to maintain contact with those who wished to participate in Land Management Planning.

The Forest was preparing, concurrently, a Preliminary Issues booklet from knowledge of public issues expressed during earlier planning activities. This booklet listed eight preliminary issues, preliminary screening criteria, a description of the overall planning process (with time schedule), an overview of the Forest, and a public response form. (A copy of this booklet is located in Forest planning records.) The booklet was mailed to the updated Land Management Planning mailing list on December 3, 1979. The public was asked to reply by January 7, 1980.

In November 1979, the scheduled public and employee meetings were publicized in the local newspapers and in the Forest newspaper "The Sequoian". To facilitate public participation, five evening meetings were held as follows:

- November 26, 1979 - Porterville;
- November 27, 1979 - Valencia;
- November 28, 1979 - Bakersfield;
- November 29, 1979 - Visalia; and
- December 6, 1979 - Kernville.

Similar meetings were held for employees at six locations as follows:

- November 26, 1979 - Porterville;
- December 11, 1979 - Kernville;
- December 12, 1979 - Hot Springs;
- December 12, 1979 - Springville;
- December 13, 1979 - Pinehurst; and
- December 14, 1979 - Bakersfield.

The Forest Planner attended scoping meetings held on adjacent Forests as follows:

- November 27, 1979 - Angeles National Forest; and
- April 16, 1979 - Sierra National Forest.

Other sessions held to facilitate scoping participation and input were:

- December 10, 1979 - California Department of Fish and Game in Fresno;
- January 22, 1980 - California State Resources Agency in Fresno;
- May 5, 1980 - Kern County Planning Department;
- May 8, 1980 - Sequoia and Kings Canyon National Parks at Ash Mountain;
- May 9, 1980 - Tulare County Planning Department; and
- May 28, 1980 - Bureau of Land Management, Bakersfield District.

As comments were received, the response was acknowledged by mail. Each respondent was given a unique identifying number which was assigned to their respective letter.

Meetings were held with the following native American groups to explain the scoping process and to facilitate input:

- June 23, 1980 - Kern Valley Indian Community (Tubatulabal, Paiute, Shoshone);

July 1, 1980 - Tule Indian Reservation Tribal Council; and  
August 8, 1980 - American Indian Council (Paiute, Kawaiisu).

The Forest received 97 written responses from the mailing of approximately 1,000 Preliminary Issues booklets, and from the 11 public and employee meetings held. Comments received were of the following types: comments on preliminary issues, proposed new issues or concerns, suggestions for resolving issues, comments on preliminary criteria, and many general or miscellaneous comments.

The comments received on the preliminary screening criteria were organized by the Planning Team (PT) by simply grouping the comments under their respective criterion. This grouping was done to speed up the review by the Interdisciplinary Team (IDT).

Public responses on the preliminary issues were first grouped by the PT under the eight issue headings contained in the Forest Issues package. Those not falling under the preliminary issues were either grouped into another potential issue topic or placed into a "miscellaneous" suggested issues or comments category. The PT then further grouped the responses under each preliminary issue into groups of similar ideas for ease in analysis.

The PT, during meetings held on April 7-10 and April 15-17, 1980, reviewed the public responses. The objective for the meetings was to provide to the IDT a complete first-cut list of Forest issues and questions based on public input. It was apparent in looking at the responses that many people tried to answer or comment on the questions listed under the issues of the issues package rather than suggest new ideas or questions which would help to resolve the preliminary issues or create additional issues. In general, public responses were used to:

- 1) form a new issue;
- 2) validate or modify one of the preliminary issues or questions;
- 3) develop a new question under one of the preliminary issues; or
- 4) provide comments to be considered in answering issue questions.

The steps taken above were documented directly on the conference paper which was retained as a planning document. Those public responses that provided suggestions for the solution of "Questions to be considered" were summarized and listed beneath the questions as "Public comments to be considered." This was done on conference paper and later incorporated into the April 23, 1980, revised issues package. These comments were to be retrieved when needed in future planning steps and used as public suggestions on how to resolve the issues.

After the PT had completed their preliminary processing of public input; the IDT (in meetings held on April 11 and 18, 1980) reviewed and modified the PT effort based on their evaluation of the public response. Several new issues were generated during these meetings. The IDT product was a list of potential issues and questions to be addressed in the Forest Plan.

During the April 18th IDT meeting, a determination was made that although all public responses had been used in developing the Forest Issues, those

responses suggesting or listing specific issues that the Forest should consider should be subjected to screening by applying the final screening criteria (as opposed to screening only those issues developed by the PT and IDT). Therefore, the PT sorted through all public input to identify and list those responses that were issues. These issues were appended to the IDT's list of issues. This package was then provided to the District Rangers and S.O. Staff for review. They were asked to submit any management concerns during that review.

The PT organized the Management Concerns that were submitted by employees, placing them in the same issue categories that were previously identified. Those concerns were then aggregated with the April 23rd Issues package to provide an **Issues** and Concerns list for final screening by the IDT.

On March 25, 1980, the IDT - after considering public responses - approved the issue screening criteria to be applied to the suggested issues and concerns.

The screening criteria are:

- 1) Include issues <sup>1/</sup> which are significant <sup>2/</sup> and require-prompt resolution (within this 10-year planning period).
- 2) Include issues where knowledge and technology will allow resolution, or is sufficient to initiate a positive course of action towards resolution.
- 3) Include issues which can be resolved at the Forest level (i.e., rather than be resolved through laws, regulations, policies and direction given in higher order planning document such as RPA and the Regional Plan).

The IDT (in meetings held on May 27, 29 and June 25-27, 1980) screened all of the "Additional issues specifically identified by the public" and the Management Concerns. This resulted in the modification of some of the previously identified issues and their associated questions. Most of those issues and concerns passing the screening criteria were considered to be facets of the various questions associated with the issues. Therefore, these issues and concerns were listed under the respective question for use later in the planning process as point of focus on the questions. Those issues and concerns failing the screening criteria were grouped into one document.

---

1/ "A subject or question of widespread public interest relating to management of National Forest System Lands, identified through public participation." (NFMA)

2/ In applying this criterion, the IDT recognized and discussed "significance" in terms of context, intensity, the geographic area, implications at other planning levels, and current validity (these aspects of "significance" were specified in ISM 1920.81b).

Based on earlier discussions and a review of all responses received during the issue identification process that were related to Riparian Zones and to Diversity, the IDT (in a meeting on July 21, 1980) decided that both topics were of enough significance to warrant issue status. The comments received pertaining to these two new issues which had been scattered under several of the earlier developed issues; and were, therefore, separated out and grouped together for reconsideration in developing the content of the questions to be formed under the new issues.

A final draft of Sequoia Issues developed from the previously described issues identification process was reviewed and subject to the screening criteria during an IDT meeting held on July 23, 1980. The product was an IDT recommended list of Forest Issues and their respective questions to be considered during the development of the Forest Plan. This list was sent to District Rangers and S.O. Staff for review and comment. The IDT acted on proposed changes and comments during a meeting on September 19, 1980.

**As** a last task prior to finalization of the Sequoia Issues package, a brief analysis was made of the relationship between the Regional Issues and those developed for the Sequoia NF.

In an IDT meeting held on September 26, 1980, a review was made of the entire Sequoia Issues package for final concurrence prior to its submission to the Forest Supervisor for his recommendation to the Regional Forester for approval.

The Forest issues were approved by the Regional Forester on February 5, 1981.

In 1979 the State of California challenged the adequacy of the RARE II Environmental Statement prepared as the basis for making the decisions for the allocations of the roadless areas to either Wilderness or non-wilderness use. In October 1982, the United States Court of Appeals for the Ninth Circuit affirmed a lower court decision which applied specifically to 46 roadless areas in California. As a result of the October decision, all roadless areas allocated to non-wilderness or wilderness in the RARE II FEIS were to be reevaluated. **For** the Sequoia this meant that rescoping was necessary for 12 non-wilderness allocated areas. Areas that were rescoped between June and December 1983, were: Staff, Black Mountain, Slate Mountain, Cannell, South Sierra, Jennie Lakes, Rincon, Domeland Additions II, Chico, Lyon Ridge, Mill Creek, and Greenhorn Creek.

The Forest intent to reevaluate roadless areas was published in the Federal Register June 2, 1983. Between July 21 and August 20, 1983, the mailing list was updated by sending post cards to those on the existing LMP mailing list. On September 6, 1983, an information packet was mailed to the updated mailing list of about 400. It contained an introductory letter explaining why the material was being sent and that comments should be received by October 21, 1983. A meeting was announced for October 6, 1983, to answer questions. The Notice of Intent, the schedule of public involvement, Sequoia Issues identified previously, and maps and descriptions of each of the 12 roadless areas were included in the mailing.

As a result of the above, the Forest received 45 written responses. Only one response suggested a new "issue". That issue was subsequently found not to qualify as an issue by the IDT during a meeting held on November 28, 1983. The Forest used the issues unchanged from those approved by the Regional Forester on February 5, 1981.

Other information which was received on wilderness attributes, resource values which might be foregone, suggestions on logical boundaries, and conflicting or nonconforming uses would be incorporated and/or considered as planning progresses.

The PT and IDT meeting notes and the publication, "Documentation of the Issues Identification process used by the Sequoia NF for Land Management Planning" - October 8, 1980, (which are available for review at the Forest Headquarters) provide a detailed record of the entire Issues Identification Process.

See FEIS Appendix N for summary of process of determining critical issues and the addition of two issues resulting from public responses to the Draft Plan and DEIS.

## 11. Consultation With Others

### A. Other Agencies and Indian Tribes

The following agencies and Native Americans were consulted during the planning process. The primary purpose for each contact is briefly stated.

#### Bureau of Land Management Contacts

- |                   |            |   |
|-------------------|------------|---|
| Bakersfield Dist. | - 1/16/80  | - Discussion of handling of Cypress joint study.                                      |
| Bakersfield Dist. | - 2/20/80  | - Cooperative Agreement signed and sent to BLM.                                       |
| Bakersfield Dist. | - 1/30/81  | - Telecon on handling coordination on WSA's.  |
| Bakersfield Dist. | - 3/3/81   | - Telecon regarding meeting - Brown and Boles.  |
| Bakersfield Dist. | - 5/7/81   | - Letter to BLM, we have minerals information for Rockhouse from San Bernardino.      |
| Bakersfield Dist. | - 5/8/81   | - Telecon need resource information for BLM WSA's by 8/15/81.                         |
| Bakersfield Dist. | - 8/6/81   | - Telecon Jerry Magee is our contact for Wilderness & Wilderness Study Areas (WSA's). |
| Bakersfield Dist. | - 9/17/81  | - Work planning - WSA's by 8/15/81.   |
| Bakersfield Dist. | - 9/21/81  | - Talked to Ed Lynch concerning the meeting for coordination.                         |
| Bakersfield Dist. | - 12/11/81 | - Letter information on BLM-FS WSA coop. agreement.                                   |
| Bakersfield Dist. | - 12/14/81 | - Letter on BLM WSA acreage adjustment.   |

- Bakersfield Dist. - 1/12/82 - Letter to BLM sending our WSA writeups for their areas.
- Bakersfield Dist. - 2/2/82 - Letter from BLM on our WSA writeups for their areas.
- Bakersfield Dist. - 3/25/82 - Letter from BLM to coordinate Cypress.
- Bakersfield Dist. - 3/25/82 - Letter from BLM to coordinate acres in Rockhouse WSA
- Bakersfield Dist. - 6/1/82 - Coordinate work planning.
- Bakersfield Dist. - 10/26/82 - Meeting on Hollister Resource Management Plan.
- Bakersfield Dist. - 1/7/83 - Meeting to coordinate Watt's WSA's decision.
- Bakersfield Dist. - 1/25/83 - Telecon to coordinate Watt-dropped WSA's.
- Desert Dist. - 1/25/83 - Telecon to coordinate WSA's dropped per Watt decision.
- Desert Dist. - 5/2/83 - Discussion of Condor Management Plan.
- Sacramento - 6/6/83 - Letter to minerals group on our adjusted schedule - Rockhouse.
- Bakersfield Dist. - 8/22/83 - Meeting to coordinate minerals input for BLM Rockhouse.
- Bakersfield Dist. - 8/23/83 - Telecon to coordinate minerals input for BLM Rockhouse.
- & BLM Sacramento
- Bakersfield Dist. - 9/27/83 - Meeting Ed Lynch on scheduling exchange and coordination.
- Caliente R.A. - 10/5/83 - Telecon on Black stain problem.
- Bakersfield Dist. - 11/23/83 - Status of their WSA writeups.
- Bakersfield Dist. - 11/28/83 - Copy of letter on Sequoia lead on South Sierra roadless area.
- Bakersfield Dist. - 12/12/83 - Planning coordination meeting with
- & Caliente R.A. - - District & R.A.
- Caliente R.A. - 12/28/83 - Letter to R.A. Manager requesting information on BLM WSA
- Bakersfield Dist. - 8/13/86 - Discuss Draft Plan and DEIS

Sequoia-Kings Canyon National Parks

- Ash Mountain - 5/8/80 - Meeting to determine ICO's.
- Ash Mountain - 3/18/81 - Telecon John Palmer - Park Wilderness proposal.

Amy Corps of Engineers

- Sacramento Dist. - 12/30/80 - Telecon coordination on planning.

State of California

- Office of Planning & Research - 1/22/80 - ICO identification meeting for Sierra, Inyo and Sequoia.
- Mountain Home - 6/25/80 - Meeting for ICO identification'.
- State Forest
- California Dept of Fish & Game - 2/1/82 - Received letter on review of Sierra EIS and Plan.
- Whittaker Forest - 4/5/82 - Telecon regarding their management plan.



- California Dept of Fish & Game - 4/8/82 - Received from Goss information on their review of new regulations.
- California Dept of Fish & Game - 8/27/82 - Sent Goss goals, standards and guidelines for planning.
- California Dept of Fish & Game - 10/19/82 - Rod Goss invited to MT meeting.
- California Dept of Fish & Game - 6/16 & 6/27/86 - Discuss Draft Plan and DEIS.

Native Americans

- Tubatulabal, Paiute, Shoshone Tule Reservation - 6/23/80 - ICO meeting (Wermuth).
- American Indian Council - 7/1/80 - Meeting with Tribal Council on ICO's (Alex Garfield et al).
- Kern Valley Indian Council - 8/8/80 - ICO meeting (Carmen Peebles et al).
- Kern Valley Indian Council - 9/1/86 - Discuss Draft Plan and DEIS.

Tulare County

- Planning Dept - 5/9/80 - Meeting with County on Forest-County coordination.
- Balch Park, Tulare County Park - 6/17/80 - No Plan to review - ICO identification.
- Planning Dept - 8/13/81 - Letter asking for comments on planning.
- Planning Dept - 10/27/81 - Letter to us on our interface areas.
- Planning Dept - 1/29/82 - Letter sent census information to them.
- Planning Dept - 3/26/82 - Meeting to brief them on our planning progress.

Kern County

- Planning Dept - 5/5/80 - Los Padres, Sequoia, County joint meeting to discuss planning efforts.
- Planning Dept - 11/25/80 - Attended County public meeting on Sketch General Plan.
- Planning Dept - 9/10/81 - Record comments on interface areas.

Fresno County

- Planning Dept - 5/21/80 - Letter request asking for their comments on ICO's and need for meeting.
- Planning Dept - 1/22/82 - Reoordination with them.
- Planning Dept - 10/27/82 - Telecon coordination discussion on planning.

City of Porterville

- Porterville City - 3/7/78 - Meeting with planner, discussion of ICO's and general profile of City.

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B. Describe Other Agency and Tribe Plans That **Were** Reviewed and How They **Were** Considered or Used During This Planning Process.

USDI Bureau of Land Management

California Desert Plan FEIS and Plan  
Benton-Owens Valley Bodie-Coleville Study Area DEIS

Both plans propose wilderness adjacent to Forest and set management direction for adjacent roaded lands. This information considered during formulation of alternative plans.

Final Intensive Inventory Roadless Areas Outside CDCA

Unroaded lands identified will be included in BLM Management Plan EIS's and will **be** considered when alternative plans for Forest are formulated.

Draft EIS South Sierra Foothills Plan

Propose Roadless Areas for wilderness or non-wilderness adjacent to Forest. Coordination needed to ensure compatible management in both agency's FEIS's.

USDI Sequoia and Kings Canyon National Parks

Mineral King Land Acquisition Plan

Does not directly affect our planning.

Cedar Grove Development Concept Plan

Coordination needed to ensure compatible management of adjacent lands.

Natural Resource Management Plan

Knowledge of management is needed to ensure coordinated management.

Statement for Management

Knowledge of policy direction allows formulation of Forest management direction which is most compatible with Park's.

Lodgepole Valley, Grant Grove and Redwood Mountain Development Concept Plans

Knowledge of the Park's management direction allows formulation of Forest management direction that is most compatible with the Park's.

Backcountry and Meadow Management Plans

Knowledge of the Park's management allows formulation of Forest management direction that is compatible.

## Corps of Engineers

### Corps of Engineers Lake Isabella Master Plan

Knowledge of this plan will influence recreation components in Forest Alternative Plans. Also Corps direction will be considered when making recommendations on the South Fork of the Kern Wild and Scenic River which terminates at Lake Isabella.

## State of California

### "As Their Land Is." Office of Planning and Research

This information useful for scoping. This land ethic conference represents an expression of public wants and desires.

### Recreation In California. Issues and Actions 1981-1985

This document describes recreation issues and problems. It suggests solution strategies - some of which relate to recreation on public land. These items were considered as a part of Forest issues, concerns, and opportunities.

## Tule Indian Reservation

### Reservation Plan (dated 12/73)

The Plan does not specifically identify opportunities to coordinate management but known opportunities include coordinating transportation planning and ensuring maintenance of water quality.

### Range Conservation Plan (dated 1/79)

This Plan describes range management on the Reservation and does not specifically identify opportunities in the Forest.

### Timber Management Plan and Forest Improvement Program (dated 10/77)

This Plan describes timber management opportunities specifically on the Reservation.

## Fresno County

### Fresno County Sierra-South Regional Plan

This regional plan reviewed to further coordinate management between private and Forest lands.

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Tulare County

Tulare County General and Foothill Growth Management Plan

Will allow development of coordinated nonconflicting management direction for adjacent Forest land.

Kern County

Kern County General Plan

Knowledge of County plan will allow us to ensure maximum compatibility of direction on Forest land as it may affect private landowners.

Kern County Havilah and Pines of Havilah Specific Plan

Primarily reviewed for fire prevention and control compatibility with adjacent Forest land.

C. Other Consultations

Listed below are contacts other than general public involvement activities listed in chronological order.

Telephone calls to the Sierra and Inyo National Forests to coordinate planning are so frequent that no record is kept on a regular basis. On the average, the Forest has talked by phone with both Forests two or three times per month for the last four years. The same is true with calls to BLM's Bakersfield District. They have been contacted by phone about once per month for the past 3-1/2 years.

Mid 1979	Provided roadless area boundaries to Tehipite Chapter of Sierra Club.
7/11/79	Meeting with Sierra NF and Tehipite Chapter of Sierra Club in Fresno to discuss planning in general.
1/13/80	Meeting in Claremont of South Zone planners to coordinate planning.
1/15/80	Program presented to Tulare County Practicing Planners on Sequoia Planning process.
1/22/80	Meeting in Sacramento with State Resources Agency to hear their scoping concerns.
5/22/80	Sierra public meeting on their scoping document. Attended by Sequoia to coordinate with them and hear public comments.
5/28/80	Meeting with BLM Bakersfield District for scoping and coordination in handling roadless and WSAs.
6/17/80	Meeting with Mountain Home State Forest for scoping.

7/1/80 Meeting with Tribal Council representatives **for** scoping.

8/8/80 Meeting with American Indian Council for scoping.

8/15/80 Meeting with Sierra Club and Audubon Society representative at their request to brief them on planning process.

9/4/80 Meeting with BLM to discuss coordination with their Desert planning.

9/8/80 Meeting with South Zone planners to coordinate and identify common tasks.

10/28-29/80 Meeting with Central Zone Forest and Regional Office to discuss planning direction.

10/30/80 Meeting with South Zone planners to coordinate completion of common tasks.

11/25/80 Meeting with Kern County discussion of sketch map for general plan update.

1/13/81 Meeting with South Zone planners and Supervisors on identification of zonal resource information needs.

1/26/81 Meeting with BLM Bakersfield on information needed from them for WSAs.

2/3-4/81 Meeting with South Zone Forests to discuss incorporation of fire planning into Forest Planning.

2/5/81 South Zone Forests coordination meeting.

2/17/81 Meeting with Sierra Club representative at his request to explain planning progress.

2/18/81 Meeting with Eldorado NF to learn of their handling of transportation analysis for planning.

2/23/81 Meeting with Central Zone Forests to discuss capability area structure.

2/24-25/81 Central Zone Forests and Regional Office meeting to discuss planning direction.

3/17/81 Meeting with BLM Bakersfield to coordinate planning between agencies and discuss Interagency Agreement for planning effort.

3/26/81 South Zone specialists meeting in Ontario to coordinate resource information production.

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4/1/81 South Zone planners meeting in Claremont to coordinate planning between adjacent Forests.

4/14-16/81 South Zone meeting and training in development of prescriptions.

4/28/81 Meeting of Forest and Regional Socioeconomists to discuss planning direction and IMPLAN.

4/30/81 Meeting of South Zone specialists to coordinate handling of Range, Wildlife and vegetation.

5/27/81 South Zone mineral group meets with Forest to discuss minerals information they provided.

6/1/81 Meeting with BLM Bakersfield to discuss handling of WSA's.

6/2-3/81 South Zone planners meeting for planning prescription training.

7/13-14/81 South Zone planners meeting for general coordination between Forests.

8/3-4/81 Meeting of South Zone planners to discuss planning prescriptions.

8/6/81 Meeting with Kern County, review of General Plan update.

9/15-16/81 Meeting of South Zone planners and Supervisors description of program and identification of coordination needs.

1/28/82 Meeting of South Zone planners on discussion of systems needs, resource information coordination and standards and guidelines.

2/2/82 Rod Goss from California Department of Fish and Game joins planning team on two-year assignment.

2/17-18/82 Meeting of planners with Regional Office personnel on LMP direction, support priorities and data bases.

3/9/82 Meeting in Fresno of Central Sierra Forest to discuss spotted owl management.

3/25/82 Meeting of South Zone planners and Supervisors. Discussed RPA link to planning, need for S.O. staff to R.O. Staff contact.

3/26/82 Meeting with Tulare County planners to brief them on our progress and discuss coordination of direction that could affect private land.

3/31/82 Meeting with Sierra Club representative at his request to discuss planning progress in general.

- 5/18/82 Meeting in San Bernardino to discuss handling of social assessment in planning.
- 6/22/82 Attended BLM public meeting in Fresno to discuss South Sierra Foothill planning.
- 7/7/82 Meeting with Inyo NF planning group in Ridgecrest to coordinate data gathering, data storage and retrieval, and handling of shared Roadless Areas.
- 7/15/82 Meeting in Sonora of Central Zone Forest to discuss handling of Fire Plan during Forest planning.
- 7/16/82 Meeting with Western Timber Association representatives at their request to review planning progress, constraints and production functions.
- 7/27/82 Meeting with Southern California Edison to discuss potential hydroelectric sites.
- 9/20/82 Meeting of Central Forest with Tahoe NF to discuss their planning and review their rough DEIS.
- 1/5/83 Meeting South Zone planners on update of progress document review procedure.
- 2/1/83 Meeting with Central Zone Forests in Fresno to discuss handling of spotted owls.
- 2/15/83 Meeting with Southern California Edison, discussion of planning progress in general.
- 2/22-23/83 Meeting of Forest planners with Regional planners. Discussion on handling of Roadless Areas, analyze requirements, and document review process.
- 3/18/83 Presentation of Forest planning process to Southern California Watershed Fire Council.
- 5/2/83 Meeting with Eldorado NF to discuss use and structure of FORPLAN for planning.
- 7/18-20/83 Meeting of Forest planning staffs with Regional Office (RO) planners. Discussion of what new planning direction will be and organization to carry it out. Discussed rescoping of Roadless Areas.
- 8/17/83 Meeting with Sierra Club representative at his request on planning progress in general.
- 8/23/83 Meeting with Regional Office wildlife group on wildlife constraints for planning.

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- 9/27/83 Meeting of South Zone planners to discuss data matrix check procedures and to schedule for completion of document reviews. Agreed to exchange data on costs by activities.
- 9/28/83 Meeting with BLM representative to exchange information on planning and their participation.
- 10/18/83 Meeting with Klaus Barber on structure of Sequoia's FORPLAN model and opportunities to streamline it.
- 11/14/83 Meeting of Forest and Regional planners to review new planning direction.
- 12/2/83 Meeting with Sierra and Stanislaus to discuss handling modeling of wildlife in FORPLAN.
- 12/6/83 Meeting with CALTRANS to discuss possible extension of Highway 190 across Sierra Nevada.
- 12/7/83 Meeting of Central Zone Forests to discuss soil and water coordination.
- 12/14/83 Meeting with Central Zone Forests to discuss FORPLAN matrix for first check point.
- 1/11/84 Meeting with Central Zone Forests on FORPLAN matrix review.
- 1/12/84 Meeting with Central Zone Forests to discuss handling of watershed, soils and fishery resources for planning.
- 1/16/84 Meeting with Sierra and R.O. planners to agree on handling of shared Roadless Area.
- 4/10/84 Meeting with Western Timber Association to allow review of assumptions and values.
- 4/23/84 Meeting with Sierra Club representative to describe planning progress.
- 6/22/84 Meeting with Tulare County Planning representatives to discuss urban interface areas and our planning in general.
- 8/9/84 Met with Audubon Society representative to discuss Alternatives and planning progress.
- 8/14/84 Gave California Department of Fish and Game, Region IV, copy of plan alternatives and issues resolution paper for review and comment.
- 8/17/84 Discussion with BLM District Office on Rockhouse WSA and our EIS presentation.
- 8/27/84 Meeting with BLM Caliente District representatives to coordinate our handling of their WSA in planning.



- 10/25/84 BLM representatives attended Forest Management Team Meeting to review and discuss our handling of their WSA.
- 10/26/84 Sent BLM District Office our planning schedule and Further Planning and Wilderness Study Areas outline.
- 11/12/84 Send Inyo NF emphasis map and W&SR map for coordination purposes.
- 12/3/84 Talked to Inyo NF planner and discussed information sent 11/12 regarding coordination at boundary.
- 12/3/84 Meeting with Sequoia and Kings Canyon National Parks representatives to coordinate our planning. Wilderness Management, Fire Management, and W&SR recommendations were the primary subject.
- 12/4/84 Meeting with Western Timber Association and Industry Committee at their request. Benchmarks and alternatives were reviewed and discussed.
- 12/13/84 Talked to BLM District Office regarding prescriptions to use for alternatives on their WSA.
- 12/17/84 Talked to BLM District Office regarding the wilderness prescription to use for their WSA.

The Public Participation Process for release of the Draft Forest Plan and Draft Environmental Impact Statement began November 11, 1985. Subsequent involvement activities were:

- 11/85-9/86 Numerous meetings with a broad range of interests regarding their input.
- 11/18/85 News release of availability of Draft Plan and Draft EIS for public review and comment with comment period to March 28, 1986.
- 11/18/85 Mail out of Draft Plan and DEIS to those on LMP mailing list and libraries statewide. Subsequently, others requesting were sent copies also.
- 11/29/85 Notice of Availability of Draft Plan and DEIS published in the Federal Register.
- 11/29/85 Notice of Availability of Draft Plan and DEIS - article in Internal Sequoia National Forest newsletter to inform employees and retirees.
- 12/85 Held meetings on all Forest Ranger Districts and Supervisor's Office to brief employees about Draft Plan and DEIS.

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- 1/7 - 3/5/86 Public meetings to present and discuss Draft Plan and DEIS:  
Kernville - January 7, 1986;  
Bakersfield - January 9;  
Palmdale - January 14;  
Porterville - January 16;  
Visalia - January 21; and  
Ridgecrest - March 5.  
News releases were also made just prior to each meeting.
- 1/30/86 Overview of LMP Program given to Lake Isabella Exchange Club.
- 1/31/86 Meeting with publishers of Kern Valley Sun to discuss IMP - Resource Management.
- 2/20/86 Meeting with California Department of Fish and Game officials to discuss IMP and Spotted Owl Management.
- 3/86 News release announcing extension of comment period to April 28, 1986 and Public Hearing dates.
- 3/86 Notice of extension and hearing dates in Federal Register.
- 3/86-6/86 Public response coding, analysis and synthesis.
- 3/11/86 Meeting with Kern County Cattlemen's Association to discuss Range Management and LMP.
- 3/21/86 Amendment to Notice of Availability of Draft Plan and DEIS and Notice of Public Hearings and dates - Published in the Federal Register.
- 4/86 Conducted Public Hearings:  
Visalia - April 10, 1986; and  
Kernville - April 17, 1986.
- 4/1/86 Meeting with Kern County Cattlemen's Association to discuss Range Management and LMP.
- 4/25/86 Meeting with Roy Ashburn, Kern County Supervisor.
- 4/28/86 Official public comment period on Draft Plan and DEIS ended. Each resposdee received a postcard verifying receipt of their written comment.
- 5/1/86 Meeting with timber purchasers to discuss Timber Program and IMP.
- 5/7/86 Meeting with Pyles Boys Camp officials to discuss LMP issues.
- 6/1/86-11/7/86 Several Forest Management Team meetings to develop additional modified alternatives, finalize critical issues, and develop Preferred Alternative.

- 6/4/86 Meeting with Poso Cattlemen to discuss Range Management and LMP.
- 6/5/86 Field trip with Tulare County Board of Supervisors to discuss Forest Issues.
- 6/6/86 Field trip on Tule River Ranger District with Dwight Willard, Save-the-Redwoods League, to discuss management of giant sequoias and LMP.
- 6/7/86 Attend meeting of Sportsman Council of Central California and discuss Forest wildlife program and LMP.
- 6/16/86 Meeting with California Department of Fish and Game officials to discuss wildlife management and LMP.
- 6/27/86 Meeting with California Department of Fish and Game officials to discuss wildlife management and LMP.
- 6/28/86 Attended meeting of Kaweah Flyfishers Association and discussed fishery management and LMP.
- 7/31/86 Meeting with Pyles Boys Camp officials to discuss camp objectives and LMP.
- 8/18/86 Meeting with California Department of Fish and Game officials to discuss LMP issues.
- 8/21/86 Meeting with Kerncrest Audubon Society representatives to discuss LMP issues.
- 8/26/86 Meeting with Mining Group Interest representatives in Kern Valley at Kernville to discuss LMP issues.
- 8/27/86 Meeting with local timber operators to discuss LMP issues.
- 8/28/86 Meeting in Bakersfield with the Sierra Club and Native Plant Society representatives to discuss LMP issues.
- 8/28/86 Meeting with Kern Valley High Sierra Stock Users Association representatives and Equestrian Trail Inc. Corral representatives of Ridgecrest to discuss LMP issues.
- 8/29/86 Meeting with Kern Valley Wildlife Association representatives to discuss LMP issues.
- 8/31/86 Meeting with Kennedy Meadows Property Owners Association representatives to discuss LMP issues.
- 9/1/86 Meeting with California Off-Road Vehicle Association (CORVA) representatives to discuss LMP issues.

- 9/1/86 Meeting with Kern Valley Indian Council representative to discuss LMP **issues**.
- 9/13/86 Meeting with High Sierra Stock Users Association members to discuss LMP and volunteer projects.
- 10/31/86 Field trip on Tule River Ranger District with Kern Valley Wildlife Association and Sierra Club members to discuss timber management program, giant sequoia management, and LMP.
- 11/25/86 Tulare City Noon Lions Club meeting to discuss LMP and other Forest programs.
- 11/25/86 Executive review with Regional Forester of Forest Plan, Plan Issues, and Issue Resolution.
- 12/29/86 Meeting with Sierra Club representatives to discuss LMP and timber management program.

The Forest Supervisor met with representatives of the following organizations and discussed LMP on the dates indicated:

Forest Products Industries: 1/24/86; 2/14/86; 3/5/86; 3/25/86; 3/31/86; 6/10/86; 8/28/86; and 12/15/86.

Sierra Club: 2/20/86; 3/14/86; 4/25/86; 7/7/86; 9/18/86; 9/20/86; 11/20/86; and 8/28/87

Sierra Club  
 Kern-Kaweah Chapter: 1/15/87  
 Joe Fontaine and Gordon  
 Nipp: 1/16/87  
 Joe Fontaine: 6/26/87

Tulare County Supervisors: 2/20/86; 3/11/86; and 6/5/86.

Congressional Assistants to  
 Congressman Thomas: 9/4/86;  
 Congressman Pashayan: 9/30/86.

Utility Company Representatives: 2/20/86; 4/24/86; and 5/21/86.

High Sierra Stock Users  
 Assn Representatives: 2/20/86; 5/2/86; and 9/2/86.  
 Public Lands Committee: 1/5/87

Kaweah Flyfishers and  
 Kings River Interests  
 Representatives: 2/28/86; 6/28/86; and 8/12/86.

Kern Kaweah Flyfishers: 8/18/87

California Dept of Fish  
and Game Officials: 3/13/86; 5/30/86; 4/24/87; and 5/7/87

Trust for Public Lands: 6/24/86

BLM Area Officials: 8/13/86

Pyles Boys Camp Officials: 8/28/86  
Board of Directors: 5/16/87

Kern Valley Wildlife  
Assn: 1/13/87; and 3/4/87  
Representatives: 9/24/86

National Parks and  
Recreation Assn  
Representatives: 10/24/86

Interagency Members: 12/1/86

Cal-Poly Students at  
Cal-Poly: 2/9/87

Watershed Fire Council: 3/20/87

Coop Fire Meeting with  
Kern County, BLM, etc.: 6/3/87

Mountain Meadow Workshop  
(several other agencies): 7/21/87

At least two dozen discus-  
sions about LMP with County  
Boards and Congressional  
Delegations: 1/87 - 10/87

Forest Management Team - Land Management Planning Team

- Reviewed monitoring plan, vision statements, FORPLAN runs and schedules: 1/15/87
- Review Record of Decision: 2/12/87
- Review results of executive review: 3/30/87
- Spotted owl update, range of alternatives, schedules: 7/6/87
- Analysis of effects spotted owl management on Forest management: 8/25/87
- Reviewed analysis of PRF Alternative with various proportions of uneven-aged management: 9/28/87

Region 5 - Land Management Planning Meetings

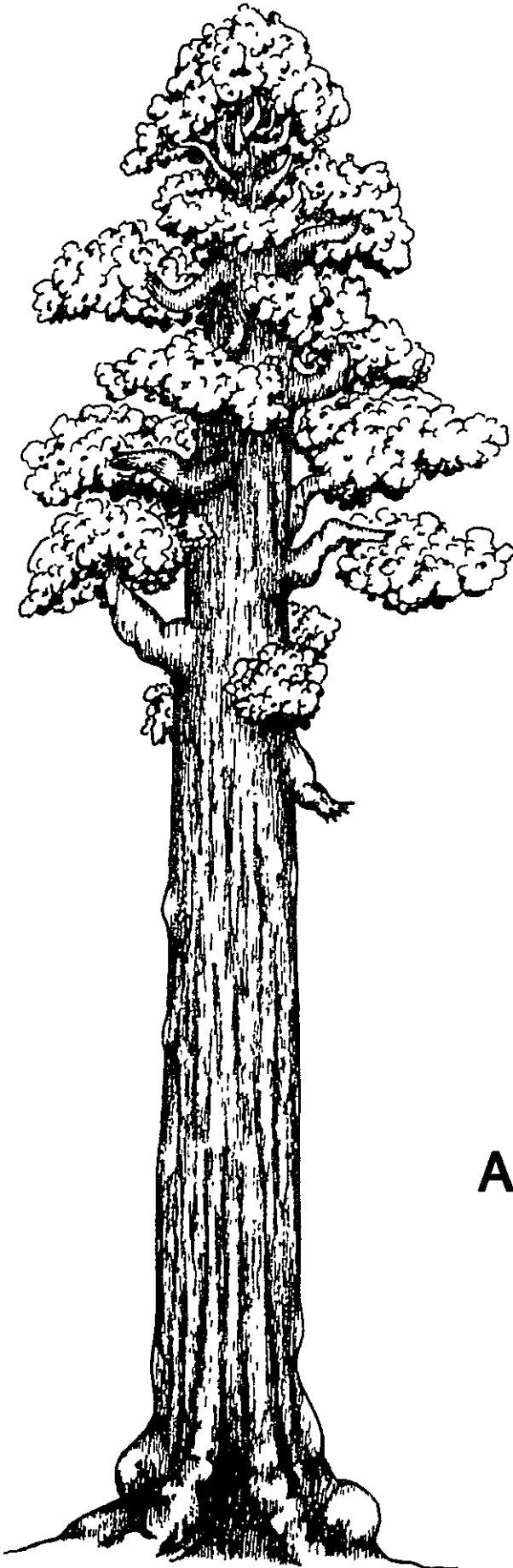
- RO - IDT technical review of (draft) final documents (FEIS, Plan, Record of Decision): 3/9-10/87
- Executive review of (draft) final documents: 3/23/87
- Met with RO Staff regarding revision of spotted owl network and modeling: 4/8-10/87

Delay of Land Management Plan announced

The Forest sent out a news release to the public announcing delay of the release of the Final Land Management Plan. Postcards were sent to people on the IMP mailing list on June 20, 1987.

III. The Selected Issues, Concerns and Opportunities

- A. The list of selected Issues, Concerns and Opportunities can be found in Chapter 1.C. of the EIS.
- B. The degree to which Issues, Concerns and Opportunities are resolved by the Alternatives can be found in Chapter 2.E.5 of the EIS.
- C. A discussion of how **Issues**, Concerns and Opportunities were used to formulate Alternatives can be found in Chapter 1.C. and Chapter 2.B. and 2.E.4. of the EIS.



**Appendix B**  
**MOQELING**  
**AND**  
**ANALYSIS PROCESS**

## APPENDIX B

### THE MODELING AND ANALYSIS PROCESS

#### I. INTRODUCTION

The purpose of this appendix is to present a technical discussion of the analysis process. The models used (including the basic assumptions, model components and inputs, modeling rules and methods, and the modeling constraints imposed along with their rationale and impacts) are described in detail. Information presented in this chapter supplements the broader and less technical descriptions included in the body of the FEIS. See Chapter 2 Section B for a description of the overall process; Chapter 2 Section C for the result of the benchmark analysis; and Chapter 2 Section E for additional discussion of the alternatives.

The analysis process revolves around the optimization model, FORPLAN (Johnson et al., 1980). FORPLAN guarantees the formulation of feasible and cost efficient alternatives and benchmarks, and performs detailed accounting work needed to construct the display tables in the FEIS. Additional simulation models are used to generate input data for use in FORPLAN. The National Fire Management Analysis System (FIREPLAN) generates fire management costs and resource effects associated with varying fire management organizations. Outputs from FORPLAN are used in habitat capability models to estimate effects on wildlife and fish populations. A more detailed description of each of these models is included in this appendix.

It should be kept in mind that neither FORPLAN nor any other model can perfectly represent the "real world". Therefore, results from the modeling process are only approximations of what to expect when alternatives are further developed into applied action plans. Since the objective of modeling is to provide insight and clarify knowledge, an approximation is fully adequate to compare alternative management strategies against one another. In this way a choice between alternatives can be made even though the model may lack precision in describing specific attributes within a given alternative.

#### 11. FOREST PLANNING MODEL (FORPLAN)

##### A. Overview

FORPLAN is a specialized matrix generator and report writer for a standard linear programming algorithm (FMPS). Linear programming is a standard mathematical technique for solving simultaneous linear equations subject to a certain set of constraints and a particular objective function. In its simplest form this is expressed mathematically as:



Maximize:  $z = c_1x_1 + c_2x_2 + \dots + c_nx_n$  (Objective function)

Subject to:  $a_{11}x_1 + a_{12}x_2 + \dots + a_{1n}x_n \geq b_1$

(Constraint set)  $a_{21}x_1 + a_{22}x_2 + \dots + a_{2n}x_n \leq b_2$

$a_{m1}x_1 + a_{m2}x_2 + \dots + a_{mn}x_n = b_m$   
 $x_j \geq 0$

These mathematical expressions can also be shown in the following matrix:

	Column j=1	Column j=2	Column j=3	Column j=n	Cons- straint Type	Right hand side con- straint
Obj. Function	$c_1x_1$	$c_2x_2$	$c_3x_3$	$c_nx_n$		maximize
Row i=1(Timber)	$a_{11}x_1$	$a_{12}x_2$	$a_{13}x_3$	$a_{1n}x_n$	$\geq$	$b_1$
Row i=2(Land)	$a_{21}x_1$	$a_{22}x_2$	$a_{23}x_3$	$a_{2n}x_n$	$\leq$	$b_2$
Row i=m	$a_{m1}x_1$	$a_{m2}x_2$	$a_{m3}x_3$	$a_{mn}x_n$	$=$	$b_m$
				$x_j$	$\geq$	0

In the FORPLAN formulation, the linear equations (rows) represent resource production functions, costs, and acreage or other types of constraints. For example, row 1 might represent timber production; row 2 might represent total cost; row m might represent acres burned by wildfire. The columns (j=1, n) represent the different activities (prescriptions) which can occur over time on specific units of land called analysis areas (represented by  $x_j$ ). The  $a_{ij}$ 's in the matrix are the production, cost, or resource coefficients associated with each prescription/analysis area combination.

The  $b_i$ 's are the right-hand-side constraints representing exact amounts (=) or upper ( $\leq$ ) or lower ( $\geq$ ) constraint levels that must be met. In the example above, if row 1 represented timber production, the interpretation of the constraint  $a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + \dots + a_{1n}x_n \geq b_1$  would be the total amount of timber produced from all prescription and analysis areas must be greater than or equal to the amount  $b_1$ .

The FORPLAN model was built by representing the production functions, costs, values, and resource supplies for the Forest in the mathematical format described above. For the Sequoia NF. the resulting model contained approximately 2,500 columns and 18,000 rows. Once the model was formulated, a number of test runs were made to check the model for reasonableness and to make additional calibrations. Land allocations, activity and

output schedules, costs, benefits, and present net value were developed by altering the objective function and constraint set to meet the theme of each alternative and benchmark and then running the model.

Unique constraint sets were developed to represent Minimum Management Requirements (**MMR's**), Timber Policy Constraints (TPC's), Minimum Implementation Requirements (MIR's), Forest specific requirements, specific land allocations, and output schedules needed for individual alternatives.

An iterative process was used to formulate these constraint sets prior to making final FORPLAN runs for the alternatives and benchmarks (see sections G, H, I, and J of this appendix).

FORPLAN was used to determine the cost efficient mix of goods and services that could be produced from the Forest given the objectives and constraints of each alternative. The trade-offs made among alternatives were examined and the costs and benefits associated with each objective or constraint measured. This analysis provided a way of indirectly evaluating the non-priced benefits by measuring the amount of present net value (PNV) foregone. The final criterion used to evaluate alternatives was net public benefits (NPB), which is the PNV plus consideration of nonquantifiable Forest resource benefits. Economic analysis of tentatively suitable timber lands required by CFR 219.14(b) is inherent in FORPLAN modeling design including the PNV objective function.

Management activities modeled in FORPLAN were identified by resource specialists and approved by the Interdisciplinary Team (IDT). This pre-FORPLAN analysis included:

1. The activities that could be applied to National Forest System lands.
2. Those activities that could be modeled in FORPLAN.
3. The kinds of land to which each activity could be applied.
4. The costs, outputs, and benefits which would result from the application of each activity to a specific type of land.
5. The compatibility of activities when applied to the same land area.

This provided the basis for a matrix of all possible management activities which could be modeled and their associated costs, outputs, and benefits.

Activities which were desired but were not modeled in FORPLAN required the use of additional constraints. The cost of doing these activities was the reduction in PNV caused by the application of the additional constraints.

## B. Land Units

Capability areas are the smallest unit of land (or water) used in forest planning. They are discrete and recognizable units classified primarily according to biological (e.g., vegetation) and administrative (e.g., county lines, Forest boundary, Roadless Areas) factors. All land within a capability area is homogeneous in its ability to produce resource outputs and in its production limitations. The Sequoia NF has 19,000 capability areas.

Capability areas were developed by overlaying existing map information. The Wildland Resource Information System (WRIS) was used to calculate capability area acreages and to number each area for identification in the data base (Forest Planning File). The Forest decided what information was needed for each capability area to assess resource opportunities and public issues; and, then, collected that information about each area. Different resource attributes were determined for each capability area. (See Sequoia NF's Planning File for detailed discussion of resource data collected.) This information was entered into a computerized data base system at Fort Collins Computer Center. Once entered into the system, information on capability areas could easily be retrieved, sorted, aggregated, and analyzed.

Because of their large number, individual capability areas could not be used in FORPLAN. Use of such a large number of land units would be cumbersome, expensive, and would have exceeded the matrix size limits that can be utilized in FORPLAN. Analysis areas were created to handle this problem. Analysis areas are an aggregation of like capability areas with sufficiently similar physical, biological, and administrative conditions such that they would probably respond in a like manner to management activities. Each capability area was given an analysis area identifier so the data base could be queried for the land information needed to build the FORPLAN model.

The delineation of the analysis areas required several steps.

The analysis areas were defined using the physical and biological attributes proposed by the resource specialists as a level of stratification, or level identifier in FORPLAN. Because FORPLAN could accommodate only six level identifiers, the number of attributes initially selected by the resource specialists were greater than could be used. This forced the ID Team to select the most critical attributes necessary to address the planning problems and to consider the reliability of the data for making yield and cost estimates.

The selection of which resource outputs to monitor in FORPLAN was guided by the problems identified by the Forest issues, concerns, and opportunities.

The Sequoia identifiers are as follows:

Identifiers

<b>*LEVEL1</b>		<b>Issues Areas "Forest ICO and Program Areas"</b>
NF	FOREST	NF: Forest-Wide activity-Outputs (Area=Forest)
FP	FIR-PR	FP: FFP Fire Program - Forest-wide
RP	RCN-PR	RP: Range Program - Improvements
WP	WLF-PR	WP: Wildlife Program - Improvements
RC	REC-PR	RC: Recreation Program - Improvements
DS	DESIGN	DS: Designated-Classified Areas Fix Allocations
AL	ALLOCA	AL: Allocated (Fix) for the Alternative
DN	FP-DEN	DN: Further Planning Area: Dennison
MS	FP-MOS	MS: Further Planning Area: Moses
KR	FP--KR	KR: Further Planning Area: Kings River W & S River
CF	GENFOR	GF: General Forest - Open Allocation
H1	SOT-H1	-1: HLRD SOHA-1, Group of 3 Spotted Owl Habitat Areas
H2	SOT-H2	-2: HLRD SOHA-2, Individual Spotted Owl Habitat Area
H3	SOT-H3	-3: HLRD SOHA-3, Individual Spotted Owl Habitat Area
H4	SOT-H4	-4: HLRD SOHA-4, Individual Spotted Owl Habitat Area
H5	SOT-H5	-5: HLRD SOHA-5, Individual Spotted Owl Habitat Area
T1	SOT-T1	-1: TRRD SOHA-1, Group of 3 Spotted Owl Habitat Areas
T2	SOT-T2	-2: TRRD SOHA-2, Group of 3 Spotted Owl Habitat Areas
T3	SOT-T3	-3: TRRD SOHA-3, Group of 3 Spotted Owl Habitat Areas
S1	SOT-S1	-1: HSRD SOHA-1, Group of 3 Spotted Owl Habitat Areas
s2	SOT-S2	-2: HSRD SOHA-2, Group of 3 Spotted Owl Habitat Areas
G1	SOT-G1	-1: GRD SOHA-1, Group of 2 Spotted Owl Habitat Areas
G2	SOT-G2	-2: GRD SOHA-2, Group of 2 Spotted Owl Habitat Areas
G3	SOT-G3	-3: GRD SOHA-3, Group of 3 Spotted Owl Habitat Areas
C1	SOT-C1	-1: CMRD SOHA-1, Group of 2 Spotted Owl Habitat Areas
c2	SOT-C2	-2: CMRD SOHA-2, Group of 3 Spotted Owl Habitat Areas
C3	SOT-C3	-3: CMRD SOHA-3, Group of 3 Spotted Owl Habitat Areas
C4	SOT-C4	-4: CMRD SOHA-4, Group of 2 Spotted Owl Habitat Areas
C5	SOT-C5	-5: CMRD SOHA-5, Individual (Burton)
SO	OWLNET	Spotted Owl Network Aggregate
M3	REGEN2	M2: Model 2 Transfer <b>AA's</b>
--	-----	--- Not one of the above (Null)
<b>*AGGREGATE LEVEL1</b>		
90	ACRES- CF DS AL	90: Acres (Non-Duplicating or Overlapping)
<b>*LEVEL2</b>		<b>-Econ Zones *Economic Zones &amp; ICO Overlaps*</b>
Z1	ECN-Z1	Z1: Economic Zone #1 Unroaded
Z2	ECN-Z2	Z2: Economic Zone #2 Partial Roaded
Z3	ECN-Z3	Z3: Economic Zone #3 80-% + Roaded
PR	PRANGE	PR: Primary Range Lands
SC	SRANGE	SC: Secondary Range Lands
WN	BUCK-L	WN: Bucks Lake Wilderness
WR	WILDRV	WR: North Fork of American Wild River (95-625)
SU	SP-Use	SU: Special Use Permitted Areas Greater than 20-Acres
DR	DEVREC	DR: Developed Recreation Sites (Non-Skiing)
SK	SKIING	SK: Existing Ski Areas Under Permit
SO	-SOMA-	SO: Spotted Owl Management Areas
--	-----	--- Not One of the Above (Null)

\*AGGREGATE LEVEL2

9D ALLDEV 9D: Developed Rec Areas  
DR SK

\*LEVEL3

MI MILES- MI: Miles  
CP CAPCTY CP: Percent Capacity Used  
PR PROGRAM PR: Program - Projects - Etc.  
NA NOTAVL NA: Lands not Available for TM Harvest  
US UNSUIT US: Lands not Suitable-Capable for TM Harvest  
NS NONSTK NS: Conifers Sites not Stocked (Brush or Hwd)  
T1 CCSWTH T1: Lands Suitable for CC-SW-TH-uE  
T2 CCSW-- T2: Lands Suitable for CC-SW-uE  
T3 sw--uE T3: Lands Suitable for SW-UE  
T4 UE---- T4: Lands Suitable for UE-Extensive Mgmt Only  
T5 EXT-SP T5: Lands Suitable for Special Treatment **RX's**  
TS TR-SEL TS: Lands Stratified for Tree Selection  
-- ----- --- Not One of the Above (Null)

\*AGGREGATE LEVEL3

92 T1&&T2 92: AGG T1-T2  
T1 T2  
93 T1T2T3 93: AGG T1-T2-T3  
T1 T2 T3  
94 T1=T4 94: AGG T1 through T4  
T1 T2 T3 T4  
9N AGGNS 9N: Lands Unsuitable or Not Capable for TBR MGMT  
NA US  
9T TMSUIT 9T: Timber Suitable & Available Lands  
T1 T2 T3 T4 NS TS  
9A ALLCOL 9A: Allocated Acres to Reg Class III or Less  
US T4 NS NA

\*LEVEL4

XX --XX-- Forest-Type- \*Vegetational Types\*  
MC --MC-- XX: AGG Types  
PP PP--JP MC: Mixed Conifer Type  
EP E-PINE PP: Ponderosa-Jeffrey Pine Type  
EM EMXCN EP: Eastside Ponderosa-Jeffrey Pine Type  
RF --RF-- EM: Eastside Mixed Conifer Type  
DF --DF-- RF: Red Fir Type  
SA SUBAPL DF: Douglas-Fir Type  
LP -LPP-- SA: Subalpine Types (WWP-MH-ETC)  
GS --GS-- LP: Lodgepole Pine Type  
HW --HW-- GS: Giant Sequoia Type - Groves  
BR CHAPRL HW: Hardwood Type on Conifer Site  
GR GRASS- BR: Brush-Chaparrel  
NF NONFOR GR: Grass-Rangeland  
RT -FR&T- NF: Non-Forested Lands - Less 5%Forested  
DS -SITE- RT: Forest Roads and Trails Mgmt  
-- ----- DS: Dev Recreation and Other Improved Sites  
--- Not One of the Above (Null)

\*AGGREGATE LEVEL4

90 OWTYP 90: Suitable Forest Types for Spotted Owls  
GS MC PP HW RF  
9L LIVFOR 9L: Types Suitable for Forage Production  
EP GR  
9M GS&&MC 9M: Mixture of GS and Mixed Conifer

9G	GS MC GRSELT MC RF EP LP GS	9G: Types Suitable Group Selection
*LEVEL5		-COND- Class *Condition Class or Structure
PL	RGN-PL	PL: Regeneration Plantations - Even-Aged Mgmt
TS	RGN-TS	TS: Regenerated Tree Selection or Groups
GS	RGN-GS	GS: Regenerated Tree Selection or Groups
IR	IN-RGN	IR: In the Process of Regeneration
BR	--BR--	BR: Brush
HW	--HW--	HW: Hardwood Stands
P1	--P1--	P1: Plantation less 10 Yrs - Disp Opening
P2	--P2--	P2: Plantation Greater 10 Yrs - Disp Not Opening
1X	--1X--	1X: Seeding (Not Plantations)
2P	--2P--	2P: Saplings < 40-% Crown Closure
2N	--2N--	2N: Saplings > 20-% < 40-% Crown Closure
2G	--2G--	2G: Saplings > 40-% Crown Closure
2X	--2X--	2x: Saplings : All Crown Closure
3s	--3S--	3S: Small Sawtimber < 20% Crown Closure
3P	--3P--	3P: Small Sawtimber >20 - < 40% Crown Closure
3N	--3N--	3N: Small Sawtimber >40% - <70% Crown Closure
3G	--3G--	3G: Small Sawtimber > 70% Crown Closure
3X	--3X--	3x: Small Sawtimber > All Crown Closure
4P	--4P--	4P: Large Sawtimber < 40% Crown Closure
4N	--4N--	4N: Large Sawtimber >40% - <70% Crown Closure
4G	--4G--	4G: Large Sawtimber > 70% Crown Closure
4x	--4X--	4x: Large Sawtimber > All Crown Closure
6G	--6G--	6G: Large Sawtimber In Multi-Store Stands
XG	--XG--	XG: Sawtimber in Moderate to Good Stkcd Stands
XP	--XP--	XP: Sawtimber in Poorly Stocked Stands
XX	AGG-CC	XX: Aggregated Condition Class (Size Density)
NF	--NF--	NF: Non-Forested
NS	UNSTKG	NS: Nonstocked Suitable Timber Lands
03	DBH<5"	03: Uneven Strata - DBH Group 0.0" - 4.9"
08	D:5-10	08: Uneven Strata - DBH Group 5.0" - 10.9"
13	D11-14	13: Uneven Strata - DBH Group 11.0" - 14.9"
18	D15-20	18: Uneven Strata - DBH Group 15.0" - 20.9"
25	D21-28	25: Uneven Strata - DBH Group 21.0" - 28.9"
34	D29-38	34: Uneven Strata - DBH Group 29.0" - 38.9"
45	DBH39+	45: Uneven Strata - DBH Group 39.0"+
Ex	EXT-AR	Ex: Existing Sites or Areas
PT	POT-AR	PT: Potential Sites or Areas
RH	REHBED	RH: Rehabed RVD's
ST	STRUCT	ST: Construction of Wildlife Structures
HB	HBTIMP	HB: Wildlife Habitat Improvement
--	-----	--- Not one of the Above (Null)
*AGGREGATE LEVEL5		
9P	ALPLNT P1 P2 1X PL TS GS	9P: All Plantation & Seeding Stages
9M	MATTBR XP 3P 3G 4P 4G 6G	9M: Mature Timber Strata Available in Period '1'
9-	FOORSK 2P 3P 4P XP 3x	9-: Poor and Spare Stocking Stands
9Q	Q-SOHB 6G 4G 3G 2G 4P XX PL XG	9Q: Spotted Owl Habitat Strata

90	OWLHBT	90:	<b>Tbr</b> Strata for Owl Nesting/Core
	6G 4G 3G 2G XG		
9G	AGG-XG	9G:	AGG Condition Class - Good Stocking
	4G 3G 2G XG		
9S	AGG-XP	9S:	AGG Condition Class - Good Stocking
	4P 3P 2P XX 4x 3x XP		
<b>*LEVEL6</b>		<b>-LAND- CLASS *LAND CLASSES - SLOPE &amp; SITE CLASSES*</b>	
<4	SLP<40	<4:	Slopes Less Than 40-%
>4	SLP>40	>4:	Slopes Greater Than 40-%
AS	AGGSLP	AS:	Aggregated Slope-Site
S1	SITE-1	S1:	Dunning Site Class '1'
s2	SITE-2	S2:	Dunning Site Class '2'
S3	SITE-3	<b>S3:</b>	Dunning Site Class '3'
s4	SITE-4	S4:	Dunning Site Class '4'
S5	SITE-5	S5:	Dunning Site Class '5'
NC	NONCOM	NC:	Noncommercial or Non Capable Lands
--	-----	--	Not One of the Above (Null)
<b>*AGGREGATE LEVEL6</b>			
9L	SUIT-F	9L:	Suitable for Livestock Forage Production
	<4 AS NC		
<b>*LEVEL7</b>		<b>-MGNT--EMPH- 'Management Emphasis'</b>	
<b>XX</b>	-NULL-	<b>XX:</b>	Null
ML	MLV---	ML:	General Minimum Level of Mgmt
GA	FOR-A0	GA:	Forest-wide Activities & Outputs Above Minlvl
<b>WP</b>	WLF-PR	<b>WP:</b>	Forest-wide Wildlife-Fishery Projects
TF	TM-FUL	TF:	Timber Reg. Class I: Full Yields
<b>TS</b>	TS-SEL	<b>TS:</b>	Timber Reg. Class 11: Int. Uneven-aged Mgmt : Tree Selection
GS	GS-SEL	GS:	Timber Reg. Class 11: Int. Uneven-aged Mgmt : GR Selection
TR	TM-RED	TR:	Timber Reg. Class 11: Reduced Yields & Specialized <b>RX's</b>
TM	TM-MRG	<b>TM:</b>	Timber Reg. Class 111: Timber Yields Marginal
SS	SALVGE	<b>SS:</b>	Sanitation-Salvage
Tu	TM-UNS	Tu:	Timber Reg. Class IV: Unsuitable - Not Needed
SP	-SPNM-	SP:	Primitive or Semi-Primitive without Roads (Backcountry)
RN	--RN--	RN:	Roaded Natural
XW	X-WLDN	XW:	Existing Wilderness Mgmt Program
<b>NW</b>	+WLDN	<b>NW:</b>	New or Expanded Wilderness Mgmt
TE	TE-DES	TE:	Designation of Areas to Threatened-Endangered Species
SD	SP-DES	SD:	Designation of Areas to Special Classification E.G. RNA'S
RR	RECRIV	RR:	Designation of Areas to Recreation River
SR	SCNRIV	SR:	Designation of Areas to Scenic River
<b>WR</b>	WLDRIV	<b>WR:</b>	Designation of Areas to Wild River
XD	XDVREC	XD:	Existing Developed Recreation Site (Non Skiing)
PD	+DVREC	PD:	Potential Developed Recreation Site (Non Skiing)
FC	FP:CUR	FC:	Current Level of Fire Program (FFP)
FS	FP:AIR	<b>FS:</b>	Air Attack Emphasis Program (FFP)
FA	FP:ATK	FA:	Initial GR Attack and Prevention EMPH (FFP)
FF	FP:FUE	FF:	Fuel Mgmt Fire Program (FFP)
CH	CHAPRL	CH:	Chaparral (Brush) Management

TD	TR+DSP	TD: New Trail Construction in 'RN' Areas
TW	TR+WLD	<b>TW</b> : New Trail Construction in Wilderness Areas
TP	TR+SPN	TP: New Trail Construction in 'SPNM' Areas
PF	RXFIRE	PF: Prescribed Fire
26	OWL-26	26: Mgnt of Owl Habitat by Even-Aged
20	OWL-20	20: Mgnt of Owl Habitat by Ext-Uneven-Aged
16	OWL-16	16: Mgnt of Owl Habitat by No Scheduled Harvest
TC	TM>RQN	TC: Timber to Range Type Conversion
LB	LVSTGB	LB: Range Mgnt Strategy-B : Some Livestock
LC	LVSTGC	LC: Range Mgnt Strategy-C : Extensive Livestock
LD	LVSTGD	LD: Range Mgnt Strategy-D : Intensive Livestock
--	-----	--: Not One of <i>the</i> Above (Null)
*AGGREGATE LEVEL7		
91	REGCL1	91: Regulation Class #1 - Full Yields
	TF SS	
92	REGCL2	92: Regulation Class #2 - Reduced-Modified Yields
	TR GS 26 TS	
93	REGCL3	93: Regulation Class #3 - Marginal-Incidental Yields
	TM 20	
9E	EVENAG	9E: Even-aged Timber Mgnt
	TF TR 26	
9I	REG1&2	9I: AGG of Reg Classes 1 & 2
	TF TR 26 TS	
9J	REG-AC	9J: Regulated Timber Acres
	TF TR TM GS 26 TS 20 TC	
9L	LIVFOR	9L: Livestock Forage Production - All Strategies
	LB LC LD	
9M	AGG-MT	9M: AGG Stand Maintenance with Mortality
	TU 16 ML	
M1	AGG-MI	M1: Model -1- Rx's Aggregate
	TU 16 ML TM 20	
90	OWL-MG	90: AGG of Mgnt Schemes for Spotted Owl Habitat Areas
	26 20 16 TS	
9R	REGLTD	9R: Regulated Timber Harvest
	TF TR TM GS 26 TS 20 TC SS	
9U	UNEVEN	9U: Uneven-aged <b>Tbr</b> Mgnt Except for Group Selection
	TM 20 TS	
9V	ALL-UE	9V: All Uneven-aged <b>Tbr</b> Mgnt
	TM GS 20 TS	
9X	EA-YLD	9X: Yields Derived for Evenaged Table
	TF TR GS 26 TC	
9Y	VIEW-Y	9Y: Yields Derived for Partial Retention View Areas
	TR GS	
9B	-FUEL-	9B: AGG Fuel Management Program
	PF LD FF --	
9S	ALL-TS	9S: All Tree Selection <b>Tbr</b> Mgnt
	TS	
CE	CAC-EV	CE: -CAC- All Me Associ with Even-Aged CAC
	TF TR TM TU 26	
CG	CAC-GS	CG: -CAC- All Me Associ with Group Selection
	GS TM TU	



*LEVELS		*MGMT--INTY* *Management Intensity*
FW	FOREST	FW: General Administration - Forest-Wide A&O
MN	MAINTS	MN: Min Level - Stewardship - Maintenance (No Develop.)
HB	ISLAND	HB: Min Level: Wildlife-Snag Habitat Islands in Regen Units -5%-
BR	BR-HAR	BR: Burned Plantation Mortality
SS	INTMED	SS: Sanitation-Salvage of Mature Existing TBR
SV	SALVGE	SV: Salvage from Catastrophic Mortality (Fire, Insects, Etc.)
SM	ST-MTN	SM: Stand Maintenance
GS	GS-HAR	GS: Group Selection (Units <5-Acres) with Plant on 100% of Acres
NR	NATRGN	NR: Natural Regeneration - Planting on < or = 20-% Acres
TS	<b>TS-HAR</b>	TS: Individual Tree Selection - Uneven-aged Mgmt -
CC	cc-HAR	CC: Clearcut Harvest
SW	sw-HAR	SW: Shelterwood Harvest
CT	CT-HAR	CT: Thinning Followed by Clear Cut Harvest
ST	ST-HAR	ST: Thinning Followed by Shelterwood Harvest
OC	OWL-EV	OC: Specialized CC & SW RX's of Spotted Owls
OD	OWL-OD	OD: Mgmt of Owl Habitat by Dedication -
OT	OWL-TH	OT: Specialized RX's of Spotted Owls with Thin
OS	OWL-TS	OS: Specialized Tree Selection Spotted Owl RX's
OU	OWL-ou	OU: Specialized RX's of Spotted Owls by Stand Maint. (Uneven)
OG	OLD-GR	OG: 'Old-Growth' Management (Untreated)
TC	TYPECV	TC: Type Convert to Timber
RC	PP>>GR	RC: Type Convert to Range
EA	EA-HAR	EA: Regen Even-Aged Management - Final Harvest Only
ET	<b>ET-HAR</b>	ET: Regen Clear-cut with Thinning - Odd Yr Cycles
TE	TE-HAR	TE: Regen Clear-cut with Thinning - Even Yr Cycles
ES	Es-HAR	ES: Reg Shwd Even-Aged Management is 'Required'
LS	LOWSTD	LS: Low Standard Mgmt of Rec, Areas
SD	FULSTD	SD: Full Standard Mgmt of Rec, Areas
RH	REHABT	RH: Rehabt of Recreation Sites-Areas from Low to Full
NC	NCONST	NC: New Construction of Sites
-4	<b>-40*\$\$</b>	-4: Reduction in Fire Program Budget
-2	<b>-20*\$\$</b>	-2: Reduction in Fire Program Budget
CR	CUR*\$\$	CR: Current Budget for Fire Programs
+2	<b>+20*\$\$</b>	+2: Increase in Fire Program Budget
+4	<b>+40*\$\$</b>	+4: Increase in Fire Program Budget
RW	VOL-RW	RW: Right-of-way Timber Volume - Regulated RX's
XX	XX-CAP	XX: Excessive Capacity
FC	FACLTY	FC: Facilities Management
--	-----	--: Not One of the Above (Null)

\*AGGREGATE LEVELS

9A	ALLHAR	9A: All Regul Harvest
	CC SW EA CT ST ET ES OC OS OT	
	TS RW SV	
9C	ALL-CC	9C: All Clearcutting or Clearing
	CC CT EA ET TE RC TC	
9F	ALFHAR	9F: All Regul Harvest from Final Harvest
	CC SW EA OC ES TC GS OS RC TS	

9R RW SV RVD-RH 9R: All RVD RX's Less Rehbt.  
 LS SD NC  
 9S ALLOWL 9S: All Suitable Habitat with in 'Owl Territory'  
 OT QIL QS OD QC  
 9T ALLTHN 9T: All Regul Harvest from Thinning  
 CT ST ET TE OT SS  
 9U ALL-UE 9U: All Uneven-Aged Mgmt Regimes  
 GH OU TS SM OS  
 9X TI-RPA 9X: Timing Limited to RPA Planning Horizon (50-Yrs)  
 SW SV

ANALYSIS AREA GROUP AND ZONE AGGREGATES

ZN#1	PROGRAM	RG1	RG2	RC1	RC2	RC3	RC4	WF1	FP1	GF1
A535	AA#535	535								
A536	AA#536	536								

QUALIFIERS

D	D :STAND	DBH	N	O

TREATMENT TYPES

	TREATMENT																			
+	TIME IMPLMT	N	N	N	N	N	N	N	N	N	N	N	Y	N						
&	AGE IMPLMT	Y	Y	Y	N	Y	N	N	N	N	N	N	Y	N						
U	TREE SELECT	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N						
E	CC&RW HV(EX)	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N						
R	CLEARCUT(RG)	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N						
T	THIN(PLANT)	N	N	N	Y	N	N	N	N	N	N	Y	Y	N						
I	INTERMD(MAT)	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N						
S	SANT-SALVAGE	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N						
M	MORT-BRPL	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N						
N	NONSIKG CNVT	Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y	N						
W	INVENTORY	N	N	N	N	N	N	N	Y	N	N	N	N	N						
P	PERM RGE CON	Y	Y	Y	N	Y	N	N	N	N	N	Y	N							
1	1ST SHWD(SD)	Y	N	N	N	N	N	Y	N	Y	Y	Y	N							
2	2ND SHWD(OV)	N	N	Y	N	Y	N	Y	N	Y	N	N	N							
G	GR-SEL(UE)	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N							
D	TREE SL(P)(	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N							
L	REGN LAG (UE)	N	N	Y	N	Y	N	Y	N	Y	N	N	N							
X	PLANT>TR-SEL	N	N	N	Y	N	N	N	N	Y	Y	Y	N							

The need to maintain the geographic identity of some individual capability areas limited the amount of aggregation that could occur. The Sequoia National Forest data base has a total of 321 analysis areas, based on actual National Forest System acres and three analysis areas not representing real acres (comprising combinations of wildlife habitat improvement projects, facilities management, fire programs, dispersed recreation, watershed improvement, and road obliteration).

Management areas are units of a single vegetative type, except for recommended designated areas (Wilderness, Special Interest Areas, Wild and Scenic Rivers, and Research Natural Areas), which are allocated to the same management emphasis. Management areas relate to analysis areas in that management areas are delineated by combinations of analysis areas or portions of analysis areas. The management area boundary and its associated management emphasis may vary by alternative based upon each alternative's theme. Management areas are not necessarily contiguous but

each contiguous unit is large enough to facilitate plan implementation and administration. Designated areas may contain several vegetative types but all types within an area are managed with the same emphasis.

### C. FORPLAN Prescriptions

A Management Prescription is the set of management practices and the schedule for their application on a specific area of land to achieve desired objectives. These Management Prescriptions were developed by the Interdisciplinary Team to represent a broad range of management emphases and intensities which would respond to issues, concerns, and opportunities

(see the Forest's planning records for more detail). Management Prescriptions represent the most cost efficient mix of practices to achieve the objectives of each management emphasis.

A difference exists between FORPLAN prescriptions and prescriptions applied to management areas. The activities in Management Prescriptions have standards and guidelines, while FORPLAN prescriptions have no built-in constraints. Specially Management Prescriptions are determined either as a result of delineating FORPLAN solutions or by allocating specific lands within the FORPLAN model to a Management Prescription and its associated practices.

FORPLAN prescriptions were developed by the Interdisciplinary Team to allow consideration of the full range of management activities physically possible on the respective analysis areas. A minimum level prescription was created for each analysis area to allow a range of choices from full intensive management for a particular resource through no active management. The choice of prescriptions identified for each analysis area was limited only by technical feasibility. For example, mechanical treatments of vegetation was not allowed on slopes over 40 percent, while prescribed burning was available for all slope classes.

A summary of FORPLAN prescriptions is listed below with additional information included in the FEIS Chapter 2 and in the planning records. The large majority of these deal with vegetation treatments while a **lesser** number deals with recreation activities and fire management options. These prescriptions are varied over space and time in the FORPLAN model to achieve resource objectives as defined by the alternative themes and the associated Management Prescriptions.

Vegetation treatment can be accomplished by practices such as thinning, shelterwood and clearcut regeneration, individual or group tree harvesting, prescribed fire, mechanical and hand treatments. Reforestation cultural treatments include mechanical, chemical and hand methods. The type of treatment(s) available vary depending on the type of vegetation, its age, density, and slope of the land.

Recreation prescriptions involve combinations of dispersed and developed emphases with the following intensities: low standard management, standard management, rehabilitation, construction, and shutdown.

The fire organization prescriptions vary in emphasis and intensities. The emphases are built around budget levels and different mixes of programs. They include: minimum level, current or base 1982 program, current minus 40 percent, current minus 20 percent, current plus 20 percent, current plus 40 percent, and various program mixes emphasizing prevention, attack, aerial suppression, and fuel treatment.

FORPLAN Prescriptions

Vegetation Management

MLV---	Minimum level of management. No active management practices occur except as needed at the custodial level. Only background outputs occur. The fire program is at a level necessary to protect private and other agency lands from fire.
<b>ST-MTN</b>	Stand maintenance. This low level of intensity is used in riparian areas, old growth retention areas, etc. No specific rotation is implied and minimal volume results.
<b>sw-HAR</b>	Shelterwood regeneration cutting system. This is a two to three decade process allowing natural replacement to occur (supplemented by planting and cultural treatments). Thinning of stands prior to regeneration can occur.
GS-HAR	Intensive Group Selection
<b>TS-HAR</b>	Intensive Tree Selection with diameter control
cc-HAR	Clearcut regeneration system. This is a one decade process with intensive planting and cultural work. Thinning of stands prior to regeneration can occur.
CT-HAR <b>ST-HAR</b>	Heavy thinning (up to 40 percent of standing inventory removed on first entry) followed by a regeneration cut after four decades is a special prescription available for regenerated stands.
<b>REJUVN</b> SM-BRN SB-BRN	Aerial prescribed burn of brush lands.
<b>HVREVM</b>	Mechanical crushing, ball and chain clearing followed by prescribed burning on non-timbered lands.
TYPECV SB-CHG CP-CHG TYP-CV	Removing existing vegetation and permanently reglacing it with another type of vegetation.
CP-HNC	Handcutting of firewood as a wildlife habitat

HB-HNC improvement tool to open dense stands of hardwoods and noncommercial softwoods.

Wildlife

STREMS Instream projects designed to improve habitat for fisheries.

LK-FUD Projects in existing lakes designed to improve habitat for fisheries.

GM-FUD Projects designed to improve habitat for terrestrial game species.

Watershed

RESTOR Projects designed to rehabilitate degraded watersheds.

OBLTR8 Abandoned road obliteration projects.

NVNTRY Watershed needs inventory costs.

ERA Describes on-site impacts in terms of the equivalent number of roads that would produce an equal amount of impact.

Fire

FP\*1-2  
FP\*\*\*3  
FP\*\*4+ The most efficient program mixes at budget levels of current, down 40 percent, down 20 percent, up 20 percent, and up 40 percent were the available options for the fire program and were implemented in three separate time frames: periods one and two; period three; periods four plus.

Recreation

LWSID Existing facilities would be open at a level (low standard) such that the willingness of the user to pay is less than at the standard level.

RE-HAB Facilities at low standard condition are rehabilitated to the standard level resulting in outputs at the standard level.

SH-DWN Closing of an existing developed recreation shutdown facility.

STDREC Facilities can be built on certain lands at new standard level.

WLDNS-

**Wilderness prescriptions corresponding to the prescribed burn and dispersed recreation standard management described above are available to be applied to the roadless areas if they are recommended for wilderness.**

Table B.1 - Prescriptions Used in Analysis

FORPLAN Prescription	Description	Analysis Areas to which the prescription applies (AA's)	Management Area Prescription Codes that contain this FOFPLAN prescription as a choice
MLV---	Represents no active management other than to provide for health and safety	All	All
<u>The following Prescriptions apply to Non-wilderness AA's only</u>			
ST-MTN CHAR sw-HAR CT-HAR ST-HAR GS-HAR TS-HAR	Timber harvest under a variety of silvicultural systems ranging from sanitation to clearcutting	All forested AA's	CF1, CF3, CF5, CF6 CF7, CF8
DEERRX	Timber harvest with modified regeneration practices and resulting reduced yields in order to provide wildlife forage and cover	AA's or portions of AA's representing key deer summer areas	CF5
REJUVN TYPECV HVREVM	Mixed chaparral treatments ranging from aerial prescribed burning to type conversion	All mixed chaparral AA's mixed chaparral $\leq$ 10% slope mixed chaparral $\leq$ 40% slope	MC1, MC2, MC5, MC6, MC8 MC1, MC5, MC6, MC8 MC1, MC2, MC5, MC6
SB-BRN	Prescribed burning and type conversion of sagebrush and desert transition brush	Sagebrush and desert transition brush AA's Sagebrush and desert transition brush $\leq$ 10% slope	PS1, PS5, PS6 PS5
SMBRN	Montane chaparral prescribed burn	All montane chaparral AA's	CF1, CF5, CF6, CF7

Table B.1 - Prescriptions Used in Analysis (Continued)

FORPLAN Prescription	Description	Analysis Areas to which the prescription applies (AA's)	Management Area Prescription Codes that contain this FORPLAN prescription as a choice
CP-CHG	Pinyon-Juniper type conversion	Pinyon-Juniper AA's that have	PS5
CP-HNC	Pinyon-Juniper fire-wood cutting	road access	PS1, PS5, PS6
HB-HNC	Black oak fuelwood cutting	Black oak AA's that have road access	OW1, OW2, OW5, OW6
WLDNS-	Wilderness prescriptions	Existing and recommended wilderness AA'S	WF4, WC4
TYP-CV	Site preparation and planting to timber	Capable. available and tentatively suitable non-stocked timber lands	CF7
MEC-SN	Crush and burning for forage productions		CF1, CF3, CF5, CF6, CF7
STDREC	New developed recreation facility construction	Potential camp-grounds and ski areas	All except: B06, MC6, OW6, PS6
LW-STD	Low standard management of existing recreation facilities	Existing recreation facilities	All
RE-HAB	Rehabilitation of existing recreation	Existing recreation facilities	All
SH-DWN	Closure of existing recreation facilities	Existing recreation facilities	All



Table B.1 - Prescriptions Used in Analysis (Continued)

FORPLAN Prescription	Description	Analysis Areas to which the prescription applies (AA's)	Management Area Prescription Codes that contain this FORPLAN prescription as a choice
FP*1-2 FP***3 FP**4+	Time periods in which fire programs and options can be implemented	Fire Program AA	All
STREMS  BK-FUD LK-FUD GM-FUD	Stream fisheries habitat improvement projects Existing WFUD's Lake fisheries habitat improvement projects Terrestrial wildlife habitat improvement projects	Wildlife structural habitat improvement AA	All
ERA	A standard by which a range of impacts are measured against to account for varying levels of disturbance.	All watershed affected by management activities	All
RESIOR  OBLTR8 ** T R Y	Watershed restoration project costs  Road obliteration costs Watershed inventory costs	Watershed improvement and mitigation AA	All
FALCON LKGT--  CONDOR	Peregrine falcon recovery costs Little Kern Golden Trout Management Plan costs California condor recovery costs	Threatened and Endangered Species AA	N/A
MAINCE	Existing roads and facilities maintenance costs	Maintenance AA	All

#### D. Time Periods

The planning horizon in FORPLAN is 160 years. It is divided into 16 decades with data displayed for each of the first five decades using average annual data per decade.

#### E. Outputs

Outputs used in FORPLAN are classified as either scheduled or nonscheduled outputs. Both types depend on the prescriptions chosen for each analysis area, but only scheduled outputs depend on the timing of the prescriptions. It is not possible to schedule all outputs through FORPLAN because of modeling limitations, but it is essential to include those that are closely related to the activities being modeled and have significant impact on PNV. Other outputs are calculated outside the model based on the results of the FORPLAN solution. Listed below are the scheduled outputs tracked in the planning process. The scheduled and nonscheduled outputs and those calculated outside FORPLAN are listed in Table B.2.

Outputs are estimated with the use of yield coefficients. In FORPLAN these coefficients define the outputs arising from the application of specific prescriptions to specific analysis areas. For outputs tracked outside FORPLAN, they describe the relationship between a particular output and various factors. The factors may have been, but are not necessarily, generated by FORPLAN. The process used by the Planning Team to develop the yield coefficients for each output is summarized below.

#### output

#### Process

Livestock Grazing

There are two types of rangeland: permanent and transitory. Permanent rangeland consists of grass or brush strata on less than 40 percent slopes. These lands are managed at various intensities. The AUM per acre coefficient varies with intensity and land productivity. The percentage of land by intensity varies with the theme of the benchmark or alternative. Transitory range is tied to timber harvest by regeneration cutting. AUM's are generated for the first decade after harvest.

Water

Background water yield data was determined from stream gage data converted to a per acre basis. Yield increases were estimated by reviewing the literature cited in the Bibliography and modified to Sequoia conditions. Prescribed burning and mechanical treatment of chaparral produces increases for less than a decade. Type conversion of chaparral to grass produces a permanent increase. Regeneration removal of timber produces increased yields which varies by timber type.

Water-Meeting  
Quality Standards

Realizing that without intensive water quality monitoring **or** simulation, water-meeting quality standards (goals) for the entire Sequoia NF can be nothing more than a very rough estimate. To make this estimate of water-meeting quality standards, a simple equation was used. This equation took into account varying amounts of road obliteration, watershed restoration, and Streamside Management Zones by alternative.

Cumulative Watershed  
Effects

Cumulative Watershed Effects are defined as the additive **or** synergistic effects of land management activities to water quality and beneficial uses as transmitted to the fluvial system.

Cumulative Watershed Effects were analyzed using the procedures outlined by Paul Seidelman, a Forest Service geologist, and Dennis Harr, a researcher in Oregon. Harr's research has shown that when a watershed is impacted beyond a certain **per**cent, deterioration of the watershed is likely <sup>1</sup>. Using this premise, Seidelman developed a rational, reproducible procedure to evaluate watersheds, their relative resistance to impacts, **and** their present level of disturbance <sup>2</sup>. This procedure identifies and tracks impacts levels within a watershed and compares the disturbance with an estimated permissible threshold of concern.

**The** cumulative effects model is designed to analyze the impacts of management activities. Although the implementation of Best Management Practices minimize impacts of specific activities, the risk of significant adverse impacts increases as a watershed approaches its threshold of concern. This methodology assumes that a watershed which exceeds its threshold has a higher probability of significant cumulative effects occurring than a watershed that remains below threshold.

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<sup>1</sup>Harr, R.D., 1976, Forest Practices and Streamflows in Western Oregon. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, General Technical Report, PNW-49.

<sup>2</sup>Seidelman, P.J., 1981, Methodology for Evaluating Cumulative Watershed Impacts. Watershed Management Staff, Pacific Southwest Region, USDA Forest Service, 17p.

Cumulative Watershed  
Effects (con't)

Stream systems vary as to the amount of disturbance that can occur prior to the occurrence of significant Cumulative Watershed Effects. Existing channel condition must be evaluated to determine sensitivity. To assess channel condition, channel stability evaluations were performed using the method described by Dale Pfankuch<sup>3</sup>. Monitoring water yield increases with respect to watershed disturbance on several National Forests has indicated that stream systems in specific stability regimes can tolerate a percentage of increased water yield relative to channel condition prior to significant Cumulative Watershed Effects occurring.

Sequoia National Forest watersheds on average indicate a moderate sensitivity and can tolerate approximately 10 percent increase in water yield. This was calculated based on 106 stream evaluations taken on the Sequoia National Forest. The average rating revealed that streams on the Forest have a high to moderate sensitivity rating and can tolerate a 10 to 12 percent increase in water yield without exceeding carrying capacity. For purposes of this analysis, the more conservative 10 percent figure was used. Based on this acceptable increase in water yield, a Forest-wide threshold of disturbance was calculated by multiplying watershed acres by a sensitivity index of .10.<sup>4</sup> The product becomes the permissible upper limit of acres of disturbance, beyond which significant Cumulative Watershed Effects are likely to take place if mitigation measures are insufficient to reduce those effects below the upper limit. This procedure was adapted for FORPLAN modeling purposes by aggregating each watershed's threshold, attributable to tentatively suitable timberland, to form a Forest-wide threshold of disturbance for those lands.

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<sup>3</sup>Pfankuch, D.J., 1975, Stream Reach Inventory and Channel Stability Evaluation. USDA Forest Service, North Region, 26p.

<sup>4</sup>This average is used only for planning purposes. Cumulative analysis on project level will include site-specific evaluations and channel stability ratings. This site-specific data will be used for calculations of Cumulative Watershed Effects for each drainage impacted by a specific activity.

Cumulative Watershed Effects (con't)

Each management activity in the **FORPLAN** model was assigned a coefficient of disturbance that equated all disturbances back to a common base, "roaded acre", for analysis purposes. **The** coefficient assigned is the Equivalent Roaded Acre (ERA) for the given management activity. Aggregating the **ERA's** for a given alternative and comparing them to the permissible limit acres of disturbance provided a means to assess the percent of threshold level approached by the various alternatives.

**Use** of this methodology to assess Cumulative Watershed Effects is based on several assumptions:

- 1) An upper limit of total watershed disturbance exists. **The** risk of initiating significant Cumulative Watershed Effects is greatly increased as this upper limit is approached and exceeded.
- 2) Control of the physical size, shape, and distribution of land disturbing activities will be exercised to minimize the potential for adverse effects on soil disturbance, associated erosion, and sedimentation.
- 3) Best Management Practices (**BMP's**) will be implemented to mitigate adverse on-site effects of management activities on soil disturbing management activities providing for the protection and improvement of water quality.

Recreation

All developed and dispersed recreation activities utilize the ~~same~~ formula to determine Recreation Visitor Days per acre **or** mile for the yield table. **The** formula is found in ROS Users Guide USDA, Forest Service (Chapter 25.32 pg 35).

**The** Formula:

$$\text{RVD's} = \frac{\text{PAOT} \times \text{MS} \times \text{PU} \times \text{LOS}}{12}$$

**MS** = Managed season of use in days (180 days).

**PU** = Pattern-of-Use **or** the relationship between the average weekend use and average weekday use of sites and/or areas.

	PAOT = Persons-at-one-time " carrying capacity.
	LOS = Average length of time in the area or site is occupied in hours. (If not known base upon local knowledge or experience)
Recreation (con't)	12 = The constant for 12 hours/RVD.
	RVD = Recreation Visitor Day
ROS Class	Acres of Recreation Opportunity Spectrum (ROS) class were based on the existing physical setting, scheduled recreation development, timber harvesting and road and trail construction and/or obliteration. Administrative setting (i.e., OHV restrictions) was also considered.
Trails	Trail inventories and plans, augmented by local knowledge, were used to estimate the miles of new trail that could be built.
Accost	All costs not directly associated with a single resource. Costs were developed by Resources Staff Officers using past records. Costs for FFP, fixed costs, deferred road maintenance and facility maintenance costs are included here.
Wilderness RVD's	Coefficients were developed " using historical use patterns of the areas prior to designation " from the existing Golden Trout and Dome Land Wildernesses and the old High Sierra Primitive Area (now part of the Monarch Wilderness). Future projections of use were made with population projections and participation rates.
Timber	Yield coefficients for timber were developed using actual Forest data collected in 1978 and updated to 1985 and the RAM-PREP timber model. This model predicts yields over time for each timber stratum based on existing volume, age and growth rate.
Animal Numbers	The projected yield for number of animals was derived from projections of habitat capability. Using current habitat estimates and current animal populations, projections could be made for increase or decrease in animal numbers as acres of favorable habitat increase or decrease.
Wildlife Use	WFUD's are a subset of dispersed Recreation

(WFUD' s) Wildlife Use (Con't)	Visitor Days. A base amount of WFUD's are calculated from RIM estimates and projected to remain at the current proportion of total dispersed RVD's over time based on existing management levels. Coefficients used to predict additional WFUD production are based on the relationships between acres of habitat and animal numbers. The effects of vegetative treatments, road closures, AUM levels, structural habitat improvement projects, and standards and guidelines associated with special habitat needs were used to predict additional habitat capability.
Diversity	Using existing vegetation, estimates of changes in seral stages over time were tracked as a function of age and treatment from the FORPLAN allocations.
Firewood	Yields of cordwood were developed based on figures known to be achievable targets based on historic outputs. Attempt was not made to project increases due to salvage operations from fire or disease since they would be intermittent and temporary.
Net Energy Potential	Net energy potential was determined by calculating energy consumption and/or yield components of significant activity groups such as: timber, biomass, range, recreation, water, minerals, roads, and fire.
Wildfire by Intensity Class	Wildfire acres are calculated by FORPLAN and change with the objective function and the change in vegetative treatment acres. Wildfire is a function of vegetative fuel model, age class and RVD's. Intensity is derived from the FIREPLAN model.
Roads and Facilities	Road construction and reconstruction is a by-product of vegetative manipulation in the conifer zone. Road construction and reconstruction is a function of timber harvest and varies by the number of acres accessed and their existing road density. Road maintenance is a function of the miles of road existing and projected for construction coupled with one of three maintenance levels: <ol style="list-style-type: none"> <li>1) minimal maintenance required to protect resources on closed roads:</li> <li>2) maintenance required to protect resources on roads open for administrative use only: and</li> </ol>

Roads and Facilities (Con't)	3) maintenance required to protect resources and keep roads open for public use while providing for comfort and convenience.
Effective Alteration (EFFALT)	Visually altered acres are calculated by assigning decay functions to all regeneration harvest prescriptions and a cumulative impact threshold for each VQO. The decay functions account for regrowth and the threshold limits alterations to meet the VQO. A detailed accounting of EFFALT is included in the planning records.
Total Budget	The total dollar expenditure and average annual expenditures are calculated by FORPLAN based on costs and levels of outputs within each alternative.
Fuels Treatment	<p>The primary objective of fuel reduction treatments is to lower the intensity of wildfires that may occur between treatments. Areas selected for treatment are those fuel types with the greatest risk of a conflagration wildfire that would threaten high resource (timber) values and public and private improvements. For the most part, this situation is limited to the mixed chaparral, timber harvesting slash, and tree plantations on the Sequoia. Fuels related to timber management are treated as part of timber harvesting operations.</p> <p>Acres of chaparral to be treated annually fuel reduction purposes were determined by:</p> <ul style="list-style-type: none"> <li>- Treatments are needed at 30-year intervals.</li> <li>- Areas presenting the greatest threat receive priority.</li> <li>- Emphasis of Plan alternative</li> <li>- Coordination with other resource treatments (i.e., range, wildlife, watershed).</li> <li>- Anticipated savings in protection and suppression costs.</li> </ul>
Dispersion	Measure when an area is considered an "opening" after even-aged regeneration harvest.
Spotted Owl	<p>Acres of habitat for spotted owl are calculated by FORPLAN based on site potential, age, and type of vegetation. Fragmentation of habitat was not considered in the model.</p> <p>A further analysis was completed to determine the sensitivity of the FORPLAN model to a full range of timber management prescriptions capable</p>



## Spotted Owl (Con't)

of maintaining **or** creating suitable owl habitat in the network of 40 Spotted Owl Habitat Areas. **This** range included the following prescription types:

- 1) Prescriptions in which no timber harvesting is scheduled **or** allowed;
- 2) Even-aged timber management prescriptions; and
- 3) Uneven-aged timber management prescriptions (includes group selection).

The size of the SOHA and rotation schedule varied according to the management prescription selected.

**For** prescriptions in which no timber harvesting was scheduled **or** allowed, 1,650 acres of habitat was modeled for each SOHA. This 1,650 acres included 1,000 acres of currently suitable habitat plus 650 acres managed **for** replacement purposes. Under this prescription the implied rotation was 380 years.

**For** even-aged timber management prescriptions, 2,650 acres of habitat was modeled for each SOHA. This acreage included 1,000 acres of currently suitable habitat plus 1,650 acres managed **for** replacement purposes. Under this prescription, the implied rotation was 240 years with no management taking place within the core area for the current plan period.

**This** management prescription was further constrained to insure that a reasonable amount of regulation had occurred (harvest occurs in reasonable increments and acreage over time).

**For** uneven-aged timber management prescriptions, 2,000 acres of habitat was modeled which included 1,000 acres **of** currently suitable habitat and 1,000 acres to be managed for replacement purposes. Under this prescription the implied rotation was approximately 300 years.

## Diversity

Acres of seral stages are calculated based on site potentials, management activities, and age of the vegetation.

## Road Obliteration

These were taken from an inventory of unneeded roads that need to be ripped and revegetated to maintain or improve soil productivity and water quality.

Watershed Inventory	These are the acres examined to update watershed improvement needs inventory and to determine cause and effects. This is based on the amount of watershed improvement.
Watershed Improvement	These were taken from the 1980 watershed improvement needs inventory which includes meadows, roads, trails, trailheads, and helicopter pads that need rehabilitation to maintain or improve soil productivity and water quality.
Long-Term Sustained Yield (LTSY)	The long-term sustained yield is the maximum timber harvest level that can be maintained indefinitely. It is calculated as a nonscheduled output, based on the highest sustained yield shown for each regeneration class and timber type in the regeneration yield tables produced by the RAMPREP model.
Ending Inventory	The ending inventory is the amount of timber that is left standing at the end of the planning horizon. This is the inventory necessary to meet the LTSY. It is calculated as a nonscheduled output, based on the contribution shown for each regeneration class and timber type in the regeneration yield tables produced by the RAMPREP model.

Table B.2 - Outputs Used in Analysis

output	Unit of Measure	Scheduled	Non Scheduled	In FORPLAN	Outside FORPLAN
Timber	MCF	X		X	
LTSY	MCF		X	X	
Ending Inventory	MCF		X	X	
Firewood	Cords				X
Net Energy Potential	BTU's				X
Accost	cost	X		X	
Livestock Grazing	AUM	X		X	
ROS Class	Acres				X
Dispersed	RVD	X		X	
Developed	RVD	X		X	
Downhill Ski	RVD	X		X	
Wilderness	RVD	X		X	
Wildlife and Fish Use	WFUD	X		X	
Diversity	Acres				X
Animal Numbers	Animals				X
Spotted Owl Habitat	Acres	X		X	
Road Obliteration	cost	X		X	
Watershed Inventory	cost	X		X	
Water	AC-Fl'	X		X	
Water Quality	AC-FT	X			X
Watershed Improvements	Acres	X		X	
Cumulative Watershed Effects	ERA'S	X		X	X
Road Construction	Miles	X		X	
Road Maintenance	Miles	X		X	
Trail Construction/ Recreation	Miles				X
Wildfire Loss	Acres	X		X	
Fuels Treatment	Acres				X
EFFALT	Acres	X		X	
Dispersion	Acres	X		X	
Total Budget		X		X	

F. Economics in FORPLAN

Economics is discussed in Chapter 2 of the FEIS in the alternative development process and displayed in various tables, in Chapter 3 of the FEIS in the economic environment. In Chapter 4, the economic consequences are discussed. Appendix D outlines how economics are used in the entire document. Demand analysis is presented in the Recreation section of the Affected Environment, Chapter 3. Demand cutoffs are used for both Dispersed and Developed Recreation Visitor Days.

Most of the economic efficiency analysis was conducted with the use of the FORPLAN model. Economic data and assumptions incorporated into the FORPLAN are described below and include economic analysis requirements of tentatively suitable timber lands described in 36 CFR 219.14(b).

## DISCOUNT RATE

An interest rate of 4.0 percent was used to determine the present value of future benefits and costs. This rate approximates the long-term cost of capital in the private sector as measured by the return on AAA corporate bonds after adjustment for inflation.<sup>5</sup> For sensitivity testing, a discount rate of 7-1/8 percent was used. This is the rate that was used for water resources evaluation by the U.S. Water Resources Council in 1980 and was also adopted for use in the 1980 RPA. Use of the 7-1/8 percent discount rate decreased PNV from that obtained with a 4.0 percent rate. Data on PNV for each alternative using the 7-1/8 percent discount rate is available in the planning records.

## BASE YEAR FOR DOLLAR VALUES

All dollar values are expressed in 1982 dollars. The following factors based on the implicit price deflator for gross national product were used to adjust values from other years to 1982.

<u>Year</u>	<u>Factor</u>
1978-82	1.39
1979-82	1.28
1980-82	1.18
1981-81	1.08

## REAL COST AND PRICE TRENDS

The real cost and price trends used for timber are shown below:

	Decade				
	1	2	3	4	5
Timber price increase, average annual percent	4.78	1.09	2.06	1.57	1.84
Timber cost increase, average annual percent	3.10	2.40	1.90	1.60	1.60

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<sup>5</sup>Row, Clark, Fred Kaiser and John Sessions., "Discount Rate for Long-Term Forest Service Investments". Journal of Forestry, June 1981, for a complete discussion of the rationale for the discount rate.

These timber price trends are projections from an econometric model of National and Regional timber markets.<sup>6</sup> The timber cost trends are based on projections of per capita disposable personal income because timber management cost increases have historically been highly correlated with increased in per capita disposable income.

Other resources do not have an extensive history of long-term price and cost increases comparable to those of timber.

## BENEFITS

The dollar values for outputs used to calculate PNV are the prices that consumers would be willing to pay for forest outputs, whether or not such prices are actually collected by the Federal Government. At present it is National policy to provide most forest outputs either at no charge to consumers or at a charge less than the willingness to pay price. This is shown in the following tabulations in Table B.2.

For outputs used off-site, benefits are based on the value of the outputs as they leave the land or production site. For outputs used on-site, benefits are valued when use takes place. However, in cases where it is easier to derive values after the output leaves the production site, costs incurred and profits earned after the output leaves the site were deducted from the values at later production stages.

Timber values are average stumpage prices developed from Forest sale records for the period 1979-1982.

Grazing values are the average amount that Sequoia NF permittees are willing to pay for grazing on the Forest as estimated from ranch livestock budgets developed by the USDA Economic Research Service.

Recreation and Wildlife and Fish user day values are the estimated average amount that recreationists are willing to pay at the site. These values are based on a national survey of travel cost and contingent value recreation studies conducted by the Forest Service for the 1985 Resource Planning Act (RPA) evaluation.<sup>8</sup>

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<sup>6</sup>Haynes, Richard W., Kent P. Connaughton and Darius M. Adams, "Stumpage Price Projections for Selected Western Species", USDA Forest Service Research Note PNW-367, November 1980.

<sup>7</sup>USDA Forest Service, "An Assessment of the Forest and Range Land Situation in the United States", January 1980.

<sup>8</sup>USDA, Forest Service, Draft Environmental Impact Statement 1985-2030 Resources Planning Act Program. Appendix F, January 1984.

Water values are the estimated amount that water users are willing to pay for water at the point of use. Values are based on the marginal value of water in irrigation use - the primary water used in California, - determined from studies surveyed by the Forest Service for the 1985 FPA.<sup>9</sup>

### COSTS

The costs used for production of outputs and to calculate PNV were in most cases calculated from historical data specific to the Sequoia NF. Where this data were lacking, Regional cost estimates were used. All costs were included in FORPLAN including the cost associated with timber, grazing, recreation, roads, wildlife, fish, fire, soils, watershed, facilities, and general administration.

Costs were checked for reasonableness by comparing the first decade costs for the Current Alternative developed with use of FOFPLAN against actual expenditures for N 1982.

All costs for benchmarks and alternatives were included in the model. Approximately 22 percent (\$3.6 Million) of the cost represented fixed costs which are not allowed to vary in any benchmark or alternative.

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<sup>9</sup>Ibid

Table B.3 - Benefits Used in the FORPLAN Analysis

output	Unit	Average Actual Cash Receipt Per Unit	Average Willingness to Pay Value Used
Existing Timber			
All Harvest Types			
0-40% Slopes			
Low site mixed conifer	MCF	491.	491.
Eastside pine	MCF	523.	523.
Lodgepole pine	MCF	334.	334.
Red fir	MCF	293.	293.
High site mixed conifer	MCF	581.	581.
41%+ slopes			
Low site mixed conifer	MCF	346.	346.
Eastside pine	MCF	361.	361.
Lodgepole pine	MCF	N/A	N/A
Red fir	MCF	157.	157.
High site mixed conifer	MCF	441.	441.
Regenerated Timber			
Intermediate Harvest			
0-40% slopes			
Diameter Class 10			
Mixed conifer	MCF	308.	308.
Eastside pine	MCF	284.	284.
Lodgepole pine	MCF	179.	179.
Red fir	MCF	151.	151.
Intermediate Harvest			
0-40% Slopes			
Diameter Class 13			
Mixed conifer	MCF	329.	329.
Eastside pine	MCF	350.	350.
Lodgepole pine	MCF	224.	224.
Red fir	MCF	198.	198.
Intermediate Harvest			
0-40% Slopes			
Diameter Class 18			
Mixed conifer	MCF	408.	408.
Eastside pine	MCF	433.	433.
Lodgepole pine	MCF	276.	276.
Red fir	MCF	253.	253.

Table B.3 - Benefits Used in the FORPLAN Analysis (continued)

<u>output</u>	<u>Unit</u>	<u>Average Actual Cash Receipt Per Unit</u>	<u>Average Willingness to Pay Value Used</u>
Intermediate Harvest 0-40% Slopes Diameter Class 22			
Mixed conifer	MCF	452.	452.
Eastside pine	MCF	496.	496.
Lodgepole pine	MCF	307.	307.
Red fir	MCF	277.	277.
Intermediate Harvest 0-40% Slopes Diameter Class 26+			
Mixed conifer	MCF	485.	485.
Eastside pine	MCF	507.	507.
Lodgepole pine	MCF	323.	323.
Red fir	MCF	290.	290.
Regenerated Timber Final Harvest 0-40% Slopes Diameter Class 13			
Mixed conifer	MCF	364.	364.
Eastside pine	MCF	386.	386.
Lodgepole pine	MCF	246.	246.
Red fir	MCF	198.	198.
Final Harvest 0-40% Slopes Diameter Class 18			
Mixed conifer	MCF	427.	427.
Eastside pine	MCF	454.	454.
Lodgepole pine	MCF	290.	290.
Red fir	MCF	269.	269.
Final Harvest 0-40% Slopes Diameter Class 22			
Mixed conifer	MCF	466.	466.
Eastside pine	MCF	496.	496.
Lodgepole pine	MCF	316.	316.
Red fir	MCF	287.	287.



Table B.3 - Benefits Used in the FORPLAN Analysis (continued)

Output	unit	Average Actual Cash Receipt Per Unit	Average Willingness to Pay Value Used
Final Harvest			
0-40% Slopes			
Diameter Class 26+			
Mixed conifer	MF	491.	491.
Eastside pine	MF	517.	517.
Lodgepole pine	MF	329.	329.
Red fir	MF	293.	293.
Regenerated Timber			
Intermediate Harvest			
41%+ Slopes			
Diameter Class 10			
Mixed conifer	MF	217.	217.
Eastside pine	MF	194.	194.
Lodgepole pine	MF	N/A	N/A
Red fir	MF	82.	82.
Intermediate Harvest			
41%+ Slopes			
Diameter Class 13			
Mixed conifer	MF	231.	231.
Eastside pine	MF	241.	241.
Lodgepole pine	MF	N/A	N/A
Red fir	MF	107.	107.
Intermediate Harvest			
41%+ Slopes			
Diameter Class 18			
Mixed conifer	MF	287.	287.
Eastside pine	MF	299.	299.
Lodgepole pine	MF	N/A	N/A
Red fir	MF	137.	137.
Intermediate Harvest			
41%+ Slopes			
Diameter Class 22			
Mixed conifer	MF	318.	318.
Eastside pine	MF	331.	331.
Lodgepole pine	MF	N/A	N/A
Red fir	MF	150.	150.

Table B.3 - Benefits Used in the FORPLAN Analysis (continued)

<u>Output</u>	<u>Unit</u>	<u>Average Actual Cash Receipt Per Unit</u>	<u>Average Willingness to Pay Value Used</u>
Intermediate Harvest			
41%+ Slopes			
Diameter Class 26+			
Mixed conifer	MCF	342.	342.
Eastside pine	MCF	349.	349.
Lodgepole pine	MCF	N/A	N/A
Red fir	MCF	156.	156.
Regenerated Timber			
Final Harvest			
41%+ Slopes			
Diameter Class 13			
Mixed conifer	MCF	257.	257.
Eastside pine	MCF	266.	266.
Lodgepole pine	MCF	N/A	N/A
Red fir	MCF	120.	120.
Final Harvest			
41%+ Slopes			
Diameter Class 18			
Mixed conifer	MCF	301.	301.
Eastside pine	MCF	313.	313.
Lodgepole pine	MCF	N/A	N/A
Red fir	MCF	145.	145.
Final Harvest			
41%+ Slopes			
Diameter Class 22			
Mixed conifer	MCF	329.	329.
Eastside pine	MCF	342.	342.
Lodgepole pine	MCF	N/A	N/A
Red fir	MCF	154.	154.
Final Harvest			
41%+ Slopes			
Diameter Class 26+			
Mixed conifer	MCF	346.	346.
Eastside pine	MCF	361.	361.
Lodgepole pine	MCF	N/A	N/A
Red fir	MCF	157.	157.

Table B.3 - Benefits Used in the FORPLAN Analysis (continued)

<u>output</u>	<u>Unit</u>	<u>Average Actual Cash Receipt Per Unit</u>	<u>Average Willingness to Pay Value Used</u>
<u>Grazing AFC</u>			
Livestock grazing	AUM	1.86	8.24
<u>Recreation</u>			
Dispersed, standard	RVD	0	11.30
Dispersed, low standard	RVD	0	5.99
Developed, ski	RVD	.40	11.20
Developed, standard	RVD	.40	11.20
Developed, low standard	RVD	.27	5.94
Wilderness, standard	RVD	0	13.75
Wilderness, low standard	RVD	0	7.29
<u>Wildlife and Fish</u>			
Resident fish use	WFUD	0	12.
Big game use	WFUD	0	30.
Other <b>game</b> use	WFUD	0	18.
Nongame use	WFUD	0	25.
Recreation use	WFUD	0	18.
Other elements			
<u>Water</u>			
Water quantity	AC-FT	0	59.

#### DEMAND CUTOFFS FOR BENEFIT VALUES

Benefit values are applied only where there is a demand for the output by Forest users. Outputs that exceed demand are given a benefit value of zero, while those that are produced at or below the quantity demanded by consumers are assigned the benefit value described in the previous section. This is handled with the use of a demand cutoff. Most of the outputs from the Sequoia NF are consumed in National and regional markets where the quantity demanded is many times larger than the productive capacity of the Forest (see Chapter 3 for a resource by resource description of the demand situation). For this reason demand cutoffs were needed for Developed Recreation Visitor Days (RVD's) (including a separate cutoff for Ski RVD's) and Dispersed RVD's, including a separate cutoff for Wildlife and Fish User Days (WFUD's). For these resource outputs, demand is more localized and less than the productive capacity of the Forest in early time periods.

Decade	1	2	3	4	5-16
Developed Cutoff (M RVD's)	937.0	1,043.5	1,082.0	1,213.0	1,279.0
Downhill Ski Cutoff (M RVD's)	297.0	320.0	419.0	547.0	708.0
Dispersed Cutoff (M RVD's)	1,900.0	2,158.0	2,438.0	2,712.0	3,000.0
WFUD Cutoff (M RVD's)	335.0	379.0	432.0	487.0	548.0

### G. Constraints

Each of the resources discussed in 36 CFR 219.13 through 219.26 must be addressed by Standards and Guidelines, Management Prescriptions, or other Management Direction in the Forest Plan. Regional resource direction which Forests are expected to follow is in the Regional Planning Direction.

Some management requirements can be translated into modeling constraints and can be simulated or proxied in FORPLAN. Constraints are quantifiable limits placed on the linear program model to ensure that minimum or maximum acres or dollars are used or that specific minimum or maximum amounts of outputs are produced. Constraints override the objective in linear programming analysis. Thus, where a predetermined level of output, minimum physical condition, or Management Prescription is entered as a constraint, it is always achieved (or no feasible solution is found). The Interdisciplinary Team tried to formulate constraints that met objectives with the lowest cost and least effect on other outputs. In most cases this required the formulation and testing of several alternative sets of constraints to determine the most cost-effective set (in terms of PNV) that would meet the objectives (for more information, see the Planning Records). For Forest planning purposes, constraints can be divided generally into five categories which are discussed in the next section.

### H. Constraints Common to all Alternatives

1. Technological constraints. Constraints needed to make the model work and to ensure technical implementability of the results. These are applied to all benchmarks and alternatives. Limiting the prescription set for an analysis area to only those activities for which the land is tentatively suitable is one type of technological constraint. Other types are project and demand cutoffs for fish and wildlife habitat development, and developed and dispersed recreation RVD's. The following technological constraints were used specific to the Sequoia:

- a) Project cutoffs for fish and wildlife habitat development to prevent exceeding projected demand.

- b) **No** clearcut harvesting on south and west facing slopes in red fir. This was done to insure regeneration success through other harvest methods.
  - c) Cutoffs to limit the number of RVD's per decade those specified by demand projections.
2. Minimum Management Requirements (MMR's). The Minimum Management Requirements are taken from 36 CFR 219.27. They generally represent requirements that are outside of Forest Service-authority-to change. They are based on statutes and regulations in contrast to manual direction or agency policy (see Chapter 2 for more information on direction and intent). Procedures for modeling the MMR's were specified by the Pacific Southwest Region. MMR's are applied to all benchmarks and all alternatives.

A discussion of the modeling rules and associated impacts for each MMR follows :

- a. Capable, Available, and Suitable Land (CAS). Tentatively Capable, Available, and Suitable lands for timber management were placed in analysis areas and were given a range of appropriate prescriptions. By definition (36 CFR 219.16). these lands are those not withdrawn from production by Congress or the Chief of the Forest Service and those lands which are capable of producing crops of industrial wood. In addition these lands can be restocked to Region 5 standards within five years of final harvest. Non-CAS lands were placed in other analysis areas where timber prescriptions were not an option. A detailed discussion of the timber suitability criteria is contained in the planning records.

The effect of limiting the land base to CAS land only establishes the maximum land base available for sustained yields of timber.

- b. Threatened and Endangered Species. The bald eagle is a federally-listed endangered species. As a management indicator species on the Sequoia NF, it represents a species that requires open, uneven-aged forest near lakes and large rivers. The Sequoia NF currently does not have a wintering population of bald eagles located on the Forest. There is no target in the Bald Eagle Recovery Plan for the Sequoia to have any nesting pairs. There are, however, many documented cases of bald eagles wintering just outside Forest boundaries.

The California condor is a federally-listed endangered species. The current management direction is to protect the existing population by placing controls on resource activities at the habitat site. In this analysis, 2,229 acres were managed for condor habitat and costs for agency coordination were modelled. This acreage is the amount established in the Condor Nest Management Plan completed in 1986. Single-tree selection or no harvest were the allowed prescriptions.

The Little Kern golden trout (LKGT) is a federally-listed threatened species. The current direction is to implement the existing Management Plan for the Little Kern golden trout. Costs to implement the Forest Service's part of the management plan were modelled.

The peregrine falcon is a federally-listed endangered species. There are no peregrine falcons currently nesting or roosting on the Forest. The Sequoia NF portion of the Peregrine Falcon Recovery Plan calls for the introduction of two pairs within the next decade. Costs for this program were included in the FORPLAN model.

c. Viable Populations.

Goshawks - Habitat for goshawks, a sensitive species, was not modeled in FORPLAN since most of the known nests were found to occur in habitat that was provided with other MMR's. Standards and Guidelines provide the necessary direction to ensure habitat protection for at least 21 nesting pair. This minimum of 21 pair is based on a Forest network which insures sufficient habitat for viable interaction between pairs. Information used to develop these Standards and Guidelines and network came from the Wildlife and Fish Habitat Relationships Program (WFHR), the associated Habitat Capability Model for Goshawks in the Southern Sierra and the Regional Guide and LMP Direction.

Snag-dependent Species - An average of 1.5 snags per acre per timber compartment is required through Standards and Guidelines to insure continued viability of snag dependent species. The Sequoia National Forest currently does not have an inventory of existing snags. The RAMPREP timber yield tables and a 20-year thinning cycle were used in FORPLAN to account for natural mortality that is used as a proxy for snag recruitment.

Species Dependent Upon Dead and Down Material - In order to insure continued viability of these species, Standards and Guidelines calling for retention of these materials have been developed for the Sequoia National Forest (see Chapter 2).

Spotted Owls - The Minimum Management Requirement for spotted owl viability is to provide habitat capable of supporting an adequate number of reproductive pairs, well-distributed across the existing geographic range of this species on the planning area. The MMR is met by the network of 40 spotted owl habitat areas established on the Sequoia NF. The number and spatial distribution of these habitat areas was determined through application of the network concept described in Appendix H of the Regional Guide EIS.

In this final EIS, based on analysis of several factors (described below), the Forest Management Team selected management of the network spotted owl habitat areas through prescriptions involving no scheduled timber harvest for each alternative presented in detail. Each network habitat area consists of approximately 1650 acres, which includes 1000 acres of currently suitable habitat (or as much suitable habitat as exists plus sufficient potential habitat to total 1000 acres) plus approximately 650 acres of replacement habitat. The replacement habitat will be present in every time period of the planning horizon and also beyond the planning horizon (see planning records).

During the analysis, the use of scheduled timber harvest (utilizing even- or uneven-aged timber harvest prescriptions) to create and/or maintain

suitable spotted owl habitat was considered but not recommended. FORPLAN modeling of scheduled timber harvest prescriptions with the network spotted owl habitat areas showed that no significant gain in the amount of nesting habitat would be realized until the tenth decade. Also, the possibility of implementing scheduled timber harvests to maintain or enhance quality spotted owl habitat over a 10-decade was not considered feasible with regard to the physical arrangement of timber types suitable for harvest on the Sequoia NF, and the associated logging and road systems that would be needed. In addition, the intensity and duration of scheduled timber harvesting that would be necessary to produce additional nesting habitat within the Sequoia spotted owl network would involve an increased risk of disturbance to the existing spotted owl population.

Based on this analysis of conditions on the Sequoia NF, the Forest management Team believes that management of the spotted owl network with no scheduled timber harvest will pose the least risk to spotted owls, will be the most effective and efficient means of implementing and monitoring resource activities within the network habitat areas, will have essentially no impact on the allowable sale quantity of timber (this is because the timber harvest levels in the alternatives are well below the production capability for the Forest), and will provide for future flexibility in management of the network.

In the draft Plan and EIS, the estimated habitat capability was 140 pairs, based on FORPLAN outputs. The habitat capability estimates were revised for the Land Management Plan and EIS tables because FORPLAN does not take habitat fragmentation into account. The Forest has, instead, estimated habitat capability based on the presence of suitable habitat in approximately 1000 acre areas or larger, local vegetation conditions, and past population surveys. In tables found throughout these documents the estimated habitat capability decreases over time due to Forest management activities which fragment this habitat, making some of it unsuitable for supporting pairs of spotted owls.

d. Diversity. In order to maintain plant and animal diversity over the planning area, a minimum of five percent of each existing vegetation type-seral stage combination was required to be maintained in each decade. FORPLAN constraints were explicitly not imposed to meet this requirement since it was "naturally" achieved. (FORPLAN solutions were monitored to assure achievement of the requirement.)

e. Riparian Areas. The MMR's (36 CFR 219.27e) are to

- a) protect streams, streambanks, shorelines, lakes, wetlands, and the plants and animals dependent on these areas:
- b) prevent adverse riparian area changes in water temperature, chemistry, sedimentation, and channel blockages: and
- c) give emphasis to riparian-dependent resources.

As a minimum, riparian areas are defined to be:

- a) areas a 100-foot horizontal distance from the edge of standing bodies of water:
- b) areas a horizontal distance of 100 feet on each side of perennial stream channels: and
- c) all wetlands.

These requirements were modeled in FORPLAN by allowing only stand maintenance within 100 feet either side of perennial streams and lakes. This affected 12,850 acres of suitable timber land. Forest standards and guidelines assure additional protection of riparian areas as well as ensure that emphasis is given to riparian-dependent resources.

f. Soil and Water Productivity. To assure conservation and prevent significant or permanent impairment of soil and water productivity all of the Forest land on over-steepened slopes (24,000 acres) were not scheduled for any land disturbing activities in FORPLAN.

3. Timber policy constraints (TPC's). As required by 36 CFR 219.14, 36 CFR 219.16, and 36 CFR 219.27c, FORPLAN constraints were needed to ensure that timber harvest meets sustained yield, Culmination of Mean Annual Increment, and dispersion requirements. Therefore the timber Policy Constraints are: rotation length and Culmination of Mean Annual Increment (CMAI): sustained yield requirements: harvest flow requirements: dispersion: and growth requirements.

a. Rotation Length and Mean Annual Increment. Direction was needed to assure that all even-aged stands scheduled to be harvested would have generally reached Culmination of Mean Annual Increment of growth. In addition, it was necessary to provide a range of rotation ages or timing options for the analysis of present and future stands. Minimum ages were established for merchantability and 95 percent of culmination of mean annual increment based on RAMREP yield tables for the major forest types. These are displayed in Table B.4.



Table B.4 - Rotation Lengths

Ages in Periods (10 years)

<u>Conifer Type/Activity</u>	<u>Merch.</u>	<u>95%CMAI</u>
Mixed conifer		
without thinning	6	6
with thinning	6	9
burned plantation	2	8
Red fir		
without thinning	7	7
with thinning	7	9
burned plantation	9	9
Eastside pine		
without thinning	1	7
with thinning	1	9
burned plantation	9	9
Lodgepole pine		
without thinning	4	4
with thinning	4	5

b. Sustained Yield Requirements. Each alternative was formulated to insure that a "perpetual" timber harvest at the long-term sustained yield level, defined for each alternative, will result by the end of the planning horizon. In addition, it was desirable that the portion of the CAS land managed under even-aged regimes be generally regulated. An inventory constraint and a growth goal were used to meet the sustained yield requirements. This forced the model to insure regulation on at least 90 percent of the managed forested area by the end of the Planning Horizon.

c. Harvest Flow Requirements. Each alternative was formulated to maintain community stability by preventing erratic flows of timber outputs between decades. A constraint was applied to timber output for decades after the first which did not allow a fluctuation of more than 25 percent, plus or minus, from the previous decade.

d. Dispersion. The Minimum Management Requirement is to prevent regeneration units which are still openings from being adjacent to each other and to disperse units in such a way as to leave logical harvest units between openings for future management. Requirements in the final Regional Guide for the Pacific Southwest Region were also followed. These requirements were modeled so that analysis areas, liquidated in periods one, two, or three in the HW unconstrained benchmark, were limited by the accessibility constraint in all other benchmarks and alternatives to spread their scheduled regeneration over the first four decades.

4. Minimum Implementation Requirements (MIR's). Constraints needed to ensure that alternatives are minimally acceptable and implementable on the ground. Procedures for defining MIR's were specified by the Region. They are within agency control but there is little discretionary control regarding their application at the Forest level, MIR's do not apply to benchmarks but they are applied to all alternatives.

a. Sensitive Plants. The MIR is to manage sensitive plants to ensure that species do not become threatened or endangered because of Forest Service actions. This was accomplished through the use of Standards and Guidelines.

b. Scenic Highways. As an MIR. because of past public expectations and commitments, the immediate foreground of officially designated California State and County Scenic Highways and eligible California State Scenic Highway System routes (as designated on the September 1970 Master Plan) are managed for Retention Visual Quality Objectives. The rest of the foreground and the middleground of the same routes are managed for Partial Retention. On the Sequoia NF, the affected routes are Highways 180 and 190 for a total of 56 miles within the Forest boundaries.

The Retention constraint prevents large openings and forces a rotation of about 240 years, or allows only selection type of harvest. This choice was open to FORPLAN and affected about 1,400 acres of immediate foreground, tentatively suitable land for timber management.

The Partial Retention constraint affects acres of suitable timber land and limits the amount of regeneration cutting per decade. This has the effect of lengthening rotations to an average of 140 years which in turn may reduce PNV over time. This Partial Retention constraint affected nearly 17,000 acres of CAS land.

c. Operational Constraint. Limits were placed on the amount of acres that could be clearcut in one decade. This was to reflect the technical and operational maximum capability to do slash disposal, site preparation, and tree planting all within limited seasonal opportunities each year. **An 18** percent maximum constraint was applied to the suitable timber acres available for even-aged timber management that were allowed to be clearcut during any time period. This constraint was never binding.

5. Forest constraints common to all alternatives. Constraints needed to ensure implementability at the local level. They are based on Forest (rather than Regional) conditions which are in addition to **MMR's**. These constraints are not applied to all benchmarks but are applied to all alternatives except the Constrained Economically Efficient Alternative (CEE). Forest constraints unique to an alternative are discussed under alternative descriptions. On the Sequoia NF, insuring that the Peppermint Ski Area is built in the first decade and the Shirley Meadow Ski Area expansion is completed are the only Forest constraints common to all alternatives. These constraints did not affect the CEE Alternative as building these ski areas was freely chosen in the CEE solution.

### III. SUMMARY OF THE CONSTRAINT ANALYSIS

For a detailed discussion of the constraint analysis by subtraction, refer to Chapter 2 of the EIS. The following Table B.5 displays the constraint's cost compared to the maximum PN (FLW) and the individual cost's percent loss compared to the total loss. Refer to Chapter 2, Section 6, Economics Trade-offs Analysis of the FEIS for a detailed explanation of Table B.5.

The maximum PN from the unconstrained benchmark (FLW) is 1,911 MM. The PN from the alternative with all common constraints (CEE) is 1,871 MM or 92.8 percent of the total. The MMR's account for 76 percent of the change in PN, with spotted owls being the major contributor. The timber policy constraints (TPC's) account for another eight percent with Dispersion contributing the most. The scenic corridor MIR contributed eight percent to the difference in PN.

The individual constraints can only account for 88 percent of the difference in the PN's. This is due to the overlap of constraints.

Table B.5 - Summary of Constraint Analysis

Constraints	Change in PN (MM\$)	Percent of Total Change in PN (%)
<b>Minimum Management Requirements</b>		
T&E Species	2.8	0.8
Spotted Owls	20.8	56.8
Diversity	0.0	0.0
Riparian Areas	6.9	18.8
Soil & Water Productivity	.1	.0 (nominal)
<b>Timber Policy Constraints</b>		
CMAI	0.0	0.0
Sustained Yield	1.1	3.0
Dispersion	1.9	5.2
<b>Minimum Implementation Requirements</b>		
Scenic Highways	3.0	8.2
Operational Constraint	0.0	0.0

#### I. Benchmarks

This section presents the required benchmark's modeling specifications. For a complete discussion of the results of the benchmarks, refer to Chapter 2 of the EIS.

(MLV) - MINIMUM LEVEL OF MANAGEMENT BACKGROUND ONLY

1. Theme

The purpose of this benchmark is to determine background<sup>10</sup> outputs and fixed costs associated with maintaining the Forest in Federal ownership.

2. Modeling Specifications

a. Objective

The model allocates resources to minimize costs.

b. Timber

The objective is to minimize costs. Timber is not produced. There is no background timber.

c. Livestock Grazing

AUM's are not produced. There are no background AUM's.

d. Water

Only background water is produced because there is no vegetative manipulation. Wildfire increases in water yield are a part of background.

e. Spotted Owls and Threatened and Endangered Species

This benchmark displays the maximum spotted owl capability. The estimated number of spotted owl plans is directly related to the number of acres of suitable habitat. Fragmentation of habitat is considered in the benchmark outputs. Threatened and endangered species recovery projects not are undertaken in this benchmark. Recovery is assumed to be complete. Costs associated with coordination with other agencies after recovery is complete are included.

f. Wildlife and Fish User Days

Only background WFUD's are produced. Background WFUD's were assumed to be a percentage of the 1982 RIM figure. Direct habitat improvement projects are not undertaken in this benchmark.

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<sup>10</sup>"background" in this context refers to outputs which are naturally occurring and not induced by management activities.

**g. Developed Recreation**

Developed site RVD's are not produced. There are no background developed site RVD's.

**h. Dispersed Recreation**

Only background dispersed use RVD's are produced. All background dispersed use RVD's receive low standard benefit values.

Background dispersed recreation was assumed to be a percentage of the 1982 RIM figure and includes the background WFUD's.

**i. Roads and Facilities**

Forest roads are not constructed or maintained. Forest roads are assumed to be closed to the public. Facilities (office buildings, barracks, etc.) would be maintained at Level I.

(FLW) - UNCONSTRAINED MAXIMUM PNW ASSIGNED WITH FLOW CONSTRAINTS

**1. Theme**

This benchmark displays the most economically efficient allocation of resources. It is intended to be neither legal or implementable. FLW provides a basis for evaluating the MMR's.

**2. Modeling Specifications**

**a. Objectives**

Resources are allocated to maximize PNW.

**b. Timber**

Minimum rotation is set at merchantable age, which on the Sequoia NF is equal to CMAL. The long-term sustained yield (LTSY) constraint provides for regulation of 90 percent of the managed forest by the end of the planning horizon. Other timber policy constraints are relaxed. Harvest flow constraints limit the variability in harvest from one period to the next to provide stability to the local economy.

**c. Livestock Grazing**

There are two types of range, Permanent and Transitory. Permanent range land is assumed to be brush and grass strata with less than 40 percent slope. These lands are managed at various intensities. The AUM per acre coefficient varies with intensity and land productivity. The percentage by intensity varies with benchmark or alternative theme. FLW has more land in high intensity management. Transitory range is tied to timber harvest by

regeneration cutting. **AUM's** are generated for the first decade after harvest.

d. Water

In addition to the background water (which is discussed under minlevel) additional water is produced in order of decreasing qualities, by regeneration, type conversion and burned acres. There is a decay function for induced water which reaches **zero** after several decades beyond the initiation of the activity.

Riparian areas (**SMZ's**) do not constrain timber management in this benchmark.

e. Spotted Owls and Threatened and Endangered Species.

The model is not constrained by protection of spotted owl nor constrained by protection of threatened and endangered species habitat.

f. WFUD's

There are four components to **WFUD's**: background which is naturally occurring and unrelated to management; existing, which is related to timber suitable acres; fisheries habitat improvements; and terrestrial habitat improvements. Timber suitable acres is the linkage which reflects KV work in habitat improvement. The terrestrial and fisheries habitat improvement projects are assumed to be focused on suitable land. There is an implementation constraint which applies to all the habitat improvement projects. There is no trade-off with any other resources and habitat improvements except when there is a budget constraint; this is because of the cost associated with the habitat improvement.

The benefit-cost ratio for fisheries habitat improvement projects is not as favorable as for terrestrial wildlife habitat improvement projects.

g. Developed Recreation

The model is free to choose production of RVD's from existing and potential developed sites and ski areas in the level and amount which maximizes PNV, not to exceed demand. Downhill ski areas are always managed at full standard. Developed sites are managed at one of three levels -- shutdown, low standard, and full standard.

h. Dispersed Recreation

Dispersed recreation production is constrained to be **less than or equal to** demand. This demand cutoff represents the summation of background WFUD's, background dispersed RVD's, wilderness RVD's, induced WFUD's, and other dispersed RVD's.

There are two management intensities for induced dispersed RVD's -- low standard and full standard. The management intensity chosen will obtain the best return to PNV.

i. Roads and Facilities

Road construction and reconstruction is a by-product of vegetative manipulation in the conifer zone. Road construction, reconstruction, and maintenance associated with timber harvest is a function of acres accessed. Road maintenance associated with recreation is related to keeping roads open for public use. There are no roads associated with downhill ski areas. The permittee is assumed to be responsible for road construction and maintenance. Facilities are managed at the least cost while meeting resource needs.

j. Protection

There are various fire management options and five budget levels which result in 12 combinations in addition to the minimum level fire management organization. The minimum level organization is only applicable to the minimum level benchmark. The model chooses the fire management option which minimizes the cost plus net value change, which is not necessarily the minimum. Net value change is represented by the effect of fire on water, timber, forage, and wildlife habitat. The effect of fire on these resources is negative or positive depending upon the intensity and fuel model. Acres of mature timber burned are supplied by the model and vary with the option. In addition to mature timber it is assumed that, based on existing probabilities, 1.9 percent of plantation acres will be burned each decade.

(MMR) - MAXIMIZE PNV-ASSIGNED VALUES WITH MMR'S. NDY, & CMAI

1. Theme

The theme of the MMR (Minimum Management Requirement) benchmark is to display outputs possible if management was constrained only to meet legal requirements.

The Minimum Management Requirements are specified by 36 CFR 219.27, National Forest Land Management Planning Direction.

2. Modeling Specifications

a. Objective

The model allocates resources to maximize PNV subject to constraints summarized below.

b. Timber

Timber Policy Constraints of CMAI, LTSY, NDY, and dispersion are applied. Other constraints concerning spotted owls, riparian

areas, sensitive soils, and T&E species habitat affect timber scheduling and yield.

c. Livestock Grazing

Forage lands and timber prescriptions produce AUM's. Discussion in benchmark HW applies to MMR.

d. Water and Soil

The discussion in the HW benchmark pertaining to the modeling of water yield applies to the MMR benchmark.

Riparian areas (SMZ) are modeled as Regulation Class III or minimum level. All riparian areas are assumed to be 100 feet wide on both sides of all perennial streams and lakes. This is to insure maintenance or improvement of riparian dependent resources (i.e., clean water, wildlife habitat, etc.).

Sensitive soils as defined in the working papers of the AMS are modeled so that not more than five percent of the sensitive area is accessed for management activities in any decade. This is done to prevent losses in soil productivity.

e. Spotted Owls and Threatened and Endangered Species

The model is constrained to provide approximately 35,000 acres managed for spotted owl habitat. The spatial requirements of Spotted Owl Habitat Areas are proxied in the model by forcing the minimum habitat acres to be allocated from existing management strata. This will insure habitat for a viable population of spotted owls is available throughout the planning horizon.

Bald eagle, Little Kern golden trout, and California condor habitat are protected by allocating it to Regulation Class III or minimum level. There are no WFUD's associated with T&E species. There is a cost in the model to account for introduction of two pair of peregrine falcon. There is a cost for condor associated with other agency coordination and for completion of LKGT Management Plan.

f. WFUD's

Same as HW.

g. Developed Recreation

Same as HW.

h. Dispersed Recreation

Same as HW.



i. Roads and Facilities

Same as FLW.

j. Protection

The model selects the most cost-effective budget level and mix in each period. Same as FLW.

(MKV) = MAXIMIZE ENV-MARKET VALUES ONLY-WITH MMR's, CMAI, AND NDY

1. Theme

This benchmark demonstrates the sensitivity of the solution to nonmarket resources (water, fish, wildlife, and dispersed recreation) price assignments. Nonmarket outputs are valued and contribute to ENV after the solution is found and do not effect the allocation of market outputs (timber, developed recreation, livestock grazing).

2. Modeling Specifications

a. Objective

Resources are allocated to maximize ENV with only timber, range, and developed recreation being valued.

b. Timber

The discussion under the MMR benchmark applies to MKV; however, timber's value through its linkage to water is reduced because water is not valued until after the optimum allocation is determined.

c. Water and Soil

Same as MMR but water's value is not taken into consideration in determining the optimum allocation.

d. WFUD's

Same as HW benchmark except WFUD's are not valued as part of the allocative solution.

e. Dispersed Recreation

Same as HW except dispersed recreation RVD's are not valued prior to the solution.

All other objectives and constraints are as in MMR.

(TBR) - MAXIMIZE TIMBER FOR ONE DECADE WITH MMR's,  
CMAI AND ECONOMIC ROLLOVER

1. Theme

The theme of this benchmark is to define the maximum timber output possible for the first decade under the constraints of NDY, CMAI, and MMR. After determining the maximum yield under these constraints, it is used as a constraint in a second run which allocates resources to meet this goal and maximize PNV (Economic Rollover).

This benchmark provides a basis for analyzing the effect of CMAI and NDY on timber yield.

2. Modeling Specifications

a. Objective

The objective function of this run maximizes PNV subject to maximizing timber first. The constraints are identical to MMR.

b. Timber

Meet the timber outputs defined in the first run described above.

(TBD) - MAXIMIZE TIMBER FOR ONE DECADE WITH DEPARTURE FROM EVENFLOW FOR  
ONE PERIOD WITH MMR's, CMAI AND ECONOMIC ROLLOVER

1. Theme

The theme of this benchmark is similar to the TBR benchmark. In TBD, the Non-declining Yield constraint is relaxed in the first period. This benchmark displays the opportunity cost of the non-declining yield constraint in terms of timber yield. A comparison of yield with TBR provides a measure of the opportunity cost.

2. Modeling Specifications

a. Objective

The objective of this benchmark is to maximize PNV subject to maximizing timber and the constraints listed below.

b. Timber

Same as MMR except the non-declining yield constraint is relaxed and a one period departure is allowed, subject to the harvest flow constraints.

All other Timber Policy Constraints apply.

All other objectives and constraints are as in 13MMR.

(WLN) - MAXIMIZE PNV WITH MAXIMUM WILDERNESS - WITH MMR's and NDY

1. Theme

The theme of this benchmark is to display the opportunity cost associated with a maximum wilderness recommendation.

2. Modeling Specifications

The objectives and constraints are as in *MMR* with the additional stipulation that all inventoried Roadless Areas are recommended for wilderness.

(NON) - MAXIMIZE PNV WITH NO FURTHER PLANNING AND WILDERNESS STUDY AREAS TO WILDERNESS WITH MMR's and NDY

1. Theme

The theme of this benchmark is to display the opportunity cost associated with not allowing any ~~VSA~~ to be recommended for wilderness.

2. Modeling Specifications

The objectives and constraints are as in *MMR* with the additional constraint of not allowing any new wilderness recommendations.

(RNG) - MAXIMIZE LIVESTOCK GRAZING FOR FIVE DECADES WITH MMR'S, NDY and ECONOMIC ROLLOVER

1. Theme

The theme of this benchmark is to display the maximum capability of the Forest to provide commercial livestock grazing over five decades. The run is completed in two stages. In the first stage the resources are allocated to define maximum livestock forage potential. In the second stage, the production potential defined in the first stage is added to the model as a constraint and the model allocates resources to maximize PNV.

2. Modeling Specifications

The objective of the model is to maximize PNV subject to maximizing livestock forage first. The constraints of *MMR* Benchmark apply.

(H2O) - MAXIMIZE WATER YIELD FOR FIVE DECADES WITH MMR's, NDY and ECONOMIC ROLLOVER

1. Theme

The theme of this benchmark is to define the maximum capability of the Forest to provide water over five decades. The same process is used as

in RNG, with the difference being the theme of water yield instead of livestock grazing.

## 2. Modeling Specifications

The objective of this run is to allocate resources to maximize PNV subject to maximizing water yield first. The constraints of MMR benchmark apply.

## J. Alternatives

For a complete discussion and display of the results of all the alternatives, refer to Chapters 2 and 4 of the EIS. Chapter 2 lists all constraints that apply to an alternative and displays the results. Chapter 4 discusses the Environmental Consequences of each alternative. This section lists only those constraints that were modeled in FORPLAN and describes how they were modeled.

### ALTERNATIVES ELIMINATED FROM DETAILED STUDY

#### (CEE) CONSTRAINED ECONOMICALLY EFFICIENT

##### 1. Theme

This alternative was formulated to represent the least constrained, legal and implementable management of the Forest to maximize PNV. It provides a measure of the opportunity cost of the scenic highway MIR when compared to the MMR benchmark.

##### 2. Modeling Specifications

The model allocates resources to maximize PNV subject to the constraints described below.

All constraints that apply to benchmark MMR apply to this alternative with the addition of the MIR for scenic highways. Analysis areas were identified where scenic highways occurred. These lands were constrained so that highway immediate foreground was assigned to a Visual Quality Objective of Retention. The rest of the foreground and the middleground was assigned to a VQO of Partial Retention. These were modeled as Regulation Class III and II, respectively.

#### (WHE) FISH AND WILDLIFE HARVEST EMPHASIS

##### 1. Theme

This alternative was formulated to emphasize production of high quality habitat for harvest wildlife species in order to increase opportunities for consumptive wildlife uses.

Dispersed recreational opportunities will be greatly expanded, with increases limited only by demand, desired **user** capacity, **or** to minimize wildlife habitat disturbance. Developed recreation opportunities will **also** be expanded but will be limited to minimize wildlife habitat disturbance. **The** timber program will be managed to provide high quality habitat for emphasized wildlife species. Livestock grazing will increase as new forage is created, but the intensity of grazing will be reduced to minimize conflicts with wildlife. Wildlife habitat improvements will provide increased habitat capability for harvest wildlife species and other wildlife species that are associated with these habitats. New wilderness designation is not recommended in order to facilitate access for habitat improvement projects.

## 2. Modeling Specifications

### a. Objective

**The** model allocates resources to maximize **PNV** subject to meeting **MMR'S**, **NDY**, **CMAI**, **MIR** and the additional constraints listed below.

### b. Timber

Available emphases are Regulation Classes II and III and no harvest. This provides for maintenance of habitat for species utilizing late-successional stages of timber.

A minimum of 1,600 acres per year are regenerated while retaining 50 percent of the area in forage producing species. This provides retention of high quality forage for deer in the summer range.

### c. Livestock Grazing

In Chaparral, only 50 percent of allowable **use** of forage is for livestock production. This provides retention of additional high quality forage for deer in the winter range.

Reduce cattle **use** in meadows to 50 percent of 1982 level. This provides additional high quality forage for deer.

### d. Soil and Water

Costs are included to rehabilitate deteriorated watersheds through restoration projects and abandoned road obliteration.

Riparian areas are modeled as no harvest. This provides high quality habitat for riparian dependent wildlife species.

### e. WFUD's

WFUD's are produced up to demand through habitat improvement projects designed to increase habitat capability for harvest species.

A minimum of 2,500 acres of chaparral are prescribed burned each year to provide increased habitat capability. This is to provide additional habitat for wildlife species associated with early successional stages of chaparral.

f. Developed Recreation

Sherman Pass and Mitchell-Maddox potential ski areas are not constructed, but are managed for wildlife habitat improvement.

g. Dispersed Recreation

Piute and Scodie Mountains are managed for maximum dispersed wildlife associated recreation opportunities.

h. Roads and Facilities

Road maintenance costs are increased to maintain 50 percent of all local roads open for public use.

(13 CED) CURRENT, ECONOMIC, DISPERSED

1. Theme

This alternative was formulated to represent the most cost efficient method to produce a broad range of emphases and intensities. A mix of commodity and amenity benefits is produced to optimize net public benefits.

The Recreation emphasis is to produce a range of quality opportunities for dispersed recreation while providing for slow increases in developed recreation capacity. Potential developed sites are managed to maintain or enhance their recreation potential for future development. Visual quality will be protected or enhanced in high use dispersed areas and near recreation developments. Part of the BLM Rockhouse WSA is recommended for wilderness.

The timber program will produce at least current harvest levels.

Livestock grazing will be emphasized, with additional forage created through a coordinated chaparral management program.

Wildlife habitat emphasis is on species associated with early successional stages through the timber and chaparral programs with additional habitat improvement projects coordinated through these programs.

Riparian areas will be extended to include protection of intermittent streams to maintain additional acres of riparian vegetation.

## 2. Modeling Specifications

### a. Objective

- The model allocates resources to maximize PNW subject to meeting **MMR's**, NDY, CMAI, MIR, and the additional constraints listed below.

### b. Timber

- Except as indicated below, all timbered lands are available **for** all regulation classes.
- **On** the Piute Mountains, all timber land below 6,500 feet will be managed under long rotations (Regulation Class II) **or** by selection harvests (Regulation Class 111).
- Retention VQO is ~~met~~ in the foreground and partial retention in the midground of Highway 180, **190**, a portion of the Western Divide, the Generals Highway, the PCT, and heavily used trails into the wildernesses. Partial retention is met in the foreground of an additional 225 miles of roads and trails in the conifer zone. This is done to provide a high quality dispersed recreation experience.

### c. Range

A limit on AUM production of 71,000 AUM's is applied in the first decade for the retention of additional forage for deer.

### d. Soil and Water

- Costs for rehabilitation of degraded watersheds and abandoned road obliteration are included.
- Riparian areas are expanded to include 25 feet on each side of intermittent streams to maintain additional riparian vegetation.

### f. WFUD's

- Terrestrial wildlife habitat improvement projects are used to increase WFUD's up to demand.
- Annually, in the first and second decades, 1,000 and 5,000 acres of chaparral are treated respectively to increase habitat capability for wildlife species associated with early successional stages.

### g. Developed Recreation

- New construction and expansion of existing developed sites is limited to a 10% increase in RVD's in the first decade in order to emphasize dispersed recreation opportunities.
- Ski area expansion and new construction is allowed.

- In the first decade, rehabilitation of existing sites is limited to 50% of total in order to emphasize dispersed recreation opportunities.

h. Dispersed Recreation

- All dispersed recreation facilities are rehabilitated to standard level in the first decade. New construction occurs.

(13 LBU) LOW BUDGET

1. Theme

This alternative was formulated to estimate the benefits that could be provided if the current budget were reduced by 25%. Goods and services would be produced in the approximate mix as current, with emphasis on market goods of timber, range, and developed recreation.

No wildlife habitat work would be done except through coordination with other resources.

No expansion of recreation sites will occur and all recreation will be managed at the low standard level. Part of BLM Rockhouse is recommended for wilderness. Visual quality objectives, other than Preservation, will be lowered one level. All forms of recreation will be below demand after the first decade.

2. Modeling Specifications

a. Objective

- The model allocates resources to maximize PNV subject to meeting **MMRs**, NDY, CMAI, MIR, and the constraints listed below.

b. Timber

- A floor of 64 MMBF/year was used in order to help maintain community stability and emphasize market goods.
- Regulation Classes I, II, and III were available as appropriate to meet visual objectives which are reduced one VQO (except in wilderness) to help meet market resource objectives.

c. Range

- A floor of 59 MAUM's/year in the first decade, 50 MAUM's/year in the second decade, and 45 MAUM's/year thereafter was used to meet permit requirements and allow slow reductions to a base level of emphasis.



d. Soil and Water

- Riparian areas increase in size on **Class I** streams and include intermittent streams to maintain additional riparian vegetation for dependent resources.
- Watershed restoration costs are reduced **25%** from current management in order to help meet market resource objectives.

e. WFUD's

- **WFUD's** are produced at existing levels.
- No projects are included to increase **WFUD's** in order to help meet market resource objectives.

f. Developed Recreation

- A floor of 660 MRVD's/year was used to provide this opportunity at a **25%** reduction from current use.

g. Dispersed Recreation

- A floor of 790 MRVD's/year was used. This was used to prevent the budget reduction from eliminating this program.

h. Roads and Facilities

- Roads were maintained such that 10% are kept open for public use.

(13 WLI) WILDERNESS WITH CAPITAL INVESTMENT FOR MARKET RESOURCES

1. Theme

This alternative was formulated to portray high levels of both quality wilderness and market outputs. The objective is to portray the amount of market outputs that could be realized with a significant part of the Forest recommended to wilderness. Non-wilderness areas would be intensively managed to produce commodities in a cost efficient manner.

Both developed and dispersed recreation opportunities would be expanded greatly, with increases limited only by demand or planned user capacity. Livestock grazing would increase greatly, considering site capability constraints and minimum wildlife habitat requirements. Wildlife habitat management would increase, but would be achieved largely by coordination with other resource management activities and treatments.

2. Modeling Specifications

a. Objective

- The model allocates resources to maximize PNV subject to meeting **MMR's**, NDY, CMAI, MIR, and the following list of constraints.

b. Market Resources

- Floors for production levels of timber, range, and developed recreation were used in order to provide at least current amounts of market resources.

ALTERNATIVES CONSIDERED IN DETAIL

(PRF) PREFERRED ALTERNATIVE

1. Theme

This alternative utilizes both even-aged and uneven-aged silvicultural techniques. It was formulated to represent the most cost efficient method to produce a broad range of emphases and intensities that meet short-term needs while retaining long-range management options. A mix of commodity and amenity benefits is produced to optimize net public benefits.

The recreation emphasis is to produce a range of quality opportunities for dispersed recreation while providing for slow increases in developed recreation capacity. Potential developed sites are managed to maintain or enhance their recreation potential for future development. Visual quality will be protected or enhanced in high use and visually sensitive dispersed areas and near recreation developments. Part of the BLM Rockhouse Wilderness Study Area is recommended for wilderness.

The timber program will produce at Forest RPA target level for the planning period. Harvest will concentrate on high site lands to insure regeneration success. Harvest methods will include both even-aged and uneven-aged harvest methods. A quality mix of harvest species will be made available.

Livestock grazing will be emphasized, with additional forage created through a coordinated chaparral management program, including prescribed fire in wildernesses.

Wildlife habitat emphasis is on species associated with early successional stages through the timber and chaparral programs with additional habitat improvement projects coordinated through these programs.

Riparian areas will be extended to include protection of intermittent streams.

2. Modeling Specifications

a. Objective

The model allocates resources to quality owl habitat and long-term sustained yield of timber products and rollover to maximize subject

to meeting **MMR'S**, NDY, CMAI, MIR and the additional constraints listed below.

b. Timber

Except as indicated below, all available timbered lands are available for all regulation classes.

Harvest level for chargeable volume (ASQ) was set at 97.0 MMF in the planning period. An additional 4.6 MMF was added for non-chargeable volume.

Retention VQO is met in the foreground and Partial Retention in the middleground of Highways 180 and 190, a portion of the Western Divide, the Generals Highway, Sierra Way (County Road M-99 from Kernville to Johnsondale bridge), Highway 178, the PCT, and heavily used trails into the wildernesses. Partial Retention is met in the foreground of an additional 225 miles of roads and trails within the conifer zone. Uneven-aged management practices were also assigned to three visually sensitive viewsheds (Sherman Pass Overlook, Monache Meadows, and Big Meadows-Salmon Creek). This is done to provide a high quality dispersed recreation experience through visual resource management.

An area in the vicinity of Sirretta Peak was classified as **SNM** and designated as not approved for timber management in favor of other nonconsumptive resource **uses**.

Thirty percent of volume in planning period was required to come from uneven-aged timber management activities.

c. Livestock Grazing

A limit on AUM production of 71,000 AUM's is applied in the first decade due to chaparral treatment and retention of additional forage for wildlife.

d. Soil and Water

Cost are included to rehabilitate deteriorated watersheds through restoration projects and abandoned road obliteration.

Riparian areas are modeled with only Regulation Class III timber management (incidental yields) within 100 feet either side of perennial streams.

Cumulative Watershed Effects were analyzed using **ERA's**. **ERA's** reflect impacted by various management activities such as road building and timber harvesting on the watershed. An ERA threshold was set as a constraint on these activities.

f. WFUD's

Terrestrial wildlife habitat improvement projects are used to increase WFUD's up to demand.

Annually, in the first and second decades, 1,000 and 5,000 acres of chaparral are treated respectively to increase habitat capability for wildlife species associated with early successional stages. Treat 30 miles of stream for increased fisheries habitat improvement.

g. Developed Recreation

New construction and expansion of existing developed sites is limited to a 10 percent increase in RVD's in the first period in order to emphasize dispersed opportunities.

Ski area expansion and new construction is allowed.

In the first decade, rehabilitation of existing sites is limited to 50 percent of total in order to emphasize dispersed recreation opportunities.

h. Dispersed Recreation

All dispersed recreation facilities are rehabilitated to standard level in first decade.

(CUR) CURRENT ALTERNATIVE (NO CHANGE ALTERNATIVE)

1. Theme

This alternative was formulated to estimate the expected outputs, services and consequences that would occur if current allocations, directions, policies, and practices were to continue. Forest goods will be provided at 1982 levels.

Recreation emphasis is for low standard management for both dispersed and developed recreation, except where permittees are 'involved (i.e., ski areas). Recreation opportunities will fall below demand after the first decade. Wildlife management will continue through coordination with other resource activities, focusing on meeting minimum requirements.

Timber harvest will remain at current levels with increased costs for production due to access difficulties.

The range program will continue at current levels. The chaparral management program will continue to burn 1,000 acres per year.

New wilderness will not be recommended.

## 2. Modeling Specifications

### a. Objective

The model allocates resources to maximize PNV subject to meeting MMR'S. NDY, CMAI, MIR and the additional constraints listed below.

### b. Timber

IVQO's are met. restricting land as follows.

Preservation - no harvest.

Retention - Regulation Class III, or no harvest.

Partial Retention - Regulation Class II, or no harvest.

Modification and Maximum Modification - Regulation Class I, II, III, or no harvest.

Produce at least 95.1 MMF per year.

### c. Livestock Grazing

Produce 63.000 AUM's per year.

1,000 acres of chaparral are prescribed burned each year.

### d. Soil and Water

Costs are included to rehabilitate deteriorated watersheds through restoration projects and abandoned road obliteration.

Riparian areas are modeled with only Regulation Class III timber management (incidental yields) within 100 feet either side of perennial streams.

Cumulative Watershed Effects were analyzed using ERA's. ERA's reflect impacted by various management activities such as road building and timber harvesting on the watershed. An ERA threshold was set as a constraint on these activities.

### e. WFUD's

The existing WFUD's are maintained.

### f. Recreation

Only low standard recreation is allowed.

Produce at least 1,580 dispersed MRVD's per year.

Produce 886 developed MRVD's per year.

g. Budget

A budget constraint of \$16.3 million is used.

(RPA) 1980 RESOURCE PLANNING ACT PROGRAM

1. Theme

This alternative was formulated to emphasize both commodity and amenity values to meet 1980 RPA targets. Both developed and dispersed recreation opportunities will be greatly expanded, limited only by demand. Livestock grazing will be below current levels until the fourth decade and show a 27 percent increase in 2030. Wildlife habitat improvements will increase and goals will be reached through a mix of extensive habitat treatments and coordination with other resources. Timber harvest will increase slightly. Visual quality will be maintained or enhanced over the entire Forest. Watershed rehabilitation will increase.

2. Modeling Specifications

a. Objective

The model allocates resources to maximize PNV subject to meeting MMR'S, NDY, CMNI, MIR and the constraints listed below.

b. Targets

Meet (or approximate to the extent possible) RPA targets for timber, range, developed and dispersed recreation, visual quality, and wildlife and fisheries habitat improvement.

c. Timber

Harvests are restricted to meet visual RPA targets. Thirty percent of the volume harvested in the planning period was assigned to uneven-aged management.

d. Livestock Grazing

Stocking of cattle in treated chaparral is allowed up to 50 percent of allowable use in order to provide additional forage in deer winter range to meet the RPA target.

e. Soil and Water

Costs are included to rehabilitate deteriorated watersheds through restoration projects and abandoned road obliteration.

Riparian areas are modeled with only Regulation Class 3 timber management (incidental yields) within 100 feet either side of perennial streams.

Cumulative Watershed Effects were analyzed using ERA's. **ERA's** reflect impacted by various management activities such as road building and timber harvesting on the watershed. **An ERA** threshold was set as a constraint on these activities.

f. Recreation

Both developed and dispersed RVD's are produced at standard levels.

g. WFUD's

Treat **30** miles of stream for fisheries habitat improvement to meet **RPA** targets.

(AMN) AMENITY EMPHASIS

1. Theme

This alternative variation was formulated to emphasize a balance of high levels of amenity benefits. Wildlife habitat diversity, wilderness and dispersed recreation opportunities and visual quality will be emphasized. Other benefits will be produced at economically efficient levels, with all timber harvested utilizing uneven-aged silvicultural techniques.

Emphasis would be placed upon improvement and maintenance of wildlife and fish habitat diversity by prescribed burning of chaparral and regulation of activities in riparian, oak woodland, and conifer forest areas. Five new wildernesses would be recommended for designation. Dispersed recreation would be emphasized over developed recreation opportunities but both would complement wildlife and fish habitat management objectives. Livestock grazing would decrease below the current level, and would be regulated to provide high quality wildlife habitat.

Visual objectives are at least Partial Retention or higher over the entire Forest.

2. Modeling Specifications

a. Objective

**The** model allocates resources to maximize PNV subject to meeting **MMR'S**, NDY, CMAI, MIR and the following constraints.

b. Timber

All available timber lands receive uneven-aged silvicultural treatment.

c. Livestock Grazing

Livestock grazing would not occur in meadows, riparian areas or new wilderness. Grazing in treated chaparral is reduced to 50 percent of allowable use. These constraints provide for a high quality dispersed recreation experience and add additional forage for deer.

d. Soil and Water

Riparian areas are modeled with only Regulation Class III timber management (incidental yields) within 100 feet either side of perennial streams.

Cumulative watershed effects were analyzed using ERA's. ERA's reflect impacted by various management activities such as road building and timber harvesting on the watershed. An ERA threshold was set as a constraint on these activities.

e. Recreation

Developed recreation is produced at low standard levels in order to emphasize dispersed recreation opportunities.

Dispersed recreation is produced at standard levels.

Five areas are recommended to wilderness (with prescribed burning permitted) to provide maximum wilderness and further emphasize dispersed recreation opportunities.

f. WFUD's

Emphasis on nonconsumptive WFUD's up to demand.

Costs included at 2.5 times recovery level for peregrine falcon to maximize population level.

Treat 3,000 acres chaparral per year for wildlife habitat improvement.

Treat 50 miles of stream for fisheries habitat improvement.

(MKT) HIGH MARKET EMPHASIS

1. Theme

This alternative was formulated to estimate the costs and benefits from emphasizing high production levels of the market resources, timber, livestock grazing, and developed recreation.

Timber production is of highest priority, with at least a 25 percent increase over current levels in the first decade and a 30 percent increase by decade five. Livestock grazing and developed recreation increases approximate those of timber. Dispersed recreation is managed



at low standard levels. Nonmarket benefits are induced from market production ~~or~~ are at economically efficient levels.

## 2. Modeling Specifications

### a. Objective

The model allocates resources to maximize PNV subject to meeting **MMR'S**, NDY, CMAI, **MIR**, and the following list of constraints.

### b. Timber

Production floors of **125 MMF** per year and **130 MMF** per year were used in the **first** and fifth decades respectively.

### d. Developed Recreation

A production **floor** of **.978** MMRVD's and **1.1** MMRVD's was used in the **first** and second decades, respectively.

All RVD's are at standard level.

Three ski areas are developed.

### e. Visual

Partial Retention was met in foreground and middleground of the Pacific Crest Trail.

### f. Water and Soil

Costs are included to rehabilitate deteriorated watersheds through restoration projects and abandoned road obliteration.

Riparian areas are modeled with only Regulation Class III timber management (incidental yields) within 100 feet either side of perennial streams.

Cumulative Watershed Effects were analyzed using ERA's. ERA's reflect impacted by various management activities such as road building and timber harvesting on the watershed. An ERA threshold was set as a constraint on these activities.

## (PRO) HIGH PRODUCTION EMPHASIS

### 1. Theme

This alternative was formulated to estimate the costs and benefits of meeting the **1980 RPA** high timber target. Emphasis is placed at a lesser level on livestock grazing and developed recreation. Nonmarket resource levels **are** induced by market production or produced at economically efficient levels.

## 2. Modeling Specifications

### a. Objective

The model allocates resources to maximize PNV subject to meeting MMR's, NDY, CMAI, MIR, and the constraints listed below.

### b. Timber

A maximum timber objective with PNV rollover was used for the RPA planning period with harvest ceiling set at 1980 RPA high timber targets.

### c. Soil and Water

Costs are included to rehabilitate deteriorated watersheds through restoration projects and abandoned road obliteration.

Riparian areas are modeled with only Regulation Class III timber management (incidental yields) within 100 feet either side of perennial streams.

Cumulative Watershed Effects were analyzed using ERA's. ERA's reflect impacted by various management activities such as road building and timber harvesting on the watershed. An ERA threshold was set as a constraint on these activities.

## (WFV) WILDLIFE, FISH AND VISUAL EMPHASIS

### 1. Theme

This alternative was formulated to emphasize production of high quality habitat for game and nongame wildlife species in order to increase opportunities for wildlife uses, while emphasizing visual quality and reducing cumulative impacts.

Dispersed recreational opportunities will be greatly expanded, with increases limited only by demand, desired user capacity, or to minimize wildlife habitat disturbance. Developed recreation opportunities will also be expanded, but will be limited to minimize wildlife habitat disturbances. The timber program will be managed to provide high quality habitat for emphasized wildlife species. Livestock grazing will increase as new forage is created, but the intensity of grazing will be reduced to minimize conflicts with wildlife. Wildlife habitat improvements will provide increased habitat capability for wildlife species. New wilderness designation is not recommended to facilitate access for habitat improvement projects.

## 2. Modeling Specifications

### a. Objective

The model allocates resources to maximize PNV subject to meeting MMR's, NDY, CMAI, MIR, and the additional constraints listed below.

### b. Timber

Available emphases are Regulation Classes II and III and no harvest. This provides for maintenance of habitat for wildlife species utilizing late successional stages of timber, and provides a moderate level of visual quality.

A minimum of 1,600 acres per year are regenerated while retaining 50 percent of the area in forage producing species. This provides retention of additional high quality forage for deer in summer range.

A floor of 82 MMBF was used to help maintain community stability. (50 percent of the harvest was required to come from uneven-aged management prescriptions.)

### c. Livestock Grazing

In chaparral, only 50 percent of allowable use of forage is available for livestock production. This provides retention of additional forage for deer in winter range.

Reduce cattle use in meadows to 50 percent of 1982 level. This provides additional high quality forage for deer.

### d. Soil and Water

Costs are included to rehabilitate deteriorated watersheds through restoration projects and abandoned road obliteration.

Riparian areas are modeled with only Regulation Class III timber management (incidental yields) within 100 feet either side of perennial streams.

Cumulative Watershed Effects were analyzed using ERA's. ERA's reflect impacted by various management activities such as road building and timber harvesting on the watershed. An ERA threshold was set as a constraint on these activities.

### e. WFUD's

WFUD's are produced up to demand through habitat improvement projects designed to increase habitat capability for wildlife species.

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2,500 acres of chaparral are prescribed burned each year to provide increased habitat areas for wildlife species associated with early successional stages of vegetation.

Treat 50 miles of stream for increased fisheries habitat.

f. Developed Recreation

Sherman Pass and Mitchell-Maddox potential ski areas are not constructed, but are managed for wildlife habitat improvement,

g. Dispersed Recreation

Piute and Scodie Mountains are managed for maximum dispersed wildlife associated recreation opportunities through the use of only Regulation Class II and III harvest emphases.

Table B.6 - Constraints Specific to Each Alternative

CONSTRAINT	PRF	CUR	RPA	AMN	MKT	FRO	WEV
Campground RVD's Produced (M RVD's per year)	1* ≤ 977 2+ Open	1-5 = 886 6+ Open	1 ≥ 978 2 ≥ 1110 3 ≥ 1170 4 ≥ 1370 5+ ≥ 1520	Open	1 ≥ 978 2+ ≥ 1107	1 ≥ 978 2-4 ≥ 1107	Open 5+ ≥ 1418
• Period(s) in which constraint applies							
Developed Recreation Rehabilitation (% allowed)	1 ≤ 50% 2+ Open	1+ = 0	Open	1+ = 0	Open	Open	Open
Ski Areas Not Constructed (# Acres)	Open	Open	1	1	Open	Open	2
Olsperfsd Recreation RVD's Produced (M RVD's per year)	Open	1+ ≥ 1582	Open	Open	Open	Open	Open
Dispersed Recreation Rehabilitation (% Allowed)	Open	1+ = 0	Open	Open	Open	Open	Open
Areas Recommended for Wilderness (# Areas)	Open	Open	Open	4	Open	Open	Open
M and MM VCO Allowed (M Acres Conifer)	1+ ≥ 250	1+ ≤ 100	1+ ≤ 78	1+ = 0	1+ ≤ 305	1+ ≤ 362.5	1+ = 0
PR VCO + (M Acres Conifer)	1+ ≥ 130	1+ ≥ 185	1+ ≥ 176	1+ ≥ 257	1+ ≥ 49	1+ ≥ 22	1+ ≥ 15
R VCO + (M Acres Conifer)	1+ ≥ 20	1+ ≥ 110	1+ ≥ 116	1+ ≥ 18	1+ 1 7	1+ ≥ 2	1+ ≥ 1
Peregrine Falcon Pair Costs (# Pairs)	Open	Open	Open	3	Open	Open	Open
Chaparral Prescribed Burning (M Acres per year)	1 = 1.0 2 = 5.0 3+ Open	1+ = 1.0	1+ ≥ 2.5	1+ 2. 3.0	Open	Open	1+ ≥ 2.5
Wet Meadow AUM Reduction (% Below Allottable Use)	Open	Open	Open	1+ 100	Open	Open	1+ = 50
Chaparral AUM Reduction (% Below Allowable Use)	1+ = 25	Open	1+ = 50	1+ = 50	Open	Open	1+ = 50
Forage Retention Regeneration Treatment (Acres per year)	Open	Open	Open	Open	Open	Open	1-5 = 1.6
AUM's Produced (M AUM's per year)	1 I 7 1 2+ Open	1-5 = 63 6+ Open	1 = 56.6 2 = 57.5 3 = 58.9 4 = 65 5 ≥ 80 6+ Open	Open	Open	Open	1 ≥ 60 2+ Open

Table 86 - Constraints Specific to Each Alternative (Continued)

<u>CONSTRAINT</u>	<u>PRF</u>	<u>CLR</u>	<u>RPA</u>	<u>AMN</u>	<u>MKT</u>	<u>PRO</u>	<u>WV</u>
WM Production Allowed in New Recommended Wildernesses (Yes/No)	Yes	Yes	Yes	No	Yes	Yes	Yes
Timber Volume Produced (MMBF per year)	1+ ≥ 97	1+ ≥ 95	1 = 101.6 2 = 103.3 3 = 110.2 4+ 1110.2	Open	1-4 ≥ 125 5+ ≥ 130	2+ ≥ 180	1+ ≥ 80
Timber Harvest Increase (% Increase Between Periods)	Open	Open	Open	Open	Open	Open	Open
Budget (\$Million per year)	1+ ≤ 30	1-5 ≤ 16.3 6+ Open	Open	Open	Open	Open	1 ≤ 15 2+ Open
Red Fir Regeneration Allowed (Acres per year)	Open	Open	Open	Open	Open	Open	1 = 0 2+ Open
Lodgepole Pine Volume Allowed (MMBF per year)	Open	Open	Open	Open	Open	Open	1 = 0 2+ Open
Sequoia Volume Allowed (MMBF per year)	open	Open	Open	Open	Open	Open	1 = 0 2+ Open
Road Obliteration (Miles per year)	1+ = 6.5	1+ = 6.5	1 = 49 2+ = .5	1 = 25 2 = 24 3+ = .5	1 = 25 2 = 24 3+ = .5	1 = 25 2 = 24 3+ = .5	1 = 25 2 = 24 3+ = .5
Watershed Restoration Costs (Acres per year)	1 = 140 2 = 100 3 = 50 4+ = 30	1 = 140 2 = 100 3 = 50 4+ = 30	1 = 270 2 = 290 3 = 300 4 = 310 5+ Open	1 = 200 2 = 50 3+ = 20	1 = 200 2+ = 50	1 = 200 2+ = 50	1 = 200 2 = 50 3 = 20 4+ = 10
Watershed Inventory Costs (Acres per year)	1 = 2,000 2 = 1,100 3 = 550 4+ = Open	1 = 2,000 2 = 1,100 3 = 550 4+ = Open	1 = 2,400 2 = 3,000 3 = 3,500 4+ = Open	1 = 6,000 2 = 1,000 3 = 400 4 = 400 5+ = 200	1 = 6,000 2+ = 1,000	1 = 6,000 2+ = 1,000	1 = 1,000 2 = 1,000 3 = 500 4+ = 100
Cumulative Watershed Effect (Threshold Level Constraining Timber Harvest [Yes/No])	No	no	NO	No	Yes	Yes	NO
Fisheries Habitat Improvement (Miles of Stream for Decade 1)	30	0	30	50	0	0	50

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## IV. OTHER MODELS

### A. Fire Management Analysis Process

The fire management analysis process <sup>11</sup> is comprised of four levels of analysis and a series of eight computer programs. Of the four levels of analysis, only two (described below) are used in the Forest planning process. The other two levels affect implementation and evaluation. The eight computer programs ~~are~~ ~~simulators~~ and report writers used to define the historical and current fire management situations and to evaluate candidate fire management fuels, prevention, detection, and suppression programs.

Fire Management Analysis Level I. An analysis of the historical and current fire management situation using fire and weather information, records of fire occurrences, and fire behavior (number of fires, acres burned by fire **size** and intensity). Some uses of Level I analysis are:

1. Display the general effectiveness and cost, including Fire Fighting Funds, of the current fire management program. This program cost may be used as a basis for estimating expected future costs where the fire program is relatively stable and will not vary significantly between prescriptions on a Forest-wide basis.
2. As a tool to aid the formulation and development of organizations in response to Forest plan alternatives and prescriptions. Level I analysis identifies areas which can be further analyzed in the areas of prevention, suppression, and fuels management areas.

Fire Management Analysis Level II. An analysis of various fire management program options (e.g., suppression mix versus prevention), budget levels (costs), and their effectiveness. This analysis is based upon the simulation of representative fires using varying fuel models, differing suppression resources, historical occurrence patterns, and by changing occurrence patterns based upon prevention efficiency. Some uses of Level II analysis **are**:

1. Evaluate fire program options appropriate for the principal Forest plan alternatives identified by FORPLAN to provide detailed resource output, effect value change, and program cost data for selection of the most efficient program level where fire program cost and effectiveness will affect the choice between these alternatives.
2. Evaluate the efficiency of fire program options for a number of alternative management prescriptions **or** Forest plan alternatives to provide general estimates of fire program cost and consequences for FORPLAN.

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<sup>11</sup>For a complete description of the fire management analysis process, see FSH 5109.19 (Fire Management Analysis, and Planning Handbook).

3. Evaluate the effectiveness of fire program options for a single Forest plan alternative within a constrained budget to establish the most effective program mix where the budget level is fixed.

From Fire Management Analysis Levels I and II, inputs by alternative to FORPLAN are:

1. Probability of acres burned.
2. Various program costs reflecting different fire management organizations.
3. Suppression costs reflecting the fire management organizational efficiency.

FORPLAN then predicts results by alternative for:

1. Acres burned.
2. Suppression costs.
3. Net value change for resources.
4. Optimum organization and budget level by period.

#### B. RAMPREP

RAMPREP is a ISW Region Timber Management model that is used to develop timber yield tables. RAMPREP timber yield tables are based on the Sequoia NF's 1980 Forest inventory data. RAMPREP summarizes the potential yields of the forest based on the 1980 inventory. For a detailed discussion of how RAMPREP calculates the potential yields, see The Region Five Timber Inventory Process, July 1981.

#### C. Regional Industrial Multiplier System (RIMS)

The U.S. Department of Commerce's Regional Industrial Multiplier System<sup>12</sup> (RIMS) was used to develop impact multipliers and employment and income estimates for the alternatives analyzed in the EIS. This system provides input-output multipliers for 56 industrial sectors for Bureau of Economic Analysis (BEA) Economic Area 166 (Fresno Area). Most of the economic activity associated with the Sequoia National Forest takes place within BEA Economic Area 166.

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<sup>12</sup>US Department of Commerce, Bureau of Economic Analysis, Industry-Specific Gross Output Multipliers for BEA Economic Areas. Regional Economic Analysis Division. Washington, D.C., January 1977.



Estimates of historical expenditures by sector associated with Forest outputs and purchases from the local economy with the RIMS input-output model multipliers were used to estimate employment and income effects of the alternatives.

A number of assumptions used in the input-output modeling technique must be kept in mind when interpreting the resulting income and employment estimates:

1. Historical transaction patterns associated with Forest outputs and purchases are assumed to hold in the future.
2. Transaction patterns (production functions) for industries in the local economy are assumed to be similar to those in the national economy and are assumed to hold in the future.
3. Income and employment impacts are assumed to occur in the same time period as the underlying changes in Forest outputs and purchases (no lagged effects are assumed).

As a result of these basic assumptions, employment and income effects estimated for the alternatives have relatively low reliability in absolute terms in future time periods. However, the income and employment estimates are reasonably accurate indicators of relative changes between the alternatives in the first decade.

D. Wildlife and Fish Habitat Relationships Habitat Capability Models

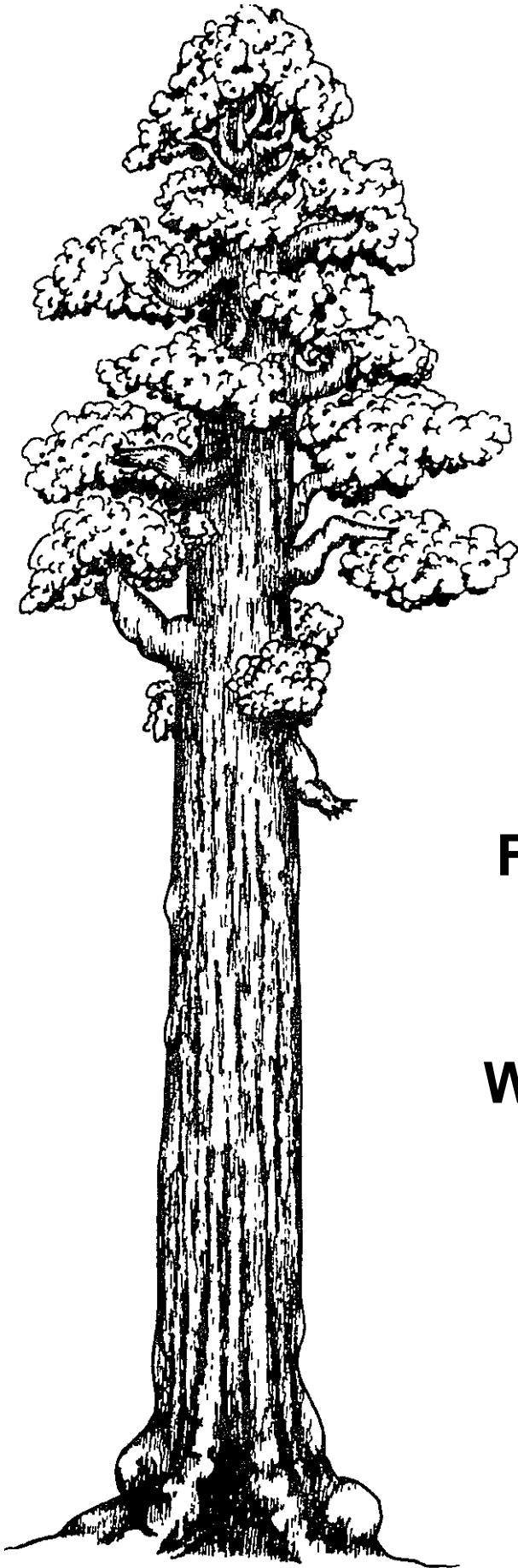
The Wildlife and Fish Habitat Relationships Habitat Capability Models (HCM's) are a management tool developed by planning biologists in the Pacific Southwest Region.<sup>13</sup> The HCM is a resume of biological information that describes the habitat requirements of a Management Indicator Species. This work was mandated by the Regulations of the National Forest Management Act (USDA 1979), which requires that each National Forest identify management indicator species to represent the significant habitat management issues for the Forest Land Management Plan.

Although the development of HCM's was related to Forest-wide planning, the models are detailed enough to apply to project work. Therefore, biologists and land managers may use this information both for large-scale planning and inventory and for site-specific habitat management within a single stand. Refer to Table 3.16, FEIS, for notations on sources of HCM's.

Because these models contain only biological information, they do not imply policy decisions. The tie to policy within the Forest Service will come as each Forest allocates land areas to high, medium, or low capability standards. This will be done in an interdisciplinary manner through the

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<sup>13</sup>Hurley, Janet F. et al, Wildlife Habitat Capability Models and Habitat Quality Criteria for the Western Sierra Nevada, Stanislaus National Forest. May 1981.

**Forest Plan. However, the models provide appropriate information for biologists to establish goals for managing habitat quality through project work.**



**Appendix C**  
**FURTHER PLANNING**  
**AND**  
**WILDERNESS STUDY**  
**AREAS**

APPENDIX C  
DESCRIPTION AND EVALUATION  
FURTHER PLANNING AND WILDERNESS STUDY AREAS

The Further Planning and Wilderness Study Areas are displayed in numerical order in this Appendix. The list below is a quick reference to locate a specific area by name.

<u>NAME</u>	NUMBER	PAGE
BLM Rockhouse	0029	c-2
Kings River (Sequoia portion)	0198	
Oat Mountain	5197	<u>C</u> -11
Dennison Peak	5202	c-20
Moses	5203	c-31
Scodies	5212	c-44

A. FURTHER PLANNING AREA DESCRIPTIONS AND EVALUATION

INTRODUCTION

The second Roadless Area Review and Evaluation (RARE II) inventory identified 21 individual roadless areas on the Sequoia National Forest with a total of 517,274 net acres. The RARE II Final EIS recommended some of these areas for wilderness or non-wilderness, and suggested that other areas be subject to further planning before final recommendations were made. However, as a result of litigation over the RARE II recommendations, and the 1984 wilderness legislation, only four Further Planning Areas (FPA's) are being evaluated by the Sequoia NF for possible wilderness recommendation. These include the Oat Mountain, Dennison Peak, Moses, and Scodies Further Planning Areas. The BLM Rockhouse Wilderness Study Area (WSA) is also being evaluated for possible wilderness recommendation.

The entire Kings River Further Planning Area was analyzed by the Sierra NF in its DEIS. During this time, a considerable amount of legislative activity regarding Wild and Scenic River designation on the Kings River occurred. The end result was enactment of Kings River Wild and Scenic River Legislation in November 1987, which included this area as a Special Management Area. This action negates the need for additional consideration as a Further Planning Area. A plan for managing the Special Management Area will be prepared jointly between the two Forests within three years of the legislation enactment date.

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1/ Deleted (See discussion in the Introduction which follows.)

One additional area, Cypress, has been evaluated by BLM. It has been recommended for non-wilderness use in their FEIS.

The following narratives describe individual Sequoia NF inventoried Further Planning Areas and the BLM Rockhouse Wilderness Study Area, analyze their wilderness values, address current and potential future **uses**, and **examine** the consequences of managing each area.

Each narrative contains five major subheadings: description, capability, availability, need, and environmental consequences. The annotated outline describes the kind of material included in each section, and defines the terms and abbreviations that might be found there.

BLM ROCKHOUSE

area #0029

35,560 ACRES

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#### DESCRIPTION

The Rockhouse Wilderness Study Area (WSA) is located in portions of Kern and Tulare Counties on the Kern Plateau. This area is administered by the Caliente Resource Area, Bureau of Land Management (BLM). The Rockhouse Area is actually split into two areas separated by an improved dirt road. The southern section is bounded on the south, east and north by the Canebrake/Long Valley-Rockhouse Basin Road, and on the west by the Sequoia National Forest boundary. The northern section is bounded on the north and east by section lines along the Kennedy Meadows Road, to the south by the Chimney Peak/Rockhouse Basin Road, and to the west by the Sequoia National Forest boundary. Access to the area is provided from Highway 178 to the Canebrake Road or Highway 395 up Nine Mile Canyon along Kennedy Meadows Road. It is approximately a 1-3/4-hour drive from Bakersfield to the southern portion of the Rockhouse Area and a 3-1/2-hour drive from Los Angeles.

The area is dominated by pinyon pine covered mountains. Rocky slopes, poor soil development and low precipitation limit vegetative growth and cover in many portions of the area. The southern end of the area in the Chimney Creek drainage contain massive granitic rock ridges and outcrops. Rockhouse currently receives a moderate amount of recreation use. Dominant recreation uses include hiking, equestrian **use**, off-highway vehicles (OHV's), and hunting. The entire Rockhouse WSA is within the watershed of the South Fork Kern River.

Archaeological evidence obtained from studies along the Pacific Crest Trail indicate the Tubatulabal Indians were the primary inhabitants in the Rockhouse WSA. These Indians relied heavily upon the local pinyon crop. Temporary hunting camps **were** also occupied throughout the pinyon season. Only one systematic survey for cultural resources has been conducted within the WSA. This survey, followed by limited excavation, was completed for construction of the Bear Mountain segment of the Pacific Crest Trail.

#### CAPABILITY

Outstanding opportunities for solitude and a primitive and unconfined type of recreation are prevalent throughout this unit. Rugged challenging

topography, perennial streams, variable terrain and vegetation all contribute to these opportunities. These opportunities are greatly enhanced by common boundaries with the Dome Land Wilderness to the west.

There are several primitive vehicle routes within the Wilderness Study Area. However, these routes do not distract from the overall natural character of the area. These routes, along with evidence of past fire suppression activities constitute the whole human influence on the area and are essentially unnoticeable. Thirty-six percent of the current recreation use is by OHV's and other users of motorized equipment. Dispersed recreation activities are challenging due to a lack of established trails. Scenic views from and within the Rockhouse WSA are excellent.

The mutual boundary of the WSA with the Dome Land Wilderness is not based on topographical features but section lines which form the administrative boundary between the two agencies. The other boundaries primarily follow roads and are easily recognized on the ground.

Opportunities exist to modify the existing boundaries to provide greater manageability for the Rockhouse area and the neighboring Dome Land Wilderness. Such modifications could reduce OHV conflicts with nonmotorized dispersed recreation users and reduce impacts on private land inholdings and mining activities. The first of these boundary modifications concerns the southern portion of the WSA and would recommend 5,270 acres to wilderness designation. A watershed boundary would bisect this section providing a topographical boundary that would enhance the manageability of the adjacent Dome Land Wilderness on the southeast corner up to Long Valley. The second modification adds an additional 4,440 acres north of Long Valley to the Rockhouse Basin Road. This boundary modification would recommend a total of 9,710 acres as wilderness and would adjoin to the Dome Land Wilderness boundary. The third boundary modification recommends most of the southern portion of the WSA as wilderness from Long Valley. This would place 12,650 acres in wilderness. The eastern boundary would follow the nearest ridge line within the WSA. The last boundary adjustment provides for more manageability of the northern portion of the WSA than the current "stair-step" boundary near Kennedy Meadows Road. A watershed boundary line is proposed that would add an additional 6,290 acres to the first boundary modification for a total of 11,560 acres recommended for wilderness.

Special features for the southern portion of the WSA included isolated populations of two sensitive plants: Needles buckwheat (Eriogonum breedlovei var. shevockii) and Yosemite bitterroot (Lewisia disepala). Habitat occurs in the pinyon woodland for another sensitive plant, Nine Mile Canyon phacelia (Phacelia novemmillensis). In addition, the southern portion of Rockhouse WSA contains one of the largest concentrations of the yucca-like plant (Nolina parryi ssp. wolfii) for the southern Sierra Nevada. The nolinias, nearly 15 feet tall when flowering, are located on rocky exposed slopes.

#### AVAILABILITY

The Rockhouse WSA represents several trade-offs between wilderness designation and other resources and activities. Modified boundaries as

mentioned earlier could greatly reduce conflicts and improve not only increased manageability of the WSA, but the existing Dore Land Wilderness as well.

Air quality of the Rockhouse WSA is most likely influenced by air flow from the South Fork Kern River. The lower elevations of the WSA are subject to some days of poor visibility during summer months when inversion layers commonly trap stagnant air in the canyons and valleys. It is speculated that pollutants collected and generated in the Bakersfield area are sometimes swept up-canyon and transported long distances via the Kern River and its tributaries. The Rockhouse WSA may sometimes be impacted by this transported material. Significant emissions generated by new major industrial facilities in the area would be subject to review due to the Class I designation of the adjacent Dore Land Wilderness.

Adjoining the Sequoia NF, and Dore Land Wilderness, this area provides opportunities for primitive recreation experiences primarily in a pinyon pine/basin-sage environment. Current use occurs in the Roaded Natural Recreation Opportunity Spectrum (ROS) Class. Hunting, generally for deer and small upland game, is the dominant recreational pursuit in the area. Some pinyon nut gathering also occurs. In 1982, use was estimated at 4,260 RVD's. Assuming that present trends continue and if the area is not designated as wilderness, use is expected to reach 4,900 RVD's and 5,600 RVD's by 1990 and 2000 respectively. By 2030, use is projected to reach 8,400 RVD's, nearly three times present use. If the entire area were designated wilderness, use is projected to be lower than non-wilderness. However, if portions of Rockhouse were designated wilderness, some additional dispersed nonmotorized use would be generated since access to the area from the south via Canebrake Road is open nearly all year. Use to the Dore Land Wilderness from the east currently depends on the ability to ford the South Fork Kern River. Due to the relative aridity of this portion of the Kern Plateau, the area would attract visitors during the traditional "off-season" winter and spring months when most wildernesses in the Sierra Nevada are covered by snow. The Pacific Crest Trail crosses the northern section of the WSA for approximately three miles.

The WSA is completely within the Monache deer herd's spring and summer ranges. The southern portion near Long Valley is historically a critical wintering area for the deer herd. Water is adequate for wildlife with several perennial and intermittent streams and springs. These are supplemented by two stock watering troughs and three **guzzlers** located in the area. There are three vegetative study enclosures located on the periphery of the area to monitor habitat trends and successional changes. A deer herd management plan has been completed and approved for the Monache herd.

Potential for habitat improvement exists in portions of the WSA. Small scale type conversions of pinyon pine to grass and various shrubs used as browse have been shown to be successful on adjacent lands and could increase the species diversity of this WSA. These projects can be easily implemented if the area is designated non-wilderness. Key wildlife areas can also be effectively managed if the area was designated wilderness by providing in the management plan opportunities to permit lightning fires to burn, thus creating early successional stages of vegetation essential for

many wildlife species. There are no fisheries within the WSA. Threatened or endangered species are not known to occur in the area.

Estimated annual water yield for the study area is 6,900 acre-feet. The area is within the South Fork Kern River drainage which eventually empties into Lake Isabella. Most of the study area contains intermittent or ephemeral creeks. Average annual precipitation is 14 inches. Channels are mostly rocky and stable.

There are no commercial conifers for timber production within the WSA. Some opportunities exist for Christmas tree cutting of pinyon pines and for fuelwood.

Recent field studies have verified the existence of black stain disease in some pinyon stands. This fungus kills small groups of trees. Some silvi-cultural practices are available to keep the infestations from spreading. Pinyon pine mistletoe is rare to uncommon in the WSA and does not present a management concern at this time.

Grazing within Rockhouse WSA is limited because pinyon pine ecosystems generally provide poor forage for cattle. Currently 280 AUM's are produced among the three permittees for the area. Most of the cattle production is restricted to perennial and intermittent streamside riparian zones where grasses and other palatable vegetation can be obtained. Understory vegetation within the pinyon pine woodland is sparse. Most browse comes from various shrubs. There are two watering troughs in the area. Plans do not exist for additional improvement.

Potential for increases in production lies in type converting pinyon stands to grass. Depending on the intensity, frequency, and number of acres treated, production could be increased between 500 to 1,200 AUM's. However, much of the terrain is too steep or excessively rocky to increase forage for grazing.

The Rockhouse WSA is composed of an uplifted erosional surface of older metasedimentary rocks which have been intruded by a succession of younger granitic plutons. The metamorphic rocks occur as roof pendants or smaller xenoliths. The California Division of Mines and Geology has recently done a mineral potential study of the area. Nearly all occurrences of mineralization are confined to metamorphic rocks which are found in the northern section of the study area.

Three land use authorizations are recorded for the WSA. They are:

- (1) Classification for Multiple-Use, R 617 (10/5/67);
- (2) Public Land Order 2594 - National Cooperative Land and Wildlife Management Area (1/22/62); and
- (3) Secretarial Order of April 8, 1935 - included land within California Grazing District No.1.

There are three blocks of non-Federal lands with approximately 200, 480, and 40 acres for a total of 720 acres. The 40-acre parcel adjoins the Dome



Land Wilderness in Section 36, T23S, R35E. The land owner has the surface mineral rights. No development is known.

The 200- and 480-acre blocks are located in the northern section of the WSA and are accessed by unimproved dirt roads that are not maintained by Government funds. The U.S. Government retains the subsurface mineral rights on these two parcels. The acquisition of these lands is not being pursued.

#### NEED

The nearest designated area is the Dome Land Wilderness which is adjacent to the western boundary of the Rockhouse WSA. A portion of BLM study area #026 on the east-side of Rockhouse WSA has been recommended as suitable for wilderness in the Central California study areas DEIS.

The southern section of Rockhouse WSA is only a 1-3/4 hour drive from Bakersfield and can be reached from Los Angeles in approximately 3-1/2 hours. Access to the area is open nearly year-round.

The majority of public comments concurred with BLM findings that the area contained wilderness attributes. The extensive pinyon woodland ecosystem is not well represented in any established California wilderness. Several people stated that the area adjacent to the Dome Land Wilderness should be protected. Major roads and development areas were originally removed from the WSA boundary and do not significantly detract from the naturalness of the area.

#### ENVIRONMENTAL CONSEQUENCES

1. Designation: Wilderness  
Prescription: Full Fire Control & Suppression (WC4)  
Alternatives: See Table C.1.

Wilderness designation would maintain the attributes of solitude, natural appearance and natural integrity that are characteristic of Rockhouse Basin. Recreation use is light to moderate. Due to the relative aridity of this portion of the Kern Plateau, the area would attract visitors during the traditional "off-season" winter-spring months when most wildernesses in the Sierra Nevada are covered by snow. Expansion of the trail system would provide access to more of the area. Cultural resources, while largely unexplored, are known to abound. They would receive maximum protection.

Although there are three permittees who utilize this area for grazing, opportunities to increase forage production and additional water developments would be forgone. Current improvements would be retained. The existing wildlife population would remain status quo. Much of the vegetation is a uniform pinyon pine woodland.

Fire suppression action will be fast and aggressive. Vegetative diversity would not be maintained or enhanced without the opportunity to use prescribed fire. Air quality would remain unaffected by application of this prescription.

Social benefits would be primarily associated with increasing the amount of wilderness available. Economic costs would involve increased administration of wilderness regulations.

Large resource trade-offs requiring mitigation would not occur with wilderness designation.

2. Designation: Non-wilderness  
Prescription: General Dispersed Recreation (PS1)  
Alternatives: See Table C.1.

Wilderness attributes of natural appearance and integrity would not be affected by application of this prescription. Because of the arid climate, recreation **use** is not expected to change except through encouragement of OHV **use**, which would affect solitude. Cultural resources would be impacted (although minimally) both by project development and dispersal of users. These activities would require inventory, evaluation, and appropriate cultural resource mitigation/protection.

Grazing programs would remain basically unchanged although conflicts with OHV's would increase slightly. Air quality would remain unaffected by application of this prescription.

Social and economic benefits for the area would be few. The biggest cost would be loss of a formal wilderness designation.

Large resource trade-offs requiring mitigation would not occur.

3. Designation: Non-wilderness  
Prescription: Wildlife & Dispersed Recreation (PS5)  
Alternatives: See Table C.1.

Wilderness attributes would be little affected by the application of this prescription, except possibly in the immediate area of a project. Projects would be in small areas and primarily aimed at providing water developments and small scale vegetative conversions. Because of the arid nature of the country, a low-to-moderate increase in recreation **use** is expected. Cultural resources would remain reasonably protected, although project areas would require inventory, evaluation, and protection/mitigation.

Grazing programs would remain basically unchanged although some range improvement measures would be implemented. Air quality would remain unaffected by application of this prescription.

Social and economic benefits for the area would be few. The biggest cost would be loss of a formal wilderness designation.

Large resource trade-offs requiring mitigation would not occur.

4. Designation: Non-wilderness  
Prescription: Range (PS6)  
Alternatives: See Table C.1.

Wilderness attributes would be little affected by the application of this prescription, except possibly in the immediate area of a project. Projects would be in small areas and primarily aimed at providing water developments and small scale vegetative conversions. Because of the arid nature of the country, a low to moderate increase in recreation use is expected. Cultural resources would remain reasonably protected, although project areas would require inventory, evaluation, and protection/mitigation.

Grazing programs would be enhanced through range improvement measures. These measures would consist primarily of water development for better distribution and type converting pinyon stands to grass.

Air quality would remain unaffected by application of this prescription.

Social and economic benefits for the area would be few. The biggest cost would be **loss** of a formal wilderness designation.

Large resource trade-offs requiring mitigation would not occur.

5. Designation: Wilderness  
Prescription: Natural Role of Fire (WF4), Full Fire Control & Suppression (WC4)  
Alternatives: See Table C.1.

Wilderness designation would maintain the attributes of solitude, natural appearance and natural integrity that are characteristic of Rockhouse Basin. Recreation use is moderate. Due to the relative aridity of this portion of the Kern Plateau, the area would attract visitors during the traditional "off-season" winter-spring months when most wildernesses in the Sierra Nevada are covered by snow. Expansion of the trail system would provide access to more of the area. Cultural resources, while largely unexplored are known to abound. They would receive maximum protection.

Fire under prescribed conditions will be used to maintain long-term plant diversity in the wilderness. Air quality would restrict application of prescribed fire.

Although there are three permittees who utilize this area for grazing, opportunities to increase forage production and additional water developments would be forgone. Current improvements would be returned. The existing wildlife population would remain status quo. Much of the vegetation is a uniform appearing pinyon pine woodland. This trend would continue unless a program of applied fire management was allowed to create a more natural regime.

Fire suppression costs would increase over existing and prescribed fire costs would be high due to restrictions placed on types or use of equipment.

Social benefits would be primarily associated with increasing the amount of wilderness available. Economic costs would involve increased administration of wilderness regulations.

Large resource trade-offs requiring mitigation would not occur with wilderness designation.

Mineral exploration, location and development would be lost. Mineral potential is highest in the northern portion of the study area. Therefore, the loss of potential would be greatest in those alternatives where the northern portion goes to wilderness.

Table C.2 displays average annual outputs for the first and fifth decade for this BLM Wilderness Study Area.

TABLE C.1  
BLM ROCKHOUSE WSA

ACRES (AND PERCENT) ALLOCATED BY ALTERNATIVE AND  
MANAGEMENT PRESCRIPTION

Management Prescription	Acres (%)			
	PRF	CUR	RPA	AMN
PS1	0	0	22910(64)	0
PS5	23060(65)	35560(100)	0	0
PS6	0	0	0	0
WF4	12500(35)	0	0	35560(100)
WC4	0	0	12650(36)	0
TOTAL	35560(100)	35560(100)	35560(100)	35560(100)

Management Prescription			
	MKT	PRO	WV
PS1	0	0	0
PS5	0	0	35560(100)
PS6	25850(73)	35560(100)	0
WF4	0	0	0
WC4	9710(27)	0	0
TOTAL	35560(100)	35560(100)	35560(100)

TABLE C.2  
WILDERNESS STUDY AREA - BLM ROCKHOUSE  
AVERAGE ANNUAL OUTPUTS  
DECADES 1 AND 5

OUTPUT	DECADE	PRF	CUR	RPA	AMN	MKT	PRO	WFV
Recommended Wilderness Acres -		12.500	0	12,650	35,560	9,710	0	0
Non-Wilderness Acres		23,060	35.560	22,910	0	25,850	35,560	35.560
Total Developed Recreation (MRVD)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Dispersed Recreation (MRVD)	1 5	2 3	3 5	2 3	0 0	2 3	3 5	3 5
Wilderness Recreation (MRVD)	1 5	2 3	0 0	2 3	3 5	2 3	0 0	0 0
Total Wildlife & Fish User Days (WFUD)	1 5	1,000 3,000	2,000 3,000	1,000 3,000	1,000 2,000	1,000 3,000	2,000 3,000	2,000 3,000
Grazing (AUM)	1 5	400 100	280 400	280 280	280 280	600 1,200	600 1,200	500 1,000
Suitable Timber Land (Acres)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Timber Volume (MMCF)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
(MMBF)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Mineral Potential Foregone (Acres of high and moderate using the BLM system)	1 5	360 360	0 0	330 330	4,480 4,480	950 950	0 0	0 0
Gross Revenue (MM\$)	1 5	39 46	40 45	39 46	39 43	40 45	40 45	40 44
Net Revenue (MM\$)	1 5	- 30 - 37	- 31 - 35	- 30 - 37	- 30 - 34	- 31 - 37	- 31 - 35	- 31 - 35
Total Cost (MM\$)	1 5	09 10	09 09	09 09	09 09	09 10	09 09	09 09

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**DESCRIPTION**

Oat Mountain Further Planning Area (FPA) lies in Fresno County on the **Hume Lake** Ranger District. This area is located along the main drainage of the Kings River immediately southeast of Pine Flat Reservoir. Oat Mountain is easily accessible from Fresno on a day-use basis. Paved roads provide access via Pine Flat Reservoir on the north of the FPA to campgrounds 4-1/2, 4, and Mill Flat. Forest Service dirt roads 12S19, 13S86, and 12S01 provide access from the south and east. **The** southwestern portion of the FPA borders private lands. This FPA is approximately a 45-minute drive from Fresno, the nearest city of over 250,000 people. **It** is approximately a 4-1/2-hour drive from Los Angeles and 3-3/4 hours from San Francisco.

**The** FPA is dominated by dense foothill woodland and chaparral communities on the steep north-facing slopes with a blue and black **oak** woodland along the summit of Oat Mountain toward White Deer Saddle. Elevations range from 1,000 feet along the north boundary adjacent to Pine Flat Reservoir to 4,300 feet along the summit ridge of Oat Mountain.

Terrain is generally steep throughout the study area. The heavily dissected areas that drain into the Kings River are rated as distinctive. Variety is increased by color, texture, and landform configurations. **The** dense vegetation is a fuels management concern because of steep topography and lack of access to the interior of the FPA.

Recreation **use** is primarily fishing, hiking, and hunting. **The** area contains about 11 miles of trail. Popular hunting locations are White Deer Saddle and the gentler slopes of the western portion of the study area.

The Kings River was identified in the National Rivers Inventory for additional study for suitability as a Wild and Scenic River. A portion of the Kings River lies adjacent to the Oat Mountain FPA. Enactment of legislation in November 1987 resolved questions on Wild and Scenic River status by establishing the Kings River Special Management Area with a specific determination that this section of the river would not be within the Wild and Scenic River system.

Five Native American groups inhabited portions of the Oat Mountain FPA. **The** Foothill Yokuts and Western Mono were perhaps the most important. A few villages were established along the Kings River. **One** is at the present day Mill Flat Campground.

**CAPABILITY**

Throughout the Oat Mountain FPA, human influence has not affected the ecological process or natural integrity of the area. The grazing improvements such as watering troughs, spring developments, and the three miles of drift fence have little effect on the area's apparent naturalness.

Oat Mountain provides some opportunities for solitude and for primitive recreation. **It** is possible to get away from human influence quickly in

much of the area. Long distance scenic views, however, are primarily influenced by human developments such as roads, Pine Flat Reservoir, and power lines. The area offers moderate opportunities for challenge and self-reliance. The area has no outstanding or special features. The boundary of Oat Mountain FPA is generally manageable with the river forming the boundary on the north and Forest Road 12S01 on the east. Part of the southern boundary follows the Forest boundary and the westernmost boundary is adjacent to the powerline.

A boundary change on the western portion of the area would eliminate the difficulty of surrounding the private lands and having the powerline as the western boundary. Using Lone Pine Canyon along the northern boundary and proceeding up the canyon to the summit of Oat Mountain would remove these conflicts.

#### AVAILABILITY

The Oat Mountain FPA represents few trade-offs between wilderness and non-wilderness uses. This FPA has a few areas that receive moderate recreation use. One popular area is located along the trail which follows the river and lakeshore to Keller Ranch. Campgrounds along the Kings River adjacent to the FPA serve as the base for much of these activities and uses. A four-wheel drive road provides access from private lands to White Deer Saddle and the summit of Oat Mountain.

Oat Mountain FPA lies within the Kings River airshed and it is assumed that existing concentrations of any regulated pollutants are transported primarily from the San Joaquin Valley from the Fresno area via this major air corridor. It is located on the northwesternmost portion of the Sequoia NF. Taking the position and location into account, it is suggested that higher concentrations of regulated pollutants might occur here as compared to higher elevations further east in the Kings River drainage. The lower elevations of the Oat Mountain FPA are especially vulnerable to low visibility days during summer episodes of inversions in the San Joaquin Valley. Forest Service activities such as prescribed fires in surrounding areas may have some temporary impacts on the present condition, but should be minimal compared to those pollutants transported into the area.

This planning area is comprised primarily of two major wildlife habitat types. These are chaparral and oak woodlands. More than 100 wildlife species may be found to inhabit the area during the year. The area is important to the Hume Deer Herd and there is considerable opportunity to improve the habitat requirements for the herd. This opportunity would be forgone if the area were allocated to wilderness.

Bald eagles, a federally listed endangered species, are known to winter in the vicinity of Pine Flat Reservoir.

Fishing is primarily concentrated along the river corridor and Pine Flat Reservoir. Few perennial streams are located in the Oat Mountain FPA.

Ecologically, the area is diverse. It contains chaparral, foothill woodland, and blue/black oak woodland ecosystems. In many areas, the vegetation is so dense that foot-travel is limited to the most challenging

recreationist. There are no conifer forests nor any known sensitive plants in this planning area.

Estimated average annual water yield for the study area is 4,000 acre-feet. The entire area drains into the Kings River and eventually into Pine Flat Reservoir. Average annual precipitation is 28 inches. Channels are primarily stable.

Oat Mountain currently produces 1,600 AUM's within three grazing allotments. The available forage is not being fully utilized. Type conversions and prescribed fire management of chaparral and foothill woodland communities offer a significant potential to increase grazing capacity. The area also serves as winter range for the ~~Hume~~ deer herd, which would also benefit from vegetative manipulative projects.

Mineral potential appears to be limited to the Davis Flat area in metamorphic material adjacent to the eastern boundary. The area is underlaid by quartz monzonite and quartz diorite. At the southwestern boundary, ultramafic rocks, primarily peridotite and serpentinite, intrude into granitic rocks. **There** are a number of mining claims, only two of which are patented. The Bureau of Mines concludes that mineral development potential is small.

A dam has been proposed at Rodgers Crossing, which is along the river immediately adjacent to this Further Planning Area. If constructed, this dam would inundate that portion of this area which lies immediately above the vicinity of Camp 4 1/2. Enactment of legislation precludes dam construction.

Under the existing Multiple-Use Plan direction, fire prevention and suppression in the Oat Mountain FPA averages \$6.85 per acre.

Cultural resource surveys are yet to be completed on most of this FPA.

There are no non-federal lands within the Oat Mountain FPA.

#### NEED

The nearest designated area is the Monarch Wilderness. This area lies approximately 16 air miles east of Oat Mountain FPA. In 1982, **use** of the High Sierra Primitive area, which is now included within the Monarch Wilderness, was 1,400 RVD's.

Oat Mountain FPA is easily accessed from communities in the Southern San Joaquin Valley: the area is only 25 miles east of Fresno. The metropolitan areas of Los Angeles and San Francisco are 4-1/2 and 3-3/4 hours drive to Oat Mountain respectively.

The primary ecosystems of foothill woodlands, chaparral and blue/black oak woodlands are not located in any California wildernesses in the Sierra Nevada even though these ecosystems **are** relatively common along the western foothills of this **range**.



This FPA was recommended as a Further Planning Area by the RARE II Final EIS. Oat Mountain FPA has not appeared in any proposed wilderness legislation.

Public comment during the RARE II process shows a 50-50 split between those persons favoring wilderness and non-wilderness designation. Basic conflict between designation hinges on range interests and potential to increase grazing use. Another issue during RARE II was the possibility of constructing a dam at Rodgers Crossing adjacent to the northern boundary. Wilderness could affect the construction or reservoir capacity. Wilderness proponents desire a non-snow winter wilderness, adding targeted ecosystems currently lacking in the wilderness system, and protecting a portion of the scenic Kings River Canyon.

## ENVIRONMENTAL CONSEQUENCES

1. Designation: Non-wilderness  
Prescription: Wildlife & Dispersed Recreation (B05, OW5, MC5)  
Alternatives: See Table C.3.

Wilderness attributes would be little affected, except for short-term impacts on natural appearance as a result of enhancement of wildlife habitat. There could be some slight increase in use of the area because of increased wildlife populations, although the area is steep and not easy to use. Therein, solitude will remain a high value. Access to the unit and throughout the area will limit people's ability to get around. Trails could be developed and/or improved to facilitate this access, including use by OHV's. Cultural resources would remain reasonably protected. Activities with potential for impacting cultural properties would require inventory, evaluation and appropriate mitigation.

Wildlife habitat would be improved through treatment. Vegetative and animal diversity would increase. This treatment would benefit grazing as well as fuel reduction programs. Prescribed fire would play a major role in vegetation and habitat management. The current range management program could increase slightly under this prescription, although grazing would be subservient to wildlife needs. Air quality would remain the same given the proximity to the San Joaquin Valley, except for periods when prescribed fire would add smoke to the airshed.

Economic and social benefits would be slightly increased in quantity due to increased human use, primarily hunting. Social costs would be a negligible loss of natural environment and a formal wilderness designation. Fire suppression costs would remain high due to limited access.

2. Designation: Non-wilderness  
Prescription: Water Yield (MC8, CF8)  
Alternatives: See Table C.3.

This prescription would be applied to a limited area of this Further Planning Area and would result in a major change from the existing vegetation structure. The use of prescribed fire would help to achieve age class diversity. This would have a short-term impact on wilderness integrity, but over the long-term enhance visual variety.

Recreation use is primarily water/fishing-oriented and so would remain low in areas where this prescription is applied because of steep terrain and limited access to the area. Solitude would not change appreciably. Cultural resources would remain reasonably protected. Activities with potential for impacting cultural resources would require inventory, evaluation and appropriate mitigation.

Wildlife habitat diversity would increase with conversions of brush to better age class distribution. Hence, wildlife populations would increase. Grazing capacities would also increase. Fuel reduction will occur. Air quality would be impacted during burning operations, otherwise it would remain as is given the area's proximity to the San Joaquin Valley.

Economic and social benefits would be slightly increased in quantity due to increased water production.

Stream channels are relatively stable. Water quality would decrease and sedimentation would increase in the short-run following treatment: then stabilization would occur and conditions remain good.

3. Designation: Non-wilderness  
Prescription: Range (B06, OW6, MC6)  
Alternatives: See Table C.3.

The wilderness attributes of natural appearance and integrity would be reduced and/or occasionally lost through the enhancement of grazing opportunities. This prescription would emphasize increases in grazing, including vegetative treatment and development of improvements for intensive management.

Recreation use is primarily water/fishing-oriented and would remain low because of steep terrain and limited access to the area, particularly across private lands outside the National Forest boundary on the south. OHV use on trails and roads associated with improvements could occur and could increase use; therein causing conflicts with grazing. Cultural resources would be impacted, both by increased grazing of animals and through development of improvements. Activities with potential for impacting cultural properties would require inventory, evaluation, and appropriate protection and mitigation.

Improving grazing would have spinoff benefits of improving wildlife habitat and/or diversity. Fuel reduction would be another benefit. Prescribed fire would play a major role in vegetation management. Air quality would remain the same given the proximity to the San Joaquin Valley, except when periods of burning would add smoke to the airshed.

Economic benefits would occur from increasing grazing opportunities. Economic costs would include those to implement improvements. Social costs would include the loss of the area as wilderness. Fire suppression costs will remain high due to limited access. Increased grazing would result in more animal use of existing stream/riparian zone areas. Even though stream channels are relatively stable, water quality would decrease and sedimentation increase proportionate with the increase in use.

4. Designation: Wilderness  
Prescription: Natural Role of Fire (WF4)  
Alternative: See Table C.3

Wilderness designation would maintain the wilderness attributes of the area. Recreation use is primarily water/fishing-oriented and overall, would remain low because of access to the area, particularly due to lack of rights-of-way across private lands outside the National Forest boundary on the south. Opportunities exist to improve trail access along the Kings River and Pine Flat Reservoir on the north side of the unit; this action would increase fishing use by only a minor amount, but will increase fire risk. Cultural resources are unexplored but will receive maximum protection. Views from the area are largely into areas where human activity is evident.

Because of its low elevation and proximity immediately adjacent to the San Joaquin Valley, low visibility will remain a factor, particularly during periods of inversion in the valley. Class I air quality is not attainable.

Vegetation currently has poor age class and mosaic distribution. Fire would be used to maintain or enhance vegetative diversity. This would produce visual diversity and increase the variety of wildlife in the area. Grazing would continue, but opportunities to increase grazing capacity and/or accomplish fuel reduction programs would be foregone: thus losses in these resources would occur over time.<sup>2/</sup> Maintaining current AUM's could also be affected. Fire prevention and suppression costs would increase as compared to management under a non-wilderness designation. Application of prescribed fire would be costly and limited.

There are no known social or economic dependencies on the area except for grazing 1,600 AUM's within portions of three allotments. Wilderness designation is not expected to adversely affect maintenance of current improvements or AUM's. Management of these allotments would continue but be more restrictive under this designation, with constraint on further grazing improvements.

Large resource trade-offs requiring mitigation would not occur. Stream channels are relatively stable, and water quality and sedimentation would not change. Manageability and enforcement of wilderness regulations would be difficult and costly due to limited access and remoteness factors. Some OHV encroachment may occur.

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<sup>2/</sup> Under the Amenity Alternative, grazing would not be permitted in new wilderness. This would result in a complete loss of this opportunity with its resultant economic impacts. Recreationists would not experience conflicts with cattle in this alternative.

TABLE C.3  
OAT MOUNTAIN FPA

ACRES (AND PERCENT) ALLOCATED BY ALTERNATIVE AND  
MANAGEMENT PRESCRIPTION

Management Prescription	Acres (%)			
	PRF	CUR	RPA	AMN
WF4	0	0	0	12400(100)
B05	0	0	600(5)	0
OW5	0	0	1900(15)	0
MC5	2500(20)	2500(20)	0	0
B06	4400(35)	4400(35)	3800(31)	0
OW6	5500(45)	5500(45)	3600(20)	0
MC6	2500(20)	0	0	0
MC8	0	0	2500(20)	0
TOTAL	12400 (100)	12400 (100)	12400 (100)	12400 (100)

Management Prescription	MKT	PRO	WFV
WF4	0	0	0
B05	0	0	4400(35)
OW5	0	0	5500(45)
MC5	0	0	2500(20)
B06	4400(35)	4400(35)	0
OW6	5500(45)	5500(45)	0
MC6	2500(20)	2500(20)	0
MC8	0	0	0
TOTAL	12400 (100)	12400 (100)	12400(100)

Table C.4 displays the critical indicators (as explained in Section B) used to compare impacts of each alternative. Table C.5 displays average annual outputs for the first and fifth decade for this Further Planning Area by alternative.

TABLE C.4  
OAT MOUNTAIN FURTHER PLANNING AREA

-Indicators-

<u>Alternative</u>	<u>Decade</u>	<u>Acres of Habitat Improvement (M ac)</u>	<u>Increased M AUM's (Avg/Yr)</u>	<u>Acres of Water Yield Improvement (M ac)</u>
PRF	1	5.0	.7	0
	2	0	.3	0
	4	0	.7	0
	5	0	.3	0
CUR	5	4.0	.4	0
RPA	1	0	0	2.0
	3	5.0	0	0
AMN	1	2.0	0	0
	2	3.0	.2	0
	4	2.0	0	0
	5	3.	.2	0
MKT	5	5.0	.7	0
PRO	5	5.0	.7	0
WFV	1	5.0	.4	0
	2	0	.1	0
	4	5.0	.4	0
	5	0	.1	0

TABLE C.5

FURTHER PLANNING AREA - OAT MOUNTAIN  
 AVERAGE ANNUAL OUTPUTS  
 DECADES 1 AND 5

OUTPUT	DECADE	PRF	CUR	RPA	AMN	MKT	PRO	WFV
Recommended Wilderness Acres	-	0	0	0	12.400	0	0	0
Non-Wilderness Acres	-	12.400	12,400	12.400	0	12,400	12,400	12.400
Total Developed Recreation (MRVD)	1 5	15 15	15 .15	0 0	0 0	15 15	.15 15	0 0
Dispersed Recreation (MRVD)	1 5	3 6	3 6	.3 6	3 3	3 6	3 6	3 6
Wilderness Recreation (MRVD)	1 5	0 0	0 0	0 0	.01 .01	0 0	0 0	0 0
Total Wildlife & Fish User Days (WFUD)	1 5	30 60	30 60	30 60	30 60	30 60	30 60	30 60
Grazing (AUM)	1 5	1,803 2,268	1,600 1,600	1,387 2,032	1,432 1,500	1,905 2,326	1,923 2,339	1,520 1,811
Suitable Timber Land (Acres)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Total Volume (MMCF)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
(MMBF)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Mineral Potential Foregone (Acres of high and medium)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Gross Revenue (MM\$)	1 5	2 02 35	1 22 1 23	2 05 34	36 37	2 01 37	2 01 37	1 25 35
Net Revenue (MM\$)	1 5	1 45 32	1 01 10	1 49 32	33 32	1 46 32	1 46 32	1 02 33
Total Cost (MM\$)	1 5	57 02	22 23	56 02	03 04	55 05	55 05	23 02

**DESCRIPTION**

The Dennison Peak FPA lies in the northwest corner of the Tule River Ranger District in Tulare County. The area is contiguous to the Sequoia National Park. Access into the Dennison Peak area is provided by Balch Park Road north of Springville and Forest Road 19S09 along the North Fork of the Tule River.

The area is very rugged with steep slopes. Chaparral vegetation covers the lower slopes, and canyon live and black oak woodlands make up nearly 50 percent of the vegetative cover. Only one trail bisects the western end of the FPA. The remainder of the area does not have developed access.

The boundary on the north is the same as the Forest boundary. The remaining boundary, a mid-slope, is not easily recognized on the ground. Elevation ranges from 3,600 feet near the North Fork Tule River in the southern corner of the area to the summit ridge north of Dennison Peak at 8,348 feet.

**CAPABILITY**

While opportunities for solitude and primitive recreation are high in the eastern three-fourths of the area, current use is very light. The highest scenic values lie in the center of the FPA east of Dennison Peak, though access is difficult.

Considered by itself, this Area's relatively small size, inaccessibility, and lack of special features do not provide a strong case for designation. However, it is adjacent to Sequoia and Kings Canyon National Parks of which portions were proposed for designation. The California Wilderness Act of 1984 did not designate the area as wilderness. The area will continue to be managed as a backcountry unit in a manner similar to wilderness.

The natural ecological integrity of the area has been adversely influenced to a low degree. Signs of human influence are located only in the western-most quarter of the FPA in the form of a fence running east-west and an OHV trail bisecting the area north-south.

The boundary to the north is the Forest and Park common boundary. To the west, manageability could be improved by a boundary modification to the north-south ridge through the center of Section 35, T18S, R29E, and Sections 2 and 11, T19S, R29E; and from there following the Blue Ridge Lookout road east and south to the Forest boundary. However, the boundary modification along the west end of the FPA would not eliminate all OHV conflicts.

**AVAILABILITY**

The primary recreational use is hunting. Travel is by OHV's along the western edge and otherwise is by foot. Dennison Peak FPA is quite steep

with **less** than 1,000 acres receiving recreational use at present. Virtually all recreational use occurs in the Roded Natural ROS class.

In 1982, use was **60** RVD's. Assuming present use patterns and if the area were not designated, use is expected to increase to 260 RVD's and 460 RVD's by 1990 and 2000, respectively. If the area were to be designated, use would increase very little to **70** RVD's and **80** RVD's by 1990 and 2000, respectively.

The **Tule** and Kaweah drainages may individually or jointly influence the air quality of this area by providing an avenue for transported pollutants. Dennison Peak's proximity to the San Joaquin Valley and private inholdings near the lower elevations of the area provide the opportunity for existing pollutant concentrations to be somewhat higher than those areas east of the Western Divide. Concentrations can be directly influenced by fluctuating summer inversions that may adversely affect visibility, especially in the lower elevations of the FPA.

The Blue Ridge-Jack Flat areas are among the **Tule** River Ranger District's most rich game zones. The Dennison Peak FPA encompasses a portion of this wildlife area. It is part of the **Tule** River deer herd summer range; however, deer use is light.

California condors, a federally listed endangered species, have been seen sporadically in the area, and were reported as recently as 1985. These birds have used the area for feeding during July and August. The FPA is not included in the Condor Recovery Plan as critical habitat for the species. Both wolverine, a state rare species, and fisher are furbearers that have been sighted in the general area.

Potential for habitat improvement is good in the lower elevations of the Dennison Peak FPA. Although a variety of game species are present, quality habitat is limited. Much of the vegetation is in a more mature successional stage with little age class diversity.

Dennison Peak FPA contains two small stream fisheries in pristine condition. Dillon and Jenny Creeks flow through private property and are subject to logging. Potential exists to locate native fish stocks in these two streams. These streams are tributaries to the North Fork **Tule** River. Overall fisheries value is moderate with some potential for improvement.

Estimated average annual water yield for the FPA is 3,500 acre-feet. About 87 percent of the area lies in the **Tule** River drainage with the remaining 13 percent in the Kaweah River drainage. Average annual precipitation is about 38 inches. Channels in the area are rocky, steep, and fairly stable.

Part of the FPA is leased to two grazing permittees. Livestock forage within this area has been classified as unsuitable. Potential for producing forage through more intensive management of the area is not practical because the terrain is too steep and rugged for domestic livestock to negotiate. Ordinarily, rangeland improvement is restricted to areas with slopes less than 40 percent. Designation of the area would not affect present livestock use.



There is a small amount of timber located in this FPA. *The* standing (board feet) inventory is estimated to be 81 million board feet. However, harvesting of 1.24 million board feet annual yield for the next 50 years appears to be not economical due to the rocky, steep terrain and low volumes per acre scattered across the FPA.

Vegetation is comprised of oak woodlands (47 percent), conifers (35 percent), and chaparral. (12 percent). Rock outcrops, prominent throughout the area, make up six percent of the area. To date, the FPA has not been surveyed for the presence of sensitive plants or their essential habitats.

The area is comprised almost entirely of granitic material. An inferred contact zone runs north-south in the western half of the area. Mineral potential is low. Recent information from the Bureau of Mines states that seven inactive claims were recorded in the early 1900's, but none had patented mining claims or mineral leases.

This FPA is located in the Foothill Yokuts' ethnographic territory. Pre-history of the Yokuts generally goes back at least 8,000 years. *The* Foothill Yokuts' technology relied heavily upon the use of stone prior to contacts with Europeans in the late 18th century. Archaeological surveys have not been conducted in this area. Archaeological sites have not been recorded to date. In historic times, the Dillon Mill operated from 1885-1914 in the vicinity of the FPA.

Under the existing Multiple-Use Plan direction, fire prevention and suppression in the Dennison Peak FPA averages about \$4.50 per acre.

There is an underground pipeline in Section 1, T19S, R29E; and a pipeline in Section 17, T19S, R30E. There are no non-federal lands within this FPA.

#### NEED

The nearest designated wilderness to the Dennison Peak FPA is the Golden Trout. Use of the Golden Trout Wilderness was 101,900 RVD's in 1982. In addition, the adjacent Sequoia and Kings Canyon National Parks are proposed *for* designation as wilderness and are currently managed as such. The section of the Park adjacent to Dennison Peak FPA receives heavy use. However, the landscape of the Park area is of a character quite different than that of Dennison. Park use centers around available water and meadows which are either restricted or lacking in this FPA.

Dennison Peak FPA is approximately a four-hour drive from Los Angeles and two hours from Bakersfield.

This area has not been included in any of the various California Wilderness Bills proposed since 1980. The Dennison Peak FPA was recommended as a Further Planning Area in the RARE II Final EIS.

Public comments during the RARE II process indicate pro-wilderness responses at 43.9 percent and non-wilderness at 56.1 percent. Dennison Peak is an area of low controversy. Since 80-90 percent of the timber is unaccessible, both groups realize Dennison is not likely to be developed. Proponents of wilderness cite possible habitat for California condor as a

primary reason for designation. Opponents want to maintain the OHV use, even though extremely limited.

There are no ecosystems found in this HPA that are not located in other National Forest wildernesses.

#### ENVIRONMENTAL CONSEQUENCES

1. Designation: Non-wilderness  
Prescription: Wildlife & Dispersed Recreation (OW5, MC5, CF5)  
Alternatives: See Table C.6.

Wilderness attributes of solitude, natural integrity and appearance would be little affected, except for short-term impacts on appearance, during wildlife habitat projects. There would be no appreciable increase in use of the area because of the difficulty of the terrain and limited access. Improvement or expansion of trails to access the area is limited by steep slopes. Cultural resources would remain reasonably protected; although project areas would require inventory, evaluation, and protection of cultural resources.

Wildlife habitat would be improved through treatment. Vegetative and animal diversity would increase. This action would enhance grazing and also accomplish fuel reduction program needs. Prescribed fire would play a **role** in vegetation and habitat management. Air quality would remain the same given the proximity to the San Joaquin Valley, except for periods when prescribed fire would add smoke to the airshed.

Limited opportunities exist for timber management and would be foregone under this prescription because of high unit costs on difficult terrain.

Social and economic costs for this area would be few. The biggest social cost would be loss of a formal wilderness designation. Fire suppression costs would remain high due to limited access.

Large resource trade-offs requiring mitigation would not occur. Stream channels are relatively stable and would remain *so*. Water quality and sedimentation will not increase above current levels.

2. Designation: Non-wilderness  
Prescription: Range (OW6, MC6, CF6)  
Alternatives: See Table C.6.

The wilderness attributes of natural appearance and integrity would be only slightly reduced from existing situations due to the limited opportunity to do range betterment. This is due to the very steep slopes and limited range potential. Grazing levels would not increase.

Recreation use will remain low because of steep terrain and the very limited access throughout the area. OHV use will not be a problem. Cultural resources would remain reasonably protected. Activities with potential for impacting cultural resources would require inventory, evaluation, and appropriate mitigation.

Wildlife habitat and/or diversity would improve in areas where range betterment work is done. Fuel loading would also be reduced. Prescribed fire would be the tool used to accomplish habitat improvement projects. Air quality would remain the same, give the proximity to the San Joaquin Valley. except for periods when prescribed fire would add smoke to the airshed.

Economically marginal opportunities exist for timber management and would be foregone under this prescription because of high unit costs on steep terrain.

Social and economical costs for this area would be few. The biggest social cost would be the loss of a formal wilderness area designation.

Fire suppression costs would remain high due to limited access and steep terrain.

3. Designation: Non-wilderness  
Prescription: Water Yield (MC8, CF8)  
Alternatives: See Table C.6.

This prescription would be applied to approximately one-half of the total area, and would result in major change in the existing vegetative structure. The use of prescribed fire would apply to other than timber type areas, and help achieve age class diversity. In timber types, strip cutting to enhance snow accumulation and runoff patterns would be applied. This would change the natural appearance and integrity of the area from those desirable wilderness characteristics now present, and forego any future wilderness designation.

Recreation use would remain low because of steep terrain and generally limited access in the area. OHV use could increase slightly on travelways which were developed to accomplish vegetation modification work, resulting in more dispersion of recreation use. Cultural resources, if present, could be impacted. Activities with potential for impacting cultural resources would require inventory, evaluation. and appropriate mitigation.

Wildlife habitat diversity would increase with conversions, resulting from better age class distribution; hence wildlife populations would increase. Grazing is not expected to change with the application of vegetation manipulation under this prescription. Air quality would be impacted during burning, but would remain as is relative to the areas proximity to the San Joaquin Valley.

Timbered areas where strip cutting is applied would add some limited volume to the market, although costs due to small volumes and difficulty of operation would be high.

Social costs for this prescription would evolve around the **loss** of an area suitable for wilderness designation. On the benefit side, there would be increase in both social and economic factors associated with timber production and increased water production.

Stream channels are relatively stable. Water quality would decrease and sedimentation increase in the short-term following treatment; then stabilization would occur and conditions remain good.

Fire suppression costs would remain high under this prescription.

4. Designation: Non-wilderness  
Prescription: Timber (CF7)  
Alternatives: See Table C.6.

This prescription would apply to approximately 40 percent of the area which is timbered. It would result in a major change in the vegetative structure of the area, where harvest cutting would result in openings of various sizes. This would require road construction. It would change the appearance and integrity of the area from the present and forego any future wilderness designation.

Recreation use will remain low due to terrain limitations, although timber access roads would provide access into the area and opportunities for driving (including use of OHV's). Use would be more widely dispersed and the chances for solitude reduced. Cultural resources, if present, could be impacted by both management and the public. Activities with potential for impacting cultural resources would require inventory, evaluation, and appropriate mitigation.

Wildlife habitat diversity would increase with vegetative manipulation, resulting in better age class distribution and, subsequently, increasing populations. Grazing would not be changed with harvest of timber due to steep terrain. Air quality would be impacted during burning, but would remain as is relative to the area's proximity to the San Joaquin Valley.

Timber harvest will not be heavy, but will be economically marginal due to anticipated high operating costs. Fuelwood harvest would increase.

Social costs of this prescription would include the loss of an area suitable for wilderness designation and the high investments to accomplish outputs. There would be economic and social benefits from the timber production and increased recreation opportunity perspectives.

Stream channels are relatively stable. Water quality would decrease and sedimentation increase in the short-term following harvest and road construction. Stabilization would follow shortly thereafter and no long-term effects would result.

Fire suppression costs would remain relatively high, but there would be improved access to facilitate this activity, in case of a fire. The need for increased prevention activities/contacts and law enforcement could develop.

5. Designation: Wilderness  
Prescription: Natural Role of Fire (WF4)  
Alternatives: See Table C.6.

Wilderness designation would maintain the wilderness attributes of the area. Recreation use is primarily hunting and would remain low because of steep terrain, heavy vegetation, limited trail system, and limited camping sites. Opportunities to expand the trail system are few. Cultural resources are unexplored but will receive maximum protection. Views from the area would largely be on areas where human activities are evident.

Opportunities to manage timber would be eliminated.

Because of its proximity adjacent to the San Joaquin Valley, periods of limited vision will remain common in this area, particularly during inversion situations.

Although there are two existing allotments in the area at present, additional range development or improvement opportunities would be foregone due to the impracticability of more intensive management. Improvements do not exist.<sup>3/</sup>

Fire would be used to maintain or enhance vegetative diversity. This would produce visual diversity and increase the variety of wildlife in the area. Opportunities to undertake fuel reduction programs would be foregone; hence, there would be a program loss over time. Fire prevention needs would not increase appreciably over existing needs; but costs for this activity and suppression costs would be high as compared to management under a non-wilderness designation. Any application of prescribed fire would be costly and limited.

6. Designation: Wilderness  
Prescription: Full Fire Control & Suppression (WC4)  
Alternatives: See Table C.6.

Wilderness designation would maintain the wilderness attributes of the area. Recreation use is primarily hunting and would remain low because of steep terrain, heavy vegetation, limited trail system, and limited camping sites. Opportunities to expand the trail system are few. Cultural resources are unexplored but will receive maximum protection. Views from the area would largely be on areas where human activities are evident.

Limited opportunities to manage timber would be eliminated.

Because of its proximity adjacent to the San Joaquin Valley, periods of limited vision will remain common in this area, particularly during inversion situations.

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<sup>3/</sup> Under the Amenity Alternative, grazing would not be permitted in new wildernesses. This would result in a complete loss of this opportunity with its resultant economic impacts. Recreationists would not experience conflicts with cattle under this situation.

Although there are two existing allotments in the area at present, additional range development or improvement opportunities would be foregone due to the impracticability of more intensive management. Improvements do not exist.<sup>4/</sup>

Fire suppression action would be fast and aggressive. Fire would not be used to maintain or enhance vegetative diversity. This would result in visual uniformity over the long-term and reduce the amount and variety of wildlife in the area. Fire prevention needs would increase over existing needs, with costs for this activity and suppression costs high as compared to management under a non-wilderness designation. Opportunities to undertake fuel reduction programs would be foregone: hence, there would be a program loss over time.

There are no **known** social or economic dependencies on the area. The social implications include more available wilderness, costlier fire administration, and slightly fewer opportunities for habitat management.

Management and enforcement of wilderness regulations would be difficult because of the location of the west boundary not being tied to a geographic feature.

<sup>4/</sup> Under the Amenity Alternative, grazing would **not** be permitted in new wildernesses. This would result in a complete loss of this opportunity with its resultant economic impacts. Recreationists would not experience conflicts with cattle under this situation.

TABLE C.6  
DENNISON PEAK FPA

ACRES (AND PERCENT) ALLOCATED BY ALTERNATIVE AND  
MANAGEMENT PRESCRIPTION

Management Prescription	Acres (%)			
	PRF	CUR	RPA	AMN
WF4	0	0	0	6700(100)
WC4	0	0	0	0
OW5	0	0	0	0
MC5	0	200(3)	0	0
CF5	2000(30)	0	2000(30)	0
OW6	3350(50)	3350(50)	3350(50)	0
MC6	840(12)	640(9)	840(12)	0
CF6	510(8)	510(8)	510(8)	0
CF7	0	2000(30)	0	0
MC8	0	0	0	0
CF8	0	0	0	0
TOTAL	6700(100)	6700(100)	6700(100)	6700(100)

Management Prescription			
	MKT	PRO	WFV
WF4	0	0	0
WC4	0	0	0
OW5	0	0	3350(50)
MC5	0	0	840(12)
CF5	0	0	2510(38)
OW6	3350(50)	3350(50)	0
MC6	0	0	0
CF6	140(2)	840(12)	0
CF7	0	2510(38)	0
MC8	700(10)	0	0
CF8	2510(38)	0	0
TOTAL	6700(100)	6700(100)	6700(100)

Table C.7 displays the critical indicators (as explained in Section B) used to compare impacts of each alternative. Table C.8 displays average annual outputs for the first and fifth decade for this Further Planning Area by alternative.

TABLE C.7

DENNISON PEAK FURTHER PLANNING AREA

-Indicators-				
<u>Alternative</u>	<u>Decade</u>	<u>Miles of Road Constructed</u>	<u>Volume of Timber Harvested (MMBF)</u>	<u>Acres of Habitat Improvement (M Ac.)</u>
AMN		(no outputs)		
WFV		(no outputs)		
PRF	1	0	2.0	0
	2	0	2.0	0
	3	0	2.0	0
	4	0	2.0	0
	5	0	2.0	0
CUR	1	0	0	.9
	2	0	0	0
	3	0	0	0
	4	0	0	0
	5	0	0	0
RPA	1	2.1	0	.8
	2	.7	0	0
	3	2.2	4.3	0
	4	0	0	0
	5	.3	.5	0
MKT	1	3.4	0	1.0
	2	1.2	2.1	0
	3	2.6	4.9	0
	4	0	0	0
	5	.7	.8	0
PRO	1	3.4	0	1.0
	2	1.2	2.1	0
	3	2.6	4.9	0
	4	.8	.7	0
	5	0	0	0



TABLE C.8

FURTHER PLANNING AREA - DENNISON PEAK  
AVERAGE ANNUAL OUTPUTS  
DECADES 1 AND 5

OUTPUT	DECADE	PRF	CUR	RPA	AMN	MKT	PRO	WFV
Recommended Wilderness Acres		0	0	0	6,700	0	0	0
Non-Wilderness Acres	-	6,700	6,700	6,700	0	6,700	6,700	6,700
Total Developed Recreation (MRVD)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Dispersed Recreation (MRVD)	1 5	06 1.0	06 1 0	06 1 0	.06 1 1	06 1 0	06 1 0	06 1 0
Wilderness Recreation (MRVD)	1 5	0 0	0 0	0 0	.00005 0002	0 0	0 0	0 0
Total Wildlife & Fish User Days (WFUD)	1 5	6 100	6 100	6 100	6 110	6 100	6 100	6 100
Grazing (AUM)	1 5	127 159	167 167	139 139	63 63	179 167	179 167	106 127
Suitable Timber Land (Acres)	1 5	2,211 2,211	0 0	1,740 1,740	0 0	2.150 2.150	2.150 2.150	0 0
Total Volume (MMCF)	1 5	0 0	0 0	0 .055	0 0	0 078	0 0	0 0
(MMBF)	1 5	2 2	0 0	002 357	0 0	001 507	001 001	0 0
Mineral Potential Foregone (Acres of high and medium)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Gross Revenue (MM\$)	1 5	07 07	23 23	28	23 23	23 31	23 18	23 23
Net Revenue (MM\$)	1 5	02 .02	22 22	22 23	21 21	22 26	22 17	22 23
Total Cost (MM\$)	1 5	05 05	01 01	01 03	02 .02	01 04	01 01	01 01

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**DESCRIPTION**

The Moses FPA is located in Tulare County in the Tule River Ranger District. It is split into two geographically separated areas. The eastern boundaries of both sections are contiguous to the Golden Trout Wilderness. Moses FPA can be reached from Springville by California Highway 190 up the Tule River Canyon and Wishon road from the south: and Balch Park and Bear Creek roads from the north and west. It is approximately a four-hour drive from Los Angeles, and two hours from Bakersfield.

Moses FPA is diverse in topographical and vegetational characteristics. The boundary contiguous to the Golden Trout Wilderness is "high country", being over 8,000 feet in elevation. The western boundaries are dominated by diverse stands of chamise chaparral.

Primary ecosystems in the area are chaparral (24 percent), oak woodlands (24 percent), mixed conifer (20 percent), giant sequoia (13 percent), Jeffrey pine (six percent), and red fir (five percent). Rock outcrops comprise seven percent of the FPA.

**CAPABILITY**

Natural integrity and apparent naturalness are high in the higher elevations of the Moses FPA. In lower elevations, these characteristics have been diminished by the introduction of unnatural features such as fuelbreaks, a series of range improvements, motorized vehicles on trails, and nonnative forage species.

The area does provide opportunities for solitude and primitive recreation, particularly at the higher elevations. In the eastern half of the southern portion and the eastern three-fourths of the northern section, opportunities for solitude and primitive recreation are considered excellent due to the varied topography and vegetation communities. These areas also correspond to the areas of highest scenic and fisheries values for the Moses FPA. In contrast, the western quarter of the northern section and western half of the southern section have few opportunities for solitude and primitive recreation. Scenic views are often influenced by human developments such as roads, power lines and/or urban developments. Overall, the area offers a variety of opportunities for challenge and self-reliance.

The boundary of the area is clearly defined only along the eastern portion of the FPA adjacent to the Golden Trout Wilderness. In both sections, the eastern boundary is a topographical feature, being the ridge dividing the North Fork from the Wishon Fork Tule River on the northern section, and the ridge dividing Wishon Fork Tule River and the Little Kern River on the southern section.

The remainder of the boundary is not easy to manage since it contains a "stair-step" boundary adjacent to Mountain Home Demonstration State Forest,

and the remainder cuts across drainages and is located mid-slope. Opportunities for increasing manageability of the HPA are limited, but some modifications would be an improvement over the current boundary.

One option would be to drop the dense impenetrable chamise chaparral area in the southern section of the HPA. The Wishon Fork would provide for a more logical boundary above Doyle Springs to the Mountain Home Demonstration State Forest boundary. This split would be easy to manage and the best opportunities for solitude and primitive recreation within the southern section of the HPA would be maintained. The northern section also has a few opportunities for boundary adjustments that would improve the manageability of the area. The northern section contains the rocky and rugged west-face of Moses Mountain. At 9,331 feet, this is the highest point for the HPA. A much more logical boundary would be to follow Pine Creek down from the southern end of Moses Mountain to the current western boundary. Of the two sections, the northern portion is the most primitive and rugged. Hence, another logical split would be to recommend just the northern section for wilderness.

Special features include two sensitive plant species: Kaweah fawn lily (Erythronium grandiflorum ssp. pusaterii) and purple mountain parsley (Oreonana purpurascens); and a recommended Research Natural Area (RNA). The Moses Mountain RNA candidate is mostly within the Golden Trout Wilderness. The remaining 350 acres is within the Moses HPA. Designation as wilderness will not affect management of the RNA if it is established by the Chief. RNA status will ensure adequate protection regardless of wilderness status.

#### AVAILABILITY

Contiguous to the Golden Trout Wilderness, with high scenic values and opportunities for solitude and primitive experience, the HPA currently receives very light recreational use. Motorized recreation constitutes nearly 25 percent of the total use, much of it originating on adjacent private lands.

Over half of all use occurs in the Semi-primitive Non-Motorized ROS class. The few trails in the HPA are used today; however, they were important in the early years of the Forest. Completion of the current road system provides better access to trailheads into the Golden Trout Wilderness.

In 1982 recreational use in the Moses HPA totalled 480 RVD's. If the area is not designated as wilderness, and present trends continue, use is expected to reach 600 RVD's in 1990 and 760 RVD's by 2000. If the area is designated, use is expected to reach 760 RVD's by 2000.

Moses HPA lies at the eastern edge of the Tule River airshed. The southern portion of the area is on the ridge separating the Tule and Kern airsheds; while the northern portion is adjacent to the Kaweah airshed. It is most likely that the primary air flow influence of the area is the Tule airshed. Ozone concentrations measured at nearby Mountain Home Demonstration State Forest from 1977-1981 consistently experienced the least number of hours exceeding the California standard of 10 ppm (parts per hundred million) as compared to two other monitoring sites on the Forest. Any pollutants

transported into the Moses FPA will likely have the most impact in the lower elevations of the area. Concentrations would be weaker as one ascends into the higher elevations.

Forest Service management activities (prescribed fires, timber harvest, road construction) nearby may temporarily impact air quality but this impact should be minimal compared to transported pollutants. The private tract of Camp Wishon and Doyle Springs lies adjacent to the southern portion of the FPA. A small number of private homes are located here and may produce a light concentration of particulates from wood burning stoves. It is assumed that these emissions occur primarily in the winter months when the cold dense air most likely allows for slow dispersion, retaining the highest particulate levels in the canyon near the private tract.

The Moses FPA is quite varied in wildlife habitat types, ranging from chaparral to exposed rocky peaks. Approximately 3,000 acres of this area are designated as key winter range for the Tule River deer herd. The remainder of the FPA is summer or transition range. Black bear are common in the area. Both the rare wolverine and sensitive fisher are known in the area. A spotted owl habitat area is also located in the FPA.

Opportunities exist to increase wildlife habitat and diversity by selected prescribed burning projects in the chamise chaparral ecosystem.

The FPA has a significant number of pristine fisheries which provide excellent fishing-exploring experiences. Minimal access to these streams has protected the fisheries from damage and overutilization.

The FPA is part of four separate livestock grazing allotments, held by four permittees. The forage resource is mostly annual grass and shrubs with some meadow habitat in the higher elevations. There are six springs developed with 250 feet of pipe, six troughs, and one stock pond.

Current production is 430 AUM's per year. The area has potential for increased forage production through chaparral manipulation, type conversions and water developments. Total potential production could be increased to 600 AUM's.

The majority of the commercial timber is located in the east half of the southern parcel of Moses. Approximately 50 percent of the southern parcel contains commercial timber within the drainages of the Middle Fork Tule River, Burro Creek, and the North and South Forks of Alder Creek. The commercial timber in the northern parcel is located south and east of the private land at Dillonwood. Approximately 40 percent of this parcel contains commercial timber. The estimated acres of commercial forest land in the Moses FPA is 9,800 acres. The maximum annual average yield possible for the next 50 years would be about 6.53 million board feet. Standing volume is approximately 442 million board feet. About 1.08 miles of road would be constructed each year to allow harvest.

Ecologically, vegetation in the Moses FPA is diverse and appears healthy. The extensive chamise chaparral areas are overmature due to fire prevention and suppression activities. This ecosystem which is fire dependent needs

to be burned periodically to maintain species diversity of both plants and animals.

Estimated average annual water yield for the study area is 19,000 acre-feet. The study area is almost entirely within the Tule River drainage. About 34 percent is in the North Fork, 51 percent in the Wishon Fork and 15 percent in the Middle Fork sub-watersheds. A flume, traversing the southwestern part of the FPA, supplies water to Springville and provides water for hydroelectric generation at the Southern California Edison plant east of Springville.

Average annual precipitation is 33 inches. Channels in the northern part of the FPA are rocky and fairly stable. The remainder of the area contains channels mostly comprised of granitic or metamorphic alluvium with some susceptibility to degradation.

The Moses FPA is composed of over 50 percent granitic with the remainder being metasedimentary material. A recent Bureau of Mines study states that 155 currently inactive claims have been located in the area since 1899. The Powell Mine which produced silver, lead, copper, and zinc was the only recorded productive mine. Along with the Powell Mine, the King Solomon Prospect shows potential for silicified phyllite containing zinc, and the Helen-Joyce Prospect shows potential for silver and zinc. Most mineral potential is in the southern section.

This FPA was inhabited by the Yandanchi branch of the Foothill Yokuts. The antiquity of the Yokuts' occupation in this area goes back at least 8,000 years. Foothill Yokuts' technology relied upon the use of stone prior to contact with Europeans in the late 18th century. Obsidian, granite, and quartz were the primary lithic sources. Cordage, bows, baskets, and pottery were common to the Yokuts. House types were conical dwellings 12-15 feet in diameter, which were sometimes excavated for a depressed floor. The Foothill Yokuts had a relatively complex social and religious organization.

Of historic interest is the Hubbs Sawmill (1885) which was the first sawmill to operate commercially in the North Fork Tule River area.

Due to the lack of archaeological surveys in the area, the prehistory of the Moses FPA is scarcely known.

Under the existing Multiple-Use Plan direction, fire prevention and suppression in the Moses FPA averages 58.00 per acre.

There are no non-federal lands within this area.

#### NEED

The nearest designated wilderness is the Golden Trout Wilderness which is adjacent to the Moses FPA. Use for the Golden Trout Wilderness was 101,900 RVD's in 1982. The northern boundary of the Moses FPA is also contiguous with Sequoia and Kings Canyon National Parks.

Moses FPA is approximately a four-hour drive from Los Angeles and two hours from Bakersfield.

The **Moses FPA** was recommended for further **planning** by the RARE II Final EIS. This FPA has not appeared in any proposed California Wilderness Bills since 1980.

A majority of public responses during the RARE II process favored non-wilderness (52 percent) over wilderness (48 percent) designation. The Tulare County Board of Supervisors filed a resolution opposing further wilderness in Tulare County. Those supporting wilderness designation feel that **it** would be a good addition to the Golden Trout Wilderness. However, this FPA does not add to the integrity of the Golden Trout Wilderness since **it** extends into another river drainage system and the southern portion would be especially unmanageable. Opposition to wilderness status centers in the southern portion. Timber industry **sees** an unnecessary loss of volume, and range interests may not be able to maintain investments in improvements and treating the chaparral to increase **or** maintain current AUM's.

During the creation of the Golden Trout Wilderness in 1978, Congress considered placing the Moses area in with the Golden Trout, but rejected **it**.

All ecosystems in the Moses FPA are represented in the National Forest Wilderness System.

#### ENVIRONMENTAL CONSEQUENCES

1. Designation: Non-wilderness  
Prescription: Wildlife & Dispersed Recreation (B05, OW5, MC5, CF5)  
Alternatives: See Table C.9.

Wilderness attributes of solitude, natural integrity and appearance would be little affected, except for short-term impacts on appearance during wildlife habitat projects. There would be no appreciable increase in **use** of the area because of the difficulty of terrain and limited access. Therein, solitude opportunities will remain high. Improvement and/or expansion of trails to access the area is limited by steep slopes. Cultural resources would remain reasonably protected, although project areas would require inventory, evaluation, and protection of cultural resources.

Wildlife habitat would be improved primarily via prescribed fire, therein, increasing both vegetative and animal diversity. Associated benefits to grazing could occur, although grazing would be subservient to wildlife needs. Air quality would be impacted during periods of burning, except in the lower portions of the FPA which are more affected by the San Joaquin Valley air quality and its associated pollutants.

Limited opportunities exist for timber management and would be available **if** done in conjunction with other timber harvests. Some fuelwood could be removed. Without this, opportunities would be foregone because of high

unit costs. Recreation needs would constrain timber harvest activities and increase costs.

Economic and social benefits would be slightly increased in quantity due to increased human **use**, primarily hunting. Social costs would include a reduction in negligible **loss** of natural integrity, designation of a wilderness, and some reduction in commercial timber harvest. Fire suppression costs would remain high due to limited access.

Large resource trade-offs requiring mitigation would not occur. Stream channels are relatively stable and water quality and sedimentation will not increase above current levels.

2. Designation: Non-wilderness  
Prescription: General Dispersed Recreation (BO1, OW1, MC1, CF1)  
Alternatives: See Table C.9.

Wilderness attributes of natural appearance and integrity would not be affected, although solitude might decrease slightly if OHV use was emphasized. **While** improvement and expansion of trail system opportunities are difficult and limited, this use could be encouraged via trail development. Cultural resources would remain reasonably protected, although trail project areas would require inventory, evaluation, and appropriate protection of cultural resources.

Wildlife habitat diversity and vegetative composition would remain static or continue to deteriorate; therein, wildlife populations could be expected to change over time. Grazing conditions would react in a similar fashion. Air quality would not be affected.

Limited opportunities exist for vegetative management in timbered areas and would be available if done in conjunction with other timber harvests. Some fuelwood could be removed. Without this, opportunities could be foregone because of high unit costs. Recreation needs would constrain timber harvest activities and increase costs.

There would be noticeable economic **or** social consequences from this action. The greatest social cost would be formal designation of a wilderness.

Fire suppression costs would remain high due to limited access. Large resource trade-offs requiring mitigation would not occur. Stream channels are relatively stable. Changes in sedimentation or water quality are not anticipated.

3. Designation: Non-wilderness  
Prescription: Range (BO6, OW6, MC6)  
Alternatives: **See** Table C.9.

The wilderness attributes of natural appearance and integrity would be moderately altered from existing situations via range betterment, including some type conversion and vegetation manipulation through use of prescribed fire and construction of improvements.

Recreation use is very light at present and would remain so, relative to steep terrain and limited access through the area. OHV use on trails and/or roads associated with improvements could occur and increase, therein conflicting with grazing. Cultural resources would be impacted both by increased grazing of animals and development of improvements. Activities with potential for impacting cultural properties would require inventory, evaluation, and appropriate protection/mitigation.

Improving grazing would have positive benefits by improving wildlife habitat and/or diversity. Fuel loading would also be reduced. Prescribed fire would be the major tool involved in habitat manipulation. This would periodically add smoke to the airshed. This would mostly occur in the lower reaches of the FPA which are more affected by the San Joaquin Valley air quality and its associated pollutants.

Economical benefits would occur from improved grazing opportunities, and costs from the funding necessary to implement improvements. Social costs would include the loss of the area as wilderness.

Fire suppression costs will remain high due to steep terrain and limited access.

The slight increase in grazing would result in a small increase in use of riparian areas. There would be no appreciable impacts on either water quality or sedimentation.

4. Designation: Non-wilderness  
Prescription: Timber (CF7)  
Alternatives: See Table C.9.

This prescription could apply to up to 75 percent of this FPA. It would represent a major change in the vegetative structure of the area, with harvest cutting resulting in openings of various sizes. Road construction would be required. It would result in visual alterations, therein changing the appearance and integrity of the area from its present condition and foregoing any future wilderness designation.

Recreation **use** would increase as access is provided into the area, although the steepness of the country will confine most users to areas on or near roads. Hunting pressures would likely increase, as will use of recreational vehicles, including OHV's. Use would be more widely dispersed and opportunities for solitude decreased. Opportunities for challenging experience would be reduced. Cultural resources, if present, could be impacted by both management and the public. Activities with the potential for impacting cultural resources would require inventory, evaluation and appropriate mitigation.

Wildlife habitat diversity would increase with timber harvest, resulting in better age class distribution and, subsequently, increasing populations. Grazing could increase slightly over existing within plantation areas once trees become reestablished. Air quality in the higher reaches of this FPA is good, not being impacted by the San Joaquin Valley; periods of burning would add smoke to the airshed.



Timber harvest will be fairly significant (up to **three MMF** per year) under some alternatives. Fuelwood harvest would increase.

In **terms** of social consequences, the area would receive a higher investment to accomplish a full **range** of cost-effective outputs. wilderness characteristics would be reduced and ultimately eliminated as intensive management proceeds. Economic and social benefits would result from timber harvest/production and increased recreation opportunities for a higher percentage of the population.

Stream channels are relatively stable. Water quality would decrease and sedimentation increase with harvest and road construction activities.

Fire suppression costs would decrease from current levels with increased access. ~~The~~ threat of human-caused ignitions would increase. Subsequently, the need for increased prevention activities/contacts and law enforcement could develop.

5. Designation: Wilderness  
Prescription: Natural Role of Fire (WF4)  
Alternatives: See Table C.9.

Wilderness attributes of solitude, natural appearance and integrity would be maintained under this prescription, where they exist at present. It is difficult to get away from human influence in much of the area, particularly in the western portions of both units. This situation would remain. Recreation use, very light at present, would remain so and possibly decrease, since there is no outstanding feature to draw use to the area. Opportunities are limited by heavy vegetation, steep terrain, a limited trail system, and few suitable camping locations. Expansion of the trail system would be expensive. Cultural resources are unexplored but would receive maximum protection.

Opportunities to manage a fairly significant timber resource would be eliminated, including both commercial sawtimber and fuelwood. Timber stands would deteriorate over time.

Periods of limited visibility would continue to affect the air quality in the lower elevation, western portions of the area near the San Joaquin Valley.

The vegetation of the lower elevations has poor age class and mosaic distribution. Prescribed fire would be used to maintain or enhance vegetative diversity. This would enhance visual diversity and increase wildlife populations and variety in the area. This could have spinoff benefits on grazing in these areas. Application of prescribed fire would be costly and limited.

Grazing and current improvements would continue, but opportunities to increase grazing and/or accomplish fuel reduction programs would be

foregone: thus losses in these resources would occur over time.<sup>5/</sup> Fire prevention and suppression costs would increase as compared to management under non-wilderness designation.

Social and economic dependencies known to exist in this area include grazing as part of four allotments with four individual permittees. Wilderness designation is not expected to adversely affect maintenance of current AUM's. Management of these allotments would continue status quo but be more restrictive under this designation, with constraints on further grazing improvements. Social implications include more wilderness and costlier fire administration. Manageability and enforcement of regulations, particularly the western portion of the south unit, would be difficult. Some enhancement by OHV's would occur.

Large resource trade-offs requiring mitigation would not occur. Stream channels are relatively stable and water quality and sedimentation would not change. A wilderness designation will not affect the current fisheries situation. Wilderness status would provide habitat/watershed protection from disturbances.

6. Designation: Wilderness  
Prescription: Full Fire Control & Suppression (W04)  
Alternatives: See Table C.9.

This prescription is used on the northern portion (9,730 acres) in the LBU alternative only.

Wilderness attributes of solitude, natural appearance and integrity would be maintained under this prescription, where they exist at present. It is difficult to get away from human influence in much of the area, particularly in the western portions. This situation would remain.

Recreation use, very light at present, would remain so and possibly decrease, since there is no outstanding feature to draw use to the area. Opportunities are limited by heavy vegetation, steep terrain, a limited trail system, and few suitable camping locations. Expansion of the trail system would be expensive. Cultural resources are unexplored but would receive maximum protection.

Opportunities to manage a small timber resource would be eliminated, including both commercial sawtimber and fuelwood. Timber stands would deteriorate over time.

Periods of limited visibility would continue to affect the air quality in the lower elevation, western portions of the area near the San Joaquin Valley.

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<sup>5/</sup> Under the Amenity Alternative, grazing would not be permitted in new wildernesses. This would result in a complete loss of this opportunity with its resultant economic impacts. Recreationists would not experience conflicts with cattle under this situation.

The vegetation of the lower elevations would be retained in its present condition with poor age class and mosaic distribution. Fire suppression would be fast and aggressive and fire would not be used to maintain or enhance vegetative diversity. This would reduce visual diversity and result in decreased wildlife populations and variety in the area.

Grazing and current improvements would continue, but opportunities to increase grazing and/or accomplish fuel reduction programs would be foregone; thus losses in these resources would occur over time.<sup>6/</sup> Fire prevention and suppression costs would increase as compared to management under non-wilderness designation or with opportunities to use fire as a management tool.

Social and economic dependencies known to exist in this area include grazing as part of four allotments with four individual permittees. Wilderness designation is not expected to adversely affect maintenance of current AUM's. Management of these allotments would continue status quo but be more restrictive under this designation, with constraints on further grazing improvements. Social implications include more wilderness, and costlier fire administration. Manageability and enforcement of regulations, particularly the western portion of the south unit, would be difficult. Some encroachment by OHV's would occur.

Large resource trade-offs requiring mitigation would not occur. Stream channels are relatively stable and water quality and sedimentation would not change. A wilderness designation will not affect the current fisheries situation. Wilderness status would provide habitat/watershed protection from disturbances.

Table C.10 displays the critical indicators (as explained in Section B Critical Indicators, amount and timing of anticipated change) used to compare impacts of each alternative. Table C.11 displays average annual outputs for the first and fifth decade for this Further Planning Area by alternative.

<sup>6/</sup> Under the Amenity Alternative, grazing would not be permitted in new wildernesses. This would result in a complete loss of this opportunity with its resultant economic impacts. Recreationists would not experience conflicts with cattle under this situation.

TABLE C.9  
MOSES FPA

ACRES (AND PERCENT) ALLOCATED BY ALTERNATIVE AND  
MANAGEMENT PRESCRIPTION

Management Prescription	Acres (%)			
	PRF	CUR	RPA	AMN
B01	500(2)	500(2)	0	0
OW1	0	0	0	0
MC1	1300(5)	1300(5)	0	0
CF1	2200(9)	2200(9)	4500(19)	0
WF4	0	0	0	24360(100)
WC4	0	0	0	0
B05	0	0	500(2)	0
OW5	0	0	600(2)	0
MC5	0	0	2300(9)	0
CF5	0	0	0	0
B06	0	0	0	0
OW6	1360(6)	1360(6)	760(3)	0
MC6	3400(14)	3400(14)	2400(10)	0
CF7	15600(64)	15600(64)	13300(55)	0
MC8	0	0	0	0
CF8	0	0	0	0
TOTAL	24360(100)	24360(100)	24360(100)	24360(100)

Management Prescription			
	MKT	PRO	WFV
B01	500(2)	500(2)	500(2)
OW1	1360(6)	1360(6)	0
MC1	1300(5)	1300(5)	1300(5)
CF1	0	0	0
WF4	0	0	0
WC4	0	0	0
B05	0	0	0
OW5	0	0	1360(6)
MC5	0	0	3400(14)
CF5	0	0	17800(23)
B06	0	0	0
OW6	0	0	0
MC6	0	3400(14)	0
CF7	0	17800(73)	0
MC8	3400(14)	0	0
CF8	17800(73)	0	0
TOTAL	24360(100)	24360(100)	24360(100)

TABLE C.10

## MOSES FURTHER PLANNING AREA

<u>Alternative</u>	<u>Decade</u>	<u>-Indicators-</u>			
		<u>Road Construction (Mi)</u>	<u>Timber Harvested (MMBF)</u>	<u>Habitat Improvement (M Ac)</u>	<u>Increased M AUM's (Avg/Yr)</u>
PRF	1	18 0	10 6	1 8	1 3
	2	1 0	2 1	3 9	9
	3	4 0	9 7	0	7
	4	1 0	3 9	0	1 3
	5	0	1 4	3 9	9
CUR	1	1	0	1 9	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	2	5	4 7	6
RPA	1	17 8	1 1	6 0	0
	2	3 6	1 9	0	0
	3	3 4	9 4	0	0
	4	4 6	10 0	4 0	0
	5	9 4	18 0	0	0
AMN	1	0	0	0	0
	2	0	0	3	0
	3	0	0	0	1
	4	0	0	0	0
	5	0	0	3	0
MKT	1	20 1	7	1 8	0
	2	10 4	19 0	3 9	0
	3	11 4	21 6	0	0
	4	3 2	7 8	0	0
	5	2 9	3 0	3 9	6
PRO	1	20 4	8	1 8	0
	2	4 2	8 1	3 9	0
	3	11 4	22 6	0	0
	4	9 4	19 7	0	0
	5	2 9	4 1	3 9	6
WV	1	12 0	0	5 5	3
	2	0	7	0	0
	3	0	0	0	0
	4	2 4	0	4 0	0
	5	2 4	13 4	0	1

TABLE C 11

FURTHER PLANNING AREA - MOSES  
AVERAGE ANNUAL OUTPUTS  
-DECADES 1 AND 5

OUTPUT	DECADE	PRF	CUR	RPA	AMN	MKT	PRO	WFV
Recommended Wilderness Acres -		0	0	0	24,360	0	0	0
Non-Wilderness Acres	-	24.360	24,360	24,360	0	24,360	24.360	24,360
Total Developed Recreation (MRVD)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Dispersed Recreation (MRVD)	1 5	5 1 2	.5 1 2	5 1 2	5 1.2	.5 1 2	5 1 2	5 1 2
Wilderness Recreation (MRVD)	1 5	0 0	0 0	0 0	.0005 .0014	0 0	0 0	0 0
Total Wildlife & Fish User Days (WFUD)	1 5	50 120	50 120	50 120	50 120	50 120	50 120	50 120
Grazing (AUM)	1 5	1.325 918	751 745	360 274	394 335	752 1,301	757 1,301	988 785
Suitable Timber Land (Acres)	1 5	9,648 9,648	99 99	7,693 7,693	0 0	9,526 9,526	9,577 9,577	7,732 7,732
Total Volume (MMCF)	1 5	1 1 1	0 002	111 1 800	0 0	075 030	076 409	0 1 336
(MMBF)	1 5	6 9 9	0 013	721 11 700	0 0	487 195	494 2 66	0 8 684
Mineral Potential Foregone (Acres of high and medium)	1 5	0 0	0 0	0 0	8,000 8,000	0 0	0 0	0 0
Gross Revenue (MM\$)	1 5	43 04	93 94	1 01 2 83	92 94	97 1 12	97 1 27	94 2 62
Net Revenue (MM\$)	1 5	05 01	88 88	81 2 21	86 86	84 96	83 1 04	90 2 19
Total Cost (MM\$)	1 5	49 03	05 06	21 62	06 08	13 16	14 22	04 43

## DESCRIPTION

The Scodies FPA constitutes the southeasternmost extremity of the Cannell Meadow Ranger District, of the Sequoia NF and the Sierra Nevada. Located in Kern County, it consists of steep granitic mountain faces rising out of the desert. The summit is almost plateau-like in appearance. Vegetation varies from a desert ecosystem of Mojave desert species through Joshua tree woodlands, desert chaparral, sagebrush, oak woodlands to an extensive pinyon pine woodland at the higher elevations. A few stringers of Jeffrey pines are located on the north-facing slopes. Very little free water is available in the Scodies and, therefore, is a severely limiting factor for biotic communities.

The area can be reached from the north and south by U.S. Highway 395 and California Highway 14 to Highway 178. Highway 178 also provides access to the area from the west. Several dirt roads allow access to various canyons and Forest Service four-wheel drive road 27S11 provides access across the summit. The Pacific Crest Trail bisects the Scodies FPA from Walker Pass to Bird Springs Pass. The nearest urban center is Bakersfield, approximately 1-3/4 hours drive.

Recreation use is estimated to be low compared with other areas on the Forest primarily because of the aridity of the area. OHV use and hunting are the dominant uses with hikers utilizing the Pacific Crest Trail. The highest peaks in the Scodies FPA provide scenic vistas. Views from Skinner Peak extend to the Dome Land Wilderness, the Kern Plateau and Mount Whitney to the north, east to desert mountain ranges, south to Mt. San Geronio and Mt. San Antonio near Los Angeles, and west to the Piute Mountains.

## CAPABILITY

Throughout the greater part of the Scodies, human influence has not affected the ecological process or natural integrity of the area. However, a microwave tower located just outside the boundary can be seen from the Pacific Crest Trail on the north-face of Skinner Peak and also from a few prominent ridges. It cannot be seen from over 90 percent of the Scodies. A low standard four-wheel drive road approximately five miles long accesses the McIvers Spring cabin site north of the microwave tower within this area.

The Scodies contain many opportunities for solitude and for primitive recreation. The relatively gently sloping terrain of the plateau-like summit provides opportunity for cross-country travel for hikers and hunters. Scenic views are abundant and of significant value. The area is quite large. This fact, combined with its isolated location and low use by people, means that a person can easily get away from the sights and sounds of civilization. Dispersed recreation activities are challenging due to the lack of trails and extremely limited water supplies.

The boundary of the Scodies FPA follows the Forest boundary. This boundary does not follow any topographic features: instead it follows section lines.

Few opportunities exist to improve the manageability of the area. The boundary is adjacent to BLM lands on all sides. Access to the Scodies FPA is rather limited. Only a few areas would need control if the area were designated as wilderness.

#### AVAILABILITY

The Scodies FPA represents a few trade-offs between wilderness values and dispersed recreation OHV's. The area has no campgrounds, fishing or perennial streams. Projected RVD use is 1,140 and 1,480 in 1990 and 2000, respectively, with a slight decrease if the area remained non-wilderness. However, most hiking RVD use is expected to occur along the Pacific Crest Trail which is the major hiking attraction in the Scodies. Many hikers, however, find the area rugged and challenging due to its aridity. The four-wheel drive road to McIvers Spring provides access to many areas of the Scodies. If the road was of a standard that average cars could drive, the Scodies would receive more dispersed primitive camping and would provide more access regardless if the area were designated as wilderness or not. However, the road north of the microwave tower is currently within the FPA boundary and could not be used by vehicles unless it were specifically identified and exempted in wilderness legislation.

The Scodies lie within the Kern River airshed and it is assumed that existing concentrations of any regulated pollutants are transported primarily from the southern San Joaquin Valley from the Bakersfield area via this major air corridor. Existing levels of particulates may also be attributed to emissions generated in the Kern River Valley communities. As a small isolated-island range, the Scodies could have potential problems if industry were to locate high-emitting facilities around the base of the range.

Primary recreation experiences in the Scodies FPA are hunting, OHV use, and hiking. Most of the use occurs in the pinyon pine woodland ecosystem in the Semi-primitive Motorized ROS class. Only the Pacific Crest Trail bisects the area. Access by hikers and hunters is limited and rugged from the base of the Scodies to the plateau-like summit. It is speculated that over 90 percent of all use in the Scodies FPA originates from Forest Road 27S11 which provides access to the plateau summit. Water is needed for camping, and McIvers Spring is utilized by hikers and OHV users. Most OHV use occurs during the weekends and hunting season. Since the road to McIvers Spring is essentially a four-wheel drive road, this limits the opportunity for more dispersed use. High summer temperatures keep use relatively low.

Wildlife information for the Scodies FPA is limited. The area does not provide for an abundance of quality habitat. The area is relatively arid with little water available during the summer and fall. Several springs and guzzlers have been developed for wildlife over the years in the Scodies. A few deer reside in the area. Mountain and valley quail, are common where water is available. There are no threatened or endangered animals in the Scodies.

Average annual precipitation is 10 inches. Estimated annual water yield is only 6,000 acre-feet. Major perennial streams do not drain the area.



Channels in the area are composed of rocky granitic alluvium and are fairly susceptible to degradation.

The Scodies FPA is currently under permit to three livestock operators. Generally, sheep and cattle graze the lower slopes. Forage available is annual grass and shrubs. Production is fairly low, producing 445 AUM's per year. Potential for increased production lies in additional water developments along with shrub type conversions and vegetation manipulation projects. Production could be increased to 525 AUM's. Currently there are 5.8 miles of fence with six stock watering troughs in the Scodie Mountains. Wilderness designation would not prohibit livestock grazing.

The vegetation in the Scodies FPA is dominated by a uniform appearing pinyon pine woodland. Jeffrey pine is restricted to the most mesic sites primarily on the northern half of the area, and could be naturally eliminated through time with continued aridity. The Jeffrey pine stands are too sparse and remote to be considered suitable for timber production. Sagebrush and semidesert chaparral occupy southern slopes. One sensitive plant, Yosemite bitterroot (Lewisia disepala), is known in the Scodies FPA.

Recent information provided by the Bureau of Mines states that about 50 claims have been located in the area, but no mineral production has been recorded. In addition, the Bureau of Mines shows the Scodies to have a low mineral resource potential. An old small mine is located just south of the microwave tower in the Cane Creek drainage. Tungsten occurrence was not found during the Bureau's investigation; and other previous reports grade it as too small and low grade to be of economic value.

Currently, a very small acreage on the northeast corner of the FPA is being investigated to determine suitability for installation of an electromagnetic acoustic research station.

The Scodies FPA was inhabited by both the Tubatulabal and Kawaiisu Indians. These Indian groups relied heavily upon the local pinyon crop, utilizing seasonal base camps. Temporary hunting camps were also occupied throughout the pinyon nut harvest season. Proximity to stable water sources does not appear to have been a factor in the location of camps. The area contains numerous cultural resources which were located by an intensive survey associated with the construction of the Pacific Crest Trail. These sites occurred in such numbers that it was often difficult to construct the trail without impacting significant properties. Generally, cultural sites in the Scodies tend to be located on small, flat spurs and ridge lines that provided adequate camping space, open view, and easy access to the surrounding pinyon pine woodland.

During the 1982-83 winter, several areas on the plateau of the Scodies received storm damage to trees. This fuel on the ground could pose a problem in suppressing a wildfire, in addition to the rugged nature of the area. There is also evidence of black stain root disease and dwarf mistletoe infestations on pinyon pines along Forest Road 27S11 between the microwave station and McIvers Spring.

There are no private lands within the Scodies FPA.

## NEED

The nearest designated area is the Dome Land Wilderness. However, the topography and vegetation of the Scodies FPA are very different from that formed in the Dome Land Wilderness. The southern boundary of the Scodies FPA is adjacent to BLM Wilderness Study Area 163 from Bird Springs Pass Road to Kelso Creek Road.

The Scodies FPA is comprised of a vast pinyon pine woodland. This ecosystem is currently not represented in any Forest Service wilderness in California.

The Scodies was placed in the further planning category in RARE 11. Although the area was proposed for wilderness in a 1980 Bill, the California Wilderness Act of 1984 retained its further planning status.

Public response during the RARE II process displays 56 percent favoring wilderness designation with 44 percent desiring non-wilderness designation. The wilderness proponents described the great scenic beauty and wilderness values of the area. Concerns also centered around the Pacific Crest Trail and user conflicts. Those opposing wilderness designation felt the Scodies provided good motorized recreation and did not want to see it eliminated.

## ENVIRONMENTAL CONSEQUENCES

1. Designation: Non-wilderness  
Prescription: Wildlife & Dispersed Recreation (PS5)  
Alternatives: See Table C.12

Wilderness attributes would be little affected by the application of this prescription, except possibly in the immediate area of a project. Primarily, projects would be aimed at providing water developments, so only small areas would be involved. Because of the arid nature of the country, appreciable increase in recreation use is not expected, even if the limited trail system is expanded also. Cultural resources would remain reasonably protected, although project areas would require inventory, evaluation and protection/mitigation of cultural resources.

Major changes to grazing programs would not occur although some range improvement measures would be implemented. Air quality would remain the same given the areas location in the Kern River airshed.

Social and economic benefits for the area would be few. The biggest social cost would include the loss of a formal wilderness designation.

Large resource trade-offs requiring mitigation would not occur. Enforcement need for nonmotorized vehicle regulations on the PCT would continue at the same rate as currently exist.

Fire suppression costs will remain constant due to limited access.

2. Designation: Non-wilderness  
Prescription: General Dispersed Recreation (PS1)  
Alternatives: See Table C.12

Wilderness attributes of natural appearance and integrity would not be affected by application of this prescription. Because of the arid nature of the area, recreation **use** of the area is not expected to change except through encouragement of OHV use, which would affect solitude. Opportunities to increase the trail system to facilitate this **use** are available. Cultural resources would be impacted, both by project development and dispersal of users; these activities would require inventory, evaluation and appropriate cultural resource mitigation/protection.

Major changes to grazing programs would not occur even with some range betterment projects, although conflicts with OHV's would increase. Air quality would remain the **same** given the area's location in the Kern River airshed.

Social and economic benefits for the area would be few. The biggest cost would include the loss of a formal wilderness designation.

Large resource trade-offs requiring mitigation would not occur. Enforcement needs to prevent OHV **use** of the PCT would increase over the existing situation.

3. Designation: Wilderness  
Prescription: Natural Role of Fire (WF4)  
Alternatives: See Table C.12

Wilderness designation would maintain the attributes of solitude, natural appearance, and natural integrity characteristic of the Scodie Mountains. Recreation **use** is generally light, being concentrated mostly around the access road to the microwave tower and McIvers Spring. It would decrease if the wilderness did not permit motor vehicle use to the springs. Further, there is no outstanding feature to draw use to the area. The extreme arid conditions will preclude significant recreation use increases under any designation, although use of the PCT could increase with the attraction of a wilderness designation. Opportunities to expand the trail system on the plateau-like mountaintop would, however, make parts of the area more accessible. Cultural resources, while largely unexplored, are known to abound on more gentle terrain. They would receive maximum protection. Views from the area, while looking to lower elevations where human presence is sometimes evident, are spectacular.

Due to the area's location in the Kern River airshed, periods of limited vision will continue to be common to this area. Air quality would restrict application of prescribed fire.

Although there are three permittees who utilize this area for grazing, opportunities to increase forage production and additional water developments would be foregone.<sup>7/</sup> Current improvements would be retained. The existing wildlife population would remain constant, albeit a limited population at best. Much of the vegetation is a uniform-appearing pinyon pine woodland. This trend would continue unless a program of applied fire management was allowed to create a more natural regime.

Fire suppression costs would increase over existing costs. Prescribed fire costs would be high due to limits and/or restrictions placed on types or use of equipment.

Social benefits would be primarily associated with increasing the amount of wilderness available. Economical costs would involve increased administration of wilderness regulations. OHV infringement is a current problem on the PCT; and designation as wilderness (closing the road to McIvers Spring) would greatly compound existing management, administration and law enforcement problems. The cost of administration would be high.

Large resource trade-offs requiring mitigation would not occur with wilderness designation.

- 4. Designation: Wilderness
- Prescription: Full Fire Control & Suppression (WC4)
- Alternatives: See Table C.12

Wilderness designation would maintain the attributes of solitude, natural appearance, and natural integrity characteristic of the Scodie Mountains. Recreation use is generally light, being concentrated mostly around the access road to the microwave tower and McIvers Spring. It would decrease if the wilderness did not permit motor vehicle use to the springs. Further, there is no outstanding feature to draw use to the area. The extreme arid conditions will preclude significant recreation use increases under any designation, although use of the PCT could increase with the attraction of a wilderness designation. Opportunities to expand the trail system on the plateau-like mountaintop would, however, make parts of the area more accessible. Cultural resources, while largely unexplored, are known to abound on more gentle terrain. They would receive maximum protection. Views from the area, while looking to lower elevations where human presence is sometimes evident, are spectacular.

Due to the area's location in the Kern River airshed, periods of limited vision will continue to be common to this area. Air quality would restrict application of prescribed fire.

Although there are three permittees who utilize this area for grazing, opportunities to increase forage production and additional water develop-

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<sup>7/</sup> Under the Amenity Alternative, grazing would ~~be~~ be permitted in new wildernesses. This would result in a complete loss of this opportunity with its resultant economic impacts. Recreationists would not experience conflicts with cattle under this situation.

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Large resource trade-offs requiring mitigation would not occur with wilderness designation.

Table C.13 displays the critical indicators (as explained in Section B), used to compare impacts of each alternative. Table C.14 displays average annual outputs for the first and fifth decade for this Further Planning Area by alternative.

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<sup>8/</sup> Under the Amenity Alternative, grazing would not be permitted in new wildernesses. This would result in a complete loss of this opportunity with its resultant economic impacts. Recreationists would not experience conflicts with cattle under this situation.

TABLE C.12  
SCODIES

ACRES (AND PERCENT) ALLOCATED BY ALTERNATIVE AND  
MANAGEMENT PRESCRIPTION

Management Prescription	Acres (%) PRF	CUR	RPA	AMN
PS1	0	0	48000(100)	0
WF4	0	0	0	48000(100)
WC4	0	0	0	0
PS5	48000(100)	48000(100)	0	0
TOTAL	48000(100)	48000(100)	48000(100)	48000(100)

Management Prescription	MKT	PRO	WFV
PS1	0	0	0
WF4	0	0	0
WC4	0	0	0
PS5	48000(100)	48000(100)	48000(100)
TOTAL	48000(100)	48000(100)	48000(100)

TABLE c.13

SCODIES FURTHER PLANNING AREA

Alternative	Decade	-Indicators- Acres of Habitat Improvement (M ac)	Increased M AUM's (Avg/Yr)
AMN		(no outputs)	
PRF	5	13.0	.1
CUR	5	13.0	.1
RPA	5	13.0	.1
MKT	5	13.0	.1
PRO	5	13.0	.1
WFV	5	13.0	.1

TABLE C 14

FURTHER PLANNING AREA - SCODIES  
 AVERAGE ANNUAL OUTPUTS  
 DECADES 1 AND 5

OUTPUT	DECADE	PRF	CUR	RPA	AMN	MKT	PRO	WPV
Recommended Wilderness Acres	-	0	0	0	48.000	0	0	0
Non-Wilderness Acres	-	48,000	48,000	48,000	0	48,000	48,000	48,000
Total Developed Recreation (MRVD)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Dispersed Recreation (MRVD)	1 5	9 2 2	9 2 2	9 2 2	1 0 2 2	9 2 2	9 2 2	9 2 2
Wilderness Recreation (MRVD)	1 5	0 0	0 0	0 0	0011 0035	0 0	0 0	0 0
Total Wildlife & Fish User Days (WFUD)	1 5	90 220	90 220	90 220	100 250	90 220	90 220	90 220
Grazing (AUM)	1 5	503 632	445 445	387 565	396 418	530 645	534 650	423 503
Suitable Timber Land	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Total Volume (MMCF)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
(MMBF)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Mineral Potential Foregone (Acres of high and medium)	1 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Gross Revenue (MM\$)	1 5	60 60	60 60	59 59	59 59	60 60	60 60	60 60
Net Revenue (MM\$)	1 5	49 40	52 43	49 39	44 44	49 40	49 40	52 43
Total Cost (MM\$)	1 5	21 16	07 16	11 20	15 15	11 20	11 20	07 16

## B. CRITICAL INDICATORS, AMOUNT AND TIMING OF ANTICIPATED CHANGE

To compare the impacts of various prescriptions, a matrix was prepared in which quantitative values of activity outputs were developed for the five decades of the planning period. This was done for each alternative. The values for the following items were reviewed:

- RVD's
- Acres of wildlife habitat improvement
- Acres of range improvement
- Acres of water yield improvement
- Acres of prescribed fire
- Acres of fuel reduction
- Miles of road construction
- Timber volume harvested
- Increase in AUM's

After analyzing these, it was felt that the following are critical indicators which would best indicate the degree of impact on any individual Further Planning Area:

- Acres of habitat improvement
- Acres of water yield improvement
- Miles of road construction
- Timber volume harvested
- Increase in AUM's

Indicators were applied to the individual Further Planning Areas in combinations representative of anticipated actions within each area. For instance, acres of habitat improvement and increase in AUM's were used as indicators in an area where timber would be not harvested or water yield improvement would not be undertaken. Information is presented in the four Tables (C.4, C.7, C.10, and C.13), located after their respective FPA narrative, to provide both magnitude and time of change.

Tables C.2, C.5, C.8, C.11, and C.14, also located after their respective FPA/WSA narrative, display average annual outputs for the first and fifth decade for each alternative.

Table C.15 compares the acres of National Forest Further Planning Areas that are allocated to each management emphasis by alternative.

Table C.16 compares the acres of National Forest FPA's and BLM WSA allocated to each management prescription by alternative.

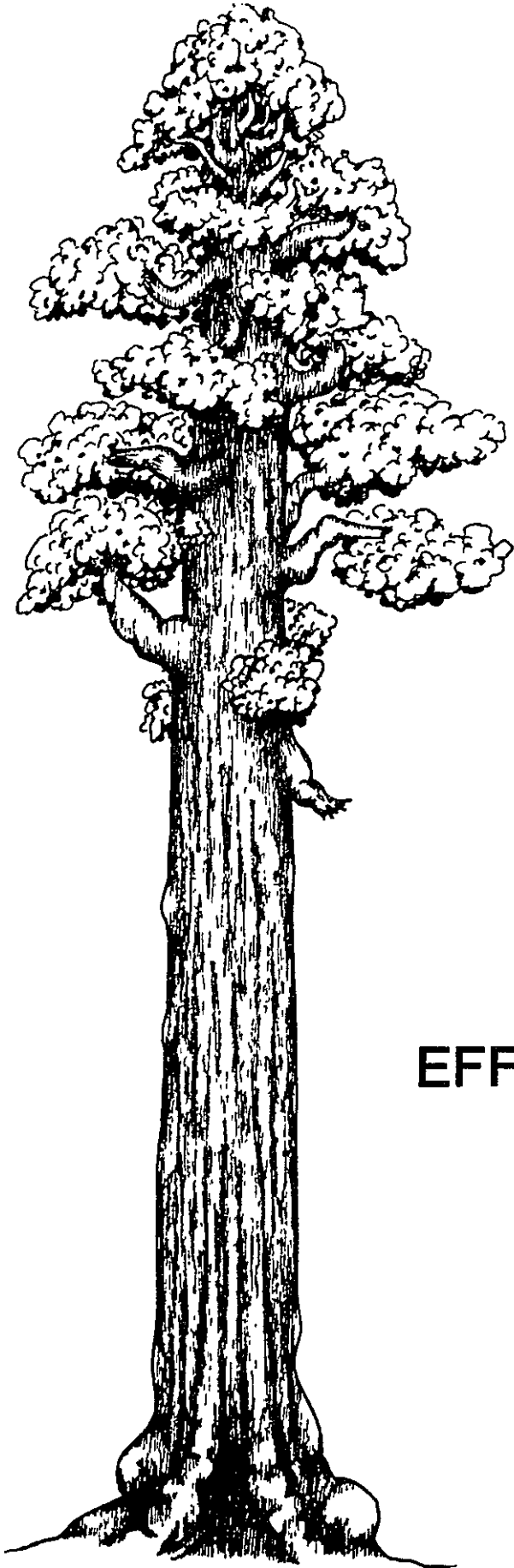


TABLE C 15 ACRES BY MANAGEMENT EMPHASIS ALLOCATED BY ALTERNATIVE -  
 TOTAL FOR NATIONAL FOREST FURTHER PLANNING AREAS

<u>Alt</u>	<u>Gen Disp</u> <u>Rec</u>	<u>Water-</u> <u>Orien.Rec</u>	<u>Developed</u> <u>Rec</u>	<u>Wild</u> <u>Fire Mgt</u>	<u>WL/Disp</u> <u>Rec</u>	<u>Range</u>	<u>Timber</u>	<u>Water</u> <u>Yield</u>	<u>Total Acres</u>
PRF	4,000	0	0	0	52,500	19.360	15.600	0	91.460
CUR	4,000	0	0	0	50.700	19.160	17,600	0	91,460
RPA	52.500	0	0	0	7,900	15.260	13.300	2,500	91.460
AMN	0	0	0	91,460	0	0	0	0	91,460
MKT	3.160	0	0	0	48.000	15,890	0	24,410	91.460
PRO	3,160	0	0	0	48.000	19,900	20,310	0	91,460
WFV	1,800	0	0	0	89.660	0	0	0	91,460

TABLE C 16  
 FURTHER PLANNING AND WILDERNESS STUDY AREA EVALUATION (USFS and BLM)  
 ACRES AND PERCENT ALLOCATED BY ALTERNATIVE AND MANAGEMENT PRESCRIPTION

Management Prescription	Acres (%)						
	PRF	CUR	RPA	AMN	MKT	PRO	WFV
B01	500 (1)	500 (1)	0	0	500 (1)	500 (1)	500 (1)
ow1	0	0	0	0	1360 (1)	1360 (1)	0
MC1	1300 (1)	1300 (1)	0	0	1300 (1)	1300 (1)	1300(1)
PS1	0	0	70910 (55)	0	0	0	0
CF1	2200 (2)	2200 (2)	4500 (4)	0	0	0	0
B02	0	0	0	0	0	0	0
ow2	0	0	0	0	0	0	0
MC2	0	0	0	0	0	0	0
CF3	0	0	0	0	0	0	0
WF4	12650 (10)	0	0	127020 (100)	0	0	0
WC4	0	0	12650 (10)	0	9710 (8)	0	0
B05	0	0	1100 (1)	0	0	0	4400 (3)
OW5	0	0	2500 (2)	0	0	0	10210 (8)
MC5	2500 (2)	2700 (2)	2300 (2)	0	0	0	6740 (5)
PS5	70910 (55)	83560 (65)	0	0	48000 (37)	48000 (37)	83560 (66)
CF5	2000 (2)	0	2000 (2)	0	0	0	20310 (16)
B06	4400 (3)	4400 (3)	3800 (3)	0	4400 (3)	4400 (3)	0
ow6	10210 (8)	10210 (8)	7710 (6)	0	8850 (7)	8850 (7)	0
MC6	4240 (3)	4040 (3)	3240 (3)	0	2500 (2)	5900 (5)	0
PS6	0	0	0	0	25850 (20)	35560 (28)	0
CF6	510 (1)	510 (1)	510 (1)	0	140 (1)	840 (1)	0
CF7	15600 (12)	17600 (14)	13300 (9)	0	0	20310 (16)	0
MC8	0	0	2500 (2)	0	4100 (3)	0	0
CF 8	0	0	0	0	20310 (16)	0	0
SIA	0	0	0	0	0	0	0
WSR	0	0	0	0	0	0	0
<b>Total</b>	<b>127020(100)</b>	<b>127020(100)</b>	<b>127020(100)</b>	<b>127020(100)</b>	<b>127020(100)</b>	<b>127020(100)</b>	<b>127020(100)</b>



**Appendix D**

**ECONOMIC**

**EFFICIENCY ANALYSIS**

## APPENDIX D

### ECONOMIC EFFICIENCY ANALYSIS

#### CONCEPTUAL BACKGROUND

Present net value (PNV) is the criterion used to maximize net benefits in planning benchmarks and alternatives for the Sequoia National Forest. For each alternative PNV is the difference between the discounted value of all priced outputs and all Forest Service management and investment cost over the analysis period. The priced outputs are those that are or can be exchanged in the market place. They include the value of forage; the stumpage value of timber; the value of commercial fish in the stream; fur animals and other harvested miscellaneous products; the value of any increased water flow quantities; the in-the-ground value of minerals; and all recreation visitor days including those for wildlife, fishing, and wilderness experiences.

The alternatives are designed to achieve the specified nonpriced outputs and to meet constraints at the least cost. Thus, the PNV of each alternative estimates the value of the maximum attainable benefits of priced outputs. It is the value of priced benefits realized in excess of all the Forest Service costs of producing priced outputs and nonpriced outputs and meeting management constraints. PNV, therefore, is an estimate of the market value of the current forest resources after all costs of producing outputs and meeting constraints have been subtracted from the value of the expected flow of priced outputs.

Net Public Benefit is defined to be overall value to the Nation of all outputs and positive effects (benefits) less all the associated Forest Service inputs and negative effects (costs) for producing those primary benefits whether they can be quantitatively valued or not. Thus, conceptually, net public benefits are the sum of PNV plus the full value of nonpriced outputs. The full value of nonpriced benefits is used because their cost of production has been accounted for in PNV. The nonpriced benefits include outputs such as threatened and endangered species maintenance or enhancement; natural and scientific areas; cultural site reservations (such as Indian religious sites), and historical or anthropological sites; visual quality in excess of full service day standards; diversity objectives; or air quality in excess of Minimum Management Requirements. Minimum Management Requirements in this context are standards that must be met in the production of any or all outputs from the Forest. The minimum level, therefore, is a cost of production in the multiple-use context.

There are also second level benefits or effects that are also the concern of National Forest policy and management. These include local income and Job effects on economic development of communities; net cost impacts on taxpayers; price effects on consumers of forest products and other producers of those products; payments to communities in lieu of taxes; and benefits to specific users of National Forest products who pay no fees, or fees less than the price of the valued outputs. All these are distributive welfare effects of National Forest production. All the foregoing distributive effects and impacts have been the object of national policy issues and

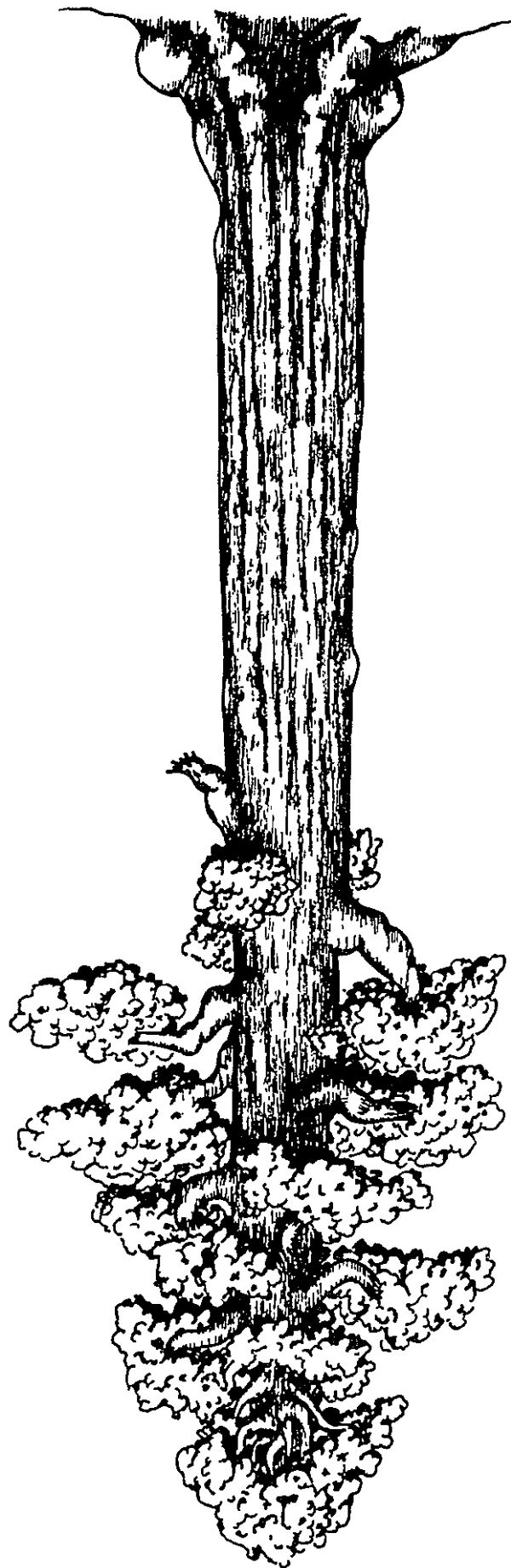
discussions in both the Administration and the Congress. Because they are distributive effects, they are essentially questions of equity rather than efficiency. They involve questions of who should get benefits and who pays the costs. They cannot be assessed in the context of the efficiency criteria associated with the PNV and the net public benefit concepts.

#### EIS PRESENTATION

The methodology, background, and results of the economic efficiency analysis that was conducted during the planning process are presented throughout the FEIS. As a result, all of the major sections of the FEIS including those listed below, must be read in order to get a complete picture of the analysis that was conducted.

<u>Context</u>	<u>Reference</u>
Discussion of how economic efficiency analysis was used in the process of developing alternatives.	Chapter II, Section B, Alternative Development Process
Outputs, total cost, and PNV for each of the benchmarks.	Chapter II, Section C, Benchmarks
Results of the constraint analysis and a comparison of the alternatives in terms of PNV. This is the most comprehensive summary of the analysis results in the FEIS.	Chapter II, Section E, Part 6, Economics and Trade-offs Analysis
Background information on economic conditions and the resource supply-demand situation for the Forest.	Chapter 3
How and why PNV of the alternatives differs.	Chapter 4
Technical details of the modeling and analysis process including a description of basic estimates and assumptions on benefits, costs, and interest rates.	Appendix B

Appendix E  
WILD AND  
SCENIC RIVERS



## APPENDIX E

### WILD AND SCENIC RIVERS

#### I. INTRODUCTION

The Nationwide Rivers Inventory (NRI) of January 1982, identified rivers that may be suitable for inclusion in the National Wild and Scenic Rivers System. In a broad sense, the National Rivers Inventory was intended to provide information on the Nation's remaining free flowing and natural rivers. It was to supply the Administration, Congress, and agencies with background data for their use in making decisions of eligibility and suitability. Specifically, the inventory:

- 1) Provides baseline data on the condition and extent of the Nation's free flowing and natural river resources that can be monitored over time;
- 2) Provides a basis for determining which rivers require study for possible additions to the National Wild and Scenic River System;
- 3) Provides a list of natural, free-flowing rivers to identify areas of conflict between water uses and potential or confirmed outstandingly remarkable features prior to heavy commitment of private or public funds; and
- 4) Responds to the President's 1979 Environmental Message to complete an inventory of natural, free-flowing rivers.

Those rivers on the Sequoia NF identified in the NRI for additional study were:

South Fork Kern River  
Kings River  
South Fork Kings River

Each is discussed in detail in the following sections of this Appendix.

The North Fork Kern River on the Sequoia NF has also been studied for possible inclusion into the National Wild and Scenic River System. The public comment phase of the Draft Environmental Impact Statement (DEIS) was completed. A Final Environmental Impact Statement (FEIS) was prepared. In May 1985, the President transmitted a recommendation to Congress that a portion of the North Fork of the Kern be designated as a Wild and Scenic River.

Legislation to establish all or segments of each of these rivers was enacted into law in November 1987. The North and South Forks of the Kern River were designated via S247. A portion of the main stem of the Kings River, the South Fork Kings River, and the Middle Fork Kings River (Sierra National Forest) were designated via HR799. A Special Management Area of approximately 48,000 acres was also established as part of HR799.

Public input on the Draft EIS and Plan included comments that the Lower Kern River below Lake Isabella should be considered for Wild and Scenic River status. In order to address this input, the Forest has undertaken an evaluation of the river from Lake Isabella downstream to the National Forest boundary above Bakersfield. The eligibility evaluation for the Lower Kern River is included in Section III of this Appendix.

## 11. WILD AND SCENIC RIVER INVENTORY

The Wild and Scenic River Inventory for each river is presented here. The report presents a condensation of inventory information and describes those features preliminarily identified as outstandingly remarkable as directed by the Wild and Scenic Rivers Act.

Eligibility is determined and appropriate classifications (Wild, Scenic, or Recreation) are developed. Eligibility and classification of river segments were determined from the criteria defined in the Act. In order to be eligible for inclusion in the National System, a river must:

- a. Be "free-flowing" that is, "existing **or** flowing in natural condition without impoundment, diversion, straightening, riprapping, **or** other modification **of** the waterway. The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed **for** inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion: Provided, that this shall not be construed to authorize, intend, **or** encourage future construction of such structures within components of national wild and scenic rivers system." (16 U.S.C. Sec. 1286).
- b. Possess "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values." (16 U.S.C. Sec. 1271).

Following the identification of outstandingly remarkable values, the next step is to determine river eligibility and classification, based on the condition of the river corridor at the time of study. Each eligible segment is recommended **for** classification as one of three categories which are defined by the Act (16 U.S.C. Sec. 1273).

Webster's dictionary defines remarkable as "worthy of being **or** likely to be noticed, especially as being uncommon **or** extraordinary: synonym, noticeable." Outstanding is defined as "a standing out from a group, i.e., conspicuous: marked by eminence and distinction; synonym, noticeable: antonym, commonplace." It would therefore follow that an outstandingly remarkable value would be one that was a conspicuous example of a value from among a population of similar values that are themselves uncommon **or** extraordinary. In applying this to a study river, an inventory should be made of all special values present within the corridor that are not commonly found elsewhere in the physiographic section. The special features **or** values would then be individually assessed as to their uniqueness in the State **or** Nation. Those that are noticeable **or** distinctive in this context would be outstandingly remarkable.

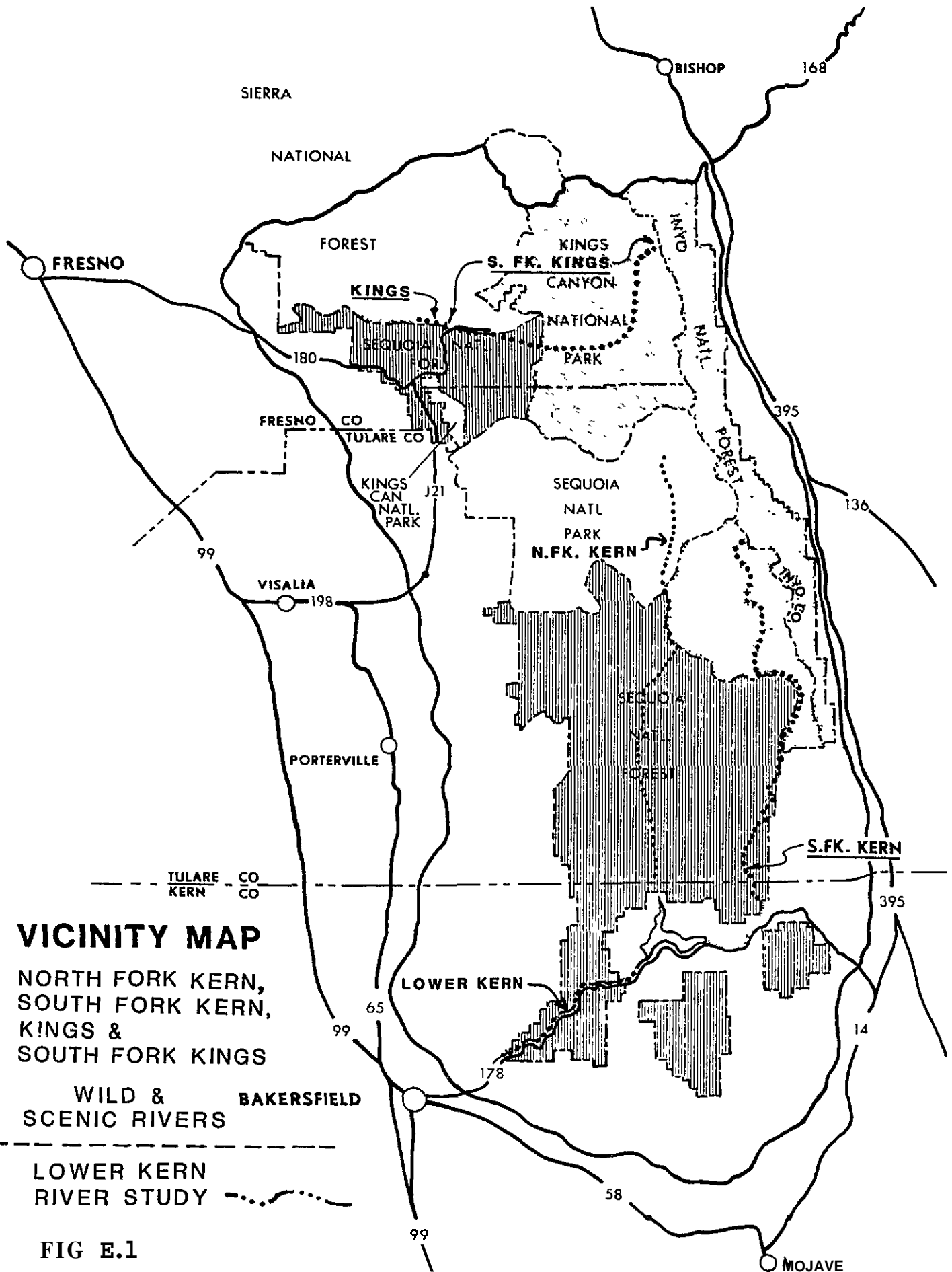


Eligible river segments are classified according to the extent of evidence of human activity as one of the following:

- a. "Wild river areas--Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America."
- b. "Scenic river areas--Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads."
- c. "Recreational river areas--Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past." (16 U.S.C. Sec. 1273(b)).

In applying these criteria, with the added assistance of the supplemental criteria outlined in "Guidelines for Evaluating Wild, Scenic and Recreational River Areas Proposed For Inclusion in the National Wild and Scenic Rivers System Under Section 2, Public Law 90-542", (National Wild and Scenic Rivers: Final (Revised) Guidelines Federal Register 9/7/82), the study team will project the most likely eligibility and classification of the river.

Following is the specific inventory of values and characteristics for each NRI study river.



**VICINITY MAP**

NORTH FORK KERN,  
SOUTH FORK KERN,  
KINGS &  
SOUTH FORK KINGS

WILD & SCENIC RIVERS

LOWER KERN RIVER STUDY

**FIG E.1**

A. South Fork Kern River

Study Area:	Source (Inyo NF) to Isabella Reservoir via Sequoia NF
Length in Miles:	83
Physiographic Section:	Cascade - Sierra Mountains - Sierra Nevada (NRI)
Landscape Character Type:	Sierra Nevada/Desert and Desert Mountain
Counties :	Tulare/Kern

Special Values Summary

Narrative Description of Values: The South Fork Kern River is totally free-flowing and descends through steep gorges with large granite outcroppings and domes interspersed with open meadows. The river flows through three wildernesses -- the Golden Trout, South Sierra, and Dome Land. Numerous waterfalls and rapids are located in the gorges; with the majority of them existing wildernesses. The river alternately passes from perpendicular-walled gorges to flat pinyon-juniper-sage-brush meadows. It traverses Monache Meadows, the largest meadow complex in the Southern Sierra Nevadas. The 15 miles of river below Rockhouse Meadow are inaccessible by road or trail until the river emerges from the Forest into the South Fork Valley above Onyx. The river corridor has dramatic diversity in vegetation and riparian habitat. A premium trout fishery exists in the upper reaches of the river. Numerous historic and prehistoric sites are known within the corridor.

Visual Resources: The entire River corridor is considered as Variety Class A within the landscape character type. Most of the corridor remains in a natural condition. Attractiveness of the corridor is enhanced by the diversity of features that include steep gorges with waterfalls and rapids, mountain meadows, and large granite outcroppings and domes interspersed with open areas in Kennedy Meadows and Rockhouse Basin. There is a dramatic variation in vegetation. One of the most impressive areas is Monache Meadows. This large complex is surrounded on the west, north, and east by wilderness, and offers panoramas unexcelled in many areas of the Forest. Human intrusions to the natural landscape include four-wheel drive roads in Monache Meadows; two trail bridges along the PCT in the South Sierra Wilderness; and, at Kennedy Meadows, a bridge, a paved road along a 1-1/2 mile stretch of River and a developed campground. Evidence of old roads now closed also remain in Rockhouse Basin, within the Dome Land Wilderness. The corridor south of National Forest System land has been altered in places for agricultural purposes.

Recreation: Recreation is limited due to access of the river. This is particularly so with the designation of the South Sierra Wilderness and the additions to the Dome Land Wilderness in 1984. Where access is available, fishing and camping predominates. Most use occurs in the vicinity of Kennedy Meadows. Some swimming and floating occurs in the South Fork Valley area. Camping is available in the Monache, Kennedy, and Rockhouse

vicinities. Very few whitewater opportunities exist. Trails **36E03**, **34E12**, **35E04**, and **35E01** parallel the river. Thirteen miles of the Pacific Crest Trail parallel the South Fork Kern, crossing it twice with bridges. The Monache Meadows vicinity is a popular riding area for **OHV's**. A number of OHV trails exist in the area; and low standard roads cross the river in three locations.

The Recreation Opportunity Spectrum classes for the River corridor are varied. There are approximately 12 miles of corridor in the Roaded Natural class. This includes about 9.5 miles between the Forest Boundary on the south to Lake Isabella and short stretches in Rockhouse Basin and the Kennedy Meadows Areas. About eight miles of Semi-primitive Motorized are located in the Monache Meadows Area and **36** miles of Semi-primitive Non-Motorized occur within the three wildernesses. There are about 27 miles of the Primitive class within the South Sierra and Golden Trout Wildernesses.

Fisheries: Adequate food supplies and spawning gravel provide good habitat above Rockhouse Basin for rainbow, brown and golden trout, and suckers. Angling pressure is heavy at Kennedy Meadows, with moderate angler use at Rockhouse Basin. The area around Kennedy Meadows receives planted trout supplied by the California Department of Fish and Game (CDF&G). Natural native trout populations occur in the higher elevations of the South Fork Kern River watershed.

The Golden Trout Wilderness is the ancestral home of golden trout, the State Fish of California. The subspecies Salmo aguabonita aguabonita is found in the upper South Fork of the Kern River (above Ramshaw Meadow and in Mulkey and Golden Trout Creeks).

South Fork Kern goldens are threatened by predation from nonnative brown trout originating from downstream areas. A small fish weir has been constructed on the stream just north of Monache Meadows. The CDF&G in cooperation with the Inyo NF are attempting to remove the brown trout down through Templeton Gorge to insure the continued survival of South Fork goldens.

Wildlife: Recovery Species - Includes all species on Sequoia and Inyo NF's that are listed by Federal or State wildlife agencies as Endangered, Threatened or Rare; or by the Regional Forester as Sensitive.

Harvest Species - Includes species that are subject to sport or commercial harvest under regulation. This designation is made by the California Fish and Game Commission.

Special Interest - Includes nonharvest species of special public interest (formerly referred to as "unique").

- (a) Recovery: bald eagle (federally endangered)  
peregrine falcon (federally endangered)
  
- (b) Harvest: mourning dove  
mink  
raccoon  
bobcat  
Audubon cottontail rabbit  
black-tailed jackrabbit  
brush rabbit  
California quail  
chukar partridge  
California mule deer
  
- (c) Special Interest: mountain lion  
ringtail  
burrowing owl  
golden eagle  
common snipe  
blue grosbeak  
Lawrence's goldfinch  
savannah sparrow  
yellow billed cuckoo

The study area lies mostly within summer range for the Monache Deer Herd. Less than one mile of the South Fork is within the key winter deer range of Long Valley. Estimated population of this herd is 4,600 animals.

Vegetation (Botanic): Nearly three-fourths of the South Fork Kern River is within designated wildernesses. The headwaters are in the Golden Trout Wilderness, the middle section in the South Sierra Wilderness, and the southern section of the river bisects the Dome Land Wilderness. Vegetation along the South Fork Kern River from Lake Isabella to its headwaters changes markedly.

Vegetation types include:

- 1) Subalpine coniferous forests dominated by foxtail pine near the headwaters.
- 2) Large meadows such as Ramshaw, Templeton, and Monache are surrounded by a band of the blue-green rothrock sagebrush.
- 3) Rocky slopes comprised of "desert-like" scrub occur along the South Fork Kern River in the Dome Land Wilderness.
- 4) The northern extension of Nolina parryi ssp. wolfii (yucca-like plant) near Rockhouse Basin and Long Canyon. Extensive populations of this species occur in the river corridor just below the Kern-Tulare County line.

- 5) A large riparian forest (comprised of cottonwoods, alders, willows) occurs just above Lake Isabella.

Two sensitive plants occur in the region of South Fork Kern River. **These** species are:

Ramshaw sand verbena: Abronia alpina  
Alkali mariposa : Calochortus striatus

Cultural and Historical Resources: Cultural resources have been recorded along the portion of the South Fork Kern River located on the Sequoia NF, and in the Monache Meadows section of the Inyo NF. Several excavations have been conducted in this area. Data is being acquired which helps to illuminate the prehistory in this particular area.

Prehistory:

**The** Tubatulabal, a Uto-aztecan subgroup, previously occupied the areas along the South Fork of the Kern. **The** Tubatulabal may have been in the southern Sierra as far back in antiquity as 4,000 B.C., assuming they had similar occupation dates as the surrounding cultural areas which have been investigated.

**The** Tubatulabal lived in three basic types of settlements: the individual family camp, the multifamily camp, and the hamlet. During the gathering season, a highly mobile subsistence strategy was needed, calling for the individual family camp settlement type. Multifamily camps were predominant near pinyon groves and fishing areas, and after gathering activities ended during the winter months, families returned to hamlets. These hamlets were located on the edges of lakes, **or** on the floor of the South Fork of the Kern River Valley **or** the lower foothills. Hence, these are the types of prehistoric sites that would be found along the South Fork of the Kern.

Historic Contacts:

**As** early as 1776, the Tubatulabal were visited by Spanish explorers. Francisco Garces explored the lower portions of the Kern Valley and during that same year, Father Pedro Font met the Tubatulabal at the confluence of the Kern and South Fork of the Kern. Later in the 1850's, settlers brought disease and death to the Tubatulabal; so that by the 1870's there were few survivors.

Historic Land Uses:

**The** major historic land use in South Fork country was cattle ranching which began in the early 1800's. Gold mining in the 1850's was another historic land use. Archaeological sites of this era include cabins, ranches, mining and cattle camps, transportation systems, and towns.

Cultural Resource Surveys:

The Archaeological Reconnaissance Report of the Kennedy Meadow/Rockhouse Basin segments of the South Fork Kern, records 35 archaeological prehistoric sites, two of which are multicomponent sites (both prehistoric and

historic). The Monache Meadows area documents **31** prehistoric sites along the South Fork Kern. A total of **66** archaeological sites indicates that the river is a significant cultural resource area which needs to be further investigated.

Geology: The South Fork Kern River flows through a variety of rock types.

Segment 1 of the river is dominated by recent (geologically speaking) alluvium. This material is very fertile which has enabled the extensive riparian forest to become established in this segment.

The Dome Land Wilderness section (Segment 2) is nearly totally dominated by mesozoic granitic rock with numerous domes. Three major Tertiary volcanic outcrops lie between Taylor and Manter Creek. There are several small falls along the South Fork in the Dome Land Wilderness, especially on Taylor and Manter Creeks. The river below Rockhouse Meadow occurs in a rugged and steep granitic gorge where whitewater rapids are common. Some riparian trees (willows, ash, cottonwoods) occur along the banks.

Segment **3** between the Dome Land Wilderness and South Sierra Wilderness is in the vicinity of Kennedy Meadows. This area is granitic in origin and is primarily alluvial material.

The South Sierra Wilderness section (Segment 4) contains some granitics but is mainly pre-Cretaceous metamorphic and Mesozoic basic intrusive rocks that are shades of deep brown as compared to the white granitics.

Segments 5 and 5A (Inyo NF) contain Monache Meadows. This is **as** interesting geologic area which contains an excellent example of a volcanic dome (Monache Mountain). Monache Meadows contains extensive alluvium with the majority of the west bank of the river granitic in origin, and the east side pre-Cenozoic granitic and metamorphic rocks. Also, a few glacial deposits occur in Monache Meadows. The segment has geothermal potential.

Segment **6** from the Golden Trout Wilderness to the headwaters (Inyo NF) is granitic in origin except for the large Tertiary volcanic cone of Templeton Mountain, and a small outcrop Pliocene volcanic pyroclastic rocks near the west end of Ramshaw Meadows. Some glacial deposits are also found in association with the meadow alluvium.

The following geologic features are located along the South Fork and are good examples of geologic features for the Sierra Nevada mountains.

- (1) South Fork Kern: Cones (less than one million years old).
- (2) Volcanic dome (Templeton and Monache Mountain).
- (3) Granite Domes in Dome Land Wilderness (White Dome)

#### River Access and Land Ownership:

##### Land Use:

Segment 1 is almost entirely private land. Only a short segment inside the National Forest boundary (approximately 1 mile) is not private. Beginning with Segment 2, the Forest Service administers 99 percent of the public

lands along the South Fork Kern River. Some small private parcels are located in Rockhouse/Kennedy area, with large inholdings at Monache, Ramshaw, and Templeton Meadows. The river is close to large areas of private land outside the Forest boundary at Kennedy Meadows.

Access:

- (1) Two-wheel drive into Kennedy Meadows area.
- (2) Two-wheel drive near the Rockhouse Basin area.
- (3) Four-wheel drive and motorcycle access into Monache Meadows area.
- (4) Dome Land, South Sierra, and Golden Trout Wildernesses limited to horse and foot travel on trails.
- (5) Numerous roads of varying standards along Segment 1 outside the National Forest.

Designated Floodway: In November 1981, the lower stretch of the South Fork (from about 1-1/2 miles north of Bloomfield Ranch to Lake Isabella) was designated as a floodway. The purpose of this designation is to preserve and keep open an area for passage of 100-year floodwaters. The controls require a landowner who proposes any development within the area to obtain a permit for review by any interested parties. Open space activities (e.g., agriculture and pasture) are not a problem; but anything that might change the volume, velocity or direction of stream flow could be rejected. The restrictions affect any proposed structure within the floodway. Pole structures are possible and portable facilities (e.g., toilets) may be used and removed during the flood season. Generally, the restrictions apply to permanent facilities unless the proposal can clearly demonstrate that the project will not affect the flow characteristics during flood stage. Coordination of permits is controlled by the Kern County Water Agency.

Water Resource Development: The South Fork originates at an elevation of about **11,500** feet and flows in a southerly direction along the eastern edge of the Kern Plateau for about **72.5** miles, and then westerly for **10.5** miles to Isabella Reservoir. There is a potential hydropower development on the South Fork Kern River near the southern Forest boundary (Segment 1).

Socioeconomic: The socioeconomic environment of the South Fork includes several modest tourist oriented businesses at **Kennedy** Meadows, a potential hydroelectric site, and a number of ranches south of the Forest near Lake Isabella. At Kennedy Meadows there are two businesses, a restaurant and a small general store, employing from two to ten people during the summer weekends. At the southeast corner of the Forest, in a small parcel outside the Dome Land Wilderness, there is a section of the South Fork corridor being considered for development of a small hydroelectric plant. There are six ranches, primarily in the cattle business, that employ about **15** to **30** people along the southern segment of the River. There is a potential for geothermal development in the Monache Meadows area.

#### Current Protection

Nearly **76** percent of the South Fork Kern River is currently in established wildernesses. About 12 percent is in private ownership in South Fork Valley. The remaining 12 percent is National Forest System land in the



Monache Meadows segment and a small segment between the Kennedy Meadows Road and Kennedy Meadow Campground.

### Identification and Description of South Fork Kern River Segments

Segment 1 - Isabella Reservoir to Dome Land Wilderness boundary - (10.5 miles)

About one mile of this segment is within the Forest boundary and outside the Dome Land Wilderness. Below the Forest boundary, this segment crosses private lands before reaching Lake Isabella. The river flows westerly through the South Fork Valley. Whitewater rapids do not occur. Most of the private land supports cattle grazing and pastures. California Highway 178 parallels the river throughout this segment, but the river cannot be seen due to the extensive riparian forests along its bank.

A unique element within this segment of river is the Nature Conservancy's Kern River Preserve. This preserve contains extensive riparian forest communities along the river comprised of cottonwoods, willows, and Oregon ash. The riparian area provides habitat for the yellow-billed cuckoo. The cuckoo is listed as Rare by the California Fish and Game Commission while the western subspecies has been identified as a candidate for federal listing as Threatened or Endangered. The South Fork Kern population of yellow-billed cuckoo forms a significant part of the statewide population. The lower reaches of the study area encompasses a portion of the largest contiguous remnant of the willow/cottonwood riparian forest in the State.

Segment 2 - Dome Land Wilderness - (27.0 miles)

This segment begins at the Dome Land Wilderness boundary. The South Fork Kern throughout the Dome Land Wilderness below Rockhouse Basin is the most rugged portion of this river. Rough terrain makes access difficult except for a few Forest Service trails that offer limited access, then require cross-country travel. Waterfalls, whitewater, and primitive camping occur along the river. Improvements do not exist along this segment. The river drops approximately 2,000 feet and flows southerly.

Segment 3 - Kennedy Meadows [between Dome Land and South Sierra Wildernesses] (3.0 miles)

This segment of the river is wedged between the Dome Land Wilderness to the south and the South Sierra Wilderness to the north. The river meanders in this segment with elevation loss less than 400 feet. Access is provided by Kennedy Meadows road with developed camping at Kennedy Meadow Campground.

Segment 4 - South Sierra Wilderness - (14.3 miles)

This segment of the river is in the South Sierra Wilderness. The river in this section flows southeasterly with the northern half forming the common boundary between the Sequoia and Inyo NF's. Portions of the river are accessible by trail; however, most of the river corridor requires cross-country travel. Two Pacific Crest Trail bridges cross the river in this segment. Primitive camping occurs in a few areas above the Kennedy Meadow Campground to Monache Meadows.

Segment 5 - Monache Meadows [between South Sierra Wilderness and the weir just south of the Golden Trout Wilderness] - (7.0 miles)

The river corridor in this segment, in the Inyo NF, has significant private inholdings at Monache Meadows. Access to most of this segment is by **four-wheel** drive vehicles and motorcycles. **There** is a small airfield at the northern end of Monache Meadows on private land. Several cow camps and cabins along with primitive campgrounds (heavily used during deer season) occur along the river north *of* Monache Meadows towards the Golden Trout Wilderness boundary. Cattle grazing occurs throughout Monache Meadows, and a number of fences exist to aid grazing management. Low standard roads cross the river in three locations. Motorcycles **use** these roads and several trails extensively.

Segment 5A - Monache Meadows [between the weir and the Golden Trout Wilderness] - (1.2 miles)

This short stretch of river corridor, in the Inyo NF, consists of the lower reaches of the rugged canyon area which extends north into the Golden Trout Wilderness (Segment 6). **The** river is relatively inaccessible above the weir. There are no improvements in this area.

Segment 6 - Golden Trout Wilderness (Inyo NF) - (20.0 miles)

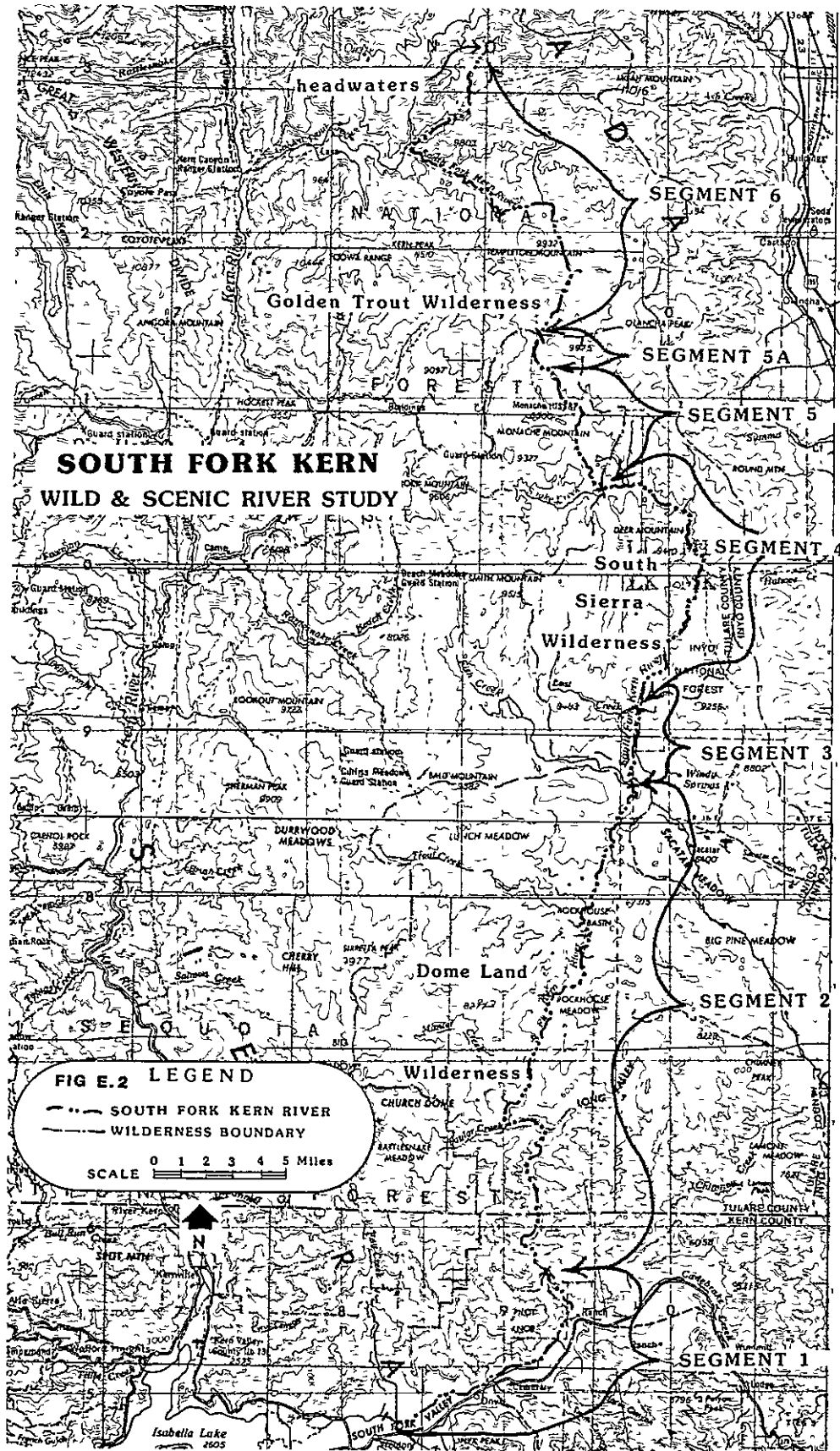
The headwaters of the South Fork Kern River occur along the crest *of* the Sierra Nevada from just south of Cottonwood Pass to Olancho Peak. The highest points are Olancho Peak (12,123 feet), Trail Peak (11,623 feet), and Kern Peak (11,510) feet with the eastern crest averaging 10,000 feet. The South Fork of the Kern meanders through Ramshaw and Templeton Meadows. An extensive trail system offers access to most of the river. Travel is limited to horse and foot since mechanized vehicles are not permitted. This segment is located on the Inyo NF with private inholdings at both Ramshaw and Templeton Meadows. Primitive camping occurs in several places along the river. The only improvements are summer cow cabins on the private inholdings.

Table E.1 - South Fork Kern River - Summary of Outstandingly Remarkable Values

Segment	1	2	3	4	5	5A	6
<u>Outstandingly Remarkable Values</u>							
Scenic	No	Yes	No	Yes	Yes	Yes	Yes
Recreation	NO	Yes	No	Yes	Yes	Yes	Yes
Fisheries	No	NO	NO	No	Yes	Yes	Yes
Wildlife	Yes	No	No	No	No	No	NO
Vegetation (Botanic)	Yes	No	NO	No	Yes	Yes	Yes
Cultural/Historical	Yes	Yes	Yes	Yes	Yes	No	No
Geology	No	Yes	No	NO	Yes	Yes	Yes
<u>Free-Flowing Nature Affected By:</u>							
Impoundments	No	NO	NO	No	NO	No	No
Diversions	Yes	No	No	NO	NO	No	No

Table E.2 - South Fork Kern River - Wild and Scenic River Study/Eligibility Classification Analysis

Classification	Segment	1	2	3	4	5	5A	6
<u>Wild</u>								
Free of Impoundments		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Generally Inaccessible Except by Trail?		No	Yes	No	Yes	No	Yes	Yes
Watershed/Shoreline Essentially Primitive?		NO	Yes	No	Yes	No	Yes	Yes
Waters Unpolluted?		NO	Yes	Yes	Yes	Yes	Yes	Yes
<u>Scenic</u>								
Free of Impoundments?		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accessible in Places by Road?		Yes	No	Yes	No	Yes	No	No
Watershed/Shoreline Largely Primitive & Largely Undeveloped?		NO	Yes	No	Yes	Yes	Yes	Yes
<u>Recreation</u>								
Readily Accessible by Road or Railroad?		NO	No	Yes	No	Yes	No	NO
Some Development Along Shoreline?		Yes	No	Yes	No	Yes	No	NO
Some Impoundments or Diversions in the Past?		Yes	No	NO	No	No	No	No
Highest Eligible Classification		Rec,	Wild	Rec,	Wild	Scenic	Wild	Wild



B. Kings River

Study Area:	Pine Flat Reservoir to confluence of Middle and South Fork Kings River.
Length in Miles:	18
Physiographic Section:	Cascade - Sierra Mountains - Sierra Nevada (NRI).
Landscape Character Type:	Sierra Nevada/Sierra Foothills.
county:	Fresno

Special Values Summary:

Narrative Description of Values: The Kings River is one of the largest rivers flowing down the western slopes of the Sierra, and forms the boundary between the Sequoia and Sierra NF's. The river is wooded with premium whitewater and several cataracts. The Kings River is a State Wild Trout Stream. Numerous Indian village sites and remnants of one of the longest logging flumes in the world are located in this system. Other historic artifacts create an area of historic and cultural significance. Whitewater rafting exists in the lower reaches of the river corridor. The river flows through a wide canyon near Pine Flat. As the river ascends toward the confluence with the Middle Fork-South Fork, the canyon becomes more narrow and steep. Main ridges on both sides of the river are over 5,000 feet in elevation above the river. Slopes on the north side of the river are covered with chaparral and hardwoods. The south side of the river is less arid and includes more conifers and less chaparral. The river exists in a free-flowing state with numerous rapids. Access is limited above Garlic Falls.

Visual Resources: The entire river corridor is considered as Variety Class A within the landscape character type. The presence of clear, unpolluted water is seen in rapids and large pools; the diversity of the vegetation, and the many boulders enhance the attractiveness of the river corridor. Unimproved Forest roads and other human intrusions interrupt the natural landscape west from Garnet Dike Campground. The upper portion, east of the campground, presents a unique panorama of a picturesque stream flowing through an unaltered steep-walled V-type canyon.

Recreation: Excellent river rafting occurs between Garnet Dike (Sec. 27, T12S, R27E) and Keller's Ranch. Included in this area are Camp 4, Camp 4 1/2, Garnet Dike, and Mill Flat Campgrounds. Trail 27E01 is adjacent to the south bank of the river above Mill Flat. Fair opportunities for fishing and hiking exist east of Garnet Dike. Whitewater rafting is a popular activity from April to August below Garnet Dike Campground. Presently, three commercial operations hold permits to conduct rafting trips.

The Recreation Opportunity Spectrum classes for the corridor include:

- 1) 8-1/2 miles of Semi-Primitive Non-Motorized located generally from Fox Canyon on the west to one-half mile west of the confluence with the South Fork: and,
- 2) 9-1/2 miles of Roaded Natural primarily found in the lower elevations west of the Garnet Dike Campground and for one-half mile west of the confluence of the Rivers.

Fishing is a popular activity and is very common along the more accessible lower portion of the river with portions restricted to fly fishing only (Garnet Dike to Rough Creek). Trail access stops near Garlic Falls; and thus, limits fishing above that point. Hiking is popular in the spring and fall when temperatures are mild. Three miles of the Kings River Trail on the Sierra NF have been designated as a Forest Service National Recreation Trail. This trail segment runs from Garnet Dike to Spring Creek. Other recreation activities in the area include hunting, camping, and horseback riding.

Fisheries: The Kings River above the North Fork junction is designated and managed under the California Wild Trout Program. The goal of this management emphasis is to maximize wild trout angling opportunities, with a priority placed on maintaining abundant self-sustaining trout populations in which the number of larger, older fish is not significantly reduced by angler harvest. Principal species involved are rainbow and brown trout.

Wildlife: The North Fork Kings and Hume Deer Herds rely heavily on land adjacent to the river. Deer commonly winter along the lower slopes of the canyon, and move to higher elevations in the **summer**. Approximately 150 species of riparian-associated wildlife live along the river. Important habitat for the endangered peregrine falcon and bald eagle also occurs along the river corridor. Wolverines are known to be occasional residents of the Kings Canyon area.

Vegetation (Botanic): **There** are no sensitive plant species or notable plant communities known to exist along this portion of the Kings River. The area is within the Western Hardwood ecosystem.

Cultural and Historical Resources: Indian sites are evident along both sides of the river. Various studies have identified and recorded several prehistoric archaeological sites, as well as highly sensitive historic resource areas along the river corridor.

Prehistory:

The ethnographic group which occupied this area was the Choinimni of the northern foothill Yokuts. The Choinimni used the Kings River for transportation and fishing extensively. On large tule barges which could carry eight to ten people, the Choinimni would travel downstream from the lower segments of the river west to Tulare Lake. They would fish, hunt, gather acorns, and trade with valley tribes. Fishing camps and villages were located along the Kings River where the Choinimni would gather acorns and hunt deer resources not available in the Valley.

The archaeological multi-activity sites would most likely consist of bedrock mortars, pestles, obsidian, midden areas, and single activity sites consisting of modified obsidian.

#### Historic Land Use:

In 1889, the Kings River Lumber Company began its remarkable feat of completing a 54-mile long lumber flume which followed the Kings River all the way to the town of Sanger, in the San Joaquin Valley. Before it entered the Kings River Canyon, it split off down Mill Flat Creek to the historic town of Millwood, where the area was logged by the Sanger Lumber Company from 1888 to 1908. The other branch followed the Kings River to Tenmile Creek to the historic Hume Lake Mill owned by the Hume-Bennett Lumber Company from 1908 to 1917.

There were feeders to keep the flume replenished with water all along the course of the flume making it one of the longest lumber flumes in the world. Most flumes at that time were cut square, but the Kings River flume was cut V-shaped because of a successful idea pioneered by a Nevada logger in 1889. Little remains of the flume today.

#### Archaeological Survey Report:

A total of 25 prehistoric sites have been recorded. These include villages, burial grounds, and fishing camps. Historic sites are known but have not been recorded. The cultural resources along the Kings River can provide valuable information for both the prehistory and history of the area. The Kings River is, therefore, a very important and significant cultural resource area and should be further investigated.

Geology: The Kings River Canyon is unique in the Sierra Nevada. The Canyon is over 7,000 feet deep; considerably deeper than the Grand Canyon. The north ridge of the canyon on the main Kings is 10,051 feet high on Spanish Mountain. The river below, where Deer Canyon enters, is only at 2,400 feet.

Geologically, the main Kings from Pine Flat Reservoir to the Middle Fork is comprised of granitic rocks, with some pre-Cretaceous limestones, pre-Cretaceous metasedimentary rocks and a small pre-Cretaceous metavolcanic outcrop. Nearly all of the pre-Cretaceous material occurs in Segment 1.

#### River Access and Land Use:

##### Land Use:

The area is under Federal power withdrawals. Forest Service facilities along the river include Garnet Dike Campground (Sierra NF), Camp 4-1/2, Camp 4, and Mill Flat Campgrounds (Sequoia NF). There is also a guard station at Camp 4-1/2 which includes a cattle permittee corral and cabin. Three gauging stations occur along the river. One highway bridge crosses the river at Keller's Ranch just below Rodgers Crossing. There is no commercial timber within the zone. There are active tungsten mining claims along the north side of the river.

#### Access:

The lower half of the river is accessible by the paved Balch Camp Road, Forest Service unimproved roads, one special-use mining access road, and the Kings River Trail. The upper portion of the river is inaccessible except for a Forest Service trail which **runs** down to the river from Yucca Point (Sequoia side).

Land Ownership: Except for one parcel of private land near Pine Flat Reservoir owned by Pacific Gas and Electric, the area is in public ownership.

Water Resource Development: The Kings River Conservation District (KRCDD) has proposed a dam and reservoir at Rodgers Crossing. A detailed feasibility study has been conducted by the Bechtel Corporation for the KRCDD. Also, a small hydropower project has been proposed near the confluence of Tenmile Creek and the Kings. Under the proposal, water from Tenmile Creek would generate about five megawatts of power. The powerhouse structure and part of an access road, powerline and penstock may be located within the river corridor.

Socioeconomic: The socioeconomic environment of the Kings River area is limited to three commercial river rafting operations and the grazing of cattle, all of which is under Forest Service permit. The river rafting program is confined to the section of the river below Garnet Dike and involves about 15 seasonal jobs. Grazing, also confined to the lower, accessible portions of the Canyon, involves a total of seven permittees.

Current Protection: Travel and water influence zone is protected under current Forest Service multiple-use management. Approximately 10 miles of the upper river are in an unroaded area selected under FARE II for Further Planning.

#### Identification and Description of River Segments

##### Segment 1 - Pine Flat Reservoir to Garlic Meadow Creek - (13 miles)

This segment extends upstream far enough to contain the maximum impoundment which could be created if a dam at Rodgers Crossing was ever constructed.

A recommendation on this segment for Wild and Scenic designation was deferred in this planning process. For this reason, detailed information is not presented for this segment.

##### Segment 2 - Garlic Meadow Creek to Confluence of Middle Fork and South Fork Kings River - (5 miles)

Access to Segment 2 is restricted to the Yucca Point Trail that enters the river at the confluence of the Middle and South Forks. The river corridor is wild and rugged, receiving virtually no recreation use at this time. It is very difficult to go via foot from Yucca Point to the west. Rafting does not occur on this segment of the river due to the hazards involved and the lack of access.



Table E.3 - Kings River Segment 2 - Summary of Outstandingly Remarkable Values

Outstandingly Remarkable Values

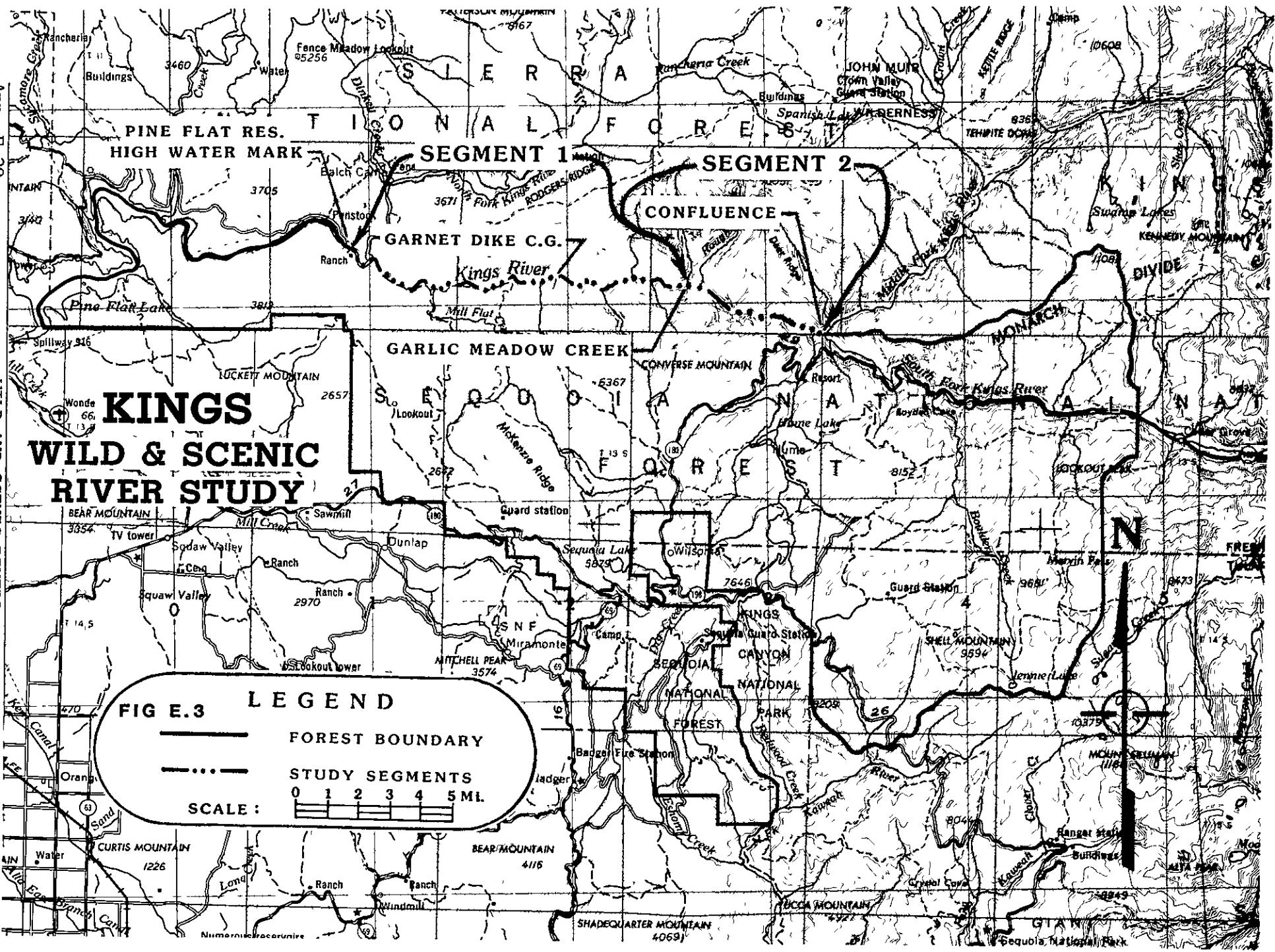
Scenic	Yes
Recreation	Yes
Fisheries	Yes
Wildlife	No
Vegetation (Botanic)	No
Cultural/Historical	Yes
Geology	Yes

Free Flowing Nature Affected By:

Impoundments	<b>No</b>
Diversions	No

Table E.4 - Kings River - Wild and Scenic River Study/Eligibility Classification Analysis

<u>Classification</u>	<u>Segment 2</u>
<b><u>Wild</u></b>	
Free of Impoundments?	Yes
Generally Inaccessible Except by Trail?	Yes
Watershed/Shoreline Essentially Primitive?	Yes
Waters Unpolluted?	Yes
<b>Scenic</b>	
Free of Impoundments?	Yes
Accessible in Places by Road?	NO
Watershed/Shoreline Largely Primitive & Largely Undeveloped?	Yes
<b><u>Recreation</u></b>	
Readily Accessible by Road or Railroad?	No
Some Development Along Shoreline?	No
Some Impoundments or Diversion in the Past?	<b>No</b>
Highest Eligible Classification -	Wild



**KINGS  
WILD & SCENIC  
RIVER STUDY**

**FIG E.3 LEGEND**

— FOREST BOUNDARY

- - - - STUDY SEGMENTS

SCALE: 0 1 2 3 4 5 MI.

### C. South Fork Kings River

Study Area:	Kings River confluence (Sequoia and Sierra National Forests) to source in Sequoia and Kings Canyon National Parks, (National Park Service)
Length in Miles:	40.5 (USDAFS 12.1 miles)
Physiographic Section:	Cascade - Sierra Mountains - Sierra Nevada (NRI)
County:	Fresno

#### Special Values Summary:

Narrative Description of Values: The headwaters are in the Sequoia and Kings Canyon National Parks above timberline in a heavily glaciated basin. The river flows through one of the deepest and most classic glacial canyons in the nation with several waterfalls and unique geological formations.

The South Fork Kings has a complex floral diversity with several **rare** species. Numerous prehistoric sites and a significant cultural resource area exist on the river. The state has designated the river as a Wild Trout Stream. Important peregrine falcon and golden eagle habitat exist in the study area.

Visual Resources: The entire river corridor is considered as Variety Class A within the landscape character type. Waterfalls, unique geologic formations and a diversity of plant species enhance the characteristics of this free-flowing stream. Much of the lower half of the river, from just below Boyden Cave is located adjacent to the State Highway/Park Service Road that provides access to the Cedar Grove portion of Kings Canyon National Park. Numerous campgrounds, the road, and other developments have reduced the naturalness of the corridor. The lower 2.5 miles of river is in a very rugged canyon well away from and not influenced by the highway.

Recreation: The river is a raging torrent and is extremely dangerous for floating opportunities during spring and early summer. There are good opportunities for fishing, hiking, and camping in both the Sequoia National Forest and the Cedar Grove area, Kings Canyon National Park. Along the roaded portions of the river, angling pressure is heavy, while use diminishes as distance from road access increases.

The Recreation Opportunity Spectrum class for the 12 miles of river within National Forest System land is Roaded Natural. The 6.5 miles between the Forest boundary to Road's End in the National Park is also Roaded Natural. Then, there is a short distance of Semi-Primitive Non-Motorized north of Road's End with the remainder of the river in Primitive.

Fisheries: The river segment within the Forest is designated and managed under the California Wild Trout Program. The goal of this management emphasis is to maximize wild trout angling opportunities, with priority placed on maintaining abundant self-sustaining trout populations in which

the number of larger, older fish is not significantly reduced by angler harvest. There are no golden trout in this river system.

Wildlife: California bighorn sheep are known to be in the Goodale Creek/Taboose area. It is likely that rams frequent the Upper Basin area of the South Fork of the Kings River during parts of the year.

Peregrine falcons are known to frequent the area and the cliffs along the South Fork Kings River. The Murro Blanco Canyon of the South Fork is especially good habitat and exceptionally remote with difficult access, making human impact on any possible peregrines almost nil. This also has contributed to a lack of information on the peregrine. Wolverines are known to be occasional residents of the Kings Canyon area.

Vegetation (Botanic): The following two sensitive plants are known to exist along South Fork of the Kings.

1. Erigeron li (Hall )  
location - lt Meadows
2. Streptanthus fenestratus (Kings Canyon Jewel Flower)  
location - Mist Falls and Hotel Creek

Cultural and Historical Resources: No major cultural resource investigations such as excavations have been conducted in this area, although much is needed due to the numerous sites recorded and lack of knowledge of the prehistory of the area.

Prehistory:

The ethnographic group which predominantly occupied this area was the Western Mono; specifically, the Wobonuch. The high elevation of the South Fork of the Kings limited the occupation periods to summer and early fall. Hunting and gathering activities were carried on in these seasonal camps to prepare for the winter months. These temporary camps were either occupied by single family or a group of families. The archaeological sites would be characterized by bedrock mortars and obsidian flakes and more often single activity sites with either only bedrock mortars or only an obsidian scatter.

Historic Land Uses:

Historic land uses cannot be ascertained at this time.

Cultural Resource Survey:

Along the corridor of the South Fork of the Kings there are 13 prehistoric sites recorded in the Archaeological Survey of the Sequoia and Kings Canyon National Parks. More than half of the sites are single activity possible hunting camps evidenced by the presence only of obsidian. The other multi-activity sites were probably seasonal base camps leaving an archaeological record of bedrock mortars, obsidian and midden areas.

Geology: Geology of the South Fork Kings River is very interesting. The river gorge in this section of the Kings River averages 5,000 feet deep.

Segment 1 is the most complex geologically. Extensive pre-Cretaceous metasedimentary and pre-Cretaceous limestones are common in the area. These limestone formations have numerous caves, the largest and most famous for the region being Boyden Cave. The cave is adjacent to the river. A small ridge of Jurassic-Triassic metavolcanic rocks occurs east of the Boyden Cave limestone area. The remainder of Segment 1 is granitic. A prominent waterfall occurs on Grizzly Creek adjacent to Highway 180 and the South Fork Kings River.

Segment 2 (from the Forest boundary to Road's End in Sequoia and Kings Canyon NPs) is totally granitic in origin. A rather open valley with deep walls is the dominant feature which is quite a geologic change from Segment 1. In addition, this segment contains a "U-shaped" canyon that was carved by glaciers during the Pleistocene. Extensive alluvium occurs along the South Fork in this segment. Many creeks enter from the steep canyon into the South Fork in this segment. Roaring River Falls is the most prominent of these features.

The third segment (also in the National Park) is also mainly granitic. Sixty Lake Basin contains a series of flattish valley areas commonly with lakes connected to one another by steep areas and waterfalls.

The South Fork Kings River is unique because of the deep gorge, cliffs, dikes, and combination of various rock types adjacent to the river. Examples include:

- (1) Sixty Lake Basin - Glacial stairway (series of flattish valley areas, commonly with lakes connected to one another by steep areas and waterfalls. U-shaped valleys and glacial marks indicate glaciation).
- (2) Boyden Cave - Limestone Cave. In addition, there is an "Early Triassic to Late Jurassic" megafossil locality in the vicinity of Boyden Cave.

River Access and Land Ownership: Yucca Point Trail provides access to the extreme lower end of this river segment (T13S, R28E, Section 1). Excellent access occurs from Boyden Cave to Cedar Grove along California Highway 180. Ownership of river corridor is 100 percent public lands.

Water Resource Development: None known in South Fork.

Socioeconomic: The socioeconomic environment of the South Fork Kings River is limited to several small tourist oriented businesses. Under permit to the Forest Service, an operator conducts tours of Boyden Cave during the summer. Boyden Cave is located on State Highway 180 west of Cedar Grove, the site of a campground, store and gas station. The latter two are operated as concessions within the Sequoia and Kings Canyon National Parks. Altogether, these businesses account for fewer than ten seasonal jobs.

Current Protection: Within travel influence and water influence zones of the current district multiple-use plan.

## Identification and Description of South Fork Kings River Segments

### Segment 1 - Confluence of Middle Fork/Main Kings River to Horseshoe Bend - (2.5 miles)

This segment of the river is extremely inaccessible, lying in the bottom of the very steep canyon well below California Highway 180. There is no access into this river area. Horseshoe Bend is the first real look at the river afforded visitors as the roadway drops into the canyon bottom. The river itself is virtually a continuous whitewater rapid. This segment is entirely within the Sequoia NF.

### Segment 1A - Horseshoe Bend to Forest Boundary - (9.5 miles)

The majority of this segment is easily reached by California Highway 180. Due to the ruggedness of the canyon and river in this section, campgrounds do not exist. Improvements include the Grizzly Falls picnic area and Boyden Cave operated under a special-use permit. Scenic vistas are common in this river corridor and the excellent maintained highway brings many visitors to the area. Whitewater rapids are common along the entire length of Segment 1A. At Horseshoe Bend, the road is well above the river and canyon views with whitewater attract many photographers. It drops rapidly to the river shoreline at Boyden Cave, approximately three-quarters of a mile to the east where the road crosses to the north side of the river. Highway 180 is not open during the winter season. Segment 1A is completely within the Sequoia NF.

### Segment 2 - Forest Boundary to Road's End in Sequoia and Kings Canyon National Parks - (6.5 miles)

Segment 2 is very different from Segments 1 and 1A in many attributes. In this section, the river meanders through an open U-shaped valley, similar in appearance to Yosemite Valley (without the major waterfalls). Numerous well-developed campgrounds occur along the river. Several trails occur in this area with trailheads leading to the "high country." Segment 2 is entirely within Kings Canyon National Park. Other improvements include a Ranger Station and a pack station. Roaring River Falls and Zumwalt Meadows are the two most visited areas in this segment. Due to the meandering of the South Fork in this segment, visitors heavily use the river for fishing. It is in Segment 2 where the only improved campgrounds occur along the South Fork Kings River.

### Segment 3 - Road's End to Headwaters in Sequoia and Kings Canyon NPs - (22.0 miles)

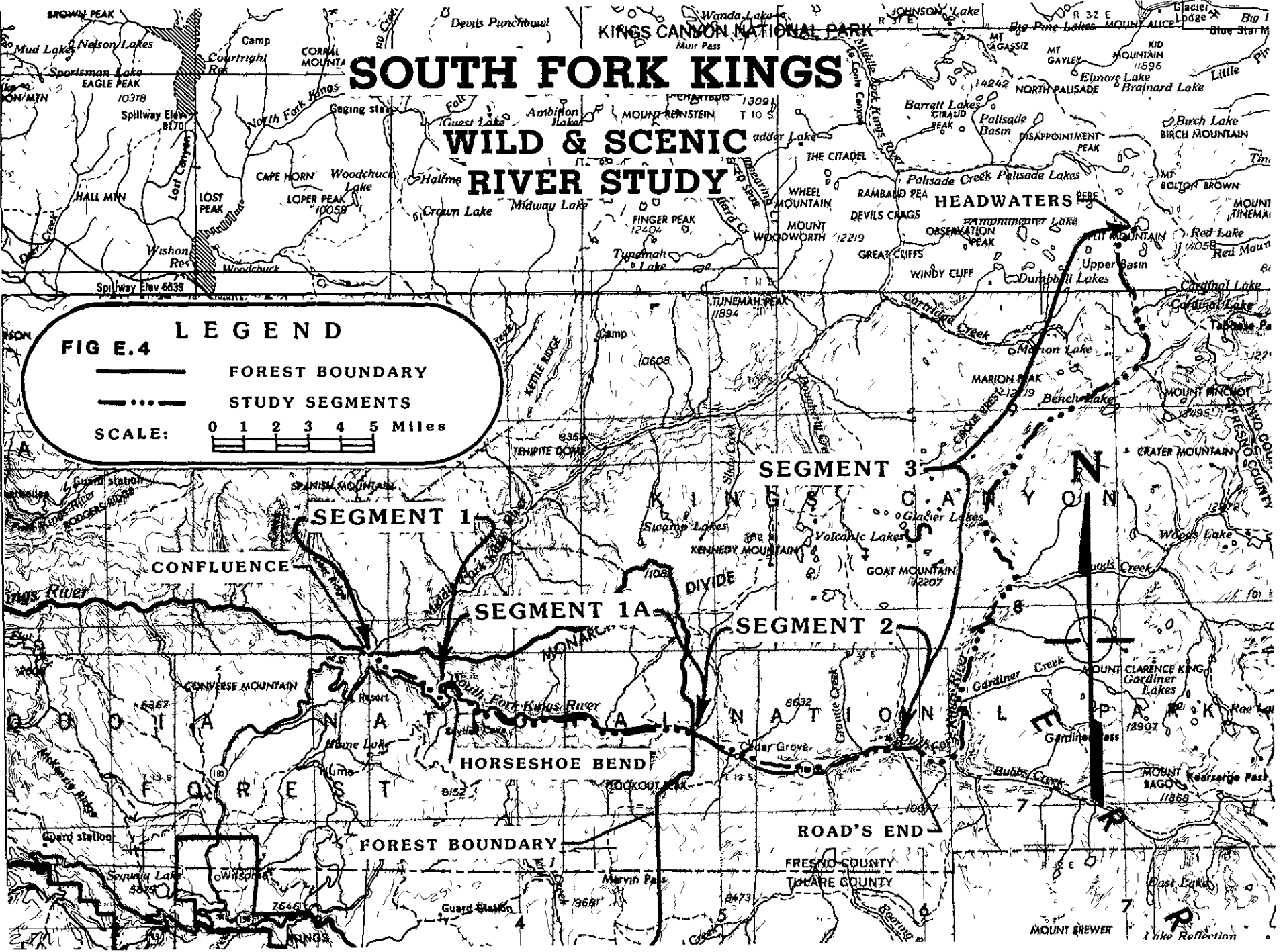
Segment 3 is entirely within Kings Canyon National Park. The area is accessible only by trails. The headwaters of the South Fork Kings River occurs in Upper Basin at the base of Mather Pass at 12,000 feet. The headwaters are surrounded by a horseshoe-shaped ridge of peaks averaging 12,000 feet. There are no improvements or developments in this section. The area is very isolated and rugged. Over half of this segment is without trails along the river corridor due to the steepness of the river gorge.

Table E.5 - South Fork Kings River - Summary of Outstandingly Remarkable Values

	<u>Segment 1</u>	<u>1A</u>	<u>2</u>	<u>3</u>
<u>Outstandingly Remarkable Values</u>				
Scenic	Yes	Yes	Yes	Yes
Recreation	NO	No	Yes	Yes
Fisheries	No	No	NO	NO
Wildlife	no	No	No	NO
Vegetation (Botanic)	No	No	No	<b>No</b>
Cultural/Historical	No	No	No	NO
Geology	Yes	Yes	Yes	Yes
<u>Free Flowing Nature Affected By:</u>				
Impoundments	NO	NO	No	No
Diversions	NO	No	No	<b>No</b>

Table E.6 - South Fork Kings River - Wild and Scenic River Study/Eligibility Classification Analysis

<u>Classification</u>	<u>Segment 1</u>	<u>1A</u>	<u>2</u>	<u>3</u>
<u>Wild</u>				
Free of Impoundments?	Yes	Yes	Yes	Yes
Generally Inaccessible Except by Trail?	Yes	No	NO	Yes
Watershed/Shoreline Essentially Primitive?	Yes	Yes	No	Yes
Waters Unpolluted?	Yes	Yes	Yes	Yes
<u>Scenic</u>				
Free of Impoundments?	Yes	Yes	Yes	Yes
Accessible in Places by Road?	No	Yes	Yes	No
Watershed/Shoreline Largely Primitive & Largely Undeveloped?	Yes	Yes	No	Yes
<u>Recreation</u>				
Readily Accessible by Road or Railroad?	Yes	Yes	Yes	No
Some Development Along Shoreline?	Yes	Yes	Yes	No
Some Impoundments or Diversion in the Past?	NO	No	NO	NO
Highest Eligible Classification	Wild	Rec	Rec	Wild



**FIG E.4**

**LEGEND**

— FOREST BOUNDARY

- - - STUDY SEGMENTS

SCALE: 0 1 2 3 4 5 Miles

# SOUTH FORK KINGS

## WILD & SCENIC RIVER STUDY

KINGS CANYON NATIONAL PARK

CONFLUENCE

SEGMENT 1

SEGMENT 1A

SEGMENT 2

SEGMENT 3

HORSESHOE BEND

ROAD'S END

FOREST BOUNDARY

FRESNO COUNTY  
YOURE COUNTY



MOUNT BREWER

Inko Reflection



### 111. Lower Kern River

Study Area:	Lake Isabella Dam to National Forest boundary above Bakersfield
Length in Miles:	30.8
Landscape Type:	Desert Mountain
County:	Kern

Narrative Description of Values: The Kern River below Lake Isabella is a controlled stream with diversions. It descends through a long canyon. At the upper end the canyon is broad and gentle. It gradually becomes more rugged so that at the lower end it is a very narrow, steep-sided gorge until it opens into the San Joaquin Valley just below the National Forest boundary. State Highway 178 traverses this canyon. In the upper reaches of the canyon, this highway and other roads cross the river in several places and in some instances are adjacent to the river. Roads are generally not evident from the river in the middle portions, while at the lower end of the canyon, the highway is immediately adjacent to the river. Where accessible, the river is heavily used by recreationists. Two hydroelectric plants operate along the river within the National Forest.

#### Identification and Description of Kern River Segments

Segment 1: - Lake Isabella Dam to Borel Powerhouse - (7.0 miles)

Approximately 4.3 miles immediately below the dam are outside the National Forest boundary. Two short segments are either private (.5 mile) or managed by the Corps of Engineers (.8 mile). The Bureau of Land Management manages 3.0 miles. The remaining 2.7 miles is within the National Forest.

Water flow is regulated by the Lake Isabella dam according to the demand for irrigation water in the San Joaquin Valley. In addition, the intake for the Southern California Edison Borel power plant affects river flows for all of this river segment, as water is diverted into a pipeline under Lake Isabella and not returned to the river until it goes through the power plant. This power diversion can withdraw up to 600 cubic feet per second (cfs) from the river. During peak spring runoff it is not uncommon for flows in the river channel to approach or exceed 5,000 cfs. Typical summertime flows during irrigation season are around 500 to 2,500 cfs. When irrigation diminishes at the end of summer, flows in the channel are generally reduced to a trickle. The river drops about 210 feet (30 feet per mile) in this segment and flows generally southwest.

Highway 178 crosses the river twice in this segment, and parallels it for some distance. Other roads (e.g., State Highway 155 and County Road 214) either cross or parallel the river in places. However, these roads are not readily visible from the river. Smaller dirt roads access the river in a number of places. Whitewater boating and kayaking occur on this river segment when water conditions permit. There is one developed campground along this segment, operated by the Corps of Engineers (Main Dam), and one proposed day-use development (Borel). Whitewater boating put in/take outs

exist in several locations: each have minimal facilities. These put ins are primarily used by the four permitted commercial outfitters.

### Segment 2 - Borel Powerhouse to Democrat Dam - (13.2 miles)

This river segment is all National Forest with the exception of three small parcels of private land (total private frontage is about one mile).

Flows are the same as in Segment 1, with the very important difference that no water is diverted from the channel for hydropower. Whitewater boating can generally occur on this segment of river except under very high spring runoff or low wintertime flows, since the addition of water from the Borel Powerhouse tailrace normally provides sufficient flows during the whitewater boating season (generally May through September). The river continues its southwest flow and drops approximately 350 feet in this segment (27 feet per mile).

While the river is located between State Highway 178 and County Road 214, both roads are away from the river itself. People on the river are not generally aware of either road except where Route 178 crosses the river about midway along this segment, and even here it is not a major intrusion. There are three roaded access points available to the general public, at Sandy Flat, Hobo Campground/Miracle Hot Springs, China Garden, and Democrat Beach, all served by dirt roads. A small bridge crosses the river on private land at China Garden. Democrat Beach is the principal and lowest takeout point for whitewater rafting on the river. Sandy Flat is the only currently designated put in on this segment and is the most popular put in on the Lower Kern with non-outfitted floaters. Sandy Flat and Democrat Beach have minimal facilities. The decision was made in 1980 to develop a campground at Sandy Flat and the Forest Service is currently pursuing alternatives to construct this facility. Four roaded campsites have been dedicated to commercial rafting outfitters operating under special use permit. A special use resort has existed at Miracle Hot Springs, which is adjacent to Hobo Campground. It has been closed since late 1985 but may open again in the future. A preliminary permit was issued by the Federal Energy Regulatory Commission in 1985 for a private developer to study the feasibility of a proposed hydroelectric plant which would divert water from almost the entire length of this segment. CALTRANS holds a Highway Easement Deed granted by the United States to construct a freeway which would extend the existing four-lane portion of Highway 178 down to Bakersfield. This highway improvement will require another crossing of the Kern River and extensive right-of-way excavation. The timing for this improvement is indefinite.

### Segment 3 - Democrat Dam to the National Forest Boundary - (10.6 miles)

Located entirely on National Forest land, this segment of the river is the steepest, most rugged section of the canyon.

Flows are the same as Segment 1, except that a maximum of about 450 cfs is diverted for hydropower, as opposed to 600 cfs in Segment 1. Democrat Dam is the diversion for Southern California Edison's KR1 power plant. The

plant is located just inside the National Forest boundary about one mile from the mouth of the canyon. Under normal irrigation season water conditions, the river is a series of impressive rapids interspersed with stretches of seemingly quiet waters. As a result of the hydropower diversion, in the winter months or other low flow periods the river is no more than a slow trickle when the power plant is in operation. The minimum flow bypassed by the hydro plant is based on a specified minimum fish release of 50 cfs from June to September, and less outside those months. The river continues its southwesterly flow, dropping a total of 960 feet between Democrat Dam and the Forest boundary (90 feet per mile).

State Highway 178 is located immediately adjacent to all but the upper one-half mile or so of this river segment. There are innumerable turnouts and locations where recreationists stop to camp, picnic, fish, and swim (entering the river is discouraged as it is very dangerous and has resulted in many drownings). There are three developed picnic sites along the river. No whitewater boating is authorized along this segment, although a few people do try the activity. This segment could also be affected by the proposed highway development.

Table E.7 - Kern River - Summary of Outstandingly Remarkable Values

<u>Outstandingly Remarkable Values</u>	<u>Segment</u>	<u>1</u>	<u>2</u>	<u>3</u>
Scenic		Yes	Yes	Yes
Recreation		Yes	Yes	Yes
Fisheries		No	No	No
Wildlife		Yes	Yes	Yes
Vegetation (Botanic)		No	No	No
Cultural/Historical		No	No	No
Geology		No	No	No
<u>Free Flowing Nature Affected By:</u>				
Impoundments		Yes	Yes	Yes
Diversions		Yes	No	Yes

Note: Recreation and scenic values are considered outstandingly remarkable because of the location of this river corridor to major population centers, the diversity of recreation opportunities, and the contrast of the canyon gorge to the adjacent valley. The Kern Canyon also provides the only known habitat for a unique (and unnamed) species of slender salamander in the genus Batrachoseps.

Table E.8 - Kern River - Wild and Scenic River Study/  
Eligibility Classification Analysis

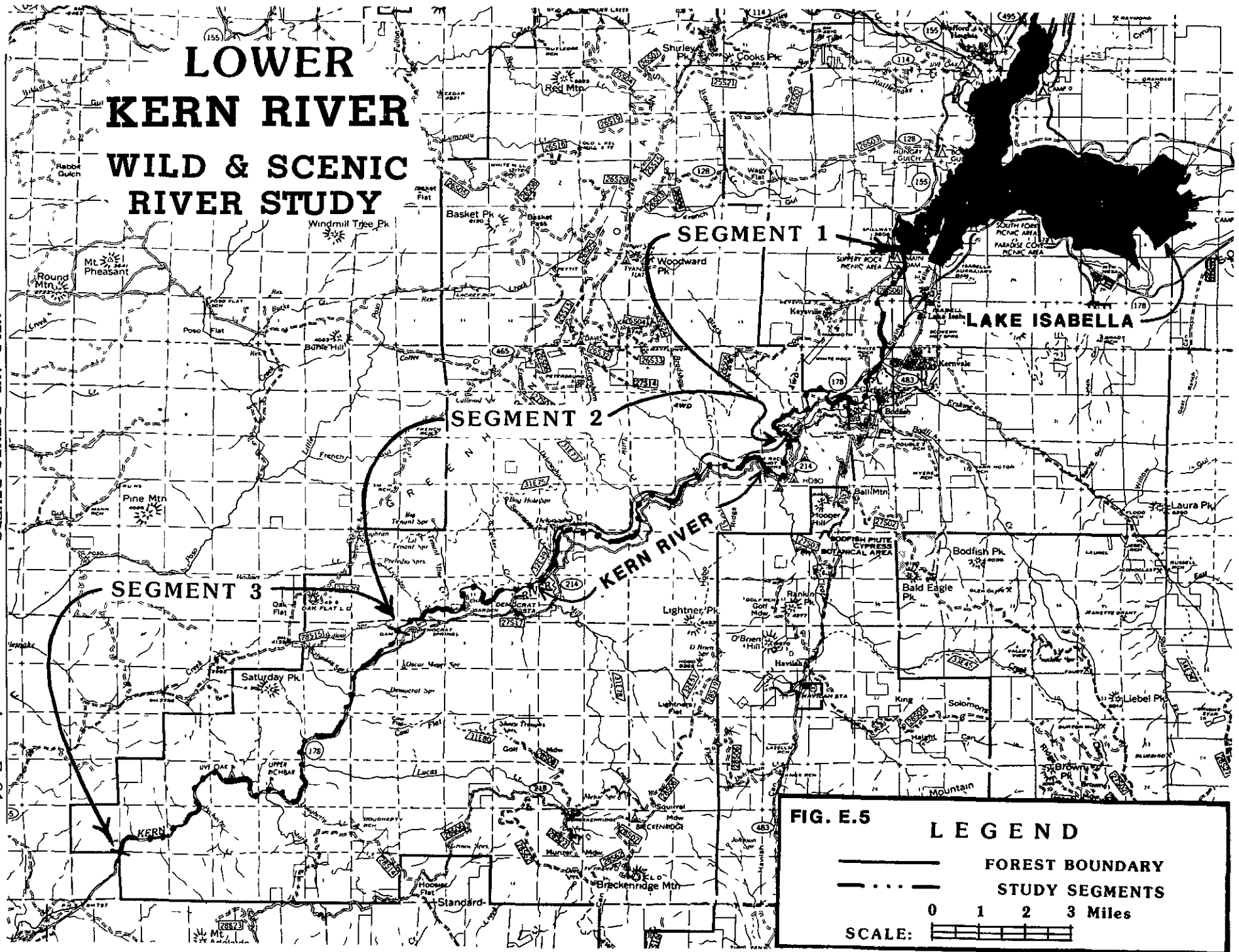
<u>Classification</u>	<u>Segment</u>	<u>1</u>	<u>2</u>	<u>3</u>
<u>Wild</u>				
Free of Impoundments?		No	No	No
Generally Inaccessible Except by Trail?		NO	No	No
Watershed/Shoreline Essentially Primitive?		Yes	Yes	No
Waters Unpolluted?		Yes	Yes	Yes
<u>Scenic</u>				
Free of Impoundments?		No	No	No
Accessible in Places by Road?		Yes	Yes	Yes
Watershed/Shoreline Largely Primitive & Largely Undeveloped?		Yes	Yes	No <u>1/</u>
<u>Recreation</u>				
Readily Accessible by Road or Railroad?		Yes	Yes	Yes
Some Development Along Shoreline?		Yes	Yes	Yes
Some Impoundments or Diversion in the Past?		Yes	Yes	Yes
		---	---	---
Highest Eligible Classification		Inelig. <u>2/</u>	Scenic	Inelig. <u>2/</u>

- 1/ The proximity of SH 178 to the river is the primary reason for the difference in this segment.
- 2/ Hydropower diversions virtually dry up the river in Segments 1 and 3 in low water situations, except for minimum fish releases.

# LOWER KERN RIVER WILD & SCENIC RIVER STUDY

WILD AND SCENIC RIVERS

App. E-31



**FIG. E.5**

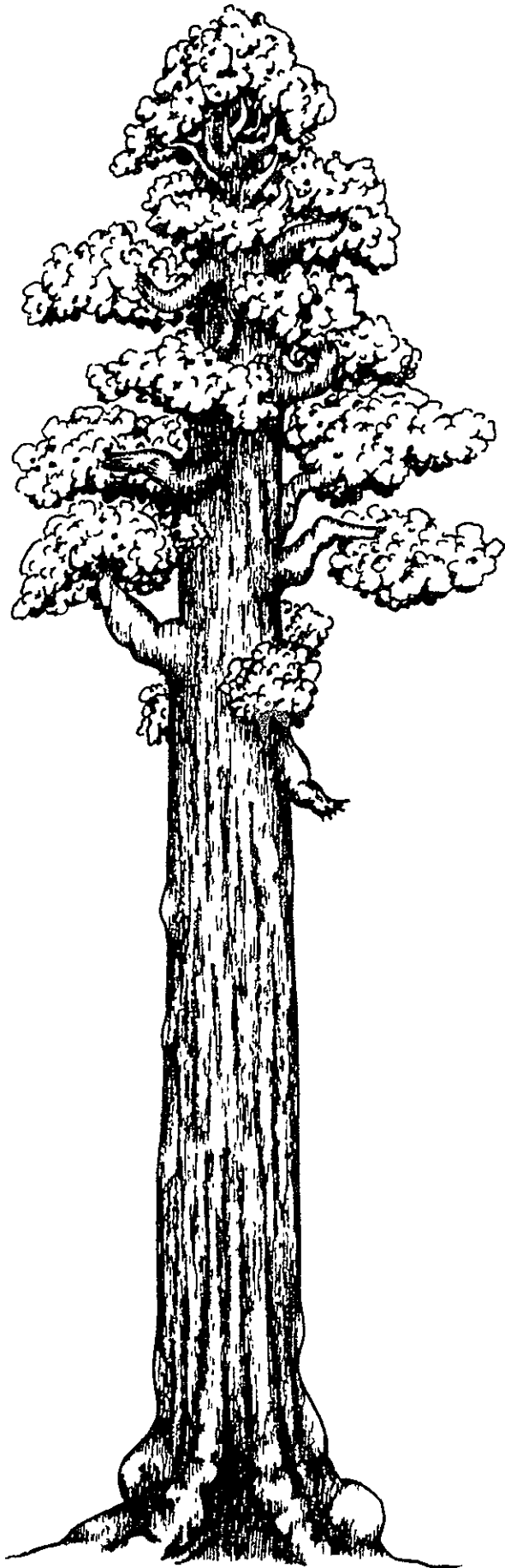
**LEGEND**

— FOREST BOUNDARY

- - - STUDY SEGMENTS

0 1 2 3 Miles

SCALE:



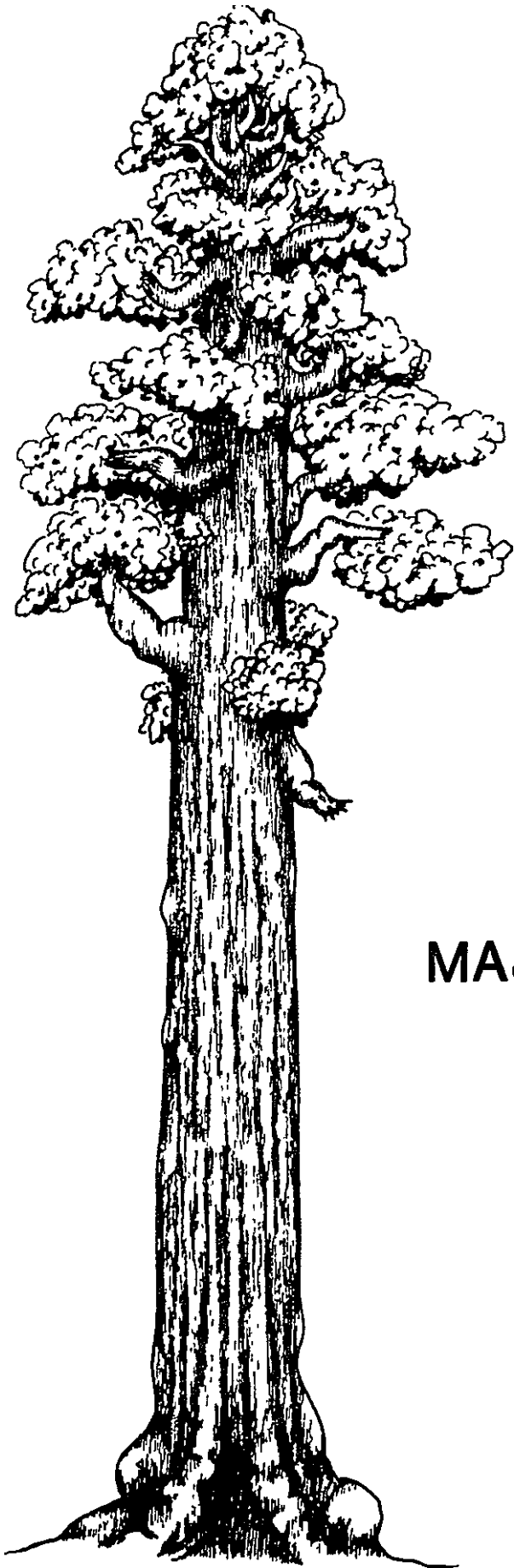
**Appendix F**  
**WATER YIELD**

APPENDIX F

WATER YIELD BY WATERSHED

Current average annual water yield from the Sequoia NF by National Forest Service (NFS) Watershed is summarized:

<u>NFS WATERSHED</u>		<u>AVERAGE ANNUAL</u> <u>WATER YIELD</u>
<u>NUMBER</u>	<u>NAME</u>	(in thousand acre-feet)
1803001005	Kings River	160
1803001004	South Fork Kings River	105
1803000701	Kaweah River	19
1803000601	Tule River	78
1803000401	Poso Creek	6
1803000101	Upper Kern River	81
1803000102	Little Kern River	82
1803000103	Middle Kern River	70
1803000104	Lower Kern River	41
1803000201	Upper South Fork Kern River	5
1803000202	Middle South Fork Kern River	18
1803000203	Lower South Fork Kern River	12
1803000204	South Fork Kern River	13
1803000301	Kern River	23
1803000302	Caliente Creek	3
1803000502	Indian Wells Creek	0
1809020601	Cottonwood Creek	0
1803000501	Deer Creek	16
1803000801	Mill Creek	<u>4</u>
	Total	736



**Appendix G**  
**MAJOR SILVICULTURAL**  
**SYSTEMS**



## APPENDIX G

### MAJOR SILVICULTURAL SYSTEMS AND THEIR APPLICATION

#### I. INTRODUCTION

The purpose of this appendix is to describe the major silvicultural systems used in land management planning for National Forests, and the advantages and disadvantages of each, considering both biological and managerial perspectives. However, almost all of the information in this appendix also applies to selecting an appropriate silvicultural system for a particular stand.

Silvicultural systems are used to manage forest stands. A silvicultural system is a planned sequence of treatments for controlling the species composition and structure of the vegetation during the life of a stand. A stand is a community of trees sufficiently uniform to be distinguishable as a silvicultural or management unit. Typically, stand sizes vary from about 5 to over 30 acres on National Forest System lands.

Management objectives for stands are typically expressed as combinations of forest products and amenities. Examples include: specific amounts of livestock forage, water runoff, and wood products; kinds of wildlife habitat; and specific scenic view qualities. No single silvicultural system can produce all desired combinations of products and amenities from a particular stand, or from a National Forest.

Forests are managed by using combinations of silvicultural systems to achieve the forest management objectives. All of the silvicultural systems discussed here are used in the National Forests in California. The combinations vary greatly, depending on the characteristics of local forest ecosystems and the differing management objectives.

Selection of the appropriate silvicultural systems occurs at both the National Forest management planning level and Ranger District project level. At the National Forest planning level, selection is based on a broad match of silvicultural systems with the overall planning objectives and ecological characteristics of broadly-defined land classes. Examples of land classes are: areas capable, available, and suitable for growing commercial wood products; Streamside Management Zones; and Spotted Owl Habitat Areas. At the Ranger District project level, selection of silvicultural systems is typically made by a certified silviculturist. Choices are based on matching the attributes of the silvicultural systems with specific management objectives and with the ecological characteristics for specific stands.

#### 11. DESCRIPTIONS OF THE SILVICULTURAL SYSTEMS

A silvicultural system typically includes cutting trees, growing new trees, and controlling competing plants. Cuttings are classified as regeneration cuttings (those that help to replace stands), and intermediate cuttings (those that maintain or improve the character of existing stands).

Silvicultural systems are not just the creation of foresters: rather, they are adaptations of natural occurrences. Nature makes "regeneration cuttings" by means of fire, insects, disease, wind, and other phenomena by removing a single tree, a small group of trees, a stand, **or** sometimes a whole forest.

Regeneration cuttings strongly influence stand characteristics and management options. Therefore, the five major silvicultural systems are named after them: clearcutting, seed-tree, shelterwood, single-tree selection, and group selection. Each of these systems includes regeneration cuttings to establish new tree seedlings **or** sprouts, and intermediate cuttings to develop the desired stand characteristics, such as species composition, spatial distribution, and plant vigor.

The clearcutting, seed-tree, and shelterwood systems are even-aged systems: which means that all of the trees in the stand are approximately the same age for almost all the life of the stand. The single-tree and group selection systems are uneven-aged systems: the trees in the stand differ markedly in age, with at least three major age classes present. Uneven-aged stands have no beginning **or** end points in time.

#### A. Even-aged Systems

Clearcutting is the harvesting, in one operation, of all merchantable trees in a stand **or** a larger area to help establish a new even-aged stand. The new stand may be created by natural processes such as seeding from trees in adjacent stands, **or** by sprouting from the stumps **or** roots of the cut trees. The new stand can also be created artificially by broadcast scattering of seeds **or** by planting seeds **or** seedlings. In California, clearcut stands are usually regenerated by planting seedlings.

Clearcutting does not necessarily mean that all unmerchantable trees are removed. Where feasible, high-quality unmerchantable trees are saved to become part of the new stand. A 1987 survey showed that on gentle terrain in the National Forests on the western slope of the Sierra Nevada, high-quality unmerchantable trees are being retained on an average of about 10 and 20 percent of the acres being regenerated to ponderosa pine, and to red fir **or** white fir, respectively.

The clearcutting silvicultural system is illustrated in Figure G.1.

The shelterwood system (shown in Figure G.2) requires leaving sufficient trees per acre (typically 10 to 20) during the regeneration cutting to provide an environment that protects (shelters) the seedlings of a new even-aged stand. Protection may be needed from excessive moisture stress **or** frosts in some forest areas. The new stand can be created by the natural or artificial processes described above.

Regeneration under shelterwoods by planting seedlings is a **common** practice on National Forest System lands in the Region. The shelterwood trees are harvested following establishment of the seedlings of the new even-aged stand. The shelterwood system is the second-most commonly used even-aged system on National Forest System lands in Region 5, after the clearcutting system. The shelterwood system is most commonly used in stands where red **or** white fir are to be regenerated.

The seed-tree system (shown in Figure G.3) requires leaving a few good seed-producing trees per acre (typically about 3 to 10) during the regeneration cutting. These trees produce the seed needed to establish a new even-aged stand. Following seedling establishment, the seed trees are harvested. This system has seldom been used for intensive timber management on the National Forest System lands in Region 5. The primary reasons were: frequent unreliability of natural regeneration in the desired periods, invasion of cleared lands by unwanted vegetation (particularly shrubs), and the poor economics of harvesting the few seed trees after natural seedlings are established.

#### B. Uneven-aged Systems

In the single-tree selection system (shown in Figure G.4), each tree is evaluated for its contribution to the desired characteristics of the uneven-aged stand. Regeneration and intermediate cuttings are usually done in one operation. The desired seedlings or sprouts grow in the spaces created by harvesting of individual trees.

Repeated selection cuttings, part of the single-tree selection system, have been used frequently to manage National Forest System lands, particularly in the Sierra Nevada and Cascade Mountain Ranges. There has been a major shift over the last two decades to utilize either the clearcutting or shelterwood systems. The primary reason is that selection cuttings have caused significant understocking in many stands, thereby reducing productivity. There are many examples of poor selection cuttings in California, under the guise of the singletree selection system. High quality, large trees were cut, leaving inferior, small trees. Genetic principles were ignored, and many stands were left understocked, with slow-growing, small trees that are more susceptible to attacks by insects and diseases. In these situations, establishing a new even-aged stand typically is the most efficient way of regaining desired productivity levels and other stand qualities.

The group selection system requires harvesting trees in small groups (less than about two acres). The openings created in the stand resemble miniature clearcuts. The uneven-aged stand consists of a mosaic of even-aged groups. Thus, the group selection system uses the principles of even-aged systems described above to manage much smaller units of land. Currently, the group selection system is used less frequently than the single-tree selection system on the National Forest System lands in Region 5.

Even-aged systems are more practical than uneven-aged systems for intensive management of wood products. The reasons are explained in Section V below on "Managerial Contrasts Among Forests and Stands Managed by Different Silvicultural Systems."

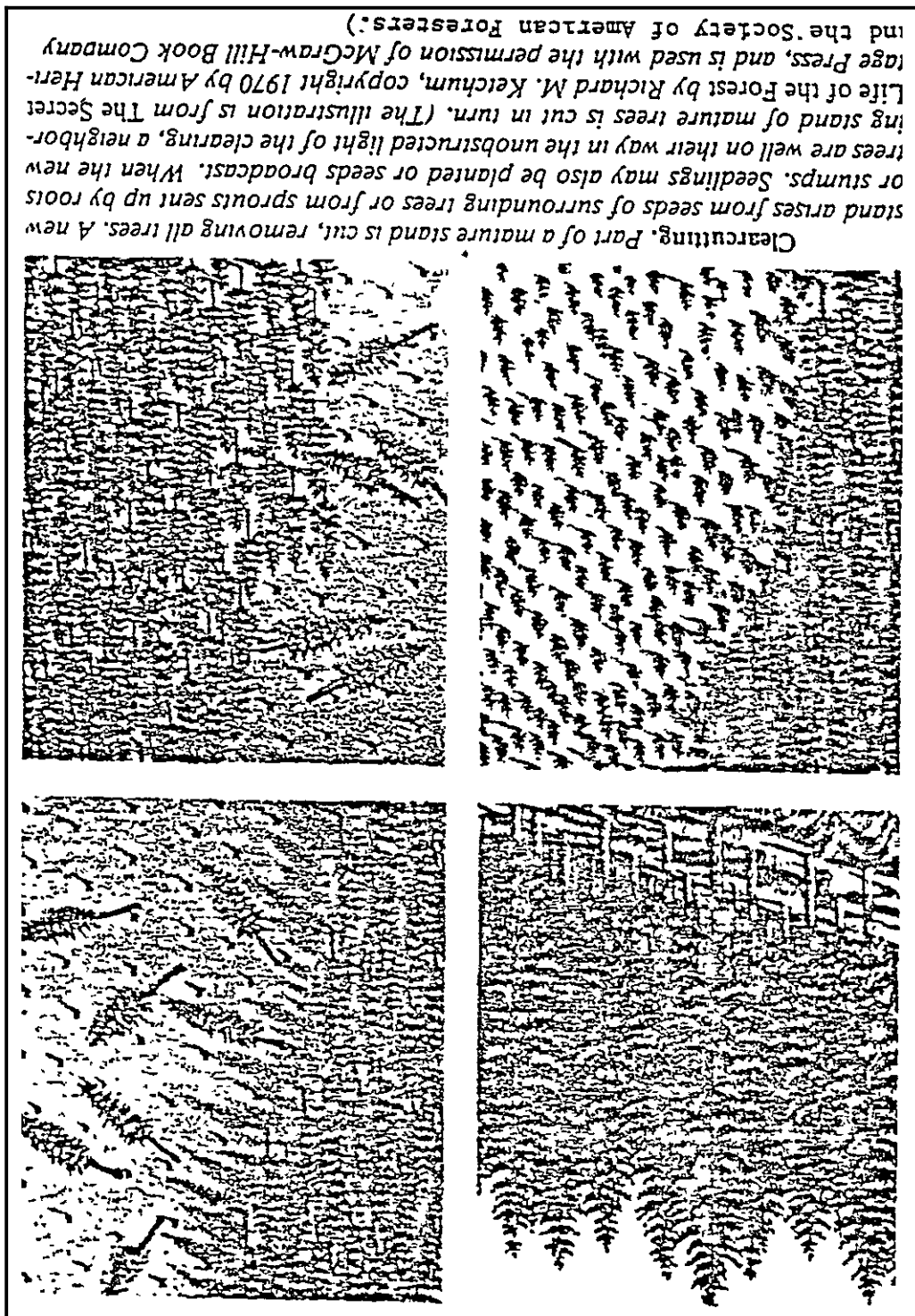
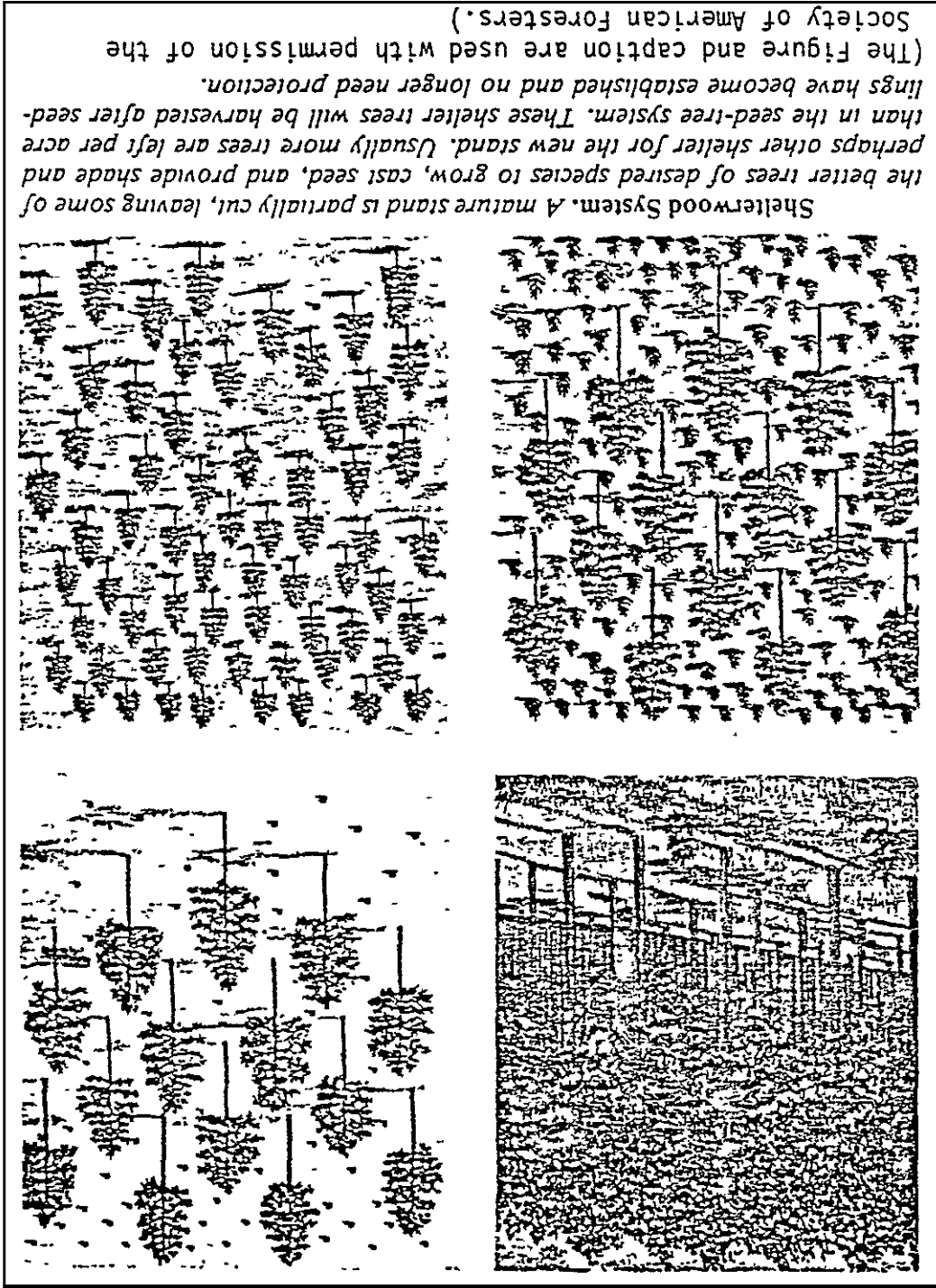
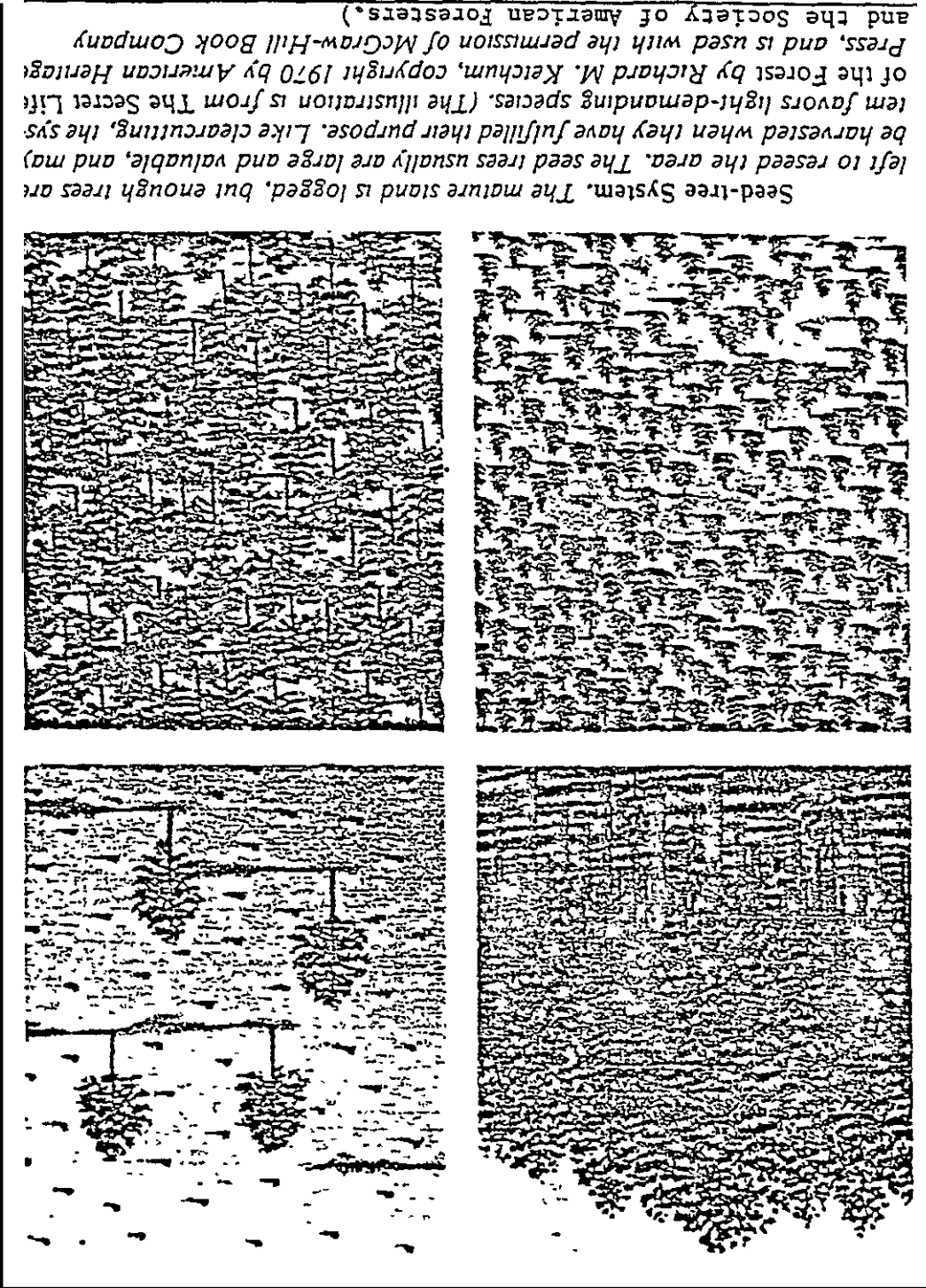


Figure G.1



Shelterwood System. A mature stand is partially cut, leaving some of the better trees of desired species to grow, cast seed, and provide shade and perhaps other shelter for the new stand. Usually more trees are left per acre than in the seed-tree system. These shelter trees will be harvested after seedlings have become established and no longer need protection. (The Figure and caption are used with permission of the Society of American Foresters.)

Figure 6.2



Seed-tree System. The mature stand is logged, but enough trees are left to reseed the area. The seed trees usually are large and valuable, and may be harvested when they have fulfilled their purpose. Like clearcutting, the system favors light-demanding species. (The illustration is from *The Secret Life of the Forest* by Richard M. Keitchum, copyright 1970 by American Heritage Press, and is used with the permission of McGraw-Hill Book Company and the Society of American Foresters.)

Figure G.3

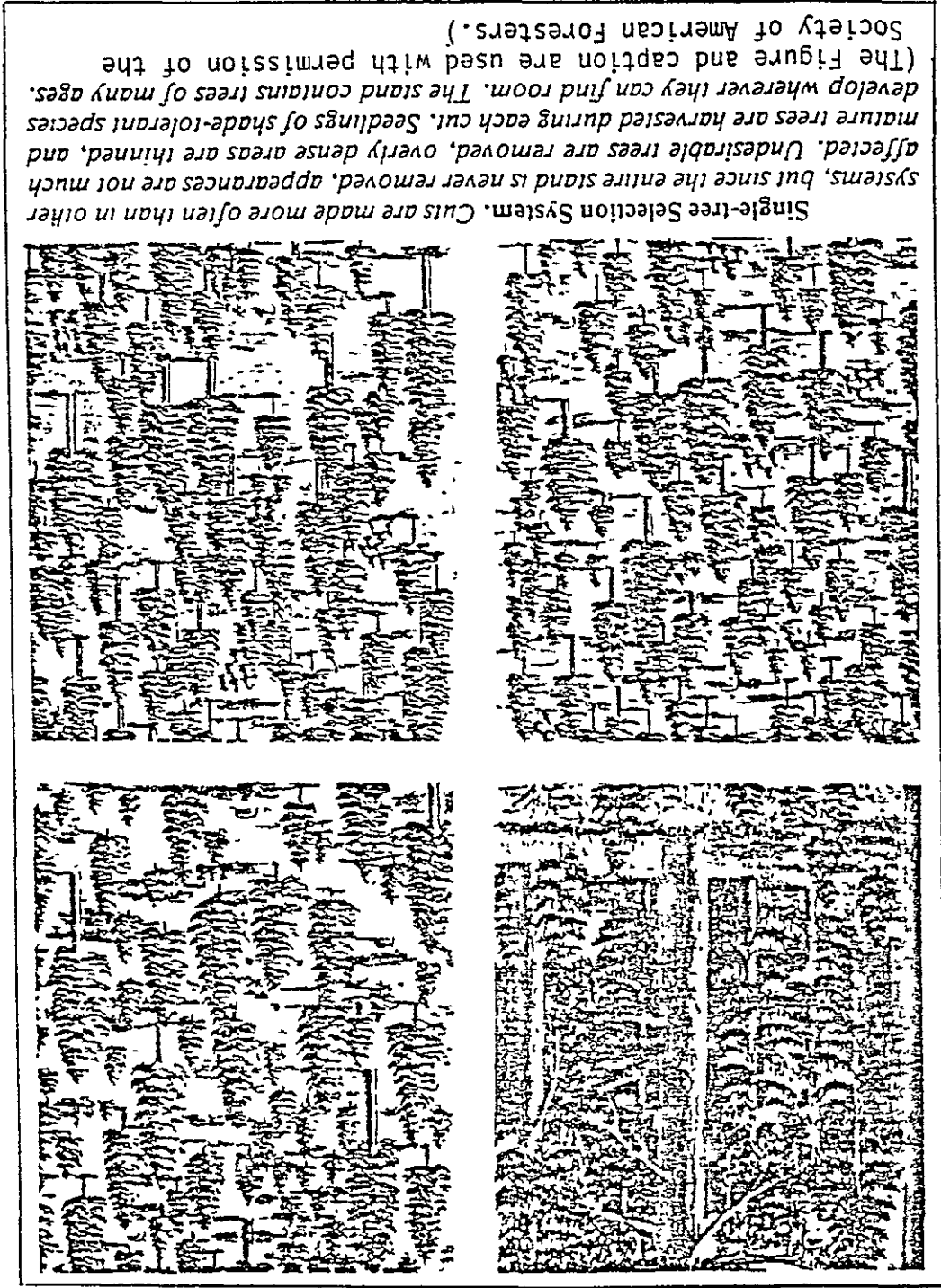


Figure 6.4

## 111. TIMBER YIELD AND REGULATION OF FORESTS AND STANDS

Timber yield is the amount of wood that is harvested periodically from a specified forest area. The maximum yield allowed from a National Forest for a planning period (typically one decade) is called the Allowable Sale Quantity. By Federal law, the Allowable Sale Quantity generally **cannot** exceed the long-term, sustained capacity of that Forest to grow wood. Within each National Forest, stands are managed by silvicultural systems to achieve continuous production of the Allowable Sale Quantity.

When this continuous production level is achieved, the Forest and stands are said to be "regulated." Where the single-tree selection **or** group selection silvicultural systems are used, each regulated stand would produce approximately the **same** yield from each harvest, which would occur about every 10 years. By contrast, where the even-aged systems are used, yields from each harvest in a regulated stand would not be equal, but the average yield for the Forest would be the **same**.

The conversion of wild stands to regulated stands in many of California's forests has just begun. The goal of regulation will take many decades to achieve. No major forest in California has yet been regulated.

## IV. BIOLOGICAL CONTRASTS AMONG FORESTS AND STANDS MANAGED BY DIFFERENT SILVICULTURAL SYSTEMS

The key biological contrasts discussed in this section are summarized in Table G.1.

### A. Appearance

-- Variation in tree age. A forest managed by even-aged silvicultural systems consists of a mosaic of even-aged stands. Every age class would be represented in a regulated forest, and each age class would be represented by approximately the **same** number of stands. A regulated forest managed by the group selection system would resemble forests managed by the even-aged silvicultural systems; except that the even-aged components (groups) would be much smaller and more numerous. By contrast, each stand in a regulated forest managed by the single-tree selection system would have trees of many ages (perhaps all ages).

The oldest (**or** largest) trees in any managed forest depend primarily on the management objectives, not on the silvicultural systems. In particular, the amounts of large- **or** old-growth to be produced **or** maintained depend more on the willingness to forego yields than on the kinds of silvicultural systems used to manage stands.

-- Variation in developmental stages. In the even-aged and group selection systems, all stages of forest development are present in the forest, including grasses, forbs, shrubs, tree seedlings, and larger trees. Each stage is represented by entire stands **or** groups. By contrast, in the single-tree selection system, the areas dominated by small plants such as grasses, forbs, **or** shrubs are commonly very small (for example, less than one-hundredth of an acre), but they typically occur somewhere in every



stand. In a regulated forest, the total area occupied by each stage should be about the same, regardless of the silvicultural system.

-- Occurrence of shade-tolerant and -intolerant plants. Even-aged and group selection systems favor plants that can be readily established and which grow well in full sunlight (shade-intolerant plants). These include grasses, most forbs and shrubs, and many of the most valuable commercial tree species, such as ponderosa pine and Douglas-fir. The single-tree selection system favors plants that can be readily established and grow well at low light levels (shade-tolerant plants). Examples in California forests are many ferns; few grasses, forbs, and shrubs; many noncommercial hardwood tree species; and a few commercial conifer tree species, such as white fir and incense-cedar.

However, on low-quality forest lands where lack of soil moisture or other soil conditions cause low plant densities, shading by trees is greatly reduced. There, shade-intolerant plants will persist if the single-tree selection system is used,

-- Diversity of plant species. Species diversity depends on the biological and physical environments, how diversity is evaluated, and on how the stands are managed under the different silvicultural systems.

On moderate-to-high quality lands, stands managed by the single-tree selection system shift toward shade-tolerant species. In California, many stands and forests which were previously dominated by commercially more valuable pine and Douglas-fir now have large components of less valuable tanoak, madrone, or white fir. This process could reduce tree species diversity in such stands, compared with management by other silvicultural systems. The shift toward more shade-tolerant species also means that the species diversity of plants near the ground would eventually be lower in stands managed by the single-tree selection system.

The species composition of commercial tree species may be significantly increased or decreased during stand regeneration depending on the environmental conditions, availability of natural seed, selection of species to be planted, and the success of the plantings. If artificial regeneration fails in stands with mixed species, the diversity in the naturally-regenerated stand may be reduced significantly. Potential seed trees of some species could have been harvested, or only certain species (for example, white fir) could regenerate naturally under the brush that rapidly occupies newly harvested areas.

If both artificial and natural regeneration fail, the species diversity of commercial trees has been significantly reduced. The risk of a complete regeneration failure is least for the single-tree selection system. There is high probability of successful natural regeneration of all species where openings are small, seed sources are present, and ground environmental conditions are suitable for tree seedling establishment. The risk of loss of diversity in large openings can be reduced by planting all appropriate species, or by designating appropriate seed trees *or* shelterwood trees of mixed species.

-- Vertical diversity. The vertical diversity in stands managed by the even-aged **or** group selection systems can be quite limited. Typically there is a single dominant layer of seedlings, saplings, **or** larger trees. However, usually there is considerable diversity in stands with the larger trees because some trees are significantly taller and have fuller crowns than others. Full vertical diversity still occurs over the forest, but not in each stand **or** group. By contrast, in the single-tree selection system, the vertical diversity within each stand should be much greater. Seedlings, saplings, and trees in larger tree classes should be seen from any point in the stand.

-- Tree vigor. If the stands are well managed, tree and stand vigor should be independent of silvicultural systems, with three exceptions. First, new seedlings in openings (particularly shade-tolerant species such as red fir and white fir) are heavily stressed by heat and lack of adequate water until they develop good root systems. These stresses often cause heavy mortality (especially of natural seedlings: **or** of low-quality, mishandled, **or** poorly planted seedlings from nurseries). Second, seedlings in openings are more susceptible to damage **or** mortality from frosts, particularly at high-elevation sites. Where seedling mortality (even of high-quality, properly handled and planted nursery seedlings) is expected to be excessive, use of the single-tree selection, shelterwood, and group selection (where groups are small) systems are favored. Third, maintaining good vigor of small shade-intolerant species, such as ponderosa pine, can be very difficult in stands managed by the singletree selection system. To promote vigor and growth of these trees, tree density may have to be reduced, which can significantly reduce timber yields.

Many stands on National Forest System lands are severely infected with certain root diseases **or** dwarf mistletoes. It is very difficult and costly to maintain **or** improve tree vigor and productivity there if the single-tree selection system is used. These root diseases and dwarf mistletoes infect other trees more easily when this system is used.

#### B. Genetic Resources

-- Conservation of genes. Genetic diversity is basically unaffected when natural **or** artificial regeneration of commercial tree species is successful. (Successful artificial regeneration means that appropriate procedures are used during seed collection to ensure a large genetic diversity in the collected seed.) However, **if** regeneration of a particular species were to fail repeatedly over broad areas, genetic diversity would be reduced.

-- Quality of genes. Where improperly applied, the single-tree selection system can lead to "high-grading," which in turn reduces genetic quality for wood production. High grading is the selective removal of the best trees (most rapidly growing, largest, and most valuable for wood) so that most regeneration comes from seed produced by the lower-quality, remaining trees.

The average genetic quality may be significantly lowered in a stand managed by the single-tree selection system, because of higher rates of inbreeding. Some forest geneticists theorize that inbreeding should also increase under the shelterwood or seed-tree systems. Nearby trees of the same species

usually are closely related, and they can pollinate each other. The natural seedlings should be even more inbred. By contrast, artificial regeneration or natural regeneration from edges of large openings reduces the probability of significant inbreeding. Large openings facilitate pollen movement from more distant, less closely related trees.

### C. Productivity.

Scientific long-term comparisons of wood production using the different silvicultural systems have not been made anywhere in the world. This comparison will be possible many decades from now at Blodgett Forest, a University of California research facility. Theoretically, the total biological productivity (biomass) may be greatest for stands managed by the single-tree selection system. This is because of more continuous tree cover, compared to the other systems. However, merchantable stand growth and timber yields may not be higher for the single-tree selection system. Merchantable yields are strongly influenced by managerial factors.

## V. MANAGERIAL CONTRASTS AMONG FORESTS AND STANDS MANAGED BY DIFFERENT SILVICULTURAL SYSTEMS

The major managerial contrasts described on this section are summarized in Table G.2.

### A. Public Concerns

In the last two decades, the clearcutting system, and, to a lesser extent, the shelterwood and seed-tree systems, have generated controversy in the United States and Europe.

There are at least six major concerns in California:

- Clearcut areas are regarded as visually unattractive;
- The risks of significant soil erosion and loss of soil productivity are thought to be much greater for the clearcutting system;
- Regeneration of clearcut stands is thought to be unreliable;
- The risks of significant genetic losses are thought to be much greater for the clearcutting system because new stands may be monocultures;
- The use of chemical herbicides (strongly opposed by some groups and individuals) is thought to be much greater if even-aged systems are used, particularly the clearcutting system; and
- Artificial regeneration, particularly of even-aged stands, is thought to be too costly.

All of these undesirable effects can occur under any silvicultural system. However, the risks of some are significantly different among certain systems. The concerns about genetic losses were addressed earlier in the sections on Diversity of plant species and Genetic Resources. The other five concerns are discussed in the following sections on Effects on Scenic Quality, Risks of Adverse Effects on Watersheds and Soils, Scientific Knowledge Base, Management Experience, Need for control of competing vegetation (including the use of herbicides), and Treatment costs.

Other managerial aspects of the silvicultural systems are also discussed in the following sections. They include: risk of major wildfires; risk of damage by insect, disease, **or** wildlife pests; production of livestock forage; protection of archaeological resources; administration of silvicultural projects; timber harvesting efficiency; genetic improvements in forests; and effects on fisheries and wildlife.

## B. Effects on Scenic Quality

It is usually easier to create **or** maintain naturally-appearing landscapes with uneven-aged systems rather than even-aged systems. Uneven-aged systems are usually less noticeable because they create less contrast and are more flexible in design. However, long-term maintenance of natural-appearing landscapes can be more difficult under the uneven-aged systems, particularly for the single-tree selection system, because the inevitable natural wildfires are more difficult to control. (See the section on Risk of Major Wildfires. )

Depending on circumstances, all silvicultural systems **may** achieve visual quality objectives, whether the emphasis is on wood production **or** natural-appearing landscapes. Regeneration cutting in some situations can meet retention or partial retention objectives; for example, partial cuttings, such as shelterwood **or** single-tree selection. **or** openings that emulate and blend with natural conditions. Which alternatives are optimal, **or** even feasible, depend on factors such as location relative to the viewer, slope steepness, and available topographic **or** vegetative screening.

## C. Risks of Adverse Effects on Watersheds and Soils

These risks depend more on the characteristics of the watershed and soils, and on the care and quality of work, than on the kind of silvicultural system used. Adverse effects associated with any silvicultural treatment can usually be avoided **or** mitigated. The major possible adverse effects are erosion, sedimentation in waterways, soil compaction, and loss of soil productivity through soil **or** nutrient loss.

The risk of significant, cumulative erosion and sedimentation effects in watersheds usually depends more on road quality and location than on silvicultural treatments. The risk of significant erosion within stands depends on how much protective vegetation and litter cover is removed, as well as on road quality and location. This risk is generally higher for the clearcutting system because more cover is temporarily removed by clearcutting and preparation for seedling establishment. **The** risk is least for the single-tree selection system.

Extensive and frequent **use** of heavy machines can cause Significant soil compaction of some soils. The risk of this occurring should not be different among the silvicultural systems.

The risk of soil nutrient **losses** is increased where vegetation **or** litter is cleared or high-intensity fires occur. Again, the risk due to clearing vegetation or litter is greater for the even-aged silvicultural systems. High-intensity fires **may** occur in any stand if controlled fires are used improperly. However, the risk of high-intensity fires is greater for the

single-tree selection system because crown wildfires are more likely. (See Section G, Risk of Major Wildfires.)

D. Scientific Knowledge Base. Knowledge is least for the single-tree selection system for National Forest lands in California.

-- Biological. Considerable research has been completed on the biological foundations for all of the silvicultural systems. Planting, natural regeneration, and genetic principles have been extensively studied for all systems. Research is more complete on early growth of young potential crop trees and control of competing plants for the even-aged and group selection systems. Similarly, stand growth model research is more complete for the even-aged and group selection systems. There are no major differences in the knowledge base about intermediate cuttings or about insect and disease pest management, among the silvicultural systems.

-- Managerial aspects. Research on the managerial aspects of California's forests has been focused on the even-aged and group selection systems. Only in the last decade have concerted efforts been made to research the long-term practicality of the single-tree selection system. Earlier studies were not completed because of difficulties with controlling regeneration of some desired species, controlling stocking, or sustaining the desired stand structures and merchantable yields. This resulted in strong recommendations against the system by many forest research scientists. New interest has been generated by demands for continuous forest cover, maintenance of an unmanaged appearance, and an alternative to management by the even-aged systems. However, several decades of management will be required before analyses of overall effectiveness can be made. Research in the group selection system is also underway in California. It too will require several decades of treatments to achieve regulated stands.

E. Management Experience

Timber harvesting has occurred in California for over 140 years. However, experience with managing forests with the goal of regulating potential yield has been limited to the last several decades. Regulation of National Forest System lands has only involved the even-aged silvicultural systems, particularly clearcutting. However, extensive experience has been gained with all of the silvicultural systems in managing certain stands.

-- Single-tree selection. Most of the harvesting from National Forest System and many private timber lands in California has been selection cuttings of large trees. These cuttings were typically made with no long-term plan for managing the stands by the single-tree selection system. This system can require cutting trees in all size classes during each operation. Regeneration from natural seeding was usually counted on. Also, growth of the young trees and the uncut smaller merchantable trees was counted on to offset the reduction in the forest inventory due to harvesting the largest trees. Unfortunately, repeated harvests of the largest trees have often caused undesirable results: understocked residual stands with lower quality, lower value trees. These stands will have to be regenerated using one of the even-aged silvicultural systems or the group selection system, so as to reestablish full stocking of desired species.

-- Group selection. The group selection system was tried extensively on National Forest System land in the Region about 20 years ago. Small openings were made to encourage natural regeneration, particularly of sugar and ponderosa pines. Special cutting guidelines were developed for different kinds of naturally-occurring groups of trees. The system, called Unit Area Control, failed for three reasons. First, the many small groups of natural regeneration could not be managed efficiently. They could not be monitored. Needed subsequent treatments were not made. The young trees did not grow well or died. Some groups could not be treated due to the higher costs of treating small areas. Second, the cutting guidelines could not be used consistently. There was great difficulty in determining which kinds of groups were actually present in the stand, and the location of their boundaries. Third, many of the small groups were unavoidably destroyed when large trees in adjacent groups were felled, or when logs were moved out of the stand in later harvesting projects. It is particularly difficult and costly to save small groups of trees on steep slopes from excessive damage during harvesting or preparation of the site for successful establishment of tree seedlings.

-- Even-aged systems. The oldest plantations on National Forest System lands in the Region are about 60 years old. Some are soon to be harvested and replaced, thus completing the cycle of an even-aged silvicultural system. Extensive experience has been gained in the regeneration, promotion of young tree growth, intermediate cutting, and regeneration cutting treatments for even-aged systems in all major timber types in the Region. Overall, artificial regeneration following clearcutting has been very reliable in ponderosa pine, Douglas fir, and mixed conifer stands. Artificial regeneration has been significantly less reliable in red or white fir stands. The primary causes of planting failures are:

- (1) difficulties with consistently producing high-quality seedlings in the nurseries: and
- (2) planting when the environmental conditions are inappropriate.

,The shelterwood system with natural or artificial regeneration is presently used in red or white fir stands where regeneration after clearcutting is expected to be unreliable.

#### F. Wood Production

-- Need for control of competing vegetation (including the use of herbicides). Control of competing vegetation is needed in all of the silvicultural systems to ensure establishment and good growth of tree seedlings or sprouts. Some have theorized that less control is needed in the single-tree selection system. Under this system tree cover is more continuous, resulting in fewer competing grasses, forbs, and shrubs. However, these competitors cause significant moisture stress in the seedling and sapling potential crop trees (in addition to the substantial moisture stress caused by the larger trees), thereby reducing their survival and growth. There is no compelling theoretical basis for concluding that the need for control of competing vegetation should be reduced if the single-tree selection system were used. Certain commonly-occurring, major competing plants can retain good vigor when shaded by most

conifers (such as manzanita, bear clover, tanoak, or madrone). Using the single-tree selection system would definitely not reduce the need for controlling competition from such plants.

Frequency of control treatments varies by silvicultural system. Treatments under the single-tree selection system could be needed somewhere in every stand as often as every 5 to 10 years. The average treatment frequencies in the other systems are much lower. For example, in any of the even-aged systems, up to about three treatments could be needed in the first 10 years of a new stand. Additional treatments may not be needed until the stand is regenerated--a period that could exceed 50 years. Thus, the average period between treatments would be greater than 20 years. Regardless of the silvicultural system used, the total acres treated (and the total pounds of herbicide applied per acre, if herbicides were used) should be about the same over the long term.

The aerial application of herbicides (usually the most cost-effective, and frequently the most controversial method of applying herbicides) could not be used in the single-tree selection system. Depending on topography and vegetation structure, it could **also** be impractical in the group selection system.

-- Treatment costs. The size of a treatment area is a major factor in determining treatment costs and managerial feasibility. Generally, costs per acre in intensively managed forests are higher when the treatment units are smaller. Therefore, the even-aged systems are the most cost efficient; and the group selection and the single-tree selection system (in that order) are the least cost efficient.

Regeneration by clearcutting is the most cost efficient among the even-aged systems. Shelterwood and seed tree systems are less **so**, in that order. The removal of shelterwood trees or seed-trees, after the seedlings are established, is a second cost not required in the clearcutting system.

In theory, the total cost of natural regeneration should be less than for artificial regeneration. The costs of seed collection, nursery operations, seedling handling, and planting are eliminated. However, these savings are often offset by increases in pre-commercial thinning costs. Natural regeneration often results in much greater densities of trees than would be planted, or are desirable. Also, unreliable seed production by many commercial tree species often delays natural regeneration. This reduces wood productivity. When natural regeneration is delayed, the sites are occupied by competing plants, the control of which can be costly. Overall, artificial regeneration insures prompt reforestation of preferred species at desirable densities. If natural regeneration is to be used, the shelterwood and seed-tree systems are usually more cost efficient than the uneven-aged systems. The reason is the economies of scale associated with larger treatment areas. Where artificial regeneration is to be used, the clearcutting and shelterwood systems are more cost efficient, for the same reason.

-- Achieving regulated forests, while maintaining Forest timber harvest levels. Regulation can be accomplished most easily with the even-aged *or* group selection silvicultural systems. There are two critical

disadvantages of the single-tree selection system. First, foresters lack the detailed information about trees needed for cutting on a stand-by-stand basis. There are tens of thousands of stands on a typical National Forest in California, with up to about 10,000 potential crop trees per stand. Currently, inventory data needed for the single-tree selection system are lacking for about two-thirds of these stands. Second, in the Mediterranean climate in California, large forest wildfires are inevitable. Reforestation after these fires creates many new even-aged stands. It is very difficult to regulate a forest under a single-tree selection system when substantial acreages of unplanned even-aged stands occur.

-- Planning, contracting, and record keeping. The many small units used in the uneven-aged systems make for ineffective and costly operation and administration. If stands in a typical Ranger District were managed by uneven-aged systems, in excess of 50,000 separate areas would have to be inventoried, planned for, treated, and monitored. Even with computers, the management complexity would be excessive. Therefore, the extent to which uneven-aged management systems are used for intensive timber management will necessarily be very limited.

-- Timber harvesting. Five important aspects of timber harvesting are strongly influenced by the choice among silvicultural systems:

- (1) variability in sizes of harvested trees;
- (2) area to be harvested;
- (3) complexity of the harvesting treatments;
- (4) probability of causing significant damage to trees to be left in the stand; and
- (5) probability of causing long-term root disease problems.

The first three influence harvesting efficiencies; and the other two affect the vigor, tree stocking, and value of the residual stand.

There is wide size variation in trees harvested in each operation under the single-tree selection system. This reduces harvesting efficiency because logging equipment is size-dependent. However, this disadvantage could be insignificant in young-growth stands.

Harvesting in the single-tree selection system is also much less efficient than for the other systems because more land must be treated in each operation to harvest the desired yield from the forest.

The complexity of harvesting treatments is also greatest in the single-tree selection system. Identifying which trees to cut, determining where they are to be felled, felling the trees in the designated areas, and removing the trees or logs out of the stand without damaging the residual trees can be very difficult and costly. In the single-tree selection system, cuttings occur as frequently as every 5 to 10 years. In the other systems, only the intermediate cuttings are as complex. The regeneration cuttings



in the other systems are more straightforward operations. Group selection and clearcutting are the most efficient.

Logging damage to trees left to grow in the stand is typically greatest for the single-tree selection system. It is very difficult to selectively harvest trees in dense stands without damaging many residual trees, particularly on steep slopes. Damaged trees are often infected by wood-decaying fungi that can persist in the soil for long periods, thus retaining the capacity to infect new trees. The fungi reduce the windfirmness, vigor, commercial value, and stocking of residual trees. These characteristics are of particular concern in developed recreation areas where selection systems are often applied. Stands with red or white fir have an especially high probability of being infected with wood-decaying fungi when damaged.

-- Genetic improvements in forests. Genetic improvements to increase timber growth, improve tree form and wood quality, or increase resistance to disease and insect pests, depend primarily on planting trees with desirable genetic characteristics. Therefore, the potential for genetic improvement is greater for silvicultural systems that use artificial regeneration. The clearcutting, group selection, and shelterwood systems (if artificial regeneration is used) have the greatest potential for improving the genetic quality of forest trees. The single-tree selection system, with its natural regeneration and higher rates of inbreeding, has the least potential.

#### G. Risk of Major Wildfires

The even-aged systems (clearcutting in particular) are best for reducing the risk of major wildfires because the greater control of fuel distribution makes wildfire prevention and suppression easier and less costly. The single-tree selection system is least desirable because fires burn intensely and are more difficult to control. Openings which can serve as fuelbreaks occur less frequently in forests or stands managed by this system. Also, the multiple tree layers create "ladders," permitting ground fires to spread into the crowns of the large trees. Crown fires are more destructive and more difficult to control than ground fires. Finally, the use of controlled fires to reduce the risks of large wildfires is most difficult and costly in the single-tree selection system.

#### H. Risk of Significant Pest Damage

Silvicultural treatments reduce risks by selecting appropriate tree species, by diversifying within and among stands, and by maintaining tree vigor. Diversification within stands is increased through use of multiple species or uneven-aged silvicultural systems. Vigor is promoted by preventing the trees and other plants from becoming too dense. Competing plants also provide habitat for animal pests such as pocket gophers and rabbits. Well-managed stands in all systems reduce the risk of significant pest damage. However, there are significant exceptions.

Risk of significant insect or disease damage to trees increases if the trees have been wounded. Many wounds occur during silvicultural treatments. Accidental scarring of trees can be caused by felling nearby

trees, or by bumping them with machines or logs moving through the forest. Risk increases with frequency of stand treatments, particularly cutting. Cutting frequency is much higher for the single-tree selection system than for others, so the risk of significant insect and disease damage is highest.

Two serious pests, dwarf mistletoes and some root rots, can be difficult, costly, and, in some cases, impossible to control under selection systems. Damage from these pests is most easily controlled by managing stands as wholes. Dwarf mistletoe plants can project seeds down on trees within about 100 feet horizontally, thereby infecting nearby susceptible species. Even-aged systems allow the manager to control damage from this pest through cutting treatments.

Many root disease fungi infect susceptible trees by root-to-root contact. Some root diseases start at harvest time and spread to other trees in the stand. Control may require killing trees in a zone around the infected area. Uneven-aged management, particularly the single-tree selection system, can perpetuate root disease "centers" and spread infection.

Generalizations about wildlife pest damage and silvicultural systems are difficult. The major potential wildlife pests in the Region include pocket gophers, deer, porcupines, and rabbits. These animals feed in vegetation dominated by grasses, forbs, shrubs, or tree seedlings. Use of the even-aged or group selection systems can create large areas temporarily dominated by this kind of vegetation. This can cause higher densities of potential pests, which increases the risk of significant damage to potential crop trees. However, often the actual damage levels are not increased where this occurs.

#### I. Production of Livestock Forage and Browse

Even-aged systems and the group selection system are best for livestock production. Grasses, forbs, and shrubs used by livestock occur in the greatest quantity in openings. Management efficiency increases in large forage areas because livestock control and access is easier and less costly.

#### J. Protection of Cultural Resources

There should be no significant differences among the silvicultural systems in their risk of damage to undetected archaeological resources. Damage depends more on the intensity and frequency of management treatments than on the kind of silvicultural system, particularly when large machines are used.

#### K. Effects on Fisheries and Wildlife Habitat

Fisheries habitat is most easily protected where the water quality is high, where stream temperatures are kept moderate through shading, and where the runoff quantity is sufficient to maintain spawning areas. The single-tree selection or group selection systems are usually more advantageous than the even-aged systems for managing the vegetation in streamside management zones and riparian areas. However, the silvicultural systems used outside

these zones does influence the amount of sediment in the water (see Section C, Risks of Adverse Effects on Watershed and Soils).

The choice of silvicultural systems to best manage wildlife habitat depends on which species are to be emphasized. Regardless of which treatment is used in a stand, some species will benefit and others will not. Most wildlife species are adapted to thrive in specific structures and species of forest vegetation. For example, the use of the even-aged or group selection systems favors deer, quail, and rabbits that use herbaceous and shrubby vegetation most abundant in large openings in the forest. The single-tree selection system may favor animals that need vertical diversity, such as spotted owls and tree squirrels.

Almost all forest wildlife species could use a particular young-growth stand at some time in its development regardless of the silvicultural system. (The exceptions are the few species that may be totally dependent on very large, decadent trees for habitat.) The kind of system would influence the proportions of species, and when and how they could use the stand as habitat. A significant exception is single-tree selection management applied to large areas. The absence of large openings could prevent use by wildlife adapted to this kind of habitat, such as soaring hawks. Overall, a mix of the silvicultural systems in the forest would probably best achieve most wildlife management objectives.

Table G.1 - Ratings of the Major Silvicultural Systems by Principal Biological Attributes

G is Good, Excellent, or Many  
M is Moderate or Few  
P is Poor or None

BIOLOGICAL ATTRIBUTE	Clear Cutting	Shelter-wood	Seed-Tree	Group Selection	Single-Tree Selection
<u>Appearance</u>					
a. Diversity of tree sizes in a stand:					
(1) Vertical	P	P	P	M	G
(2) Horizontal	P	P	P	M	G
b. Number of openings in a forest: <u>1/</u>					
(1) Larger than 2 ac.	G	G	G	P	P
(2) 1/10th to 2 ac.	P	P	P	G	P
(3) Smaller than 1/10 ac.	P	P	P	P	G
c. Potential for conserving or improving plant species diversity in a stand	G	G	G	G	M <u>2/</u>
<u>Genetics</u>					
a. Resistance to inbreeding effects	G	G,M	G,M	G	P
b. Resistance to degradation by "high-grading"	G	G	M	G	M
c. Potential for conserving genes in a forest <u>3/</u>	G	G	G	G	G
<u>Productivity</u> (potential for producing biomass)	G	G	G	G	G

1/ Exclusive of roads and natural openings such as meadows or rock outcrops.

2/ Assumes no major fires: otherwise "Poor."

3/ Assumes all harvested species are planted successfully, or will regenerate naturally: otherwise "Poor."

Table G.2 - Ratings of the Major Silvicultural Systems by Key Managerial Attributes

G is Good, Excellent, or High

M is Moderate

P is Poor

MANAGERIAL ATTRIBUTE	Clear Cutting	Shelter- Wood	Seed- Tree	Group Selection	Single-Tree Selection
<u>Overall Public Acceptance</u>	P	M	M	M	G
<u>Natural Appearance</u>	P	M	M	M	G
<u>Soil Protection in Stands</u>					
Soil stability where soils have high erosion potentials	P	M	M	P	G
<u>Scientific Knowledge Base and Management Experience</u>	G	M	M	M	M
<u>Wood Production</u>					
a. Cost efficiency of treatments:					
(1) General (based on size)	G	G	G	P	P
(2) Regeneration	M	M	M	M	M
(3) Feasibility of aerial application of herbicides	G	G	G	P	P
(4) Harvesting	G	M	M	M	P
b. Potential for regu- lating the forest, while maintaining harvest levels	G	M	G	P	P
c. Administrative effi- ciency (planning, contracting, and record keeping)	G	M	M	P	P
d. Need for control of competing vegetation	G	G	G	G	G

Table G.2 - Ratings of the Major Silvicultural Systems by Key Managerial Attributes (continued)

G is Good, Excellent, or High  
M is Moderate  
P is Poor

MANAGERIAL ATTRIBUTE	Clear Cutting	Shelter- Wood	Seed- Tree	Group Selection	Single-Tree Selection
<u>Wood Production</u> (continued)					
e. Potential for retaining vigor and value of residual trees <u>1/</u>	G	G	G	M	M
f. Potential for genetic improvement of trees by planting	G	G	G	M	M
<u>Controlling Wildfires in a Forest</u>					
a. Potential for controlling major wildfires	G	G	G	G <u>2/</u>	P <u>3/</u>
b. Potential for using controlled fires to manage fuels	G	G	G	M <u>2/</u>	P <u>3/</u>
<u>Risk of Significant Pest Damage</u>					
Potential for controlling damage from dwarf mistletoes and certain tree root diseases	G	G	G	G <u>2/</u>	P
<u>Livestock Production Potential in a Forest</u>	G	G	G	M <u>2/</u>	P
<u>Streamside Mangement Zones</u>					
Potential for protecting fish habitat	P	G	P	G	G

1/ Exclusive of roads and natural openings such as meadows or rock outcrops.

2/ Assumes all harvested species are planted successfully, or will regenerate naturally; otherwise "Poor."

3/ Assumes no major fires; otherwise "Poor."

Table G.2 - Ratings of the Major Silvicultural Systems by Key Managerial Attributes (continued)

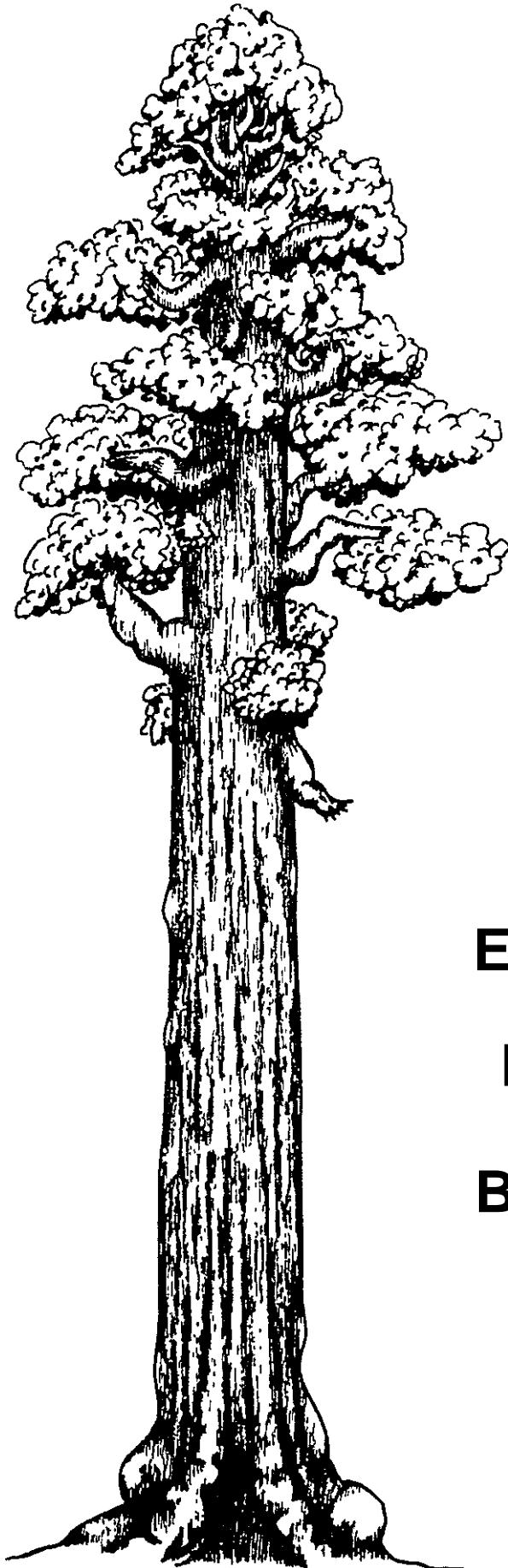
G is Good, Excellent, or High  
M is Moderate  
P is Poor

MANAGERIAL ATTRIBUTE	Clear Cutting	Shelter- Wood	Seed- Tree	Group Selection	Single-Tree Selection
<u>Wildlife Habitat in a Forest</u>					
a. Potential for deer, rabbits, and quail	G	G	G	G	P <u>1/</u>
b. Potential for spotted owls and tree squirrels	P	P	P	M	M
c. Potential for soaring hawks and eagles	G	M	G	M <u>2/</u>	P <u>3/</u>

1/ Assumes gentle slopes; otherwise "Moderate" but "Poor" for the Group and Single-tree selection systems.

2/ Assumes openings of about 1-2 acres; "Poor" if smaller.

3/ Assumes highly productive land; otherwise "Moderate" or "Good."



**Appendix H**  
**EVALUATION of**  
**PWISSELMANN**  
**BOTAN'IGAL AREA**



## APPENDIX H

### EVALUATION OF ERNEST C. TWISSELMANN BOTANICAL AREA

#### I. INTRODUCTION

With the death in 1972 of Ernest C. Twisselmann, amateur botanist of Kern County and the Kern Plateau, several botanists and interested conservationists approached the Cannell Meadow Ranger District for establishment of a "botanical reserve" in his honor. Evaluation of the proposed reserve was initiated by the District as to choice of location and choice of classification for this area.

Based on Twisselmann's article A Botanical Scanning of the Kern Plateau 1971, four areas of special botanical interest occurring in this region of the southern Sierra Nevada were considered. The arkosic gravels bordering Ramshaw and Templeton Meadows are within the Golden Trout Wilderness, Inyo National Forest. The metamorphic ridgetop of Bald Mountain is the location of an active lookout for fire detection with a road to the tower, and of a proposed nature trail. Big Meadows is presently in private ownership, and therefore, is not feasible. The final area, Sirretta Peak, is adjacent to the Dome Land Wilderness.

From the above information, the best choice of location presently available on the Kern Plateau that has significant botanical interest is Sirretta Peak. In addition, several botanists and conservation groups have proposed establishment of the reserve on Sirretta Peak. Not only is this an excellent botanical region, but there are no resource conflicts that require mitigation. Timber in the Sirretta Peak region is of marginal quantity and quality with difficult access (see Section II, Affected Environment of this appendix). Foregone commodity values are deemed insignificant when weighed against the protected botanical values. It was the decision of the Cannell Meadow District to proceed with classification of a "botanical reserve" honoring Ernest C. Twisselmann on Sirretta Peak.

The following will focus on the type of classification appropriate to the Sirretta Peak area:

##### A. Location and Size

The proposed Ernest C. Twisselmann Botanical Area is located on the Kern Plateau in the Cannell Meadow Ranger District of the Sequoia National Forest, Tulare County, California. It lies approximately one mile north of Big Meadow, adjoins the Dome Land Wilderness, and includes Sirretta Peak. The area consists of approximately 859 acres and includes parts of Sections 16, 17, 20, and 21, T23S, R34E, M.D.B.&M.

##### B. Purpose, Objective, Need, and Origin of the Proposal

The selected area is proposed to be classified as a Botanical Area to preserve a botanically significant natural ecological complex.

Botanical areas are established to protect significant botanical values and contain specimens **or** group exhibits of plants, plant groups, and plant communities which are significant because of form, color, occurrences, habitat, location, life history, arrangement, ecology, environment, rarity, and/or other features. Identified areas having these characteristics and being deemed an important example are to be classified under 36 CFR 294.1 concurrent with Regional Forester's approval of area management plans designed to protect the values involved.

The Forest Supervisor of the Sequoia National Forest has proposed this Botanical Area to meet the needs, purpose, and objectives stated above. In addition, naming it after Ernest C. Twisselmann will pay tribute to a person who contributed much to the botanical knowledge of Kern County and, **more** specifically, to the Kern Plateau.

C. Topography and Climate

The proposed Botanical Area is located among granite peaks and ridges rising sharply from mountain meadows. Elevations range from 8,500 feet in the Salmon Creek drainage to 9,978 feet on the peak just north of Sirretta **Peak**.

Temperatures range from an average low of 0-10<sup>o</sup> F in January and February to high temperatures of 75-85<sup>o</sup> F during July and August. The growing season ranges from two to four months depending on the elevation and variations in the weather patterns for a particular season.

Precipitation for the area ranges from 30-35 inches annually, mostly as snow during the winter with some occasional thundershowers during summer months.

D. Unique Features

Foxtail pine reaches the southern limit of its range within this proposed Botanical Area. The foxtail pine is an endemic species to California. In addition, this species is found in association with four other pines on one slope within the area. This association and other features are described further in the following section.

11. **AFFECTED ENVIRONMENT**

In this section the various resources inherent in the proposed Botanical Area are described.

A. Vegetation

Six plant associations are represented in the proposed botanical area that form a unique mosaic of vegetation in the southern Sierra Nevada. Due to the small geographical area available for this diverse assemblage, many associations are rarely distinct since several indicator species occur in two **or** more of the associations. These associations are: Foxtail Pine Forest, Subalpine/Mixed Conifer Forest,

Red Fir Forest, Rock Outcrop, Montane Chaparral, and Mountain Meadow-Streambank. Within the proposed Botanical Area, the Foxtail Pine Forest is the dominant association. The Subalpine/Mixed Conifer Forest along with the Red Fir Forest make up the remainder of the overstory vegetation. Throughout the entire region, both the Rock Outcrop and Montane Chaparral association are common.

Foxtail pine (*Pinus balfouriana*) is found throughout the proposed area with the exception of some of the lower elevations. This association includes several southern Sierran endemics such as foxtail buckwheat (*Eriogonum polypodium*) and sierra mountain parsley (*Oreonana clementis*). The granite penstemon (*Penstemon caesius*) is one of the dominant ground cover species.

Dominants in the Subalpine/Mixed Conifer Forest are western white pine (*Pinus monticola*) and limber Pine (*Pinus flexilis*). Within this association also occur Jeffrey pine (*Pinus jeffreyi*), lodgepole pine (*Pinus murrayana*), and scattered foxtail pines. Limber pine at this location makes this the most southern population in the Sierra Nevada.

The Red Fir association is primarily comprised of red fir (*Abies magnifica* var. *shastensis*). However, most of the other conifers mentioned above can be located within this association. One of the most common understory shrubs in the Red Fir association is bush chinquapin (*Castanopsis sempervirens*).

Within the Mountain Meadow-Streambank association, the greatest species diversity for the proposed botanical area is located. Numerous species of grasses, sedges (primarily *Carex* spp.) and rushes (*Juncus* spp.) form the foundation for this association. Several plants are restricted to this association. Noteworthy plants include: Labrador tea (*Ledum glandulosum* var. *californicum*), twinberry (*Lonicera involucrata*) and mountain ash (*Sorbus californica*).

The Rock Outcrop association is comprised of small woody plants like the prickly phlox (*Leptodactylon pungens* ssp. *pulchriflorum*), pride of the mountain (*Penstemon newberryi*), rabbitbrush (*Chrysothamnus* spp.), horsebrush (*Tetradymia canescens*), and creambush (*Holodiscus microphyllus*).

The Montane Chaparral association is comprised of woody shrubs that form fairly large "brushfields." The dominant species are: bush chinquapin (*Castanopsis sempervirens*), mountain white thorn (*Ceanothus cordulatus*), green-leaf manzanita (*Arctostaphylos patula*), Kern Plateau ceanothus (*Ceanothus pinetorum*), and squaw currant (*Ribes cereum*).

Except for the Mountain Meadow-Streambank, Montane Chaparral, and Rock Outcrop associations, the timbered associations are not readily distinct throughout the area as individual conifer species to assess timber volumes. For ease in computing timber volumes, a map was developed showing approximate plant association boundaries with a Subalpine, red fir, and subalpine/red fir designation. Table H.1 was developed from that map and a forest type map of the District.

Table H.1 - Vegetation by Plant Associations and Timber Volumes

Plant Association	Area		Gross Timber Volume M Board Feet	
	Acres	Percent	Per Acre	Total
Rock Outcrop	154	18	0	0
Montane Chaparral	23	3	0	0
Mountain Meadow- Streambank	24	3	12	288
Subalpine (primarily Foxtail Pine)	38	4	8	304
Red Fir	20	2	20	400
Sub Alpine/Red Fir (50%)	600	70	7	4200
	—	—	—	—
	859	100		5192

The approximately 5.2 million board feet of timber included within the proposed Botanical Area is included in the 1961 Timber Management Plan as part of the allowable cut calculation. However, most of the timber is located in relatively inaccessible locations on very rocky soils. Quality is low, and growing potential is low. Potential for successful regeneration by artificial means does not exist for most of the area (over 90 percent) and would be low for the remainder. Harvest would have to utilize helicopters because of the terrain and rock. To date, harvest has not been proposed within the area.

Foxtail pine is found throughout the proposed Botanical Area with the exception of some of the lower elevation areas. One grove particularly noteworthy because of the large size of the specimens is located in a basin just over East Sirretta Pass. The area was named "Foxtail Basin" by a botanist exploring the area with Ernest C. Twisselmann in 1971. Another fairly large grove of foxtail pine extends north up the ridge from Sirretta Peak to the east-west ridgeline. A few red fir are mixed in, but the grove is predominantly foxtail pine. The ridge that follows the Dome Land Wilderness boundary from the southern edge of the Botanical Area to the eastern edge is covered with foxtail pine. It has the greatest concentration of limber pine in the proposed area. It is near this southern edge of the Botanical Area that foxtail pine reaches the southern limit of its entire range.

A unique association of five native pines is located in the basin east of Sirretta Peak between the meadow and East Sirretta Pass. According to John T. Howell (Curator Emeritus, California Academy of Sciences, and expert on the Sierran flora), this is the only known location in the state where foxtail, limber, western white, Jeffrey, and lodgepole pines all occur on the same slope.

Foxtail pine is found in all age classes within the proposed area. A considerable amount of young reproduction was noted in a swale

southeast of the "five pine area." extending up the saddle to the ridge along the Dome Land Wilderness boundary. Mature trees in this area have been estimated to be 2,500 years old.

In addition to the unique association of conifers and the plant associations, several plants observed at the proposed botanical area constitute phytogeographical records.

A complete floristic inventory of the proposed Ernest C. Twisselmann Botanical Area has not been made. Seventy species were identified during field trips. The mountain meadows contain a variety of additional species, as yet unidentified.

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Table H.2 - Southern Limits Within the Sierra Nevada, Sirretta Peak

Foxtail pine (Pinus balfouriana)  
Limber pine (Pinus flexilis)  
Explorers Gentian (Gentiana calycosa)  
California mountain ash (Sorbus californica)  
Foxtail buckwheat (Eriogonum polypodium)  
Sierra mountain parsley (Oreonana clementis)  
Wooly butterweed (Senecio canus)  
Labrador tea (Ledum glandulosum var. californicum)  
Nuttall's sandwort (Arenaria nuttallii ssp. gracilis)  
Moss-Lupine (Lupinus breweri var. bryoides)  
Pygmy hulsea (Hulsea vestita ssp. pygmaea)

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Table H.3 - Tulare County Endemics on Sirretta Peak

Foxtail buckwheat (Eriogonum polypodium)  
Purple ivesia (Ivesia purpurascens)  
Kern Plateau catchfly (Silene aperta)

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## B. Wildlife and Fish

Several species of birds and mammals have been identified within the proposed area. Others, though not observed specifically, are known to inhabit surrounding areas and are suspected to make use of the proposed area also. There are no fisheries in the proposed area.

None of the listed species are found on the combined lists of rare and endangered species compiled by the California Department of Fish and Game and the USDA, Forest Service.

## C. Watershed

The headwaters of the north fork of Salmon Creek and a fork of Little Trout Creek are within the proposed Botanical Area. Salmon Creek flows south through Big Meadow and into the main fork of the Kern River.

Little Trout Creek flows northeast into Trout Creek which joins the South Fork of the Kern in Rockhouse Basin.

The two meadows mentioned in Section A, Vegetation, are located at the headwaters of these two drainages in the proposed Botanical Area.

#### D. Geology and Soils

The proposed area is composed of granite rock overlaid by a relatively thin layer of coarse, granitic soil. It is part of the Sierra Nevada, fault-block mountain range.

Soils are highly erodible and gully easily whenever water is concentrated. The steep slopes, 40-70 percent, increase the risk of erosion. Evidence of this can be observed on the trail through the area as discussed in Section F, Outdoor Recreation and Trails.

Capacity of the soil to grow trees or other vegetation varies from low in the rocky, undeveloped soils to moderate on some of the northern slopes in swales and saddles. The meadows consist of alluvial material from previous lake bottoms and are highly productive soils.

#### E. Livestock Grazing

The proposed Ernest C. Twisselmann Botanical Area is within the Cannell Meadow and A. Brown Livestock Grazing Allotments. There is little range value within the area except for the two meadows near the headwaters of Little Trout and Salmon Creek drainages. Use has been noted on the meadow in the Salmon Creek drainage within the Cannell Meadow Allotment. Cattle using the A. Brown Allotment are driven into the Little Trout Creek drainage over the Sirretta Peak Trail (34E12) and are able to wander throughout the area. Most use is concentrated in the small meadows where feed is most abundant. A drift fence on the ridge between the two allotments is ineffective and needs repair.

#### F. Outdoor Recreation and Trails

There are no recreation sites within the proposed area nor are any planned according to the Kern Plateau Recreation Plan developed in 1959 and District recreation personnel.

Trail 34E12, Sirretta Peak Trail, goes through the middle of the proposed area. It is designated for hiking and horseback travel only. The trail appears to get some use. Most of the trail within the area, south of East Sirretta Pass, is eroding. The trail itself has become a gully in many places. Concentrated water flowing from the trail has caused gullying below it. Much of the current condition resulted from a high intensity storm during September 1976, based on observations before and after the storm. It appears that erosion is increasing fairly rapidly.

This trail provides one of the access routes to Sirretta Peak, a limited hiking attraction. The trail register kept on the peak shows an average of 31 persons per year have hiked there and signed the

register between 1970 and 1976. Neither this trail nor the one west of the peak (33E32) actually go to the peak. Cross-country travel is used for the final one-quarter to one-half mile to the peak.

The trail is also used when moving cattle into Sirretta Meadows and Little Trout Creek Meadow from the road north of Big Meadow. The trail is designated for reconstruction to improve the existing condition and prevent future erosion.

The Tulare County endemic plant, foxtail buckwheat (Eriogonum polypodium), is located in colonies along the trail at East Sirretta Pass.

#### G. Visual and Cultural Resources

The proposed Ernest C. Twisselmann Botanical Area is part of the rolling plateau lands at the southern end of the Sierra Nevada range. The plateau consists of mountain meadows separated by granitic peaks and ridges. The proposed area is located in the ridge and peak portion of the basic land type, just north of Big Meadow (the largest meadow on the Kern Plateau within the Sequoia NF).

The proposed area has been identified as having a common variety from a visual standpoint, but vistas from peaks and ridges within the proposed area are dramatic. To the northeast, the rolling plateau reaches to Olancha Peak and ends to the north at the base of Cirque Peak. The area itself, however, consists of a light colored granitic soil, sparsely covered with subalpine type trees and shrubs, and occasionally broken up by a large rock outcrop. The small areas containing such outcrops could be considered as having a distinctive variety. However, the variety of the area, overall, is considered common.

There are no recorded archaeological sites within the proposed area according to the District atlas. Other evidence of past human use of the area has not been noted during reconnaissance to date.

#### H. Minerals, Rights-of-way, Land Status, Special Uses

Known mining claims do not exist within the proposed area. The closest one known is in Section 15, east of the proposed area near Snow Meadow on South Creek. This mining claim is a gold claim filed May 1976.

Economic mineral deposits have not been reported in the proposed area. There has been no mineral examination of the area. If the Botanical Area is established, a withdrawal will be investigated to preclude prospecting and mining.

Rights-of-way are not involved in the proposed area.

Private land does not occur within the proposed area. There are no withdrawals. Just east of the proposed boundary in Section 17, Power Project #85 was filed by Southern California Edison Company in 1921. There has been nothing done on that land to date; and there should be no effect of this proposal on that withdrawal.

Currently special-use permits are not on file within the proposed area.

I. Fire Control

The ridge systems running east and west through the Botanical Area and north and south between the proposed area and the Dome Land Wilderness are logical locations to establish firelines during suppression activities. The open, rocky terrain and scattered vegetation make it unnecessary to construct presuppression firebreaks along these ridges. They would only be used to combat large fires threatening the immediate area.

Special measures are not needed in the area except to identify the need for quick suppression of fires occurring there.

J. Insects and Disease

An inventory was not made to identify the extent of insects and disease occurring within the area. Casual observation revealed occasional incidents of both, but nothing unusually high. There will be no effect as a result of this proposal.

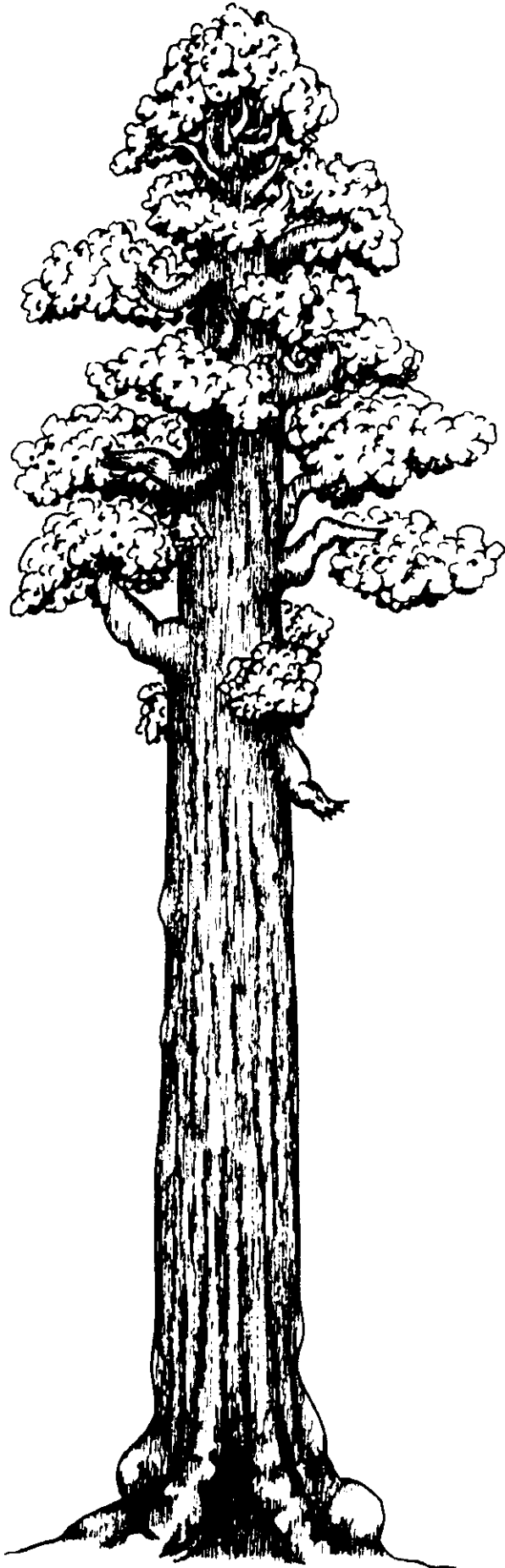
K. Transportation

Trails are discussed in Section F, Outdoor Recreation and Trails. Roads are not planned for this area.

L. Economics

The approximately five million board feet of timber inventoried on the 859 acres will be placed in a reserved status. The low overall growing capacity of the area and the relative inaccessibility of the timber except with an expensive helicopter system reduce the actual impact of this loss. In addition, only 1.5 million board feet over the entire proposed Botanical Area is of commercial quality. The actual effect will be a slight reduction in the commercial timber base from which the maximum allowable cut for the District is computed. The visible loss in annual timber outputs will be negligible. The artificial regeneration potential is low on a small portion where commercially harvestable species occur. Planting would be infeasible on the remaining area due to rock and poor soils. Also, a high-risk cut would reduce stocking to inadequate levels and regeneration could not be assured.





**Appendix I**  
**ACRONYMS**

## APPENDIX I

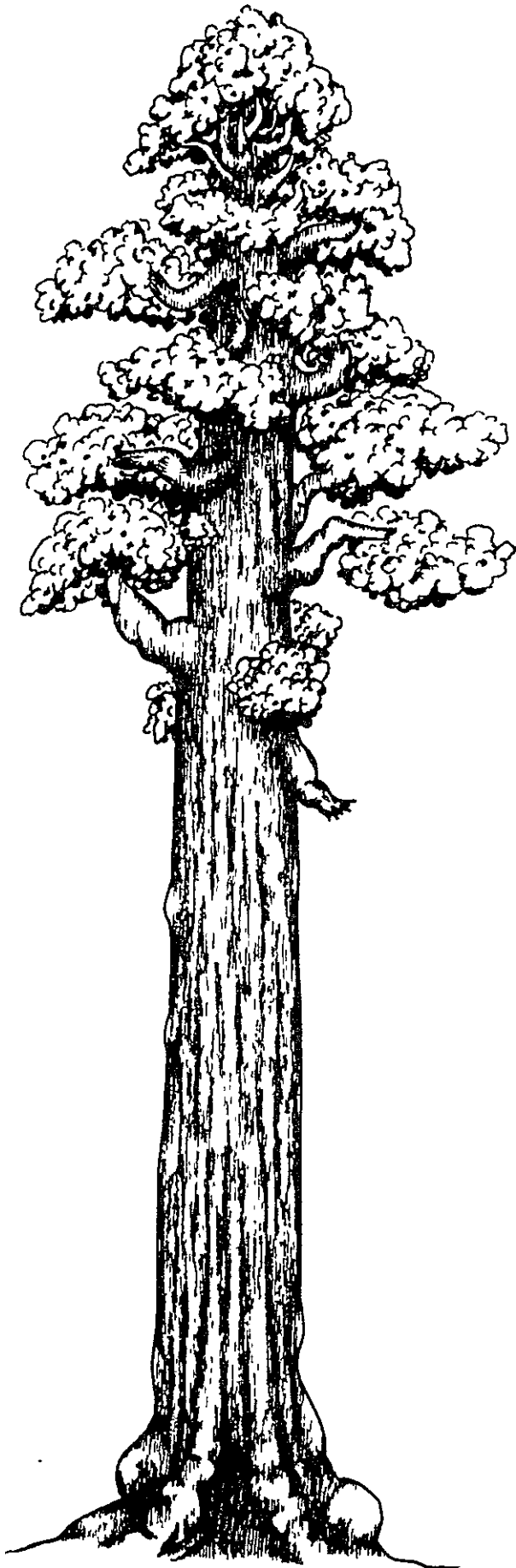
### ACRONYMS

3-FIA	<b>Three</b> Forest Interpretive Association (Sequoia, Sierra, Stanislaus)
4WD	Four-wheel Drive
AFB	Air Force Base
AC-FT	Acre Feet (of water)
ADM	Administration
ADT	Average Daily Traffic
AMN	Amenity Emphasis (Alternative)
AMS	Analysis of the Management Situation
ARR	Archaeological Reconnaissance Report
ASQ	Allowable Sale Quantity
AUM	Animal Unit Month
BG	Background
BLM	Bureau of Land Management
BMP	Best Management Practice
BSS	Base Sale Schedule
BTU	British Thermal Unit
CAS	Capable, Available and Suitable
CCC	California Conservation Corps
CDF	California Department of Forestry
CED	Current, Economic Dispersed (Alternative)
CEE	Constrained Economically Efficient (Alternative)
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic Foot per Second
CG	Campground
CMAI	Culmination of <del>Mean</del> Annual Increment
CRM	Cultural Resource Management
CUR	Current (Alternative)
CWE	Cumulative Watershed Effects
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EFFF	Emergency Fire Fighting Funds
E.O.	Executive Order
EPA	Environmental Protection Agency
ERA	Equivalent Roaded Acre
EVC	Existing Visual Condition
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FFP	Forest Fire Protection
FG	Foreground
FLPMA	Federal Land Policy Management Act
FPA	Further Planning Area
FS	Forest Service
FSH	Forest Service Handbook
FSM	Forest Service Manual
FVC	Future Visual Condition
FY	Fiscal Year
GSA	General Service Administration

<b>GTW</b>	Golden Trout Wilderness
<b>HC</b>	Habitat Capability
<b>HCM</b>	Habitat Capability Model
<b>HRP</b>	Human Resources Program
<b>HRU</b>	Human Resource Unit
<b>I&amp;C's</b>	Issues & Concerns
<b>ICO'S</b>	Issues, Concerns and Opportunities
<b>IDT</b>	Interdisciplinary Planning Team
<b>IPM</b>	Integrated Pest Management
<b>IS</b>	Interpretive Services
<b>IVQO</b>	Initial Visual Quality Objective
<b>JTPA</b>	Job Training and Partnership Act
<b>KV/K-V</b>	Knudsen-Vandenberg (funding for reforestation)
<b>KRCD</b>	Kings River Conservation District
<b>LBU</b>	Low Budget (Alternative)
<b>LKGT</b>	Little Kern Golden Trout
<b>IMP</b>	Land Management Planning
<b>LTSY</b>	Long Term Sustained Yield
<b>LTSYC</b>	Long-Term Sustained Yield Capacity
<b>M</b>	Modification (VQO class)
<b>M</b>	Thousand
<b>MAR</b>	Management Attainment Report
<b>MBF</b>	Thousand Board Feet (of timber)
<b>MBF</b>	Thousand Cubic Feet (of timber)
<b>MG</b>	Middleground
<b>MIR</b>	Minimum Implementation Requirement
<b>MIS</b>	Management Indicator Species
<b>MIZ</b>	Meadow Influence Zone
<b>MKT</b>	High Market Emphasis (Alternative)
<b>MM</b>	Maximum Modification (VQO class)
<b>MM</b>	Million
<b>MMB</b>	Million Board Feet (of timber)
<b>MMF</b>	Million Cubic Feet (of timber)
<b>MMR</b>	Minimum Management Requirement
<b>MT</b>	Management Team
<b>NDY</b>	Non-Declining Yield
<b>NEPA</b>	National Environmental Policy Act
<b>NF</b>	National Forest
<b>NFS</b>	National Forest System
<b>NFMA</b>	National Forest Management Act
<b>NOI</b>	Notice of Intent
<b>NP</b>	National Park
<b>NPB</b>	Net Public Benefit
<b>NR</b>	National Register of Historic Places
<b>NRI</b>	Nationwide Rivers Inventory
<b>NRT</b>	National Recreation Trail
<b>NST</b>	National Scenic Trail
<b>NVC</b>	Net Value Change
<b>OHV</b>	Off-highway Vehicle
<b>O1</b>	Office of Information
<b>OMB</b>	Office of Management and Budget
<b>ORV</b>	Off-road Vehicle
<b>OSHA</b>	Occupational Safety and Health Administration

P	Preservation (ROS Class)
PAOT	People-At-One-Time
PCT	Pacific Crest Trail
PD	Preferred Departure (Alternative)
PNV	Present Net Value
PR	Partial Retention (VQO class)
PRF	Preferred (Alternative)
PRO	High Production Emphasis (Alternative)
PSW	Pacific Southwest (Region of the Forest Service)
PT	Planning Team
R	Rural (ROS Class)
R	Retention (VQO class)
RARE	Roadless Areas Review and Evaluation
RD	Ranger District
RIM	Recreation Information Management
RN	Roaded Natural (ROS Class)
RNA	Research Natural Area
RO/R.O.	Regional Office
ROS	Recreation Opportunity Spectrum
RPA	Forest and Rangeland Renewable Resource Planning Act
RPA	1980 Resource Planning Act Program (Alternative)
RVD	Recreation Visitor Day
S&G's	Standards and Guidelines
SAOT	Skiers-at-One-Time
SCSEP	Senior Community Service Employment Program
SHPO/S.H.P.O.	State Historic Preservation Officer
SIA	Special Interest Areas
SMA	Special Management Area
SMZ	Streamside Management Zone
SO/S.O.	Supervisor's Office
SOHA	Spotted Owl Habitat Area
SOMA	Spotted Owl Management Area
SM	Semi-primitive Motorized (ROS Class)
SNM	Semi-Primitive Non-Motorized (ROS Class)
SYEP	Summer Youth Employment Program
T&E	Threatened and Endangered (Species)
TM	Timber Management
TPC	Timber Policy Constraint
TSI	Timber Stand Improvement
U	Urban (ROS Class)
USC	United States Code
USDA	United States Department of Agriculture
USDAFS	United States Department of Agriculture, Forest Service
USDI	United States Department of Interior
VAC	Visual Absorption Capability
VIS	Visitor Information Service
VQI	Visual Quality Index
VQO	Visual Quality Objective
WFHR	Wildlife and Fish Habitat Relationship
WFUD	Wildlife and Fish <b>User</b> Days
WV	Wildlife, Fish and Visual Emphasis (Alternative)
WHE	Fish and Wildlife Harvest Emphasis (Alternative)
WIN	Watershed Improvement Needs
WLI	Wilderness/Capital Investment Emphasis (Alternative)

WRIS	Wildland Resource Information System
WSA	Wilderness Study Area
WSR/W&SR	Wild and Scenic Rivers
YACC	Young Adult Conservation Corps
YCC	Youth Conservation Corps



**Appendix J**

**GLOSSARY**

A

access

See public access

equivalent

The index of acres life d by wildlife habitat improvement in n rast to act acres treated

acre-foot

A water measurement term, equal to the amount of water that would cover an area of one acre to a depth of one foot (325,851 gallons)

activity

A work process that is conducted to produce, enhance, or maintain an output or achieve an administrative and/or environmental quality objective

activity fuels

Fuels which have been directly generated or altered by management activity

activity outputs

The quantifiable goods or services resulting from any management actions taken on the Forest

administration-endorsed areas

Areas recommended by the President to Congress for classification or designation as National Wilderness, Wild and Scenic Rivers, or National Recreation Areas

administrative cost

Costs of required general administration which are prorated over fixed, variable, and investment costs

administratively-designated areas

Areas designated by the Secretary of Agriculture, the Chief of the Forest Service, or the Regional Forester because they merit special attention and management, such as scenic or geological areas

administrative unit

All the National Forest System lands for which one Forest Supervisor has responsibility

aerial logging

See logging systems

affected environment

The natural and physical environment and the relationship of people to that environment that will or may be changed by actions proposed

age class

One of the intervals, usually 10 to 20 years, into which the age range of vegetation is divided for classification or use

agricultural base

Economy in which the basic industry of a community is agriculture

air quality related values

Those attributes of Mandatory Class I areas important to the functioning of the area for the purposes for which they were established and preserved and which can be affected by air quality. May include visibility, ecologic, historic, cultural, or other values

airshed

A region with common resources and problems of air pollution. It may coincide with a watershed or be a part of a large urban agglomeration

allocation

The assignment of sets of management practices to particular land areas to achieve the goals and objectives of the alternative

allocation model

See resource allocation model

allotment

See range allotment

allowable sale quantity (ASQ)

The quantity of timber that may be sold from the area of land covered by the Forest Plan for a time period specified by the Plan. This quantity is usually expressed as an annual basis as the average annual allowable sale quantity (36 CFR 219.3(a) NFMA Regulations)

alternative

In Forest planning, a given combination of resource uses and a mix of management practices that achieve a desired management direction, goal, or emphasis

amenity (amenity value)

Typically used in land use management planning to describe those resource values for which market values (or proxy values) are not established. See also amenity market

American Indian Religious Freedom Act of 1978

An Act by Congress that establishes as U.S. policy the protection and preservation of the inherent right of American Indians to believe, express, and exercise their traditional religions. The Act directs agencies to consult with native traditional leaders in order to determine the potential effect of Agency activities upon American Indians' religious and cultural rights and practices

AMS

See Analysis of the Management Situation

analysis areas

A aggregation of like capability areas with sufficiently similar physical, biological, and administrative conditions such that they would probably respond in a like manner to management activities. See also capability areas

analysis of the management situation (AMS)

A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services

animal unit month (AUM)

The amount of forage required to support one mature (1,000 pound) cow or equivalent animal for one month, based on an average daily forage consumption of two pounds of dry forage per day

annual Forest program

The summary of aggregation of all projects that make up an integrated (multi-functional) course of action for a given level of funding of a National Forest that is consistent with the Forest Plan

apparent naturalness

The degree to which each roadless area reflects levels of environmental modification

appropriated costs

The sum of operational and capital investment costs

Archaeological Resources Protection Act of 1979

An Act by Congress that establishes protection for archaeological resources to prevent loss and destruction due to uncontrolled excavation and pillaging. Establishes permit procedures to permit excavation or removal of archaeological resources (and associated activities) located on public or Indian lands. Defines excavation, removal, damage, or other alterations or defacing of archaeological resources as a "prohibited act" and provides for criminal and civil penalties. Provides monetary rewards to individuals furnishing information leading to a civil violation or conviction of a criminal violation

area of influence

A delineated geographic area within which the present or proposed actions of a forest unit exert an important influence or resource and wildlife

aspect

The compass direction that the slope of a land surface faces

ASQ

See allowable sale quantity

assigned value

A monetary value that represents the price consumers would be willing to pay for Forest outputs, whether or not such prices are actually paid to the Federal Government by consumers. In Forest planning the term assigned values refers to both market and nonmarket outputs because it is National policy to provide most Forest outputs at either no charge to consumers or at a price less than the willingness to pay price

AUM

See animal unit month

available, capable, and suitable  
See available lands, capable lands, and suitable lands

available lands  
Those portions of the Forest not administratively excluded from use for timber production

average annual cut  
The volume of timber harvested in a decade, divided by 10, used as a basis for comparison of alternatives, not as a measure of nondeclining yield

average daily traffic (ADT)  
The average 24-hour volume being total volume during a stated period divided by the number of days stated, the period is one Year

B

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backcountry  
An undeveloped area where the management objectives stress dispersed off-road recreation (e.g., hiking, trail bike riding, hunting, fishing), generally describes semi-primitive motorized and semi-primitive nonmotorized recreation opportunities

background (BG)  
The view beginning 3-5 miles from the observer and as far into the distance as the eye can detect the presence of objects

background level  
The measurement of an environmental quality or characteristic in a natural or relatively unaffected state, such as water quality, used as a basis for comparison after management activities or large climatic events.

backlog  
Work done by the Forest Service (such as reforestation, timber stand improvement, slash disposal, or land line location) which needs to be completed

basal area  
The cross-sectional area of a stand of trees measured at 4.5 feet above the ground, expressed in square feet

base area  
The public or private land used to support a recreation operation that depends on use of the National Forest System land for its viability. Usually used to describe the base facility of a ski area

base sale schedule (BSS)  
The timber sale schedule in which the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade of the planning period. The planned sale and harvest for any decade is not greater than long-term sustained yield capacity

base timber harvest schedule  
See base sale schedule

benchmark  
An analysis of the supply potential of a particular resource, or of a set of resources subject to specific management objectives or constraints. Benchmarks define the limits within which alternatives can be formulated

benefit  
The total value of an output or other effect

benefit-cost analysis  
An analytical approach to making choices on the basis of receiving the greatest benefit for a given cost or producing the required level of benefits at the lowest cost. Also referred to as cost effectiveness analysis when the benefits cannot be quantified in terms of dollars

benefit-cost ratio  
Measure of economic efficiency, computed by dividing total benefits by total costs. Usually both benefits and costs are discounted to present. See also discounting

Management Practices (BMP)  
Management activities which are designed to maintain water and soil on the land by preventative and corrective measures

biological control  
A method to control insect populations or tree diseases through the use of applied biology

biological potential  
The maximum possible output of a given resource limited only by its inherent physical and biological characteristics

biomass  
The total mass (e.g., weight, Volume) of living matter in a biological system

BLM  
Bureau of Land Management

BMP  
See Best Management Practices

board foot  
A unit of timber measurement equalling the amount of wood contained in an unfinished board 1 inch thick, 12 inches long, and 12 inches wide

broadcast burning  
A technique of using Prescribed fire to burn all flammable material within pre-determined boundaries - as opposed to burning individual piles or isolated patches of fuels

boating  
See floating

browse  
Leaf and twig growth of shrubs, woody vines, and trees available for animal consumption, act of consuming browse

BSS  
See base sale schedule

burning prescription  
Written direction stipulating fire environment conditions, techniques, and administrative constraints necessary to achieve specified resource management objectives by use of fire on a given area of land

C

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canopy  
The more or less continuous cover of branches and foliage formed collectively by the crown of adjacent trees and other woody growth

capability  
The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils, and geology, as well as the application of management practices, such as silviculture or protection from fire, insects, and disease

capability areas  
The smallest unit of land or water used in forest planning. They are discrete and recognizable units classified primarily according to physical, administrative, and biological factors. All land within a capability area is homogeneous in ability to produce resource outputs and in production limitations

capable lands  
Those portions of the Forest that have an inherent ability to support trees for timber harvest and produce at least 20 cubic feet per acre per year of wood fiber. CMAI

total costs : costs  
Those Costs associated with construction of improvements including road reforestation, camp, and land line location etc

carrying capacity  
The number of organisms of a given species and quality that can survive in, without causing deterioration of, a given ecosystem through the least favorable environmental conditions that occur within a stated interval of time

CEQ  
See Council on Environmental Quality

CFR  
See Code of Federal Regulations

cfs  
See cubic foot per second

characteristic landscape  
The naturally appearing landscape being viewed



chemical control  
A method to control insect populations or tree diseases through the use of applied chemicals.

**Class I Area**  
Any area which is designated for the most stringent degree of protection from future degradation of air quality. The Clean Air Act designates as mandatory Class I areas each national park over 6,000 acres and each national wilderness area over 5,000 acres

**Clean Air Act**  
An act by Congress for air pollution prevention and control.  
To protect and enhance public health and welfare and the productive capacity of its population  
2 To initiate and accelerate a national research and development program to achieve the prevention and control of air pollution  
3 To provide technical and financial assistance to state and local governments in connection with the development and execution of their air pollution prevention and control programs  
4 To encourage and assist the development and operation of regional air pollution control programs

**Clearcut**  
A silvicultural treatment that removes in a single cut the entire merchantable stand of trees, with the exception of trees reserved for special uses.

**clearcutting**  
Harvesting of all merchantable trees in one cut or area for the purpose of creating a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped and recorded as a separate age class in planning

**clearing**  
An opening of any size created by management activities or natural occurrences within any vegetative type

**climax**  
The culminating stage in plant succession for a given site where the vegetation has reached a highly stable condition

**closed canopy**  
A condition that exists when the crowns of the trees in a stand cover 100 percent of the potential open space

**closure**  
The administrative order restricting either location, timing, or type of activity in a specific area

**CMAI**  
See culmination of mean annual increment

**codominant**  
One main crown class of trees with their tops in the upper canopy but lower than the dominant trees. See also dominant

**Code-a-site**  
A method of recording and evaluating dispersed recreation camping sites

**Code of Federal Regulations (CFR)**  
The listing of various regulations pertaining to management and administration of the National Forest

**coliform bacteria**  
Any of several bacteria found in the large intestine of humans and animals, the presence of which indicates fecal pollution

**collector road**  
See road

**commercial species**  
Tree species suitable for industrial wood products

**commercial thinning**  
Cutting timber by means of sales for products (poles, posts, pulpwood, etc.) in immature stands to improve the quality and growth of the remaining stand

**commercial timber sales**  
The selling of timber from National Forest lands or the economic gain of a party removing and marketing the trees

**commodity**  
A resource output with commercial value

**common variety minerals**  
See minerals, common variety

**communications transmitter sites**  
See electronic sites

**community lifestyles**  
The ways in which individuals conduct their everyday routines; how the "way they live" is associated with a National Forest

**community stability**  
The capacity of a community to absorb and/or cope with change without major hardships to groups or institutions within the community

**compartment**  
A division of forest land defined by natural and human-made features usually between 3,000 and 15,000 acres in size, used to facilitate timber planning.

**concern**  
See management concern

**condition class, facility**  
See facility condition class

**confinement**  
To restrict the fire within determined boundaries established either prior to the fire, during the fire, or in a post-fire situation analysis. The normal tactic is surveillance only

**conifer**  
A group of cone-bearing trees, mostly evergreen, such as pines, firs, incense-cedar, giant sequoia, etc.

**constraints**  
Limitations, actions which cannot be taken or which must be taken

**consumer surplus**  
The difference between the actual amount paid by consumers for a good or service and the amount each individual would be willing to pay

**consumptive use**  
1) A use of resources that reduces the supply, such as logging and mining  
2) water right term: water diverted and not returned to the waterbody from which it was taken.  
See also nonconsumptive use

**containment**  
To surround a fire, and any spot fires therefrom, with control lines, as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions. The normal tactic is indirect attack and burn to human-made or natural barrier with little or no mop-up

**control**  
To complete the control line around a fire, any spot fires therefrom, and any interior islands to be saved. burn any unburned area adjacent to the fire side of the control line, and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under foreseeable conditions. The normal tactic is direct attack on the fire, if possible, and mop-up

**cord**  
A stack of cut wood four feet by four feet in vertical cross section and eight feet long, contains 128 stacked cubic feet. Two cords roughly equal one MBF

**core area**  
See spotted owl core area

**corridor**  
A narrow strip of land where existing or planned transportation and utility facilities are or will be located

**cost**  
The price paid or what is given up in order to acquire, produce, accomplish, or maintain anything. See administrative cost

**cost-effective**  
Achieving a specified level of outputs under given conditions for the least cost. See benefit-cost ratio

cost efficiency

The usefulness of specified inputs (costs) to produce specified outputs (benefits). In measuring cost efficiency, some outputs (such as environmental, economic or social impacts) are not assigned monetary values, but are achieved at specified levels in the least cost manner. Cost efficiency is usually measured using percent net value; though use of benefit-cost ratios and rates-of-return may sometimes be appropriate.

Council on Environmental Quality

An advisor council to the President established by the National Environmental Policy Act of 1969. It reviews federal programs for their effect on the environment, and advises the President on environmental matters.

cover

Vegetation used by wildlife for protection from predators and weather conditions, or in which to reproduce.

critical habitat

Key land areas used by wildlife for forage and reproduction.

crown

The upper part of a tree carrying the main branch system and foliage.

cubic foot

A unit of measure referring to wood volume. 1 foot x 1 foot x 1 foot.

cubic foot per second (cfs)

Unit measure of streamflow or discharge, equivalent to 449 gallons per minute or about two acre-feet per day.

culmination of mean annual increment (CMAI)

The point where the average annual growth of a stand of timber no longer increases.

cultural practices

Various treatments to vegetative stands such as release, thinning, etc.

cultural resources

Cultural resources are the tangible and intangible aspects of cultural systems, living and dead, that are valued by a given culture or contain information about the culture. Cultural resources include, but are not limited to, sites, structures, buildings, districts, and objects associated with or representative of people, cultures, and human activities and events.

Cumulative watershed effects (CWE's)

The additive or synergistic effects of land management activities to water quality and beneficial uses as transmitted to the fluvial system. Equivalent: Roaded Acres. Measured by measure of CWE's by defining a road by which a wide range of impacts can be measured against to account for varying level of soil compaction and increase in runoff.

current alternative

See no action alternative.

current management direction

See management direction.

cutting cycle

The planned, recurring lapse of time between successive cuttings of a crop or timber stand.

D

DBH

See diameter breast height.

decadence

Refers to decaying or declining growth of tree stands.

decision criteria

Essentially the rules or standards used to evaluate alternatives. They are measurements or indicators that are designed to assist a decision maker to identify a preferred choice from any array of possible alternatives.

decision space

The limits within which Forest planning alternatives occur. The outer limits are defined by benchmarks in Forest planning.

decking areas

Sites that are intermediate between stump and landing used to collect logs.

DEIS

See draft environmental impact statement.

demand

The quantity of a good or service called for given a price or other combination of factors.

and analysis

A study of the factors affecting the quantity and price of a good or service that could be used or purchased by consumers if available.

demand schedule

The relationship between price and quantity demanded. The demand schedule expresses how much of the good or service would be bought or consumed at various prices at a particular point in time.

departure

A level of timber production that allows the planned sale and harvest to drop in a future decade (as opposed to non-declining yield). See also non-declining yield.

dependent communities

Communities whose social, economic, or political life would become discernably different in important respects if outputs from the National Forest were significantly altered.

dependent species

A wildlife species that is dependent on a specific habitat element (e.g., snags, a vegetation type). The habitat element is deemed essential for the species to occur regularly or to reproduce.

designated areas

See administratively-designated areas.

design capacity

The maximum theoretical amount of use a developed facility was constructed to accommodate.

design standard

A set of descriptive terms which summarize the essential characteristics of a facility's design. It may include the number of lanes, width of traveled way, average design speed, ditch, shoulder, dike, or pavement structure.

dominate stand

A group of trees of similar age and species composition that clearly stands out as a group from surrounding stands.

developed recreation

Use of a developed recreation site.

developed recreation site

Relatively small, distinctly defined area where facilities are provided for concentrated public use (e.g., campgrounds, picnic areas, swimming areas, etc.).

development scale

A predetermined scale for recreation site development which guides the degree of site modification and kind of facilities to be installed.

diameter breast height (DBH)

The diameter of a standing tree at a point 4 feet 6 inches from ground level.

direction

See management direction.

directive system

Is the basis for management and control of all internal program and administrative direction. This system is made up of two basic components. They are: 1) Forest Service Manual (FSM), and 2) Forest Service Handbooks (FSH).

direct outputs

Resource outputs that are caused by an action and occur at the same time and place.

discharge

Amount of flow at a given point in a stream, usually expressed in cubic feet per second.

discount rate

The interest rate which is used to reduce costs and benefits occurring in the future to their value in the present. The higher the discount rate, the lower the present value of future benefits and costs. See discounting and present value.

discounted benefit  
The present value of future benefits

discounted cost  
The present value of future Costs

discounting  
An adjustment made to costs and benefits to compensate for the fact that dollars received or spent in the future have a lower value today than dollars in the present. For example, it would be preferable to receive \$100 this year rather than in one year from now because it could be invested at one percent simple interest and be worth \$104 in one year. Thus, given the choice between receiving benefits worth \$100 today or benefits worth \$100 one year from today, one would choose to receive it today. Discounting reduces future costs and benefits to reflect that fact and enables comparisons to be made of benefits and costs occurring at different points in time

dispersed recreation  
Outdoor recreation which occurs outside of planned and maintained recreational facilities (e.g., scenic driving, hunting, backpacking)

distance zone  
One of three categories used in the Visual Management System to divide a view into near and far components. The three categories are:  
1) foreground (FG) (0 - 1/4 to 1/2 mile);  
2) middleground (MG) (FG = 3 to 5 miles);  
3) background (BG) (MG = infinity)

District Ranger  
The official responsible for administering a subdivision of an administrative unit. See Ranger District

diversity  
The distribution and abundance of different plant and animal communities and species within an area

dominant  
One main crown class of trees with their tops in the uppermost layers of the canopy

dominant land type  
An area of land classified on the basis of geomorphic principles. An understanding of geologic processes (as reflected in land surface form and features), individual kinds of soil, and the factors which determine the behavior of ecosystems (i.e., climate, vegetation, relief, parent materials, and time) is used as the basis of this classification system

draft environmental impact statement  
The statement of environmental effects required for major Federal actions by the National Policy Act of 1969, released to other agencies for comment

E

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EA  
See Environmental Assessment

early forest succession  
The plant and animal life that develops immediately following the destruction of the forest on an area

ecology  
The study of plants and animals in relation to their environment

economic cost  
Total fixed and variable costs for inputs, including costs incurred by other public and private parties, opportunity costs, and cost savings

economic efficiency  
The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations. Economic efficiency is usually measured using present net value, though use of benefit-cost ratios and rates-of-return may sometimes be appropriate

economic growth  
Increased economic activity in real terms over time

ecosystem  
Any complex of living organisms interacting with their environment

ecotone  
The transitional zone between two overlapping habitats or plant communities.

edge  
The boundary between two elements of the environment (e.g., field/woodland)

edge contrast  
The degree of similarity or difference between two or more adjacent elements of the environment

EFFALT  
The Effective Alteration (EFFALT) approach is a means of quantifying the degree of visibly detectable alteration of the landscape caused by even-aged timber management. The EFFALT index is a means to compare the overall visual impact of each alternative

effects  
Results expected to be achieved or actually achieved related to physical, biological, and social (cultural and economic) factors resulting from the achievement of outputs. Examples of effects are tons of sediment, pounds of forage, person-years of employment, income, etc. There are direct effects, indirect effects, and cumulative effects

efficiency, cost  
See cost efficiency

efficiency, economic  
See economic efficiency

EIC  
See Ending Inventory Constraint

EIS  
See Environmental Impact Statement

electronic sites  
Areas designated for the operation of equipment which transmits and receives radio signals, excluding television aerials and antennas

encumbrance  
See title claim

endangered species  
A species of native fish, wildlife, or plants found by the Secretary of the Interior to be threatened with extinction because its habitat is threatened with destruction, drastic modification or severe curtailment, or because of over-exploitation, disease, predation, or other factors and its survival requires assistance. Protection is established by the Endangered Species Act. See also threatened species

endemic species  
A plant or animal that is restricted to a relatively small geographic area or to an unusual or rare type of habitat

ending inventory constraint (EIC)  
A constraint to ensure that the total timber volume remaining at the end of the planning horizon will equal or exceed the volume that would occur in a managed forest

environmental analysis  
An analysis of alternative actions and their predictable short- and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions

environmental assessment (EA)  
A concise public document required by the regulations implementing the National Environmental Policy Act which briefly provides sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. This document is the report of the environmental analysis.

environmental effect  
Environmental effects describe the change, positive or negative, in the physical, biological, economic, and social state directly or indirectly resulting from one or more activities or outputs

environmental impact statement (EIS)  
A statement of the environmental effects which would be expected to result from alternative management actions

**Even-aged stream**  
A stream which flows only from storm runoff and receives no contribution to flow from ground water

**Equivalent loaded acre (ERA)**  
See cumulative watershed effects.

**Erosion**  
The detachment and movement of soil from the land surface by wind, water, or gravity

**Even-aged management**  
Management of forest stands that results in trees of essentially the same age growing together. Cutting methods which produce even-aged stands are clearcut, shelterwood, and seed tree

**Even-aged stand**  
A forest stand composed of trees having no or relatively small differences in age

**Even-flow**  
Maintaining a relatively constant supply of timber from decade to decade

**Existing visual condition (EVC)**  
The present state of visual alteration which is measured in degrees of deviation from the natural appearing landscape. It provides a baseline inventory from which to measure change. See visual condition

**Expanded suppression**  
The control or containment of wildfires at increased acreage within allowable fire intensity levels and fire control standards

**Extensive grazing**  
Season-long use of rangelands with distributed, salting, etc

**Extensive vs intensive management**  
Loose terms generally used to indicate a degree or level of management. For example intensive timber management refers to all practices or a set of practices necessary to emphasize timber production on land suitable for timber production consists of extensive timber management consists of practices necessary to manage timber on land and emphasizing other values

**Facility condition class**  
The rating system used in the Recreation Information Management System to classify the sites and areas

**Fee ownership of property that has no limitation, qualification, or condition affecting it and real estate under the system of property rights founded on English common law**  
Acquisition of fee ownership to a piece of property

**Fee site**  
A forest Service recreation area in which users must pay a fee

**FEIS**  
See environmental impact statement

**Final cut**  
Generally, removal of the last trees remaining in a stand, specifically, removal of the last seed bearing or shelter trees after regeneration is established under a shelterwood system

**Firebreak**  
See fuelbreak

**Fire hazard**  
The fuel in which a fire will ignite and burn

**Fire risk**  
The potential cause of a fire

**Firewood**  
See fuelwood

**Fisheries habitat**  
Streams, lakes, and reservoirs that support fishes

**Fixed cost**  
A cost committed for the planning period in forest planning, the total cost of the minimum level benchmark;

**Flooding**  
The use of river craft including inflatable boats, kayaks, canoes, rafts or other recognized types of craft does not include for play

**Floodplains**  
Lowland and relatively flat areas adjoining inland water, including as a minimum, that area subject to one percent or greater chance of flooding in any given year

**Forage**  
All browse and nonwoody plants used for grazing or harvested for feeding grazing animals

**Forest cover type**  
A classification of forest land referring to a group of timber stands of similar development and species composition. Examples include the mixed conifer and the true fir types.

**Forest development roads and trails**  
A forest road or trail under the jurisdiction of the Forest Service (Title 23 USC 101 as amended by the Surface Transportation Act of 1978)

**Forest highway (legal definition)**  
The term "forest highway" means a forest road under the jurisdiction of and maintained by a public authority and open to public travel (Title 23 USC 101 as amended by the Surface Transportation Act of 1978). This designation provides Congressional funding separate from ordinary use tax sources to insure adequate access and mobility between state primary highway system and the National Forests

**Forest land**  
Land at least 10 percent occupied by forest trees of any size, or formerly having had such tree cover and not currently developed for non-forest use. Or, land within the National Forest boundary

**Forest Officer**  
An employee exercising a specific and properly delegated authority

**Forest Plan**  
See National Forest Land and Resource Management Plan

**Forest Service Handbook (FSH)**  
The principal source for detailed instructions for performing specialized tasks. Handbooks completing the Forest Service Manual

**Forest Service Manual (FSM)**  
The principal source of continuing instructions for the conduct of Forest Service programs and activities and is the basic and ruling component of the directive system. Manual is also available to interested persons outside the Service as a source of information on basic operations in the Forest Service

**Forest succession**  
See early forest succession

**Forest Supervisor**  
The official responsible for administering the National Forest System lands in the Forest Service Administrative unit, which may consist of two or more National Forests, or all the Forests within a State who reports to the Regional Forester

**Forest planning**  
The total cost of the minimum level benchmark;

forest survey site classes  
A measure of the maximum capacity of an area to produce timber, measured in cubic feet per acre per year

Site Class	Max Cu Ft /Ac /Yr
1	225 +
2	165-224
3	120-164
4	85-119
5	50-84
6	20-49
7	less than 20

forest type  
A term referring to a group of timber stands of similar character, development, and species composition due to ecological factors  
Examples on the Forest are mixed conifer and true fir types

forest-wide standard  
A performance criterion indicating acceptable norms, specifications, or quality that actions must meet to maintain the minimum considerations for a particular resource. This type of standard applies to all areas of the Forest regardless of the other prescriptions applied

formation  
One or more plant communities dominated by one particular life form occurring in similar habitats (e.g., conifer forest)

FORPLAN  
A linear programming model used for developing and analyzing forest planning alternatives  
Also see linear programming and Appendix B

front country  
The area below the elevation of the conifer forests (e.g., blue oak savanna, mixed chaparral)

FSH  
See Forest Service Handbook

FSM  
See Forest Service Manual

fuel  
Any material that will carry and sustain a fast fire, primarily natural materials, both live and dead

fuelbreak  
Any natural or constructed barrier utilized to segregate, stop, and control the spread of fire or to provide a control line from which to work

fuel management  
The practice of planning and executing treatment or control of any vegetative material which adversely affects meeting fire management direction based upon resource management goals and objectives

fuels, activity  
See activity fuels

fuels, natural  
See natural fuels

fuel treatment  
The rearrangement or disposal of natural or activity fuels to reduce the fire hazard  
Fuels are defined as both living and dead vegetative materials consumable by fire

fuelwood  
Wood cut into short lengths for burning. It is generally refuse material and may be round, split, or sawn

full service management  
Management of developed recreation facilities to provide optimum maintenance

future scenarios  
A word picture of a fixed sequence of future events in a defined environment

future visual condition (FVC)  
See visual condition

G

game species  
Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunting, trapping, and fishing under State or Federal laws, codes, and regulations

goal  
As used in the Forest Service, a concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad, general terms, and may not have a specific date for completion

goods and services  
The various outputs produced by forest and rangeland renewable resources, the tangible and intangible values of which are expressed in market and nonmarket terms

granitic rock  
This is a general term which includes several rock types with differing combinations of quartz, micas, and feldspars. Usually has a salt-and-pepper look

grass/forb  
An early forest successional stage where grasses and forbs are the dominant vegetation  
See also forb

grazing  
Consumption of herbage or artificial pasture forage by animals

grazing allotment  
See range allotment

grazing permittee  
An individual who has been granted written permission (a grazing permit) to graze livestock for a specific period on a range allotment in the National Forest

groundwater  
Water within the earth that supplies wells and springs. Specifically, water in the zone of saturation where all openings in soils and rocks are filled

group selection  
The cutting method in which trees are removed in small groups of less than two acres in size

growing season  
The months of the year a species of vegetation grows

growing stock level  
The number or volume of trees growing in a forest or in a specified part of it

guideline  
An indication or outline of policy or conduct that is not a mandatory requirement (as opposed to a standard, which is mandatory)  
See also standard

H

habitat  
The sum of environmental conditions of a specific place that is occupied by an organism, a population, or a community

habitat capability models  
A model developed to describe the capability of specific habitat to support wildlife species

habitat diversity  
See wildlife habitat diversity

habitat diversity index  
A measure of wildlife habitat diversity improvement expressed as a percentage of optimum size class distribution that is achieved over time

habitat quality crit  
A wildlife habitat model developed to describe conditions necessary to maintain wildlife populations at selected levels

habitat quality criteria for riparian habitat  
A specific habitat quality criteria for riparian areas describing habitat conditions necessary to support riparian dependent species at various selected population levels

hard snag  
A dead tree that has not started to rot  
See snag and soft snag

hardwoods  
A conventional term applied to the wood of a broadleaf tree (e.g., maple, willow, oak, sycamore, alder)  
See softwoods

harvest species  
Species of animals or fish that are hunted or fished for human consumption.

harvest system  
See logging systems

helicopter logging  
See logging systems

heliport  
An area used for landing and takeoff of helicopters which is accessible by road or boat. It generally has supporting facilities.

helispot  
Any designated landing spot for helicopters. It is distinguished from a heliport by lack of supporting facilities.

herbicide  
A substance used to inhibit or destroy plant growth.

hiding cover  
Trees of sufficient size and density to conceal wildlife from view at 300 feet.

high-lead  
See logging systems

home range  
An area in which an individual animal spends all or most of its time.

horizontal diversity  
The distribution and abundance of different plant and animal communities across a specified area of land.

Human Resource Unit (HRU)  
A human geographic unit characterized by particular patterns of cultural lifestyles, economic conditions, institutional arrangements, and topography.

I  
ICO's  
See issues, concerns, and opportunities

IDT  
See interdisciplinary team.

implementation  
Those activities necessary to respond to the approved land and resource management plan.

incidental grazing  
Grazing use that occurs on lands not managed for the production of domestic livestock. May occur as a result of natural herd movement, trailing of livestock, or the use of domestic livestock in recreation.

Indeterminate and  
A group of trees of similar age and species composition has been identified by other tree species to the point where their origin group has lost its identity as a discrete unit.

indicator species  
A species or group of species whose habitat needs represent the habitat of a larger set of species.

indirect outputs  
Outputs that are the action but which are later in time or farther removed in distance but still are probably foreseeable.

induced outputs  
Outputs in the private sector induced by the direct outputs produced on the Forest.

inherent edge  
Naturally occurring breaks between two or more elements of the environment.

inholdings  
Lands within the proclaimed boundaries of the Forest that are owned by some agency, organization, or individual besides the Forest Service.

initial attack  
The initial suppression action taken by the first arriving individual or module to control a wildfire.

Initial Visual Quality Objectives (IVQO)  
Visual objectives for a definitive landscape area that is developed by using the Forest Service's Visual Management System.

in-migration  
The movement of human population into an area.

input/output analysis  
A quantitative study of the interdependence of a group of activities based on the relationship between inputs and outputs of the activities. The basic tool of analysis is a square input/output table, interaction model, for a given period that shows simultaneously for each activity the value of inputs and outputs, as well as the value of transactions within each activity itself. It has especially been applied to the economy and the industries into which the economy can be divided.

inputs  
Land, labor, and capital required to produce outputs. Inputs are generally represented by activity costs.

institutional analysis  
An examination of the institutions within the area of influence and their expected responses to Forest Service actions. See also area of influence.

instream flow  
The amount of water passing a given point at a given time.

integrated land management plan  
A forest plan which considers all lands and all resources of the National Forest, in contrast to just part of the forest's lands or just one of its elements.

integrated pest management (IPM)  
A process wherein pests (insects, animals, disease, and competing vegetation) and their impacts are managed through a combination of resource management considerations in planning. Techniques which may be used are biological, chemical, manual, mechanical, or prescribed fire.

intensive grazing  
Grazing management that controls distribution of cattle and duration of use on the range, usually by fences, so parts of the range are rested during the growing season.

intensive timber management  
Timber management practices carried out to increase timber yield per acre.

interdisciplinary team (IDT)  
A group of individuals with different training who solve a problem or perform a task through frequent interaction so that disciplines can combine to provide new solutions.

intermediate harvest  
Any removal of trees from a stand between the time of its formation and the regeneration cut. Most commonly used intermediate cuttings are release, thinning, improvement, and salvage.

intermittent stream  
A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas.

interpretive services (IS)  
Activities and displays that interpret the natural and social history of the National Forest environment for the visiting public and inform them about national Forest goals, programs, and services.

inventory data and information collection  
The process of obtaining, storing, and using current inventory data appropriate for planning and managing the Forest.

inversion  
A warmer air layer overlapping a colder one because of a rapid heat loss by radiation from the ground at night. In the San Joaquin Valley this inversion produces the "tule-fogs" during the winter months. In urban areas, it traps a significant concentration of pollutants especially during the summer months.

irretrievable commitments  
Applies to losses of production or use of renewable natural resources for a period of time. For example, timber production from an area is irretrievably lost during the time an area is a wilderness study area. If the use is changed, timber production can be resumed. The production lost is irretrievable, but the action is not irreversible.

irreversible commitments  
Decisions causing changes which cannot be reversed. Once used, the resource cannot be reinstated. nor can opportunities be recovered. Applies to nonrenewable resources such as minerals and Cultural resources

issue  
See public issue

issues, concerns and opportunities (ICO's)  
Refers to the public issues, management concerns, and opportunities identified in the Forest planning process

J

K

K-V funds  
Funds set aside from timber sale receipts to finance reforestation, wildlife habitat, and other improvements in the timber sale area

L

land allocation  
The assignment of a management emphasis to particular land areas with the purpose of achieving the goals and objectives of that alternative

Land and Water Conservation Act  
Provides funds for and authorizes Federal assistance to the states in planning, acquisition, and development of needed land and water areas and facilities, provides funds for the Federal acquisition and development of outdoor recreation resources

land exchange  
The conveyance of nonfederal land or interests to the United States in exchange for National Forest System land or interests in land

landform  
A natural landscape that exists as a result of wind, water, or geologic activity (e.g., a plain, plateau, basin, mountain, etc.)

landing  
Any place where round logs are assembled for further transport, commonly with a change of transport method

land line  
For Forest plan purposes, National Forest property boundaries

land line location  
To locate, survey, mark, and post the boundaries of National Forest System lands

landownership adjustment  
The transfer of the ownership of lands by land exchange, land purchase, donations, or other methods

land status  
The ownership status of lands within the National Forest boundaries

late forest succession  
A stage of forest succession where the majority of trees are mature or overmature  
See early forest succession

leasable minerals  
See minerals, leasable

lifestyle  
The characteristic way people live, indicated by consumption patterns, work, leisure, expressed values, and other behavior

linear programming  
A mathematical method used to determine the most effective allocation of limited resources between competing demands when both the objective (e.g., profit or cost) and the restrictions on its attainment are expressible as a system of linear equalities or inequalities (e.g.,  $y = a + bX$ ).

litter  
The uppermost, slightly decayed layer of organic matter on the forest floor

local dependent industries  
Industries relying on National Forest outputs for economic activity

local lifestyle  
See community lifestyles

locatable minerals  
See minerals, locatable

logging systems  
Methods of extracting logs from the stump to an area of collection, which are

aerial - a system which employs aerial means of transportation, (e.g., helicopters)

cable - a method which utilizes a powered cable system as the main device for moving logs. High-lead, low-lead, and skyline are types of cable logging

tractor - a method which uses a tractor as the motive power for transporting logs, whether by dragging or carrying the logs

long-term effects  
Those outcomes that will be significant beyond the RPA planning horizon of 50 years

long-term sustained yield (LTSY)  
The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified intensity of management consistent with multiple-use objectives

long-term sustained yield capacity (LTSYC)  
See long-term sustained yield

law-lead  
See logging systems

low standard service  
A level of recreation management prescribed when recreation alternatives and direction are reduced in an alternative manager direction

LTSY  
See long-term sustained yield

LTSYC  
See long-term sustained yield

M

M  
Thousand

maintenance level  
A formal established set of objectives which describe the conditions necessary to achieve the planned operation of a road. Maintenance levels describe the intensity of road maintenance

Level 1 - Basic custodial care required to protect the investment and to see that damage to adjacent land and resources is held to a minimum. Roads not open to public traffic

Level 2 - Roads where management requires limited passage of traffic (e.g., administrative, permitted, etc.)

Level 3 - Roads which are open for general public traffic. This level is required to meet minimum standards for general public use traffic

Level 4 - Roads are open for public traffic which are frequently paved or surfaced with aggregate materials

Level 5 - Roads open to general public traffic providing comfort. Roads usually paved

Level 1 costs (long-term)  
costs required to keep capital assets at a given level of service and availability  
These are variable costs

maintenance level costs (short-term)  
Costs incurred to keep capital assets at a given level of service and availability  
These are fixed costs

maintenance wildlife species  
Wildlife species not emphasized in a given alternative scenario

managed season  
That period of time developed recreation sites are open for public use, with routine maintenance, cleanup, and operation on a scheduled basis

management action	Any activity undertaken as part of the administration of the Forest	MCF	Thousand cubic feet. A measure of wood volume. See cubic feet
management area	An area of similar management goals and a common management prescription. Consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns	mean annual increment	The average yearly growth of a tree, calculates by dividing the volume of the tree by its age
management area grouping	An area of land used in planning which consists of similar analysis areas. has one prescription assigned and may not be contiguous. When prescriptions change between alternatives, management areas also change	merchantable timber	Timber of salable quality
management Concern	An issue or problem requiring resolution	middleground (MG)	The space between the foreground and the background in a picture of landscape. The area located from 1/4-1/2 to 3-5 miles from the viewer
management direction	A statement of multiple-use and other goals and objectives, the management prescriptions, and the associated standards and guidelines for attaining them.	mineral development	The preparation of a proven mineral deposit for mining
management indicator species (MIS)	A particular type of animal whose presence in a certain situation or location is a fairly certain sign or symptom that particular environmental conditions are also present.	mineral entry	Filing a claim to hold or purchase public land in order to claim the rights to minerals it contains
management intensity	The management practice or combination of management practices and their associated costs designed to obtain different levels of goods and services	mineral exploration	The search for valuable minerals on lands open to mineral entry
management opportunity	A statement of general actions, measures, or treatments that address a public issue or management concern in a favorable way	mineral production	Extraction of mineral deposits
management practice	A specific measure, action, or treatment	mineral soil	Weathered rock materials without any vegetative cover
management prescription	Management practices selected and scheduled for application on a specific area to attain multiple-use benefits and other goals and objectives	minerals, common variety	Deposits which, although they may have value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts, do not possess a distinct, special economic value for such use over and above the normal uses of the general sum of such deposits
management program	A set of activities designed to achieve a specific outcome	minerals, leasable	Minerals which are developed (i.e., explored, mined, extracted, etc.) by a permit or lease. In contrast to minerals development through claims staking (e.g., coal, oil, gas, and geothermal)
management standards and guidelines	See standard and guideline.	minerals, locatable	Those hardrock minerals which are mined and processed for the recovery of metals. May include certain nonmetallic minerals and uncommon varieties of mineral materials such as valuable and distinctive deposits of limestone or silica.
management team	The decision-making body comprised of the Forest Supervisor and his staff officers and District Rangers	minerals, salable	Minerals occurring in high volume, low-unit-value deposits which do not have a distinct or special economic value over similar materials and are therefore usually sold rather than leased or claim staked. Examples are sand, gravel, stone and clay
market outputs	Outputs normally exchanged in markets as evidenced by transactions: timber, range, developed recreation, minerals, and commercial utilized fish	minerals, strategic and critical	Minerals that are necessary for industry and national defense and have been identified by Congress for stockpiling
mass movement	Downslope unit movements of a portion of the land's surface (i.e., a single landslide or the gradual simultaneous downhill movement of the whole mass of loose earth material on a slope face)	mineral withdrawal	The withholding of an area of federal land from mineral entry or development in order to reserve the area for a particular public purpose or program
mast	Nuts, acorns, and similar products of hardwood species, which are consumed by animals	minimum stream flow	A specified level of flow through a channel that must be maintained by the users of Stream for biological, physical, or other purposes
mature timber	Trees that have attained full development, particularly height, and are in full seed production	mining claim	That portion of the public estate in which the right of exclusive possession of locatable mineral deposits is vested in the locator of a deposit
maximum erosion hazard	This is an assessment of the relative hazard of the loss of surface soil in an average year, assuming that protective vegetation has been removed	mining patents	See patented mining claim.
maximum modification (MM)	See Visual Quality Objectives.	MIS	See Management Indicator Species
MBF	Thousand board feet. A measure of wood volume equal to 1 inch x 1 foot x 1000 feet. See board feet	mitigation	Actions to avoid, minimize, reduce, eliminate, or rectify the impact of a management practice
meadow ecosystem	A meadow ecosystem is a grassy opening, two acres or larger, dominated by perennial sedges, rushes, and grasses (wet meadow) or perennial grasses and forbs (dry meadow).	MM	Million.



**MMBF** Million board feet A measure of wood volume  
See board feet and MBF

**MMCF** Million cubic feet A measure of wood volume  
See cubic feet and MCF

**modification (M)**  
See Visual Quality Objectives

**monitoring and evaluation**  
The periodic evaluation on a basis of  
Forest Resource Management Plan to determine  
how well objectives have been met and how  
closely management standards have been  
applied

**mortality**  
Dead or dying trees resulting from forest  
fire, insects, diseases, or climatic factors

**multiple-use**  
The management of all renewable surface  
resources of the National Forests so that they  
are utilized in the combination that will best  
meet the needs of the American people

**municipal watershed**  
The watershed from which the runoff is used  
for drinking purposes in a city.

## N

**National Environmental Policy Act (NEPA)**  
An act to declare a national policy which  
will encourage productive and enjoyable  
harmony between people and their environ-  
ment to promote efforts which will prevent  
or eliminate damage to the environment and  
biosphere, and stimulate the health and  
welfare of people, to enrich the understand-  
ing of the ecological systems and natural  
resources important to the nation, and to  
establish a Council on Environmental Quality

**National Forest Land and Resource Management Plan**  
A plan developed to meet the requirements of  
the Forest and Range Land Renewable Resources  
Planning Act of 1974, as amended, that guides  
all natural resource management activities  
and establishes management standards and  
guidelines for the National Forest System  
lands of a given National Forest

**National Forest Landscape Management System**  
The art and science of planning and adminis-  
tering the use of forest lands in such ways  
that the visual effects maintain or upgrade  
human psychological welfare. It is the  
planning and design of the visual aspects  
of multiple-use land management

**National Forest Management Act (NFMA)**  
A law passed in 1976 as amendments to the  
Forest and Range Land Renewable Resources  
Planning Act that requires the preparation  
of Regional and Forest plans and the  
preparation of regulations to guide that  
development

**National Forest System land**  
National Forests, National Grasslands, and  
other related lands for which the Forest  
Service is assigned administrative  
responsibility

**National Historic Preservation Act of 1966**  
(as amended)  
An Act by Congress that declares national  
policy of historic reservation. Directs  
expansion of the National Register of  
Historic Places, authorizes matching  
Federal grants to States and the National  
Trust for Historic Preservation. An amend-  
ment authorizes the Secretary of the Interior  
to withhold from public disclosure locational  
information on National Register listings if  
such disclosure would create a risk of damage  
or destruction to such sites and objects

**National Recreation Trails**  
Trails designated by the Secretary of the  
Interior or the Secretary of Agriculture as  
part of the national system of trails  
authorized by the National Trails System Act  
National recreation trails provide a variety  
of outdoor recreation uses in or reasonably  
accessible to urban areas

**National Register of Historic Places**  
A listing (maintained by the USDI National  
Park Service) of areas which have been

as being of national significance  
The Register is a list of places of  
state significance as well as those of  
national significance as a whole

**National Wild and Scenic River System**  
Rivers with outstanding remarkable scenic,  
recreational, geologic, fish and wildlife,  
historic, cultural, or other similar values  
designated by Congress under the Wild and  
Scenic Rivers Act for preservation of their  
free-flowing condition

**National Wilderness Preservation System**  
All lands covered by the Wilderness Act and  
subsequent wilderness designations, irrespec-  
tive of the department or agency having  
jurisdiction

**natural forest**  
The condition of a forest environment at any  
point in time, including its associated plant  
and animal communities, which has been reached  
essentially through the process of natural  
succession

**natural fuels**  
Fuels not directly generated or altered by  
management activity. This includes fuels  
which have accumulated because of deliberate  
fire exclusion.

**natural opening**  
A break in the forest canopy in an area of  
essentially bare soil, grass, forbs, or  
shrubs in an area dominated by trees

**NEPA** See National Environmental Policy Act

**net public benefit (NPB)**  
The overall value to the nation of all Out-  
puts and positive effects (benefits) less all  
associated inputs and negative effects (costs)  
whether they can be quantitatively valued or  
not. Net public benefits are measured by both  
qualitative and quantitative criteria rather  
than a single measure or index

**net value**  
The sum of the changes resulting from  
increases (benefits) and decreases (de-  
creases) in the value of output from the land area  
affected as the consequence of fire

**network**  
See spotted owl network

**NFMA** See National Forest Management Act

**no action alternative or current alternative**  
The alternative which continues current  
management direction into the future

**noncommercial vegetative treatment**  
The removal of trees for other than timber  
production purposes

**noncommodity outputs**  
A resource output that cannot be bought and  
sold

**nonconsumptive species**  
Wildlife species not used as food for human  
consumption, but normally observed, studied,  
photographed, etc. (as opposed to harvest or  
consumptive species)

**nonconsumptive use**  
1) Use of a resource that does not reduce  
the supply, such as many types of  
recreation  
2) Water right term: water returned after  
use to the waterbody from which it was  
diverted (e.g., hydroelectric)  
See also consumptive use

**non-declining yield**  
Timber scheduled for harvest so that any  
given decade's production does not fall  
below the previous decade's production

**nondiscretionary resources**  
Resources considered in the Plan where the  
choices of allocation are limited by law  
and/or regulation, or by unique, site-  
specific sets of physical environmental  
requirements (e.g., Research Natural Areas,  
Wild and Scenic Rivers)

**nongame**  
Wildlife that are not hunted for sport  
and/or for food

nonmarket outputs  
Forest outputs not normally exchanged in markets. In the Forest Service, the following resource outputs are classified as nonmarket outputs: dispersed recreation, wildlife and fish user days, water. Although not normally exchanged in markets, the Forest Service assigns proxy values for analysis purposes.

nonpoint source pollution  
Pollution occurring at many diffuse locations, as opposed to pollution from a specific site, such as a factory.

control practices (type control measures, noxious weed control, seeding, etc.) that are carried out to increase forage production and enhance or protect the other resources

notice of intent (NOI)  
Written notice to the affected District Ranger by those who intend to engage in mining activity on the Forest including prospecting, exploration, mining, and mineral processing activities

noxious weeds  
A plant species that is undesirable, conflicts, restricts, or otherwise causes problems with management objectives

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objective  
A clear and specific statement of planned results to be achieved within a stated time period. The results indicated in the Statement of Objectives are those which are designed to achieve the desired state or process represented by the goal. An objective is measurable and implies precise time-phased steps to be taken and resources to be used which, together, represent the basis for defining and controlling the work to be done. Objectives may be stated as a range of outputs, casts, and/or effects

objective function  
A term used in linear programming referring to the item to be maximized (or minimized) in the problem's solution (e.g., maximize PNV, maximize timber)

obliteration  
The act of eliminating the functional characteristics of a road and reestablishment of natural resource production capability.

occupancy trespass  
The illegal occupation or possession of National Forest System land or property

off-highway vehicle (OHV)  
Any motorized vehicle capable of cross-country travel on or immediately over land, water, snow, ice or other natural terrain. Examples include motorcycles, four-wheel drive vehicles and snowmobiles. The State of California has defined off-highway vehicles by size and class of vehicles

old growth  
A stand that is past full maturity and showing signs of decadence, the last stage in forest succession. Although the tree age, size, height, or density will vary by timber type, trees are usually 21 inches or larger DBH and 150 years or older

opening  
An area of land from which timber has been harvested (generally using even-aged management). In Region 5, the maximum size of openings is 5 to 60 acres for Douglas fir and 5 to 40 acres for all other forest types. An opening is no longer considered an opening when a specified number of trees per acre within a specific forest type and site class have reached 4.5 feet in height

operational costs  
Those associated with administering and maintaining National Forest facilities and resource programs

operations plan  
A claimants or Operators written plan approved by a Forest officer, describing proposed mining activities

opportunity  
See management opportunity

opportunity cost  
The value of the benefits foregone when a management alternative is chosen.

Order 3 Geologic Resource Inventory  
An inventory describing and designating geologic factors such as soils, surficial deposits, bedrock, landslides, etc. and geologic resources such as ground water, minerals and underground space  
Also see FSM 2881

ORV  
Off-road vehicle. See off-highway vehicle

output  
A good, service, or on-site use produced from Forest and rangeland resources. See nonmarket output

output, activity  
See activity outputs

output, direct  
See direct outputs.

overflow capacity  
Use of a developed recreation site which exceeds the designed capacity

overmature timber  
Trees that have exceeded full development, particularly in diameter, height or growth rate, and are declining in vigor: health, and soundness

oversteeped slopes  
Slopes greater than the angle that soil or loose rock fragments remain stable

overstory  
That portion of the trees, in a forest of more than one story, forming the upper or uppermost layer

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Pacific Southwest Region  
The Region of the Forest Service covering the 17 National Forests within the State of California. This region is referred to as Region 5 or R-5

PAOT  
See persons-at-one-time

partial retention (PR)  
See Visual Quality Objectives

particulates  
A component of polluted air consisting of any liquid or solid particles suspended or falling through the atmosphere

patented mining claim  
A patent is a document which conveys title to land. When patented, a mining claim becomes private property and is land over which the United States has no property rights except as may be reserved in the patent

payment in lieu of taxes  
Payments to local or State governments based on ownership of Federal land and not directly dependent on production of outputs or receipt sharing. Specifically, they include payments made under the Payments in Lieu of Taxes Act of 1976 by U.S. Department of the Interior

perennial stream  
Stream that flows throughout the year

permitted grazing  
Use of a National Forest range allotment under the terms of a grazing permit

personal income  
Income earned by all households within a region (salaries, wages, profit, rent, royalties, interest, etc.)

persons-at-one-time (PAOT)  
A recreation capacity measurement term indicating the number of people that can use a facility or area at one time

person-year  
Approximately 2,000 working hours. May be filled by one person working yearlong or several people filling seasonal positions

physiographic surface  
A land surface created by geologic processes of intrusion, deposition, erosion, or structural movement

planned ignitions  
A fire started by a deliberate management action

planning area  
The area of National Forest System land covered by a Regional or Forest plan

planning criteria  
Standards, tests, rules, and guidelines by which the planning process is conducted and upon which judgments and decisions are based

planning direction  
Refers to R-5, Pacific Southwest Region Land Management Planning Direction. Circulated to the Forests March 1, 1982. Copies are available for review in Forest planning offices

planning horizon  
The overall time period considered in the planning process that spans all activities covered in the analysis or plan and all future conditions and effects of proposed actions which would influence the planning decisions in Region 5 the planning horizon is 160 years

planning period  
Five decades. The time interval within the planning horizon that is used to show incremental changes in yields, costs, effects, and benefits

planning question  
A major policy question of long-range significance, derived from the public interests and management concerns to be decided when selecting among alternative Forest plans

planning records  
A system that documents data collections, analysis, interdisciplinary team decisions, and activities that result from the process of developing a Forest Plan, revision, or significant amendment

planning regulations  
Refers to the Code of Federal Regulations (36 CFR 219) "National Forest System Land and Resource Management Planning"

planning team (PT)  
A group of resource specialists assigned to Land Management Planning that provide data to the interdisciplinary team for Forest planning

plantation  
A stand of trees resulting from planting or artificially seeding an area

plant communities  
A group of plants that live together in the same environment

PNV  
see present net value

point pollution source  
An identifiable source from which pollutants are or may be discharged (e.g., a pipe, ditch, channel, tunnel, conduit, well)

pole and sapling  
A forest successional stage in which trees between one and 10 inches in diameter are the dominant vegetation

pole timber trees  
See size class

policy  
A guiding principle upon which is based a specific decision or set of decisions

possible management prescription  
A combination of management practices. A possible management prescription emphasizes one or more management opportunities over others in order to address specific public issues and management concerns. The combination of management practices describes how all resource uses and activities would be managed to attain what the prescription has been designed to accomplish. If a possible management prescription is selected and scheduled for application, it becomes a management prescription

practice  
See management practice

precommercial thinning  
The selective removal of trees in a young stand to maintain a specific stocking or stand density range, and improve the vigor and quality of the trees that remain

preparatory cut  
Removal of trees near the end of a rotation so as to permanently open the canopy and enlarge the crowns of seed bearers with a view to improving conditions for seed production and natural regeneration, as typical in shelter-wood systems

prescribed fire  
Introduction of fire under controlled conditions to dispose of slash or fuels control unwanted vegetation or stimulate grasses, forbs, shrubs, or trees for range, wildlife, recreation, or timber management purposes

prescription (Rx)  
The set of management practices applied to a specific area to attain specific objectives. Region 5 distinguishes between FORPLAN Rx's and management Rx's. FORPLAN Rx's are sets of "pure" activities without spatial allocation and standards and guidelines. Management Rx's are written as a result of allocating FORPLAN solutions to management areas and imposing standards and guidelines. See also management area

present net value (PNV)  
The difference between the value of discounted benefits derived from all outputs to which monetary values or establishes market prices are assigned, and the total discounted costs of managing the planning area

present value  
The value which results when benefits or costs expected to occur in the future are discounted to the future. See also discounting

preservation (P)  
See Visual Quality Objectives

preservation  
See Giant Sequoia, Chapter 3, EIS, Vegetation Management section

presuppression  
Activities required in advance of fire occurrence to ensure effective suppression action. Includes:  
1) recruiting and training fire forces,  
2) planning and organizing attack methods,  
3) procuring and maintaining fire equipment, and  
4) maintaining structural improvements necessary for the fire program

primary range  
See range

primitive roads  
Roads constructed with no regard for grade control or designed drainage, sometimes by merely repeated driving over an area. These roads are single lane, usually with native surfacing and sometimes passable with four-wheel drive vehicles only, especially in wet weather

productive potential  
The largest possible amount of output that a resource can supply without grading the production capability of the resource

productivity  
See site productivity

Program Accounting and Management Attainment Reporting System (PAMARS)  
The administrative system used by the Forest Service to monitor costs and outputs

program budget  
The schedule of projects and activities to be carried out on the Forest for a year for which money has been appropriated

Program Development and Budgeting  
The process by which activities for the Forest are proposed and funded

project  
Work schedule for a project area to accomplish management prescriptions. Projects can be for operation maintenance and protection (OMP) or for investment purposes. OMP projects are for ongoing work and are generally considered one

year at a time. Investments can be of multi-year duration. A project is organized for managerial convenience, and is described by location, activities, outputs, effects, workforce, dollars, time, and responsibility for execution

proposed action  
In terms of the National Environmental Policy Act, the project, activity, or decision that a Federal agency intends to implement or undertake which is the subject of an environmental impact statement

proxy value  
A value assigned to a good or service for evaluation purposes when the good or service is not bought nor sold and an established monetary price does not exist

public  
The people of an area, state, or nation that can be grouped together by a commonality of interests, values, beliefs, or lifestyles

public access  
Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use

public benefit, net  
See net public benefit

public issue  
A subject or question of wide read public interest relating to management of National Forest System lands identified through public participation.

public participation activities  
Meetings, conferences, seminars, workshops, tours, written comments, response forms, news releases, letters, and similar activities designed and held to obtain comments from the general and specific publics about National Forest System land management planning

put to bed (roads)  
Blocking a road so that it can not be used by motorized vehicles, removing drainage structures and promoting revegetation by ripping, seeding, planting and fertilizing, if necessary. See obliteration

**Q**

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**QWIK-QWERY**  
A computer program used for data analysis and sorting

**R**

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**R-5**  
The abbreviation for the Pacific Southwest Region of the Forest Service. National Forests in California belong to Region 5

range  
primary - includes areas which are readily accessible, have available water and will be overused before livestock significantly graze other areas  
secondary - areas less preferred by livestock which will ordinarily not be grazed significantly until the primary range has been overused  
suitable - land that is or can be made accessible to livestock, that produces forage or has inherent forage producing capabilities, and that can be grazed on a sustained yield basis under given management goals  
transitory - land temporarily suitable for grazing, but transient over time and/or location. For example, grass may cover an area for a period before being replaced by trees or shrubs not suitable for forage  
sui generis - area that should not be grazed because of unstable soils, steep topography, or inherent low potential for forage production.

range allotment  
A designated area of land available for livestock grazing upon which a specified kind and number of livestock may be grazed under a range allotment management plan.

range condition  
The state of health of the range based on what it is naturally capable of producing

range permittees  
See grazing permittee

Ranger District  
Administrative subdivisions of the Forest supervised by a District Ranger who reports to the Forest Supervisor

raptors  
Birds of prey with a strong, notched beak and sharp talons (e.g., the eagle, hawk, owl, etc.)

RARE II  
See Roadless Area Review and Evaluation II

rare species  
One that, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment worsens

rate-of-return  
Rate of interest at which the net discounted benefits equal the net discounted costs (Internal rate-of-return is a similar measure appropriate to private firms)

real dollar value  
A monetary value which compensates for inflation

real income  
Income based on real dollar values (values from which the effect of change in purchasing power of the dollar has been removed)

receipt income  
A percentage of revenue collected by National Forests which is given to state and county governments where the Forest is located for use on county roads and schools

reconstruction  
Road or trail construction activities which take place on an existing road or trail and which raise the standard of the road or trail. Usually the length of the existing facility is not materially changed, although the length may be increased to reduce the grade. This can include relocation of the facility in a completely new location

Record of Decision  
A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision on which alternative in the EIS to implement

recovery species  
Federally listed threatened or endangered wildlife and fish species for which an objective has been set to raise the population to a viable level

recreational livestock  
Animals used primarily in conjunction with recreation (e.g., horses, mules, llamas, etc.)

recreational river area  
As used in the Wild and Scenic Rivers Act, those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past

recreation experience level  
A classification (using a scale of 1 for "primitive" to 5 for "modern") of the level of development in camp and picnic sites pertaining to the types of recreation opportunities and modifications in the environment that can be expected

Recreation Information Management (RIM)  
The Forest Service system for recording recreation facility condition and use

recreation opportunity  
The availability of a choice for a user to participate in a preferred activity, within a preferred setting, to realize the desired experience

recreation opportunity class  
A land classification based on recreation settings and possible uses

Recreation Opportunity Spectrum (ROS)  
 A means of classifying and managing recreation opportunities based on physical setting, social setting, and managerial setting. The six different ROS classes briefly described are:

**Primitive (P)** - An area three miles or more from roads and trails having motorized use, generally 5,000 acres or more in an essentially unmodified natural environment.

**I-Primitive No. Motorized (SPNM)** - An area one-half mile from roads and trails having motorized use, generally 2,500 to 5,000 acres with only subtle modifications to an otherwise natural setting.

**Semi-Primitive Motorized (SPM)** - Same as semi-primitive non-motorized but with motorized use of roads and trails, including ORV touring, snowmobiles, hiking, cross-country skiing, etc.

**Roaded Natural (RN)** - An area one-half mile or less from roads, resource modifications range from evident to strongly dominant.

**Rural (R)** - The setting is substantially modified with structures or other cultural modifications.

**Urban (U)** - The setting is strongly dominated by structures, highways, and streets.

recreation residences  
 Houses or cabins on National Forest System land that are not intended to be the primary residence of the owner.

recreation visitor day (RVD)  
 Twelve hours of recreation use in any combination of persons and days (i.e., one person for 12 hours, 3 persons for 4 days).

reduced service management  
 Management of developed recreation facilities below optimum maintenance standards.

reforestation  
 Reestablishing a crop of trees on forest land by natural or artificial methods.

reforestation backlog  
 Suitable timber land which is currently not stocked with commercial tree species. Land occupied mainly with hardwoods, brush, or grasses scheduled for conversion to commercial conifer through reforestation.

regeneration  
 Reestablishing a crop of trees on forest land by natural or artificial methods.

regeneration cutting  
 Refers to the logging of stands to allow new crops to be planted, usually applied to stands which cannot economically be held because of poor stocking, health, thrift, quality, or composition.

regeneration harvest  
 Any cutting of trees in preparation for the establishment of a new stand or individual trees. Cutting prescriptions include clearcutting, seed-tree, shelterwood, and group selection.

region  
 An administrative unit within the National Forest System. Each region has a headquarters (regional) office and is supervised by a Regional Forester. The Pacific Southwest Region (R-5) Regional Office is in San Francisco.

Regional Forester  
 The official responsible for administering a single region.

Regional guide  
 The guide developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended that guides all natural resource management activities and establishes management standards and guidelines for the National Forest System lands of a given region. It also assigns RPA objectives to the Forests within that Region.

Regional land and resource management plan  
 The plan developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides

nil natural resource management activities and establishes management standards and guidelines for the National Forest System lands. (Even regions that also assign RPA objectives to the Forests within that Region)

Regional Office  
 See region.

Regional Plan  
 See Regional Land and Resource Management Plan.

regulated timber land  
 Land which is capable and is managed to produce regular periodic yields of commercial timber in perpetuity. Ideally, a regulated forest would consist of equal areas in each age class so that the oldest stands could be cut annually to produce a sustained yield.

Regulation Classes  
 Regulation Class I prescriptions are even-aged management prescriptions for existing timber stands with full timber yields expected. These represent harvest regimes on lands not otherwise constrained that result in optimum timber production in volume and/or value. Practices in this class are:

- 1) Clearcutting without thinning (non-intensive harvest in FORPLAN)
- 2) Shelterwood without thinning (non-intensive harvest in FORPLAN)
- 3) Clearcutting with thinning(s) prior to harvest

Regulation Class II prescriptions are area conditions for existing stands.

Reduced timber yields would be expected. These represent harvest regimes on lands designated to meet non-timber objectives that result in a mean rotation longer than optimum for timber production. Generally other values are accounted for by constraints on harvest rates, not by modifications to yield tables, the exceptions are group selection (item 5) and specialized prescriptions (item 6).

Practices in this class are:

- 1) Clearcutting without thinning (non-intensive harvest in FORPLAN)
- 2) Shelterwood without thinning (non-intensive harvest in FORPLAN)
- 3) Clearcutting with thinning(s) prior to harvest.
- 4) Shelterwood with thinning(s) prior to harvest
- 5) Group selection (i.e., clearcuts less than five acres in size) or single tree selection
- 6) Specialized prescriptions which contain unique yield tables and/or constraints on harvest rates (e.g., deer winter range prescriptions with wider spacing and no release)

Regulation Class III prescriptions are for existing stands which are equivalent to the former "marginal timber yield" categorization. Timber outputs resulting from prescriptions in this class will be regulated as a separate non-interchangeable component of the allowable sale quantity. Practices in this class are:

- 1) Removal of single trees or small groups of trees for sanitation, salvage, or hazard reduction (assume yields based on past 10-year experience)
- 2) Stand maintenance along roads to maintain the vigor of the stands. Yields are often limited to other harvest in adjacent areas. Generally this practice is used for streamside and highway zones if not otherwise managed by independent sales.
- 3) Prescriptions for marginal productivity (i.e., lands producing less than 20 cubic feet per acre per year) and/or disputed regeneration.

4) Group selection (i.e., clearcuts less than five acres in size) or single tree selection

release  
Freeing a tree group of trees from immediate competition by eliminating growth that is overtopping or closely surrounding them.

release and weeding  
All work done to free desirable trees from competition from less desirable trees, dense shrubs, or grasses and other forms of herbaceous vegetative growth.

Research Natural Area (A)  
An area established specifically to preserve a representative sample of an ecological community, primarily for scientific and educational purposes

residual stand  
The trees remaining after some form of selection cutting is performed on a stand

resource allocation model  
A mathematical model using linear programming which will allocate land to prescriptions and schedule implementation of those prescriptions simultaneously. The end purpose of the model is to find a schedule and allocation that meets the goals of the Forest and optimizes some objective function such as "minimize costs"

resource element  
A major category of activity required to accomplish the Forest Service mission. The eight resource elements are recreation, wilderness, wildlife and fish, range, timber, water, minerals, and human and community development

resource management plan  
A plan developed prior to the Forest Plan that outlined the activities and projects for a particular resource element independently of considerations for other resources. Such plans are superseded by the Forest and

resource use and development opportunities  
A possible action measure, or treatment, and corresponding goods and services identified and introduced during the scoping process which subsequently may be incorporated into and addressed by the land and resource management plan in terms of a management prescription

responsible Forest Service employee who has been delegated the authority to carry out a specific planning action.

restoration  
A process of restoring site conditions as they were before the land disturbance

retention (R)  
See Visual Quality Objectives

return period  
Average time in years between flood flows of a specified size for a given stream

rights-of-way  
Accurately located land areas within which users may conduct operations approved or granted by the landowners. May also refer to a permit, easement, lease, license, or Memorandum of Understanding (MOU) used to authorize the land use

rights-of-way acquisition  
Rights-of-way granted to National Forest by others to use the land in the manner specified

rights-of-way grant  
Rights-of-way granted to others to use National Forest System land in the manner specified

RIM  
See Recreation Information Management

riparian area  
Land situated along the bank of a stream or other body of water and directly influenced by the presence of water (e.g., streamside, lake shores)

RNA  
See Research Natural Area.

road  
A general term denoting a travel way for vehicles greater than 40 inches in width. Roads are functionally classified as

abandoned road - A road not needed on a continuing basis for sustained or intermittent use. Abandoned roads include abandoned system roads and temporary roads. Where possible, abandoned roads not planned for future use will be obliterated. Unofficially referred to as nonsystem roads

arterial road - Typically a two-lane, surfaced road serving large land areas and usually connecting with public highways.

collector road - single-lane or double-lane road which is typically surfaced and serve smaller land areas. They usually form a link between arterial and local roads

local road - Typically a native surface road accessing a single resource terminal facility such as a log landing, a campground, a ski or ski facility

nonsystem road - see abandoned road

system road - A road needed on continuing basis for sustained or intermittent use

roaded natural (RN)  
See Recreation Opportunity Spectrum

roaded natural recreation  
Recreation activities which occur in an area characterized by predominantly natural appearing environments with moderate evidences of human sights and sounds

roadless area  
As defined by the Roadless Area Review, an area of undeveloped Federal land within which there are no improved roads or roads maintained for use by motorized vehicles, generally 5,000 acres or larger unless adjacent to an existing Wilderness.

Roadless Area Review and Evaluation II (RARE II)  
The assessment of roadless and undeveloped areas within the National Forests as potential wilderness areas as required by the National Wilderness Act. This refers to the second such assessment which was documented in the final environmental impact statement of the Roadless Area Review and Evaluation, January 1979

road obliteration  
See obliteration

ROS  
See Recreation Opportunity Spectrum.

rotation  
The length of time between the formation or regeneration of a tree stand and its final cutting

roundwood  
Timber and fuelwood prepared in the round state - from felled trees to material trimmed, barked, and crosscut (e.g., logs, transmission poles)

RPA  
See Forest and Rangeland Renewable Resources Planning Act

RFA program  
The recommended direction for long-range management of renewable resources of National Forest System lands. This direction serves as the basis for the Regional targets assigned to the Forest. The development of this direction is required by the Forest and Rangeland Renewable Resources Planning Act

rural (R)  
See Recreation opportunity Spectrum

RVD  
See recreation visitor day

Rx  
See prescription

S

salable minerals  
See minerals. salable

sale schedule  
The quantity of timber planned for sale by time period from an area of suitable land covered by a forest plan

salvage  
The exploitation of trees that are dead, dying, or deteriorating (e.g., trees which are overmature or materially damaged by fire, wind, insects, fungi, or other injurious agents) before their timber becomes worthless

sanitation cutting  
The removal of dead, damaged, or susceptible trees, to prevent the spread of pests or pathogens and to anticipate salvage

sapling  
See size class

sawlog  
A log meeting minimum standards of diameter, length, and defect. For softwoods, they are at least eight feet long, sound and straight, and with a minimum diameter inside bark of six inches

sawtimber  
Trees that will yield logs suitable in size and quality for producing lumber. See size class

scoping process  
Process used to identify issues and concerns which are within Forest Service authority to resolve. See also Appendix A

Seasonal Average Daily Traffic (SADT)  
The average 24-hour traffic volume, being the total volume during a stated season of use that a road is open, divided by the number of days in that season

seasonal economy  
An economy based on employees working only part of the year (e.g., summer employment, winter employment at a ski area). See also year-round economics.

secondary range  
See range

second growth  
Forest growth that has become established after some interference with the previous forest crop (e.g., cutting, serious fire, or insect attack)

second home  
A residence that is not occupied year-round and whose owner has a permanent residence somewhere else

sedimentation  
The deposition of soil and organic material transported by or suspended in water

seed cut  
Removal of trees in a mature stand so as to effect permanent opening of its canopy (if there is no preparatory cutting to do this) and so provide conditions for securing regeneration from the seed of trees retained for that purpose

seedling  
See size class

seedling  
1. A forest tree less than 1.37 meters (4.5 feet) in height at the time of measurement.  
2. A forest tree less than 1.37 meters (4.5 feet) in diameter at the time of measurement.

seed tree cutting  
Harvesting all trees in one cut except for a small number of seed bearers left singly or in small groups, usually 8 to 10 per acre. An even-aged stand results

seen area  
Total area observed. May be measured in terms of foreground, middleground, and background

selection cutting  
The removal of trees individually or in small groups less than five acres in size

semi-primitive motorized (SPM)  
See Recreation Opportunity Spectrum

semi-primitive non-motorized (SPNM)  
See Recreation Opportunity Spectrum

sensitive species  
Those species of plants or animals which 1) have appeared in the Federal Register as proposals for classification and are under consideration for official listing as endangered or threatened species; 2) are on an official State list; or 3) are recognized by the Regional Forester as needing special management in order to prevent the need for their placement on Federal or State lists

sensitivity level  
A particular degree or measure of viewer interest in the scenic qualities of the landscape

seral  
A biological community which is a developmental, transitory stage in an ecological succession

settlement patterns  
Any distinguishable distribution of a population in a geographic area, including the historical cycles of settlement in an area. This descriptor identifies where a population is located, the type of settlement categorized by its centralized/dispersed, permanent/temporary, and year-round/seasonal characteristics. It also describes the major historical growth/nongrowth cycles and the reasons for each successive wave of settlement

shelterwood cutting  
A regeneration method under an even-aged silvicultural system. A portion of the mature stand is retained as a source of seed and/or protection during the period of regeneration. The mature stand is removed in two or more cuttings commonly termed seed cutting and removal cutting

shrub and seedling  
A forest successional stage in which shrubs and seedling trees are the dominant vegetation

silvicultural system  
The entire process by which forest stands are tended, harvested, and replaced. It includes all cultural practices performed during the life of the stand such as regeneration cutting, fertilization, thinning, improvement cutting, and use of genetically improved sources of tree seeds and seedlings to obtain multiple resource benefits. Silvicultural systems are classified as even-aged or uneven-aged

silviculture  
The art and science of growing and tending forest vegetation for specific management goals

single tree selection cutting  
The cutting method in which individual trees are removed to provide a stand with trees of different sizes and age classes on the same site. This method results in an uneven-aged stand

site  
A refinement of a capability area. A subdivision of a capability area using those land characteristics which cause significantly different short-term outputs, effects, or costs when a management prescription is implemented on it

site class  
See forest survey site classes

site index  
A numerical evaluation of the quality of land for plant productivity, especially used in forest land where it is determined by the rate of growth in height on one or more of the tree species

site preparation  
The preparation of an area for regeneration. It involves the removal of slash and/or competing vegetation and usually the exposure of bare mineral soil

site productivity  
Production capability of specific areas of land

## size class

For purposes of Forest planning, size class refers to the three intervals of tree stem diameter used for classification of timber

- 1) seedling/sapling - less than five inches in diameter
- 2) pole timber - five to less than ten inches in diameter
- 3) sawtimber - larger diameter than pole timber

## skidding

A loose term for hauling logs by sliding, not on wheels, from stump to roadside, deck, skidway, or other landing

## skier day

Measure of downhill skiing use equivalent to one person skiing for eight hours

## skiers at one time (SAOT)

a measure of ski area capacity represented by the number of skiers that can occupy the area at the same time

## skyline

See logging systems

## slash

The residue left on the ground after timber cutting, storms fire, etc. It includes unutilized logs: uprooted stumps, broken stems, branches, twigs, leaves, bark, and chips

## slope slump

A slide or earthflow of a soil mass

## SMZ

See streamside management zone

## snag

A standing dead tree from which the leaves and most of the branches have fallen. Snags provide food and living space for many birds and animals. See hard snag and soft snag.

## social category

People with a common social characteristic such as age, nationality, occupation, hobby, interest, or educational level

## social diversity

The variety of choices people have in shaping current and future activities in their environment

## social group

People who cooperate to pursue common interests and/or attain mutual goals

## social impact

Changes in social or cultural conditions that directly or indirectly result from a Forest Service program, project, or activity

## social impact analysis

The social components of the environmental analysis process, a systematic effort to determine how present programs or proposed actions affect the human environment

## social organization

The structure of a society described in terms of roles, relationships, norms, institutions, and/or community cohesiveness and stability

## Social Resource Unit (SRU)

A human-geographic area exhibiting common cultural, economic, and institutional characteristics; An SRU is an aggregation of Human Resource Units and typically crosses National Forest county and state boundaries. The SRU is used to design, implement, and evaluate management actions that respond to changing social conditions of physical resource uses at an area of regional level

## social stability

The degree of control people have in protecting the cultural strengths within their environment and managing changes affecting their future activities

## social value

A shared standard of preference or desirability, as wealth, beauty, good health, honesty, or privacy

## social variable

A social or cultural element such as population size, employment, opinion on an issue, crime rates, satisfaction with community life or recreation-use patterns, that can be evaluated at different times or places to show the effects of a Forest Service action

## soft snag

A standing dead tree from which the leaves and most of the branches have fallen and which has started to rot internally. See snag and hard snag

## softwoods

A term applied to the wood of a cone-bearing tree (e.g., pines, firs, incense-cedar, giant sequoia). See hardwood

## soil horizons

Layers of the soil each of which has comparatively uniform characteristics different from adjacent layers (e.g., surface layer)

## soil productivity

The capacity of soil to produce a specific crop such as wood products, forage, etc. under defined levels of management. It is generally dependent on available soil moisture, nutrients, and length of growing season

## soil resource inventory (SRI)

The systematic examination, description, classification, and mapping of soils

## sound wood

Timber that is free from defect, damage, or decay (i.e., in solid, whole, good condition)

## Special Interest Area (SIA)

Areas established and managed for their unique special feature. They include geologic, historical, archaeological, botanical, and other memorable features

## spatial-use permits

Permits, memorandums of understanding, and other agreements of easements authorizing the use and use of land.

## special uses

Uses of public land for which a special-use permit is required

## species

See dependent, endangered, or threatened species

## specimen giant sequoia

A standing giant sequoia, live or dead, that has mature characteristics such as columnar form of stem, deeply furrowed bark, lower stem free of limbs, red bark, etc. In addition, it must be older than 150 years and larger than eight feet in diameter at six feet above ground level

## spotted owl core area

300 or more continuous acres within which a known or potential spotted owl nest site is located

## Spotted owl habitat

1.0 acre of habitat and 650, 1.0 [1.65] acre habitat depending on the management plan to sustain habitat

## spotted owl management area (SOMA)

Groups of three or more spotted owl habitat areas which are separated by not more than 1.5 miles from core area to core area. The SOMA's are spaced between six and 12 miles apart

## SRI

See soil resource inventory

## SRU

See Social Resource Unit

## stagnation

With respect to air pollution, the persistence of a given volume of stable air over a region, permitting an abnormal buildup of pollutants from sources within the region

## stand

A community of trees or other vegetation which is sufficient in composition, constitution, size, spatial arrangement, or condition to distinguish it from adjacent communities in its form and management entity



standard Performance criterion indicating acceptable norms, specifications, or quality that actions must meet. A principle requiring a specific level of attainment, a rule to measure against. See also guideline

standard service Management of recreation facilities which provides for vegetation management, full maintenance of facilities, appropriate toilet cleaning and garbage pick up, and information and interpretive services for the recreation user

stocking An indication of the number of trees, basal area, or cubic feet in a stand as compared to the desirable number for best growth and management. Examples are overstocked, well stocked, understocked

stocking level The degree to which land is occupied by trees (measured by basal area and/or number of trees by size and spacing), compared with a stocking standard which establishes the stocking required to utilize fully the growth potential of the land.

strategic and critical minerals See minerals, strategic and critical

stream class A classification given to all named drainages or stream channels on the Forest, based on stream size, season, amount of flow, importance as a fishery or water source, and other characteristics. They range from Class I (largest, most important) to Class IV (small, often intermittent)

Stream flow, minimum See minimum stream flow

stream order Stream ordering starts at the fingertip tributaries at the head of a Stream system and these are designated as first-order streams. Then two first-order streams join to form a second-order stream segment, two second-order streams join, forming a third-order, and so on

streamside management zone (SMZ) An area of land extending beyond the riparian area commonly managed with caution as a buffer to protect riparian areas and water quality

structural range improvements Those range improvements (fences, cattle guards, etc.) to facilitate the range resource and maintenance of development of

stumpage Timber as it stands uncut

subculture A distinctive pattern of beliefs, values, norms, and customs shared by a portion of the population, often because of a common ethnic heritage, occupation, or religious or ideological orientation

subdivisions Areas of previously undeveloped land divided into lesser blocks of ownership

succession The gradual supplanting of one plant community by another as the site changes over time until the climax community is reached. See early forest succession and forest succession

suitable lands Acres of land selected for management of timber production on a regulated basis from land which has been identified as tentatively suitable. See tentatively suitable lands

suitable range See range

supply potential The output production possible from the available resources

support services Any arrangement people use for taking care of each other. Support services occur in a geographic area in both formal and informal ways. Examples include health care, education, law enforcement, fire protection, transportation environmental protection, and energy

Examples Of informal support activities include the ways people manage on a day-to-day basis using family, neighborhood, friendship, or any other support system

suppression Actions taken to extinguish or confine a fire

sustained yield See long-term sustained yield

T

T & B Threatened and endangered species See endangered species and threatened species

tall-forest cover Trees of at least young sawtimber size

target A statement used to express planned results to be reached within a stated time period

tentatively suitable lands Those lands which are defined as
 

- 1) presently forested, currently producing, industrial wood-producing, crops of
- 2) not withdrawn from timber production by Congress, the Secretary of Agriculture, or the Chief of the Forest Service,
- 3) for which technology and knowledge exist and are available to ensure timber production without irreversible damage to soils productivity, or watershed
- 4) where there is reasonable assurance that adequate restocking can be attained within five years after final harvest, and
- 5) where adequate information is available to project responses to timber management activities

theoretical capacity See design capacity

thermal cover Trees of at least sapling size of sufficient density to provide shelter from winter winds for wildlife

thinning Cutting timber to improve the quality and growth of the trees that remain in commercial thinning, timber is cut. In precommercial thinning, non-trees are cut. See commercial thinning

threatened species Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the Federal Register by the Secretary of Interior as a threatened species. See also endangered species

shelterwood An even-aged silvicultural system in which in order to provide a source of seed and/or protection for regeneration the old crop (the shelterwood) is removed in tree successional shelterwood cuttings

tiering Refers to the practice of covering general matters in broader environmental impact statements which are subsequently incorporated by reference into narrower environmental impact statements or environmental analyses, allowing the narrower document to concentrate solely on the issues relevant to that specific project

timber A general term for the major woody growth of vegetation in a forest area

timber base The lands within the forest capable, available, and suitable for timber production

timber compartment See compartment

timber harvest See timber production

timber harvest schedule The quantity of timber planned for sale and harvest, by time period, from the area of land covered by the Forest plan

timber land, regulated  
See regulated timber land

timber production  
The growing, tending, harvesting, and regeneration of regulated crops of industrial wood. Industrial wood includes logs, bolts, or other round selections cut from trees for industrial or consumer use, except fuelwood.

timber sale  
See commercial timber sales

timber stand improvement (TSI)  
The use of noncommercial thinning, clearing, weeding and intermediate cuttings to eliminate or suppress less desirable vegetation and improve composition, condition, structure, or growth of a stand.

title claim (encumbrance)  
Claim of ownership on National Forest System land by others.

tractor logging  
See logging systems

trade-off  
The impact on an output or cost caused by changing another output or cost

trailhead  
The parking, signing, and other facilities available at the terminus of a trail

trail maintenance level  
A maintenance sequence ranging from I to IV, with Level I being a low level providing for resource protection and foot traffic only, and Level IV being a high level emphasizing user convenience for all modes of travel (foot, horse, motor vehicle)

transitory range  
See range

travel management  
The administrative decisions on the location and timing of road and trail closures

treatment area  
The site-specific location of a resource improvement activity

tree bole effect  
The visual appearance of tree trunks in an area where an opening has been made in the forest canopy

TSI  
See timber stand improvement

two-step shelterwood  
An even-aged silvicultural system in which, in order to provide a source of seed and/or protection for regeneration, the old crop (the shelterwood) is removed in two successive shelterwood cuttings

type conversion  
The change from one type of vegetation cover to another, e.g., forested to nonforested, one tree species to another, shrubs to grasses)

**U**

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UAC  
See unit area control

understory  
Low-growing vegetation (herbaceous, shrubs, or seedlings and saplings) growing under a stand of trees. Also, that portion of trees in a forest stand below the overstory

even-aged management  
Management of forest stands which include trees of several or many ages growing together. Cutting methods producing uneven-aged stands are single-tree and group selection

unit area control (UAC)  
A system of forest management whereby stand boundaries and cutting prescriptions are determined primarily by the condition of existing timber

unpatented mining claim  
See mining claim

unplanned ignition  
A fire started at random by either natural or human causes, or a deliberate incendiary fire

unregulated timber  
Timber on commercial forest land that is not considered part of the annual harvest because other resource values are greater (e.g., recreation, aesthetics)

unsuitable lands  
Refers to land which is not suited for timber production according to the following criteria defined in NFMA Regulations, 36 CFR 219.14

- 1) is not at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use.
- 2) there is not reasonable assurance that such lands can be adequately restocked within five years after final harvest.
- 3) technology is not available to ensure timber production from the land without irreversible resource damage to soil productivity or watersheds, and
- 4) land has been withdrawn from timber production by Congress, the Secretary of Agriculture or the Chief of the Forest Service

unsuitable range  
See range.

interface  
An area of land in settlement or in the Forest that is developed or potentially developable to a level comparable to conventional land

utility corridors  
Area of land set-aside for powerlines, pipelines, or other similar utilities

utilization standards  
The minimum size of tree that may be cut as Sawtimber or roundwood

**V**

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variety class  
See Visual Variety Class

vegetation treatment  
Any activities undertaken to modify the existing condition of the vegetation

vegetative management  
Activities designed primarily to promote the health of the forest cover for multiple-use purposes

vertical diversity  
The distribution and abundance of different plant and animal communities from the ground level up

viable populations  
Populations of reproductive plants or animals of sufficient numbers and distribution to assure perpetuation of the species in perpetuity

viewshed  
The landscape seen or potentially seen from all or a local part of a travel route, use area, or wafer body

visitor information service (VIS)  
Activities which interpret for visitors, in layman's language, Forest management, protection, utilization, and research. It also includes interpreting the local background geology, ecology, zoology, history, and archaeology. See also Interpretive Service

visual absorption capability (VAC)  
The ability of the lands to withstand management manipulations without significantly affecting its usual character. Rated as high, moderate, and low

Visual Condition  
The following are Visual Condition Classes and descriptions

- I - Pristine, no trace of management activities, only change from natural ecological processes
- II - Evidence of management activities is not detectable by the average viewer
- III - Effects on the landscape management activities are visible but remain visually subordinate to characteristic landscape

IV - Landscape alterations caused by management activities visually dominate the characteristic landscape but vegetative and land form alterations must borrow visual characteristics that naturally occur within the surrounding area

V - Effect of management activities visually dominate the natural landscape but the visual characteristics of the alterations must appear to be of natural occurrence only when viewed in the background. When seen in the foreground or middleground they may not appear at all natural

VI - Landscape alterations totally dominate the natural landscape and appear unnatural when viewed at any distance and in stark contrast to surrounding natural features

**al enhancement**  
A short-term management alternative which is done with the express purpose of increasing positive visual variety where little variety now exists

**visual quality index (VQI)**  
A numerical rating of scenic quality that reflects both the condition of the landscape and the acreage of land in each of the six condition levels ranging from Type I which appears to be untouched by human activities to Type VI where changes in the landscape appear to be drastic disturbances and are in glaring contrast to the natural appearance

**visual quality objectives (VQO)**  
A set of measurable maximum levels of future alteration of a characteristic landscape. These levels are:

- Preservation (P) - Ecological change only
- Retention (R) - Human activities are not evident to the casual Forest visitor
- Partial Retention (PR) - Human activities may be evident, but must remain subordinate to the characteristic landscape
- Modification (M) - Human activity may dominate the characteristic landscape but must, at the same time, follow naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground
- Maximum Modification (MM) - Human activity may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background

**visual resource**  
The composite of basic terrain, geologic features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal that the unit may have for visitors

**Visual Variety Class**  
A measure of the inherent potential of landscape for scenic value, based on the premise that greater diversity in landscape features increase the natural scenic quality. The three Variety Classes are:

- Class A** - Areas with landform: unusual and distinctive patterns, or standing visual quality
- Class B (Common)** - Areas with distinctive features that provide an adequate amount of variety and create a landscape that is common to the area
- Class C (Minimal)** - Areas with little change in their landscape features and thus, with little scenic quality

**VQO**  
See Visual Quality Objectives  
See also Initial Visual Quality Objectives

**W**

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**water chance**  
An area generally on a perennial stream utilized for drafting water to accomplish dust abatement on logging roads or used for fire suppression. Water chances can be either a temporary or a permanent water-holding structure

**water influence zone**  
Areas oriented to outdoor water recreation

**Water Pollution Act**  
Public Law 92-500 enacted in 1972 which has an objective to restore and maintain the chemical, physical, and biological integrity of the Nation's waters

**water rights**  
Legal right to divert and use water or to use it in place

**watershed**  
The total area above a given point on a stream that contributes water to the flow at that point

**watershed condition**  
The status of a watershed which influences soil productivity, water yield, water pollution, or hazardous events

**watershed modeling**  
A mathematical formulation to simulate natural watershed phenomena. The end purpose of the model is to predict water yield and sedimentation

**water yield**  
The total amount of water coming from an area of land, commonly a watershed, over a given period of time

**water yield increase**  
Additional water released to the Forest streams as a result of Forest management activities

**wetlands**  
An area at least periodically wet or flooded, where water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (e.g., bogs and marshes)

**WFHR**  
See Wildlife and Fish Habitat Relationships

**WFUD**  
See Wildlife and Fish User Day

**wild and scenic river**  
Under the 1968 Wild and Scenic Rivers Act, a river set aside to preserve its natural environment and water quality. "Wild River," "Scenic River" and "Recreation River" are classifications of rivers covered by the Act (16 U.S.C. Sec. 1273(b))

**wilderness**  
Briefly, under the Wilderness Act of 1964, wilderness:

- 1) is undeveloped Federal land without permanent improvements or human habitation,
- 2) is protected and managed so as to preserve its natural conditions,
- 3) has outstanding opportunities for solitude or primitive recreation.
- 4) has at least 5,000 acres or is of sufficient size to make practical its condition, and
- 5) and may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest

**wilderness study area (WSA)**  
One of the areas selected by the Chief of the Forest Service from an inventory of unroaded and undeveloped National Forest System lands as having apparent high qualities for wilderness. The area will be studied to determine whether it should be recommended for addition to the National Wilderness Preservation system

**wildfire**  
Any wildland fire that requires suppression

**Wildlife and Fish Habitat Relationships (WFHR)**  
A system for organizing information about wildlife and fish species, their habitats, and relationships between them which is used in

land and resource management planning to set standards and guidelines, evaluate species and habitat diversity, identify special habitat needs, etc

wildlife and fish user day (WPUd)  
Twelve hours of recreation use oriented to wildlife and fish

wildlife habitat diversity  
The distribution and abundance of different plant and animal communities and species within a specific area

withdrawal  
Withholding an area of Federal land from settlement, sale, location, or entry allowed under the general land laws to reserve the area for a particular purpose or program

wood fiber production  
The growing, tending, harvesting and regeneration of harvestable tree;

work routines  
Predictable ways in which people earn their living, including where and when. Factors such as times of day and year, stability, skills required, types of work (hard labor, services), natural resources required, and pay levels are used to generate a profile of a geographic area's work routines. The opportunities for advancement, the business ownership patterns, and the generational cycles of employment activities are also described as part of the work routines descriptor

X

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Y

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year-round economics

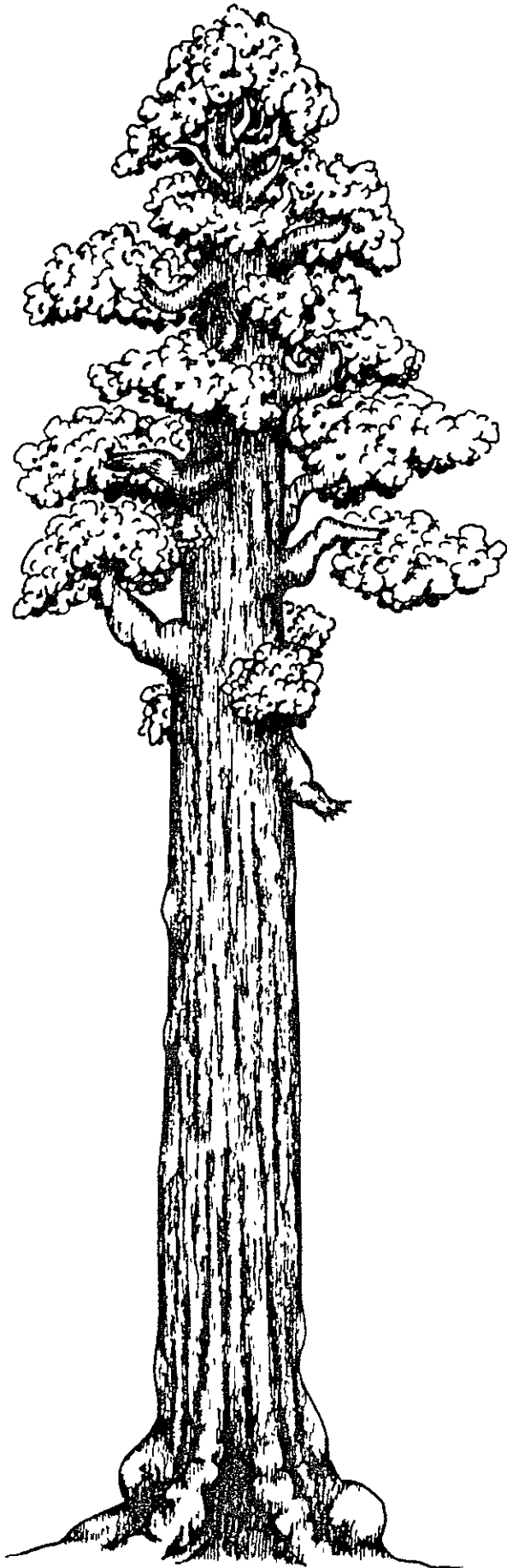
Economics based on employees working year-round as opposed to seasonal employment see also seasonal economy

yield table

A tabular statement of timber volumes expected to be produced under a specified set of conditions

Z

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**Appendix K**  
**BIBLIOGRAPHY**

## APPENDIX K

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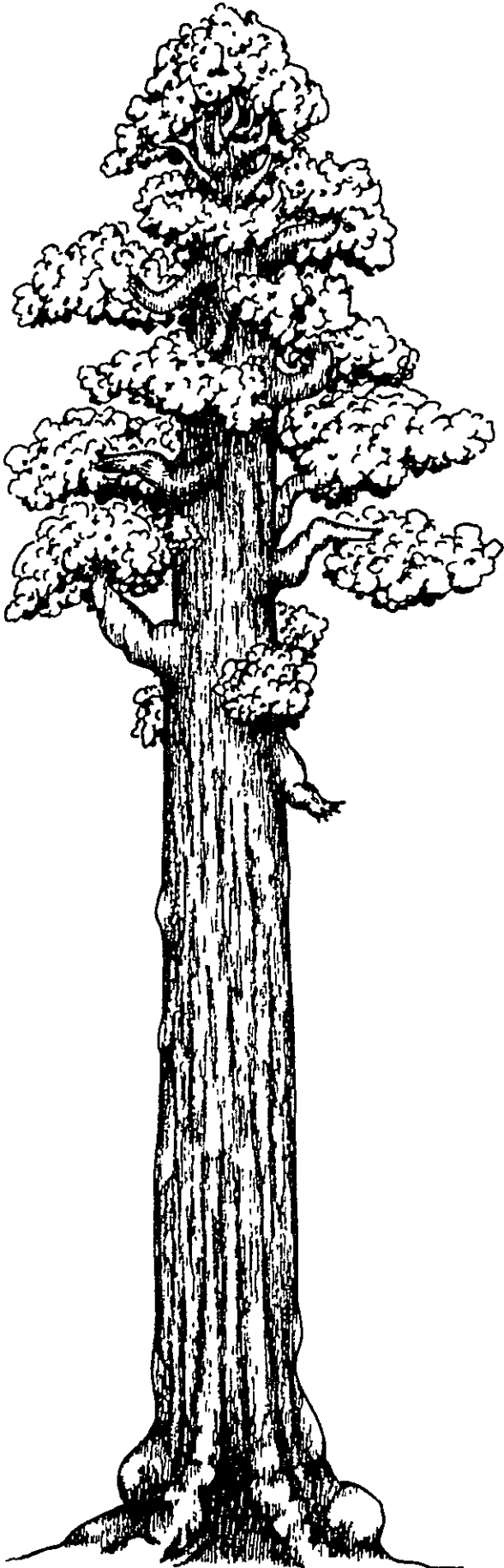
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**Appendix L**

**BUDGETS**

## APPENDIX L

### BUDGETS AND THEIR RELATIONSHIP TO THE FOREST PLAN

The purpose of this appendix is to explain how the Forest gets its funding and what effect different funding levels will have on implementation of the Land and Resource Management Plan (Forest Plan). The appendix explains 1) the Federal budget process, 2) alternate sources of funding, 3) Forest priorities, and 4) monitoring compliance of the Forest Plan.

#### I. The Federal Budget Process

The Federal budget process is lengthy and complex. The Sequoia National Forest's budget is combined with the budgets of the other 17 National Forests which comprise Region 5 of the Forest Service. The budgets of the nine Forest Service regions are, in turn, combined to form the Forest Service's budget. This, in turn, becomes part of the Department of Agriculture's budget before it enters pertinent Congressional subcommittees. Needless-to-say, the budget gets negotiated at each step. The flow chart on the following page illustrates highlights in the chain of events that a Forest budget undergoes on its way to and from Congress.

The role of the Forest Plan in this process is to identify for Congress and for the public what appears to the Forest Service to be the best program and funding level for the Sequoia NF. As can be seen from the chart, however, the factors influencing the Forest's final budget are many and relatively uncontrollable from the Forest's perspective. The ultimate decision-making power over the budget lies with Congress, not only with regard to the total size of the budget, but also with regard to how much will be spent for individual budget items (e.g., timber sales, recreation, wildlife). For these reasons, it is probable that actual budgets will never match the Forest Plan budgets exactly. However, it is anticipated that the parties involved in the budget process will use the Forest Plan for guidance and long-range direction in deciding budget priorities.

As an indication of the Sequoia National Forest's budget trends and priorities as they have been reflected in recent budgets, Table L.1 on page L-3 shows the Forest's funding by resource (function) for fiscal years 1982 (The Plan base year), 1985, 1986, and 1987.

## BUDGET PROCESS FLOW CHART

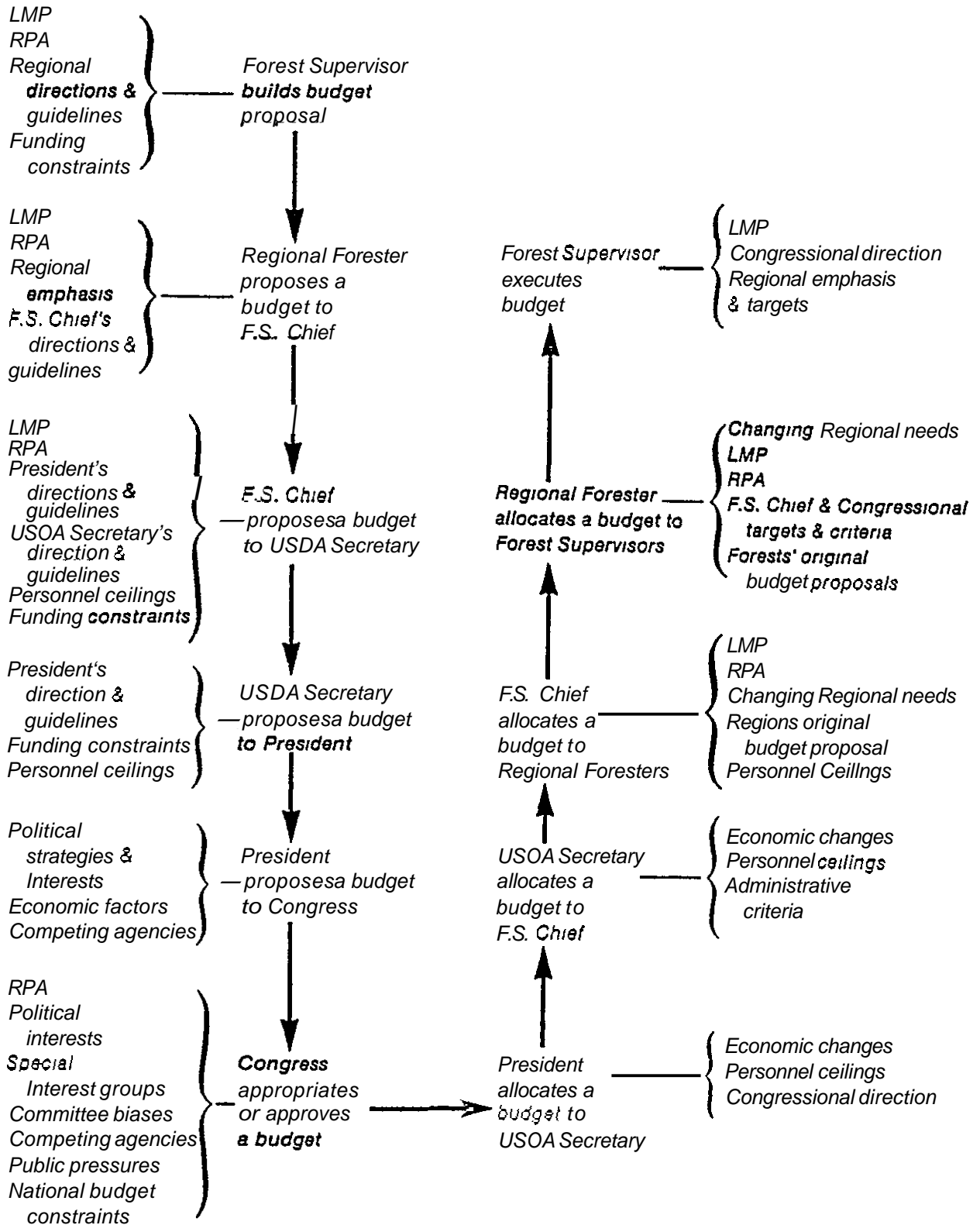
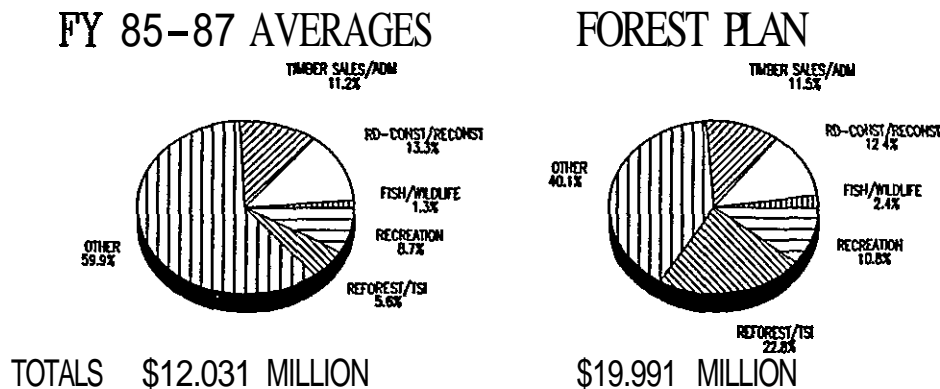


Table L.1 - Sequoia National Forest Budgets

(\$ in thousands)

FISCAL YEAR	<u>82</u>	<u>85</u>	<u>86</u>	<u>87</u>
TOTAL FOREST FUNDS	17,628	13,480	11,515	11,099
TRUST FUNDS	575	1,170	1,585	1,234
KV (Reforestation of Timber Sales)	(459)	(879)	(867)	(685)
OTHER	(116)	(291)	(718)	(549)
PERMANENT APPROPRIATIONS	1,123	494	529	550
TIMBER PURCHASE ELECT	(503)	(-)	(-)	(-)
TIMBER SALVAGE	(254)	(244)	(184)	(161)
BRUSH DISPOSAL ON TIMBER SALES	(366)	(250)	(345)	(383)
TOTAL APPROPRIATED FUNDS	15,930	11,816	9,140	9,315
RANGE BETTERMENT	(38)	(36)	(34)	(34)
CONSTRUCTION	(6,050)	(1,432)	(861)	(1,021)
TRAIL	[280]	[111]	[36]	[54]
ROADS	[5,387]	[1,153]	[804]	[856]
RECREATION	[383]	[83]	[2]	[111]
TOTAL NAT'L FOREST SYSTEM	(9,842)	(9,001)	(8,506)	(8,260)
GENERAL ADMIN.	[1,345]	[1,184]	[1,325]	[1,236]
SOIL, WATER, AIR PROTECTION	[201]	[134]	[124]	[127]
RANGE	[144]	[147]	[188]	[126]
WILDLIFE	[172]	[158]	[176]	[136]
RECREATION	[1,245]	[1,069]	[1,000]	[1,080]
REFORESTATION/ TIMBER STAND IMPV.	[620]	[640]	[600]	[776]
TIMBER SALE PREP. & ADMIN.	[1,445]	[1,509]	[1,198]	[1,338]
TRAIL MAINTENANCE	[171]	[103]	[113]	[66]
ROAD MAINTENANCE	[757]	[553]	[438]	[394]
COOP. LAW ENFORCEMENT	[54]	[101]	[83]	[46]
FIRE PROTECTION	[3,178]	[3,001]	[2,841]	[2,561]
MAINTENANCE OF FACILITIES	[226]	[187]	[178]	[173]
LAND LINE LOCATION	[125]	[136]	[131]	[118]
LANDS MANAGEMENT	[146]	[55]	[66]	[57]
MINERALS	[13]	[24]	[45]	[26]
PURCHASER CREDITS (NOT PART OF ABOVE TOTALS)	863	571	488	570

In order to understand how past budgets compare with the Plan's Preferred Alternative, the above information for recent budgets and costs for the LMP Preferred Alternative have been converted into pie charts for broad resource categories.



"Other" includes the myriad of functional funds not specified above (e.g., range, fire, general administration). Refer to Table L.1 on page L-3.

While not identical, the two pie charts show a similar distribution of funds to major resource areas. This is important, even though past budgets have not been formulated under the broad "umbrella" of a Land Management Plan. The significance is to indicate that a balanced approach to forest management will occur even if budgets less than that necessary to fully implement the Preferred Alternative result. Budgets for the Forest Plan implementation will be developed using the Forest Plan as a foundation; and subject to final allocation, can be expected to approximate the percentages shown.

Using the logic that the Sequoia NF's timber program under the Preferred Alternative is similar to what has occurred on the Forest for the past 25 years, it is not surprising to note mostly minor percentage shifts in the major functional categories for timber and road construction. The most significant shift occurs in the area of Reforestation/Timber Stand Improvement. The primary reason for this shift lies in the fact that the Preferred Alternative identifies an increased program in Timber Stand Improvement activities (e.g., thinning young tree stands to facilitate growth and improve stand vigor). This important aspect of Forest management has unfortunately not been recognized in recent past budgets.

Should Congress continue to fund individual resource programs as in the recent past, adjustments will be required in planned output levels and for the rate at which some provisions of the Forest Plan are implemented. For example, should funds for timber sale preparation and administration continue at the current level, the sale targets outlined in the Forest Plan will be decreased. Similarly, if funds for recreation continue at current levels, much of the action detailed under recreation as described in the Forest Plan will not be undertaken in the coming decade.

## II. Alternate Sources of Funding

The budget given to the Forest Service by Congress authorizes it to spend both appropriated and trust funds. However, while the budget is paramount in a National Forest's ability to carry out activities, it is not the only factor that allows a Forest to get work done. Forests also receive money and services from many other sources. These other sources are becoming increasingly important.

Cooperators aid greatly in accomplishing needed work. For FY 84, a total of \$174,000 was provided by others to do "Coop" work. In FY 85, the total was 5154,000, and in FY 86, \$384,000. Following are examples of various cooperative deposits with which the Sequoia National Forest is dealing:

<u>Cooperator</u>	<u>Purpose</u>	<u>Amount</u> <u>1/</u>
California Department of Fish and Game	Sikes Act Wildlife Habitat Improvement	5 30,000
Penny Pines	Planting Trees	\$ 2,000
Timber Purchasers	Remarking of Timber Harvest Units	\$ 20,000
	Deferred and Recurrent Road Maintenance	\$125,000
Kern County	Wildlife Habitat Improvement	\$ 10,000
State of California	Fire Protection on State Lands Snow Survey	\$ 30,000 \$ 5,000
Three-Forests Interpretive Association	Interpretive Projects and Services	5 7,000
<u>Some One-Time Allocations:</u>		
CALTRANS	State Highway Improvement	\$125,000
Land Exchange Proponents	Facilitate Exchanges	58,000 - \$ 10,000
Water District	Watershed Monitoring Associated with Chaparral Treatment	\$ 16,000
County of Kern	Cultural Resource Studies	\$ 16,000 <u>2/</u>

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1/ Approximate annual amount for recurring funds.

2/ Coop agreement consummated, but funding returned to County when another solution to the need was utilized.

Reimbursements for work performed also add significantly in some program areas. For example:

- 1) The Sequoia assists the Tule River Indian Reservation with its fire program and periodically provides aircraft to other agencies in times of need. Reimbursements to the Forest vary from \$15,000 to \$54,000 per year.
- 2) The Sequoia does fire protection for various agencies, with reimbursements ranging from \$55,000 to \$81,000 per year, depending on fire conditions.
- 3) The Sequoia provides assistance to the State of California in various fire related areas, with reimbursements ranging from \$135,000 to \$719,000 per year. Again, fire severity greatly influences yearly amounts.
- 4) The Sequoia has begun participation with the State of California in the Green Sticker program. The State will reimburse the Forest for OHV and snowmobile trail construction, administration, and planning. Currently, the Forest has agreements for approximately \$300,000 on approved projects. Approximately \$350,000, in addition, have been approved by the State Legislature and agreements are pending.

Occasionally, the Forest receives other funding for emergency situations. For example, following a devastating storm in 1983, the Forest received approximately \$275,000 for trail repair and reconstruction, and \$250,000 for road repair and reconstruction from the Federal Highway Administration through ERFO (Emergency Repair-Federally Owned) program. This funding was utilized over the FY 84-86 period.

The Sequoia National Forest has investigated a number of opportunities to reduce costs of operation. One of these involves operation of the Stony Creek Campground, the Stony Creek Picnic Area, and the Fir and Cove Group Campgrounds under a concessionaire permit. Under the permit system, operations are funded out of fees collected from campers by a private operator and Forest Service costs are reduced. This action is saving the Forest approximately \$15,000 per year.

Volunteers have played, and will continue to play, an increasingly large role on the National Forests. Various programs bring volunteers to help with both office work and field activities. In FY 85, the Forest had a total of 9.4 person-years of contributed time under the Volunteer Program, providing an appraised value of work totaling over \$98,000. In FY 86, these figures increased to 17.3 person-years and over \$230,000. The recreation program is the primary beneficiary of volunteer contributions, including such activities as campground hosts (caretakers), trail maintenance and reconstruction efforts, developed site facility construction and rehabilitation, and OHV administration. Other significant volunteer efforts contribute to the fish and wildlife, timber management, facilities, and protection programs.

The Forest is exploring ways to make additional use of user fees and other funds to finance operating programs. This includes pursuing the



opportunity to obtain user donations for various programs (recent authority to do so has been granted) and to meet proponents' needs for timeliness, having proponents of various projects (e.g., a mineral proposal, a powerline proposal) fund necessary Forest Service study and coordination. Investigating ways to improve efficiency and productivity are also receiving emphasis as a method to make available funding "stretch" to the limit and accomplish more with the resources available.

### 111. Forest Priorities

While output levels listed in the Forest Plan are tied to projected budget levels, they are not the sole or even the primary product of the Forest Plan. The Land Management Plan establishes management direction for the Forest. This includes the Minimum Management Requirements (MMR's), Timber Policy Constraints (TPC's), Minimum Implementation Requirements (MIR's), and Standards and Guidelines (S&G's). These are discussed in Chapter 2 of the FEIS and Chapter 4 of the Forest Plan. The Forest Plan delineates which activities are appropriate for each section of the Forest. For instance, some areas will be managed for recreation, with other activities being undertaken in a fashion to complement recreation. Other areas are managed for range or timber production as their primary function.

The Preferred Alternative shows the maximum potential the Forest can achieve (e.g., the amount of timber which can be sold, the number of cattle grazed) within the bounds of the management direction the Forest has set for itself. The amount of output actually produced and number of activities and projects actually implemented depends on available funding and, in many instances, on actual demand.

Should Congress not provide the budget levels required for full Forest Plan implementation in a given year, management intensity and/or production levels will be lower. Priority within base level funding for the Forest will be the dollars necessary to ensure achievement of MMR's, TPC's, and MIR's. (MMR's are those requirements outside Forest Service authority to change. TPC's are necessary to ensure timber harvest meets sustained non-declining yield, culmination of mean annual increment, and dispersion requirements. MIR's for the Sequoia NF pertain to managing sensitive plants and maintenance of scenic corridors along designated highways.)

Funding beyond the MMR, TPC, and MIR levels will tie to Forest-Wide S&G's. (S&G's are Regional standards and guidelines or specific mitigation measures necessary to meet a fixed objective.) Implementation of S&G's could be affected by budget levels.

Generally speaking, S&G's fall into two categories:

- 1) those associated with project mitigation; and
- 2) those which will maintain or possibly enhance the Forest environment.

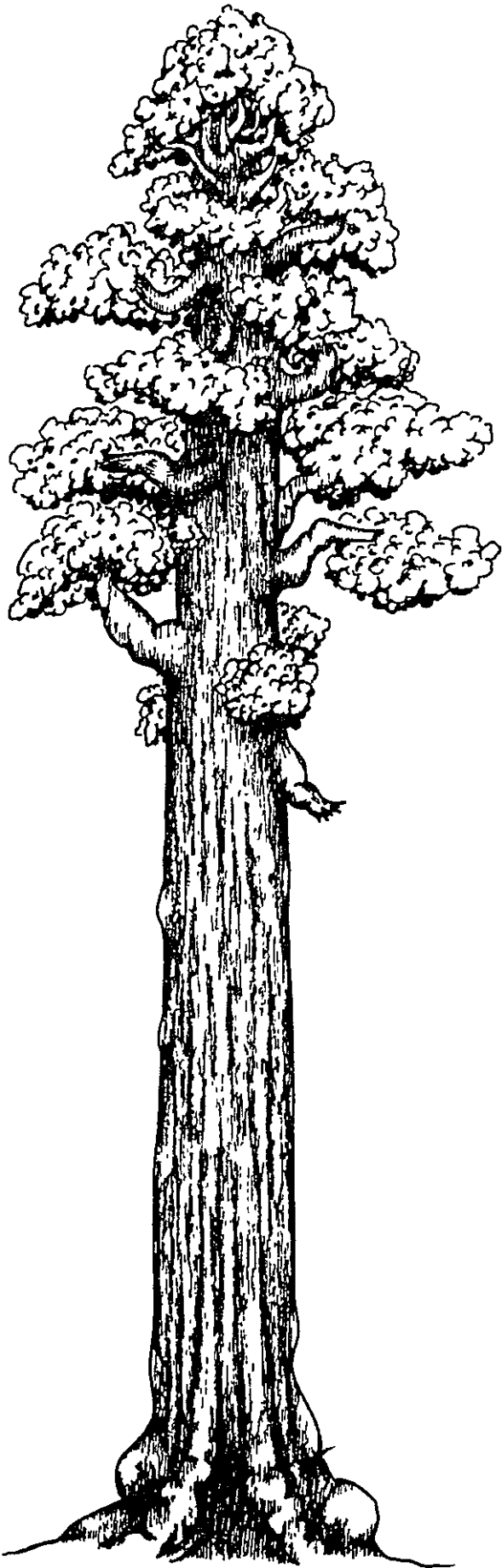
Standards and Guidelines established by the Forest Plan to regulate implementation of projects will not be relaxed simply to meet production levels. Under NEPA, an environmental analysis is completed for every project that affects other resources. If the environmental analysis shows

that the project cannot be accomplished without violating the S&G's, the project will be modified **or** revised to ensure compliance.

Other S&G's address maintenance and/or enhancement of the environment but are not tied to specific projects. Lower budget levels will alter their rate of accomplishment. **For** example, a Forest ~~may~~ have an S&G which reads: "Manage vegetation within developed recreation sites to maintain **or** improve recreation values." Without appropriate funding, this ~~may~~ not be accomplished within the time frame envisioned by the Forest Plan.

#### IV. Monitoring Compliance

The Forest Plan includes a monitoring plan that will help the Forest identify **how it is** meeting the objectives. (This monitoring plan is given in Chapter 5 of the Forest Plan). If the Forest strays too far from accomplishing the objectives set in the Forest Plan, a Plan amendment **or** revision is required. However, because Forest Plan objectives are expressed in average annual terms **for** a 10-year period, accomplishment levels at less than the annual average will not automatically trigger a Plan amendment or revision. The allowed variability for each monitoring item is shown in the monitoring plan. If Forest activities consistently fall outside of the allowed variability, a Plan amendment **or** revision could be triggered.



**Appendix M**

**HERBICIDES**

## APPENDIX M

### EFFECT OF HERBICIDE CONSTRAINTS ON TIMBER MANAGEMENT

If herbicides were constrained in reforestation and timber stand improvement activities, there would be an effect on long-term sustained yield (LTSY) and the cost of timber production. The magnitude of effects would depend upon the extent of the constraints imposed. The greatest effect would be expected with a prohibition on the use of all herbicides. The least effect would be expected, for example, with constraint on the method of application. Intermediate effects would be expected, for example, if only certain chemicals were prohibited. Effects would also depend upon the physical and biological characteristics of land being managed intensively for timber products and the maximum age to which timber producing trees were allowed to grow.

In order to assess the range of possible effects on LTSY and cost, the Preferred Alternative (PRF) was analyzed under two constraining conditions:

- 1) no herbicides, and
- 2) no aerial application of herbicides.

The analysis was based on Appendix A to the Region 5 Draft EIS entitled "Vegetation Management for Reforestation" dated June 1983. This document developed estimates for the changes in timber yields and reforestation costs under several alternative regimes of vegetation management. The Regional analysis was adapted to the Sequoia National Forest by:

- 1) adjusting rotation lengths from 85 years average to 90 years on land assigned to Regulation Class I, and to 150 years on land assigned to Regulation Class II;
- 2) adjusting LTSY reductions caused by competing vegetation when rotation length is different than the 85 years assumed in the Regional DEIS;
- 3) revising "typical" reforestation and timber stand improvement prescriptions to better match local conditions and technology available on the Sequoia NF (Table M.1); and
- 4) adjusting costs to reflect actual local experience where applicable (Table M.2).

Reduction in LTSY and increase in cost for the "No Herbicide" condition were calculated using adaptations of Tables 26 and 28 of the Vegetation Management DEIS; and the combinations of forest cover type, competing vegetation and slope class appropriate to the Sequoia National Forest weighted by the acres ultimately regenerated under PRF. Tables 26 and 29 were used for the "No Aerial Herbicide" condition. A basic assumption used in these calculations was that **all** lands remain suitable for timber management under all constraints; except that all cable ground and most of

the tractor ground with bearclover competition is unsuitable when herbicides are prohibited.

Since rotation length has a significant effect on both yield and cost, the weighting by acres **also** had to include a calculation to account for the proportion of Regulation Classes I and II lands in Alternative PRF.

(Yields from Regulation Class III generally do not depend upon intensive reforestation and stand improvement treatments, and thus were not affected by any constraining condition.) Tables **M.3** through **M8** were created by first calculating the effects under the two constraining conditions (above) with rotation length set at **90** years. Effects were then recalculated with a rotation of **150** years. Averages weighted by acres assigned to each rotation length (Regulation Class) were then calculated to produce the final result shown in Table **M.9**. The model used to calculate effects caused by constraining herbicides was much simplified from that used in FORPLAN. **For** this reason the tables are valid for comparative relationships only. Absolute values may differ significantly from those derived by FORPLAN.

The estimate of effects on other alternatives followed this **same** procedure, based on the acres and Regulation Classes appropriate to each. Table M.10 lists the acres by regulation class and alternative used in the weighting calculation.

Table M1 - Typical Prescriptions and Treatment Costs

CONDITION: NO HERBICIDES

<u>Treatment Unit</u>	<u>Site Prep</u>	<u>\$/ac</u>	<u>Plant</u>	<u>\$/ac</u>	<u>Release</u>	<u>\$/ac</u>	<u>Thin</u>	<u>\$/ac</u>	<u>Total</u>
<u>EASTSIDE PINE</u>									
1 NON-SPROUT MANZ/TRACTOR	Tractor pile 90% Broadcast burn 10	1300	Plant 100% Replant 20%	1340	rub 100% X 2	1500	all	1170	\$1310
2 OTHER BRUSH/TRACTOR	Same as 1	1300	Same as 1	1340	rub 100% ach Mast 75%	1480	all	1170	\$1290
3 GRASS-FORDS/TRACTOR	Same as 1	1300	Plant 100% Replant 40%	1390	rub 100% X 2	1500	70%	1120	\$1310
<u>RED FIR</u>									
4 OTHER BRUSH/TRACTOR	Same as 1	1300	Plant 50% replant 30%	1220	Same as 2	1480	Nat 50% Plant 5% X 65%	1150	11150
5 GRASS-FORDS/TRACTOR	Same as 1	1300	Plant 70% replant 30%	1280	Same as 3	1500	Same as 4	1150	\$1230
6 GRASS-FORBS/CABLE <60%	Broadcast burn 100%	1350	Same as 5	1280	Same as 3	1500	Same as 4	1150	\$1280
7 GRASS-FORBS/CABLE >60%	Same as 6	1380	Same as 5	1310	Same as 3	1550	Same as 4	1160	11400
<u>MIXED CONIFER</u>									
8 SPROUTING MANZ/TRACTOR	Same as 1	1300	Plant 100% Replant 30%	1360	Same as 2	1480	all	1170	\$1310
9 SPROUTING MANZ/CABLE <60%	Same as 6	1350	Same as 8	1360	Same as 3	1500	all	1170	\$1380
10 SPROUTING MANZ/CABLE >60%	Same as 6	1360	Same as 8	1400	Same as 3	1550	all	1190	11520
11 BEARCLOVER/TRACTOR	Unsuitable 90% Terrace 10%	1400	Same as 3	1390	Same as 3	0		0	\$ 790
12 BEARCLOVER/CABLE <60%	Unsuitable 100%								
13 BEARCLOVER/CABLE >60%	Unsuitable 100%								
14 OTHER BRUSH/TRACTOR	Same as 1	1300	Same as 1	1340	Same as 2	1480	all	1170	\$1290
15 OTHER BRUSH/CABLE <60%	Same as 6	1350	Same as 1	1390	Same as 3	1500	all	1170	\$1410
16 OTHER BRUSH/CABLE >60%	Same as 6	1380	Same as 8	1400	Same as 3	1550	all	1190	11520

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Table M.1 - Typical Prescriptions and Treatment Costs (continued)

CONDITION: NO HERBICIDES

<u>Treatment Unit</u>	<u>Site Prep</u>	<u>\$/ac</u>	<u>Plant</u>	<u>\$/ac</u>	<u>Release</u>	<u>\$/ac</u>	<u>Thin</u>	<u>\$/ac</u>	<u>Total</u>
<u>MIXED CONIFER</u>							1		
17 GRASS-FORBS/TRACTOR	Same as 1	1300	Same as 3	1390	Same as 3	1500	all	1170	\$1360
10 GRASS-FORBS/CABLE <60%	Same as 6	1350	Same as 3	1390	Same as 3	1500	all	1170	\$1410
19 GRASS-FORBS/CABLE >60%	Same as 6	1380	Same as 3	1430	Same as 3	1550	all	1190	\$1550
<u>BRUSHFIELD CONVERSION</u>									
20 BRUSHFIELD/TRACTOR	Tractor pile 100%	1300	Same as 3	1390	Same as 2	1400	all	1170	\$1340
71 BRUSHFIELD/CABLE <60%	Hand cut 6 pile 100%	1350	Same as 3	1390	Hand cuttings X 2	1500	all	1170	\$1410

Table 11.1 Typical Prescriptions and Treatment Costs (continued)

**CONDITION: NO AERIAL APPLICATION OF HERBICIDES**

Treatment Unit	Site Prep	\$/ac	Plant	\$/ac	Release	\$/ac	Thin	\$/ac	Total	
<b>EASTSIDE PINE</b>										
1	NON-SPROUT MANZ/TRACTOR	Tractor pile 90 Broadcast burn 10%	Plant 100% Replant 10%	1300	1310	Ground herb 90%, Grub 10%	1190	all	1170	\$ 970
2	OTHER BRUSH/TRACTOR	Same as 1	Same as 1	1300	1310	Same as 1	1190	all	1170	\$ 970
3	GRASS-FORBS/TRACTOR	Tractor pile 100%, Ground herb 100%	Same as 1	1400	1310	Ground herb 100%	1180	all	1170	11140
<b>RED FIR</b>										
4	OTHER BRUSH/TRACTOR	Same as 1	Plant 40% Replant 20%	1300	1170	Ground herb 70% Grub 10%	1150	Nat 60% Flnt 40%	1240	\$ 860
5	GRASS-FOROSITRACTOR	Tractor pile 100% Ground herb 100%	Plant 50% Replant 30%	1480	1220	Same as 4	1150	Nat 50% Plnt 50%	1230	\$1080
6	GRASS-FORBS/CABLE <60%	Broadcast burn 100% Ground herb 100%	Same as 5	1530	1220	Same as 4	1150	See 5	1230	11130
7	GRASS-FORDSICADLE >60%	Same as 6	Plant 60% Replant 30%	1580	1280	Ground herb 100%	1200	Nat 40% Flnt 60%	1240	\$1300
<b>MIXED CONIFER</b>										
8	SPROUTING MANZITRACTOR	Same as 1	Plant 100% Replant 20%	1300	1340	Same as 1	1190	all	1170	\$1000
9	SPROUTING MANZ/CABLE <60%	Same as 6	Same as 8	1530	1340	Same as 1	1190	all	1170	\$1230
10	SPROUTING MANZ/CABLE >60%	Same as 6	Same as 8	1580	1370	Same as 1	1210	all	1190	\$1350
11	BEARCLOVER/TRACTOR	Same as 5	Same as 8	1480	1340	Ground herb 100% X' 2	1360	all	1170	\$1350
12	OEARCLOVERICADLE <60%	Same as 6	Same as 8	1530	1340	Same as 11	1360	all	1170	\$1400
13	BEARCLOVER/CABLE >60%	Same as 6	Same as 8	1580	1370	Same as 11	1400	all	1190	\$1540
14	OTHER BRUSH/TRACTOR	Same as 1	Same as 8	1300	1340	Same as 1	1190	all	1170	\$1000
15	OTIHER BRUSH/CABLE <60%	Same as 6	Same as 8	1530	1340	Same as 1	1190	all	1170	\$1230
16	OTHER BRUSH/CABLE >60%	Same as 6	Same as 8	1580	1370	Same as 1	1210	all	1190	\$1350



Table H.1 - Typical Prescriptions and Treatment Costs (continued)CONDITION: NO AERIAL APPLICATION OF HERBICIDES

<u>Treatment Unit</u>	<u>Site Prep</u>	<u>\$/ac</u>	<u>Plant</u>	<u>\$/ac</u>	<u>Release</u>	<u>\$/ac</u>	<u>Thin</u>	<u>\$/ac</u>	<u>Total</u>
<u>MIXED CONIFER</u>									
17 GRASS-FORBS/TRACTOR	Same as 3	1480	Same as 1	1310	Same as 3	180	all	1170	\$1140
18 GRASS-FORBS/CABLE <60%	Same as 6	1530	Same as 1	1310	Same as 3	180	all	1170	\$1190
19 GRASS-FORBS/CABLE >60%	Same as 1	1580	Same as 1	1340	Ground herb 100%	200	all	190	\$1310
<u>BRUSHFIELD CONVERSION</u>									
20 BRUSHFIELD/TRACTOR	Pile 90%, Mow 10%, Ground herb 100%	1480	Same as 1	1310	Same as 1	190	all	1170	\$1150
21 BRUSHFIELD/CABLE	Ground herb 100% X2, Broadcast burn	1710	Same as 1	1310	Same as 1	190	all	1170	\$1380

Table M.1 - Typical Prescriptions and Treatment Costs (continued)

CONDITION: TREATMENT METHODS UNCONSTRAINED

Treatment Unit	Site Preo	\$/ac Plant	\$/ac Release	\$/ac Thin	\$/ac Total	
<b>EASTSIDE PINE</b>						
1 NON-SPROUT MANZ/TRACTOR	Tractor pile 90% Broadcast burn 10%	1300	Plant 100% Replant 10%	310	Ground herb 30%, Aerial Herb 60%, Grub 10%	160 all 170 \$ 940
2 OTHER ORUSH/TRACTOR	Same as 1	300	Same as 1	310	Same as 1	1160 all 1170 1940
3 GRASS-FORQSITRACTOR	Tractor pile 100%, Ground herb 30%, Aerial herb 70%	1440	Same as 1	1310	Ground herb 30%, Aerial herb 70%	150 all 1170 \$1070
<b>RED FIR</b>						
4 OTHER BRUSH/TRACTOR	Same as 1	1300	Plant 40% Replant 20	1170	Ground herb 70% Grub 10%	150 Nat 60% Plant 40% 1240 \$ 860
5 GRASS-FORQSITRACTOR	Tractor pile 100% Ground herb 50% Aerial herb 50%	1450	Plant 50% Replant 30%	1220	Same as 4	150 Nat 50% Plant 50% 1230 11050
6 GRASS-FORBSICABLE <60%	Broadcast burn 100% Aerial herb 100%	1480	Same as 5	1220	Same as 4	150 See 5 1230 \$1080
7 GRASS-FORQSICABLE >60%	Broadcast burn 100% Aerial herb 100%	1530	Plant 60% Replant 30%	1280	Aerial 100%	1140 Nat 40% Plant 60% 1240 \$1190
<b>MIXED CONIFER</b>						
8 SPROUTING MANZ/TRACTOR	Same as 1	1300	Plant 100% Replant 20%	1340	Same as 1	160 all 1170 \$ 970
9 SPROUTING MANZ/CABLE <60%	Same as 6	1480	Same as 8	1340	Same as 1	1160 all 1170 \$1150
10 SPROUTING MANZ/CABLE >60%	Same as 7	1530	Same as 8	1370	Same as 1	1180 all 1190 11270
11 BEARCLOVER/TRACTOR	Same as 5	1450	Same as 8	1340	Ground herb 100% X 2	1360 all 1170 11320
12 BEARCLOVER/CABLE <60%	Same as 6	1480	Same as 8	1340	Same as 11	1360 all 1170 11350
13 BEARCLOVER/CABLE >60%	Same as 7	1530	Same as 8	1370	Aerial herb 100% X 2	1290 all 1190 \$1300
14 OTHER BRUSH/TRACTOR	Same as 1	1300	Same as 8	1340	Same as 1	1160 all 1170 \$ 970
15 OTHER BRUSH/CABLE <60%	Same as 6	1480	Same as 8	1340	Same as 1	1160 all 1170 \$1150
16 OTHER BRUSH/CABLE >60%	Same as 7	1530	Same as 8	1370	Same as 1	1180 all 1190 \$1270

EFFECT OF HERBICIDE CONSTRAINTS ON TIMBER MANAGEMENT

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Table H.1 - Typical Prescriptions and Treatment Costs (continued)

CONDITION: TREATMENT METHODS UNCONSTRAINED

Treatment Unit	Site Prep	\$/ac	Plant	\$/ac	Release	\$/ac	Thin	\$/ac	Total
<b>MIXED CONIFER</b>									
17 GRASS-FORBS/TRACTOR	Same as 3	1440	Same as 1	1310	Same as 3	150	all	1170	11070
18 GRASS-FORBS/CABLE <60%	Same as 6	480	Same as 1	1310	Same as 3	150	all	1170	11110
19 GRASS-FORBS/CABLE >60%	Same as 7	1530	Same as 1	1340	Aerial herb 100%	1140	all	1190	\$1200
<b>BRUSHFIELD CONVERSION</b>									
20 BRUSHFIELD/TRACTOR	Pile 90%, Now 10%, Aerial herb 50%, Ground herb 505	1460	Same as 1	1310	Same as 1	1160	all	1170	\$1100
21 BRUSHFIELD/CABLE	Aerial herb 100% X2, Broadcast burn	1610	Same as 1	1310	Same as 1	1160	all	1170	\$1250

Table M.2. - Typical Treatment Costs<sup>1</sup> For  
Reforestation and Timber Stand Improvement

<u>TREATMENT</u>	<u>\$/acre</u>
Tractor piling including burning	\$300
Mowing (mastication)	310
Broadcast burning	350
Hand cutting (brush sprouts)	250
Hand cutting (old brushfield)	350
Contour Terracing	400
Hand grubbing	250
Herbicide, aerial application	130
Herbicide, ground application	180
Planting	280
Pre-commercial thinning plantations	170
Pre-commercial thinning natural regeneration	290

1/ Estimates based on recent contract experience on the Sequoia National Forest and typical costs experienced Region-wide (Appendix C of the R5 Vegetation Management DEIS). All figures above include project preparation, administration and overhead allowances.

Add 10% for operations on slopes >60%.

Table M.3 - No Applications of Herbicides - Regulation Class I Land Base - Effects on Timber Yields and Costs of Cultural Treatments (Exclusive of Annual Damage Control), By Major Timber Types, By Alternative

Alternative: PREFERRED ALTERNATIVE (PRF), BUT NO APPLICATIONS OF HERBICIDES  
 Land Base Assumption: LAND BASE IS ALL REGULATION CLASS I (AVERAGE ROTATION AGE IS 90 YEARS)  
 (Adapted for the Sequoia National Forest - John Fiske, October 22, 1907)

TREATMENT UNIT	ACRES (#)	AVERAGE CULTURAL TREATMENT COSTS COSTS PER ACRE (\$)					TOTAL COST (MILLION \$)	MEAN ANNUAL GROWTH (MAI, BD. FT. SCRIBNER)				AVG. TOTAL CULTURAL COST/ MDF
		SITE PREP	PLANT	RELEASE	PRECON. THIN.	TOTAL		PERCENT OF MAX MAI	MAXIMUM MAI/AC	ESTIMATED MAI/AC	MAI (M.B.F.)	
<b>Eastside Pine</b>												
Non-sprout, Manz/Tractor	7	300	340	500	170	1310	9	80	180	144	1	101
Other Brush/Tractor	6	300	340	480	170	1290	8	90	180	162	1	88
Grass-Forbs/Tractor	13	300	350	500	120	1310	17	30	180	54	1	270
<b>Subtotal or Average</b>	<b>26</b>	<b>300</b>	<b>365</b>	<b>495</b>	<b>145</b>	<b>1305</b>	<b>34</b>	<b>57</b>	<b>160</b>	<b>103</b>	<b>3</b>	<b>141</b>
<b>Red Fir</b>												
Other Brush/Tractor	7	300	220	400	210	1210	0	100	700	700	5	19
Grass-Forbs/Tractor	26	300	280	500	150	1230	32	50	700	350	9	39
Grass-Forbs/Cable <60%	3	350	280	500	150	1280	4	50	580	290	1	49
Grass-Forbs/Cable >60%	2	380	310	550	160	1400	3	50	580	250	1	54
<b>Subtotal or Average</b>	<b>38</b>	<b>300</b>	<b>271</b>	<b>499</b>	<b>162</b>	<b>1239</b>	<b>47</b>	<b>59</b>	<b>684</b>	<b>407</b>	<b>15</b>	<b>34</b>
<b>Mixed Conifer</b>												
Sprouting Manzan/Tractor	47	300	360	480	170	1310	62	80	500	400	19	36
Sprouting Manz/Cable <60%	8	350	360	500	170	1300	11	80	410	328	3	47
Sprouting Manz/Cable >60%	4	300	400	550	190	1520	6	80	410	328	1	51
Dear Clover/Tractor	3	400	390	0	0	790	2	50	500	250	1	35
Other Brush/Tractor	76	300	340	400	170	1290	90	100	500	500	38	29
Other Brush/Cable <60%	22	350	390	500	170	1410	31	100	410	410	9	38
Other Brush/Cable >60%	10	300	400	550	190	1520	15	90	410	369	4	46
Grass-Forbs/Tractor	17	300	390	500	170	1360	23	90	500	450	8	34
Grass-Forbs/Cable <60%	4	350	390	500	170	1410	6	90	410	369	1	42
Grass Forbs/Cable >60%	3	300	430	550	190	1550	5	90	410	369	1	47
<b>Subtotal or Average</b>	<b>194</b>	<b>317</b>	<b>363</b>	<b>484</b>	<b>169</b>	<b>1334</b>	<b>259</b>	<b>91</b>	<b>477</b>	<b>435</b>	<b>84</b>	<b>34</b>
<b>Brushfield, Assumed to be Sprouting Manzanita, and Converted to Mixed Conifer</b>												
Brush/Tractor	0	300	350	480	170	1340	0	80	500	400	0	0
Brush/Cable <60%	0	350	390	500	170	1410	0	00	410	328	0	0
<b>Subtotal or Average</b>	<b>0</b>	<b>325</b>	<b>370</b>	<b>490</b>	<b>170</b>	<b>1110</b>	<b>0</b>	<b>80</b>	<b>455</b>	<b>364</b>	<b>0</b>	<b>0</b>
<b>Total or Average</b>	<b>258</b>	<b>314</b>	<b>350</b>	<b>407</b>	<b>166</b>	<b>1317</b>	<b>340</b>	<b>03</b>	<b>512</b>	<b>398</b>	<b>103</b>	<b>37</b>

Total Annual Timber Yield - Sequoia NF - 103 Million Board Feet (Scribner) Per Year  
 Average Mean Annual Increment Per Acre - Sequoia NF - 390 Board Feet (Scribner) Per Acre Per Year  
 Average Annual Vegetation Management Costs for Reforestation - Sequoia NF: 3.70 Million Dollars  
 Average Program Cost of Vegetation Management During Reforestation Per Thousand Board Feet (Scribner) Yield - Sequoia NF: 37 Dollars

Table 11.4 - To Aerial Applications of Herbicides - Regulation Class 1 Land Base - Effects on Timber Yields and Costs of Cultural Treatments (Exclusive of Annual Damage Control), by Major Tractor Types, by Alternative

Alternative PREFERRED ALTERNATIVE (PFP), PUT NO AERIAL APPLICATIONS OF HERBICIDES  
 Land Base Assumption, LAND BASE IS ALL REGULATION CLASS 1 (AVERAGE ROTATION AGE IS 90 YEARS)  
 (Adapted for the Sequoia National Forest - John Fiske, October 22, 1987)

TREATMENT UNIT	ACRES	COSTS PER ACRE (%)		TOTAL PRECON.	TOTAL (MILLION \$)	PERCENT OF MAXIMUM ESTIMATED MAI	MAX MAI MAI/AC. (T/MBF)	AVG. TOTAL CULTURAL COST/T/MBF
		SITE PRECON.	PLANT RELEASE THIN.					
Eastside Pine								
Non-sprout, Hantz/Tractor	7	300	310	190	970	100	180	60
Other Brush/Tractor	6	300	310	170	970	100	180	60
Class-Fords/Tractor	13	480	310	180	1140	100	180	70
Subtotal or Average	26	390	310	185	1055	100	180	65
Red Fir								
Other Brush/Tractor	7	300	170	150	240	100	700	14
Class-Fords/Tractor	26	480	220	150	230	100	700	17
Class-Fords/Cable <60%	3	530	220	150	1130	100	580	22
Class-Fords/Cable >60%	2	580	280	200	240	90	522	28
Subtotal or Average	38	456	214	153	232	99	684	17
Mixed Conifer								
Sprouting Hantz/Cable <60%	47	300	340	190	1000	100	500	22
Sprouting Hantz/Cable >60%	8	530	340	210	1230	100	410	33
Ear Clover/Tractor	4	580	310	400	1540	90	369	46
Ear Clover/Cable <60%	10	530	340	360	170	100	410	38
Ear Clover/Tractor	33	480	340	360	1350	100	500	10
Ear Clover/Cable >60%	33	480	340	360	1350	100	500	41
Sprouting Hantz/Cable >60%	4	580	310	400	1540	90	369	46
Other Brush/Tractor	16	300	340	190	1000	100	500	29
Other Brush/Cable <60%	22	530	340	190	1230	100	410	38
Other Brush/Cable >60%	10	580	310	210	1350	90	369	41
Class-Fords/Tractor	17	430	310	180	1140	100	500	25
Class-Fords/Cable <60%	4	530	310	180	1190	100	410	32
Class-Fords/Cable >60%	3	500	340	200	1310	90	410	39
Subtotal or Average	238	405	340	225	1141	99	477	27
Brushfield, Assumed to be Sprouting Hantz/Cable, and Converted to Mixed Conifer								
Brush/Tractor	0	480	310	190	1150	100	500	0
Brush/Cable <60%	0	110	310	190	1380	100	410	0
Subtotal or Average	0	590	310	190	1110	100	455	0
Total or Average	302	410	321	212	179	1123	339	26

Total Annual Timber Yield - Sequoia NF: 143 Million Board Feet (Scribner) Per Year  
 Average Mean Annual Increment Per Acre - Sequoia NF: 473 Board Feet (Scribner) Per Acre Per Year  
 Average Annual Vegetation Management Costs for Reforestation - Sequoia NF: 3.77 Million Dollars  
 Average Program Cost of Vegetation Management During Reforestation Per Thousand Board Feet (Scribner) Yield - Sequoia NF: 26 Dollars

Table d.5 - Herbicide Application - Regulation Class I Land Base - Effects on Timber Yields and Costs of Cultural Treatments (Exclusive of Animal Damage Control), By Major Timber Types, By Alternative

Alternative: PREFEPPED ALTERNATIVE (PRF), OUT KO CONSTRAINT ON HERBICIDE APPLICATION!  
 Land Base Assumption: LAND BASE IS ALL REGULATION CLASS I (AVERAGE ROTATION AGE IS 90 YEARS)  
 (Adapted for the Sequoia National Forest - John Fiske, October 22, 19071

TREATMENT UNIT	ACRES (1)	AVERAGE CULTURAL TREATMENT COSTS					TOTAL COST (MILLION \$)	MEAN ANNUAL GROWTH (MAJ. PD. FT. SCRIBNER)			AVG. TOTAL CULTURAL COST/ MBF	
		SITE PREP	COSTS PER ACRE (\$)					PERCENT OF MAX MAI	MAXIMUM ESTIMATED MAI/AC	MAI (MBF)		
			PLANT	RELEASE	PRECON. THIN.	TOTAL						
Eastside Pine												
Non-sprout, Manz/Tractor	7	300	310	160	170	940	7	100	180	180	1	58
Other Brush/Tractor	6	300	310	160	170	940	6	100	180	180	1	55
Grass-Forbs/Tractor	13	410	310	150	170	1070	14	100	180	180	2	66
<u>Subtotal or Average</u>	<u>26</u>	<u>370</u>	<u>310</u>	<u>155</u>	<u>170</u>	<u>1005</u>	<u>26</u>	<u>100</u>	<u>180</u>	<u>180</u>	<u>5</u>	<u>62</u>
Red Fir												
Other Brush/Tractor	7	300	170	150	240	860	6	100	700	700	5	14
Grass-Forbs/Tractor	26	450	220	150	230	1050	27	100	700	700	18	17
Grass-Forbs/Cable <60%	3	400	220	150	230	1080	3	100	530	500	2	21
Grass-Forbs/Cable >60%	7	530	280	140	240	1190	2	100	580	500	1	23
<u>Subtotal or Average</u>	<u>38</u>	<u>429</u>	<u>214</u>	<u>140</u>	<u>232</u>	<u>1025</u>	<u>39</u>	<u>100</u>	<u>684</u>	<u>684</u>		
Mixed Conifer												
Sprouting Manzan/Tractor	47	300	340	160	170	970	46	100	500	500	74	22
Sprouting Manz/Cable <60%	0	480	340	160	170	1150	0	100	410	410	3	31
Sprouting Manz/Cable >60%	4	530	370	180	190	1270	5	100	410	410	7	34
Bear Clover/Tractor	33	450	340	360	170	1320	44	100	500	500	17	29
Bear Clover/Cable <60%	10	480	340	360	170	1350	14	100	410	410	4	37
Bear Clover/Cable >60%	4	530	370	290	190	1380	6	100	410	410	2	37
Other Brush/Tractor	7	300	340	160	170	970	74	100	500	500	30	77
Other Brush/Cable <60%	22	480	340	160	170	1150	25	100	410	410	9	31
Other Brush/Cable >60%	10	530	370	190	190	1270	13	100	410	410	4	34
Grass-Forbs/Tractor	17	440	310	150	170	1070	18	100	500	500	9	24
Grass-Forbs/Cable <60%	4	480	210	150	170	1110	4	100	410	410	2	30
Grass Forbs/Cable >60%	3	530	340	140	190	1200	4	100	410	410	1	33
<u>Subtotal or Average</u>	<u>238</u>	<u>384</u>	<u>340</u>	<u>198</u>	<u>172</u>	<u>1094</u>	<u>260</u>	<u>100</u>	<u>475</u>	<u>475</u>	<u>113</u>	<u>26</u>
Brushfield, Assumed to be Sprouting Manzanita, and Converted to Mixed Conifer												
Brush/Tractor	0	480	310	160	170	1100	0	100	500	500	0	0
Brush/Cable <60%	0	610	310	160	170	1250	0	100	410	410	0	0
<u>Subtotal or Average</u>	<u>0</u>	<u>535</u>	<u>310</u>	<u>160</u>	<u>170</u>	<u>1110</u>	<u>0</u>	<u>100</u>	<u>455</u>	<u>455</u>	<u>0</u>	<u>0</u>
<u>Total or Average</u>	<u>307</u>	<u>389</u>	<u>371</u>	<u>212</u>	<u>179</u>	<u>1078</u>	<u>325</u>	<u>100</u>	<u>476</u>	<u>476</u>	<u>144</u>	<u>25</u>

Total Annual Timber Yield - Sequoia NF: 144 Million Board Feet (Scribner) Per Year  
 Average Mean Annual Increment Per Acre - Sequoia NF: 476 Board Feet (Scribner) Per Acre Per Year  
 Average Annual Vegetation Management Costs for Reforestation - Sequoia NF: 3.62 Million Dollars  
 Average Program Cost of Vegetation Management During Reforestation Per Thousand Board Feet (Scribner) Yield - Sequoia NF: 2 Dollars

Table M.6 - No Applications of Herbicides - Regulation Class II Land Base - Effects on Timber Yields and Costs of Cultural Treatments (Exclusive of Animal Damage Control), By Major Timber Types, By Alternative

Alternative PREFERRED ALTERNATIVE (PRF), BUT NO APPLICATIONS OF HERBICIDES  
 Land Base Assumption. LAND BASE IS PLL REGULATION CLASS II (AVERAGE ROTATION AGE IS 150 YEARS)  
 (Adapted for the Sequoia National Forest - John Fiske, October 22, 1987)

TREATMENT UNIT	ACRES (M)	AVERAGE CULTURAL TREATMENT COSTS					TOTAL COST (MILLION \$)	MEAN ANNUAL GROWTH (MAI, BD., FT., SCRIBNER)				AVG. TOTAL CULTURAL COST/ MIBF
		COSTS PER ACRE (\$)						PERCENT OF MAX. MAI	ESTIMATED MAI/AC	MAI/AC (MIBF)	MAI (MIBF)	
		SITE PREP	PLANT	RELEASE	PRECOM. THIN	TOTAL						
<b>Eastside Pine</b>												
Non-sprout, Manz/Tractor	7	300	340	500	170	1310	9	90	220	198	1	44
Other Brush/Tractor	6	300	340	480	170	1290	8	100	220	220	1	39
Grass-Forbs/Tractor	13	300	390	500	120	1310	17	50	220	110	1	79
<b>Subtotal or Average</b>	<b>26</b>	<b>300</b>	<b>365</b>	<b>495</b>	<b>145</b>	<b>1305</b>	<b>34</b>	<b>72</b>	<b>220</b>	<b>159</b>	<b>4</b>	<b>55</b>
<b>Red Fir</b>												
Other Brush/Tractor	7	300	220	480	210	1210	8	100	060	060	6	9
Grass-Forbs/Tractor	26	300	280	500	150	1230	32	70	860	602	16	14
Grass-Forbs/Cable <60%	3	350	280	500	150	1280	4	70	710	497	1	17
Grass-Forbs/Cable >60%	2	300	310	550	160	1400	3	70	710	497	1	19
<b>Subtotal or Average</b>	<b>38</b>	<b>308</b>	<b>271</b>	<b>499</b>	<b>162</b>	<b>1239</b>	<b>47</b>	<b>76</b>	<b>840</b>	<b>636</b>	<b>24</b>	<b>13</b>
<b>Mixed Conifer</b>												
Sprouting Manzan/Tractor	47	300	360	400	170	1310	62	90	610	549	26	16
Sprouting Manz/Cable <60%	E	350	360	500	170	1300	11	90	500	450	4	70
Sprouting Manz/Cable >60%	4	380	400	550	190	1570	6	90	500	450	2	23
Pear Clover/Tractor	3		390	0	0	790	2	70	610	427	1	12
Other Brush/Tractor	76	300	340	400	170	1290	98	100	610	610	46	14
Other Brush/Cable <60%	22	350	390	500	170	1410	31	100	500	500	11	19
Other Brush/Cable >60%	10	380	400	550	190	1520	15	100	500	500	5	20
Grass-Forbs/Tractor	17	300	390	500	170	1360	23	100	610	610	10	15
Grass-Forbs/Cable <60%	4	350	390	500	170	1410	6	100	500	500	2	19
Grass Forbs/Cable >60%	3	300	430	550	190	1550	5	100	500	500	2	21
<b>Subtotal or Average</b>	<b>194</b>	<b>317</b>	<b>363</b>	<b>484</b>	<b>169</b>	<b>1334</b>	<b>259</b>	<b>96</b>	<b>585</b>	<b>560</b>	<b>109</b>	<b>16</b>
<b>Brushfield, Assumed to be Sprouting Manzanita, and Converted to Mixed Conifer</b>												
Brush/Tractor	0	300	390	480	170	1340	0	90	610	549	0	0
Brush/Cable <60%	0	350	390	500	170	1410	0	90	500	450	0	0
<b>Subtotal or Average</b>	<b>0</b>	<b>325</b>	<b>390</b>	<b>490</b>	<b>170</b>	<b>1110</b>	<b>0</b>	<b>90</b>	<b>555</b>	<b>500</b>	<b>0</b>	<b>0</b>
<b>Total or Average</b>	<b>258</b>	<b>314</b>	<b>350</b>	<b>407</b>	<b>166</b>	<b>1317</b>	<b>340</b>	<b>91</b>	<b>587</b>	<b>531</b>	<b>137</b>	<b>17</b>

Total Annual Timber Yield - Sequoia IIF. 137 Million Board Feet (Scribner) Per Year  
 Average Mean Annual Increment Per Acre - Sequoia IIF. 531 Board Foot (Scribner) Per Acre Per Year  
 Average Annual Vegetation Management Costs for Reforestation - Sequoia IIF 2.27 Million Dollars  
 Average Program Cost of Vegetation Management During Reforestation Per Thousand Board Feet (Scribner) Yield - sequoia IIF 17 Dollars



Table M.7 - No Aerial Applications of Herbicides - Population Class II Land Base - Effects on Timber Yields and Costs of Cultural Treatments (Exclusive of Animal Damage Control), By Major Timber Types, By Alternative

Alternative. PREFERRED ALTERNATIVE (PRF), BUT NO AERIAL APPLICATIONS OF HERBICIDES  
 Land Base Description LAND BASE IS ALL REGULATION CLASS II (AVERAGE ROTATION AGE IS 150 YEARS)  
 (Adapted for the Sequoia National Forest - John Fiske, October 22, 1987)

TREATMENT UNIT	ACRES (11)	AVERAGE CULTURAL TREATMENT COSTS COSTS PER ACRE (\$)					TOTAL COST (MILLION \$)	MEAN ANNUAL GROWTH (MAI, CU. FT. SCRIBNER)				AVG. TOTAL CULTURAL COST/ 1000 BF
		SITE PREP	PLANT	RELEASE	PRECON. THIN.	TOTAL		PERCENT OF MAX MAI	MAXIMUM MAI/AC	ESTIMATED MAI/AC	MAI (MMBF)	
Eastside Pine												
Non-sprout. Manz/Tractor	7	300	310	190	170	970	7	100	220	220	2	29
Other Brush/Tractor	6	300	310	190	170	970	6	100	720	220	1	29
Grass-Forbs/Tractor	13	480	310	180	170	1140	15	100	220	220	3	35
Subtotal or Average	26	390	310	185	170	1055	27	100	220	220	6	32
Red Fir												
Other Brush/Tractor	7	300	170	150	240	860	6	100	860	860	6	7
Grass-Forbs/Tractor	26	470	220	150	730	1080	28	100	860	860	22	8
Grass-Forbs/Cable <60"	3	530	220	150	230	1130	3	100	710	710	2	11
Grass-Forbs/Cable >60"	2	500	260	200	240	1300	3	100	710	710	1	12
Subtotal or Average	38	456	214	153	232	1055	40	100	840	840	32	8
Mixed Conifer												
Sprouting Manzan/Tractor	47	300	140	190	170	1000	47	100	618	610	29	11
Sprouting Manz/Cable <60"	8	530	740	190	170	1730	10	100	500	500	4	16
Sprouting Manz/Cable >60"	4	580	370	210	190	1350	5	100	500	500	7	18
Beard Clover/Tractor	33	480	340	360	170	1350	45	100	610	610	70	15
Beard Clover/Cable <60"	10	530	340	360	170	1400	14	100	500	500	5	19
Beard Clover/Cable >60"	4	580	370	400	190	1540	6	100	500	500	2	21
Other Brush/Tractor	76	300	340	190	170	1000	76	100	610	610	46	11
Other Brush/Cable <60"	27	530	340	190	170	1730	27	100	500	500	11	16
Other Brush/Cable >60"	10	580	370	210	190	1350	14	100	500	500	5	18
Grass-Forbs/Tractor	17	420	310	180	170	1140	19	100	610	610	10	12
Grass-Forbs/Cable <60"	4	530	310	180	170	1190	5	100	500	500	2	16
Grass Forbs/Cable >fin-	3	580	340	200	190	1310	4	100	500	500	2	17
Subtotal or Average	230	405	340	225	172	1141	272	100	500	580	138	13
Brushfield, Assured to be Sprouting Manzanita, and Converted to Mixed Conifer												
Brush/Tractor	0	480	310	190	170	1150	0	100	610	610	0	0
Brush/Cable <60"	0	710	310	190	170	1380	0	100	500	500	0	0
Subtotal or Average	0	595	310	190	170	1110	0	100	555	555	0	0
Total or Average	302	410	321	212	179	1123	330	100	582	582	176	13

Total Annual Timber Yield - Sequoia NF - 176 Million Board Feet (Scribner) Per Year  
 Average Mean Annual Increment Per Acre - Sequoia NF - 582 Board Feet (Scribner) Per Acre Per Year  
 Average Annual Vegetation Management Costs for Reforestation - Sequoia NF - 2.26 Million Dollars  
 Average Program Cost of Vegetation Management During Reforestation Per Thousand Board Feet (Scribner) Yield - Sequoia NF - 13 Dollars

Table M.8 Herbicide Application - Regulation Class II Land Base - Effects on Timber Yields and Costs of Cultural Treatments (Exclusive of Animal Damage Control), By Major Timber Types, By Alternative

Alternative: PREFERRED ALTERNATIVE (PRF), PUT NO CONSTRAINT ON HERBICIDE APPLICATION  
 Land Base Assumption: LAND BASE IS ALL REGULATION CLASS II (AVERAGE ROTATION AGE IS 150 YEARS)  
 (Adapted for the Sequoia National Forest - John Fiske, October 22, 1987)

TREATMENT UNIT	ACRES (h)	AVERAGE CULTURAL TREATMENT COSTS COSTS PER ACRE (\$)					TOTAL COST (MILLION \$)	MEAN ANNUAL GROWTH (MAI, PD. FT. SCRIBNER)				AVG. TOTAL CULTURAL COST/ HBF
		SITE PREP	PLANT	RELEASE	PRECOM. THIN	TOTAL		PERCENT OF MAX MAI	MAXIMUM MAI/AC	ESTIMATED MAI/AC	MAI (MEC)	
<b>Eastside Pine</b>												
Non-sprout, Hanz/Tractor	7	300	310	160	170	540	7	100	270	220	2	28
Other Brush/Tractor	6	300	310	160	170	940	6	100	220	720	1	28
Grass-Forbs/Tractor	13	440	310	150	170	1070	14	100	220	220	3	32
<b>Subtotal or Average</b>	<b>26</b>	<b>370</b>	<b>310</b>	<b>155</b>	<b>170</b>	<b>1005</b>	<b>26</b>	<b>100</b>	<b>220</b>	<b>220</b>	<b>6</b>	<b>30</b>
<b>Red Fir</b>												
Other Brush/Tractor	7	300	170	150	240	860	6	100	060	860	6	7
Grass-Forbs/Tractor	26	450	220	150	230	1050	27	100	860	860	22	8
Grass-Forbs/Cable <60%	3	480	220	150	230	1080	3	100	710	710	2	10
Grass-Forbs/Cable >60%	2	530	280	140	240	1150	2	100	710	710	1	11
<b>Subtotal or Average</b>	<b>38</b>	<b>429</b>	<b>214</b>	<b>149</b>	<b>232</b>	<b>1025</b>	<b>39</b>	<b>100</b>	<b>840</b>	<b>840</b>	<b>32</b>	<b>8</b>
<b>Fixed Conifer</b>												
Sprouting Manzan/Tractor	47	300	340	160	170	970	46	100	610	610	29	11
Sprouting Hanz/Cable <60%	8	480	340	160	170	1150	9	100	500	500	4	15
Sprouting Hanz/Cable >60%	4	530	370	180	190	1270	5	100	500	500	2	17
Rear Clover/Tractor	33	450	340	360	170	1320	44	100	610	610	20	14
Rear Clover/Cable <60%	10	480	340	360	170	1350	14	100	500	500	5	18
Rear Clover/Cable >60%	4	530	370	210	150	1300	6	100	500	500	2	18
Other Brush/Tractor	76	300	340	160	170	970	74	100	610	610	46	11
Other Brush/Cable <60%	22	480	340	160	170	1150	25	100	500	500	11	15
Other Brush/Cable >60%	10	530	370	180	190	1270	13	100	500	500	5	17
Grass-Forbs/Tractor	17	440	310	150	170	1070	18	100	610	610	10	12
Grass-Forbs/Cable <60%	4	480	310	150	170	1110	4	100	500	500	2	15
Grass Forbs/Cable >60%	3	530	340	140	190	1200	4	100	500	500	2	16
<b>Subtotal or Average</b>	<b>238</b>	<b>384</b>	<b>340</b>	<b>198</b>	<b>172</b>	<b>1094</b>	<b>260</b>	<b>100</b>	<b>580</b>	<b>580</b>	<b>130</b>	<b>13</b>
<b>Brushfield, Assumed to be Sprouting Manzanita, and Converted to Fixed Conifer</b>												
Brush/Tractor	0	460	310	160	170	1100	0	100	610	610	0	0
Brush/Cable <60%	0	610	310	160	170	1250	0	100	500	500	0	0
<b>Subtotal or Average</b>	<b>0</b>	<b>535</b>	<b>310</b>	<b>160</b>	<b>170</b>	<b>1110</b>	<b>0</b>	<b>100</b>	<b>555</b>	<b>555</b>	<b>0</b>	<b>0</b>
<b>Total or Average</b>	<b>307</b>	<b>389</b>	<b>321</b>	<b>188</b>	<b>179</b>	<b>1070</b>	<b>375</b>	<b>100</b>	<b>502</b>	<b>582</b>	<b>176</b>	<b>12</b>

Total Annual Timber Yield - Sequoia IF 176 Million Board Feet (Scribner) Per Year  
 Average Mean Annual Increment Per Acre - Sequoia IF: 582 Board Feet (Scribner) Per Acre Per Year  
 Average Annual Vegetation Management Costs for Reforestation - Sequoia IF: 7.17 Million Dollars  
 Average Program Cost of Vegetation Management During Reforestation Per Thousand Board Feet (Scribner) Yield - Sequoia IF 12 Dollars

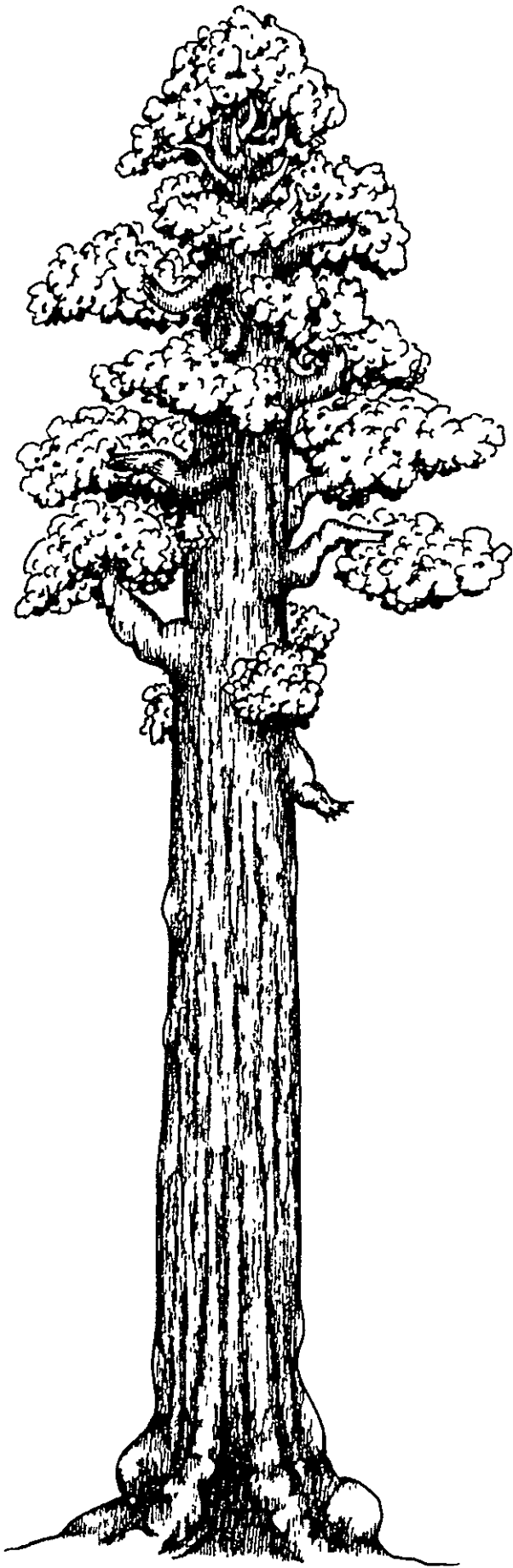
Table M.9 - Effects on Timber Management of Two Policies That Would Restrict Use of Herbicides  
 (Effects are displayed **two** ways: actual changes and. In parentheses. percentage changes)

Effect on:	Herbicide Policy:	LMP Alternative						
		PRF	CUR	RPA	ANM	IKT	PRO	WVY
Allowable Sale Quantity (MMBF)	No Herbicides	-40 (26)	-25 (28)	-27 (28)	-14 (22)	-35 (28)	-38 (30)	-28 (22)
	No Aerial Herb.	-1 (1)	neg	neg	neg	-1 (1)	-1 (1)	neg
Timber Suitable Land Base (Thousand Acres)	No Herbicides	-44 (15)	-28 (14)	-32 (15)	-21 (18)	-37 (14)	-39 (14)	-32 (15)
	No Aerial Herb.	0	0	0	0	0	0	0
Reforestation and Timber Stand Improvement Budget (Million Dollars) 1/	No Herbicides	+0.1 (3)	+0.1 (4)	+0.1 (4)	neg	+0.2 (6)	+0.1 (3)	neg
	No Aerial Herb.	neg	+0.1 (4)	+0.1 (4)	neg	+0.1 (3)	neg	+0.1 (6)
Average Cost per Thousand Board Feet (Dollars) 1/	No Herbicides	+8.10 (39)	+11.30 (44)	+11.30 (44)	+3.80 (27)	+12.30 (49)	+12.00 (47)	+3.60 (29)
	No Aerial Herb.	+0.10 (1)	+1.10 (4)	+1.00 (4)	neg	+1.00 (4)	+0.20 (1)	+0.80 (6)

1/ All reforestation and timber stand improvement costs, except for animal damage control.

Table M.10 - Acres Suitable for Timber Management by Alternative, Forest Type-  
and Regulation Class

FOREST TYP AND REGULATION CLASS	TH SAND OF ACRE BY ALTERNATIVE							
	PRF	CUR	RPA	AMN	MKT	PRO	WFV	
EASTSIDE PINE	RC 1	0	13	19	0	36	26	0
	RC 2	26	13	0	0	0	10	19
RED FIR	RC 1	13	16	15	0	20	30	0
	RC 2	25	2	2	0	9	0	24
MIXED CONIFER	RC 1	188	152	172	11	200	210	0
	RC 2	50	0	0	103	0	0	175



**Appendix O**

**TIMBER  
SUPPLY-DEMAND**

## APPENDIX 0

### THE REGIONAL TIMBER SUPPLY-DEMAND SITUATION IN CALIFORNIA

This appendix was created to address public comment that requested additional information on the broad level timber supply and demand situation in relation to supplies from individual National Forests. Existing information from recent RPA assessments, the Pacific Southwest Regional Guide, Forest Service research publications, and the State of California's Forest and Range Resource Assessment Program was used for this purpose.

#### 1. Historical Harvests from Public and Private Lands - Statewide

Timber harvest in California has been in a downward trend for over 30 years. In 1955, timber harvest in the State from all lands totaled 6 billion board feet. In that year, harvest from private lands was 4.9 billion and harvest from National Forest was 1.0 billion. Less than 100 million board feet were harvested from other public lands. Since that time, total harvest in the State has fallen steadily. By 1982, at the bottom of the last recession, harvests had fallen to 2.5 billion board feet. Since then, annual harvests have rebounded to 4 billion board feet. Harvest from private lands fell to 1.5 billion board feet in 1982 and have since rebounded to 2.2 billion board feet. Harvest from National Forests increased to a peak of 2.36 billion board feet in 1968. National Forest harvests then trended downward to a low of 0.9 billion board feet at the bottom of the last recession and have since rebounded to 1.96 billion board feet. Harvests from other public lands have been relatively stable at near 100 million board feet for the last three decades (see Table 0.1).

As shown in Table 0.1, harvest levels fluctuate widely from year to year rather than following a smooth pattern. Year to year variations are influenced primarily by changes in housing markets and general business conditions. Only over the long term do timber inventory and growth levels limit harvests.

#### 2. Statewide Demand for Timber Products and the Relationship to Harvest Levels

With a population that has grown faster than the national average to over 26 million people and a high level of income per capita. California is one of the largest markets for lumber, wood, and paper products in the world. When discussing the relationship between the demand for timber products (lumber, wood, and paper) and the demand for timber harvest (stumpage), it is necessary to translate the demand for timber products into its timber harvest equivalent. Expressed in these terms, the demand for timber has been increasing, but at a slower rate than the growth in population. While the population has been growing, per capita consumption of timber has been declining. This has occurred due to the introduction of labor and material-saving technologies both in timber product manufacturing and in industries that use manufactured timber products. The result of these technological innovations has been a drop in per capita consumption of timber from 390 board feet annually in 1950 to 360 board feet annually in 1983. However, because population in the state grew from 10.6 million in

1950, to over 26 million at present, total demand increased from 4.1 billion board feet annually in 1950 to 9.3 billion board feet annually at present.

While the demand for timber products has been increasing, timber harvests in the state have been decreasing. The difference between the growing demand and the declining supply has been made up by increased imports to the state--primarily from Oregon, Washington, and Canada. The state has changed from a net exporter to a net importer of timber products over the last three decades.

California now relies on imports for more than one-half of its overall timber product needs. Although California receives only a small proportion of its imports from Canada, Canadian shipments to the United States have a significant effect on the state's ability to import timber products from the Pacific Northwest. In contrast to California's reliance on imports, the bulk of the timber products produced in both Washington and Oregon are exported to other states and countries. Increases in Canadian shipments to the eastern half of the United States have displaced timber products from the Pacific Northwest. The result has been an increase in the availability of timber products from the Pacific Northwest for California markets. Increased production in the South has also been displacing the Pacific Northwest in eastern markets, which has also increased the availability of products from the Northwest in California markets.

### 3. Broad Level Socioeconomic Effects

About 95 percent of California's population lives in urban areas. As consumers, the primary effect of changes in harvest levels in the state on them is a change in prices paid for timber products. A reduction in timber harvests in the state reduces competition among suppliers, raises market prices, and leads to increased use of imported products. Econometric analysis done for the 1985 RPA indicates that a one billion board foot change in harvest level would change lumber prices by about three percent. This translates into a \$250 change in the price of the typical new house at current conversion efficiencies. For the United States economy as a whole, this would amount to a cost to buyers of about \$400 million annually.

Another effect on the urban population is through "indirect and induced" employment. While the employment effects of changes in harvest levels is felt most strongly in the communities where the logging and sawmilling takes place, some broader level employment effects also occur. This is because most firms that manufacture and supply goods and services to logging and sawmill companies are typically located in the major urban centers rather than in the rural areas where the logging and milling takes place.

Logging and milling by itself typically requires four to seven person-years of employment per million board feet processed. Newer, more specialized and automated mills using readily accessible timber are at the bottom of this range, while more labor intensive operations are at the top of this range. This direct employment generates indirect employment in firms that supply goods and services to logging and milling firms and induced employment in firms and governments providing goods and services to those

employed directly and indirectly. In undeveloped rural areas there is little if any indirect and induced effect because suppliers are located outside of the area, and logging and sawmilling employees must "drive into the city" to make major purchases. In addition, on most National Forests a portion of the logs harvested are trucked well outside of the primary zone of influence for manufacturing into lumber products. As a result, total statewide employment effects of changes in harvest levels are larger than employment effects occurring in the primary zones of influence for individual National Forests. Employment effects on a statewide basis range between 10 and 20 person-years per million board feet of timber harvested. These employment effect estimates were made with input-output models constructed by the Forest Service and U.S. Department of Commerce. They reflect present technologies. As the trend toward increased timber utilization efficiency continues, employment generated per unit of timber processed is expected to decline.

#### 4. The Outlook for Timber Supplies - Private Lands

Based on an examination of timber growth and inventory levels compared to historical harvest levels, timber supplies from private lands in California can be maintained or increased over present levels over the 10 to 15-year life of the Forest Plans. Recent harvest levels and timber growth and inventory levels are shown in Table 0.2. Private harvests averaged 2 billion board feet annually over the period 1978-1985. This compares with sawtimber growth on private lands of 2.3 billion board feet annually. Current private sawtimber inventory is 86.8 billion board feet or the equivalent of a 43-year supply (not counting growth) at current harvest rates and utilization standards. As timber utilization efficiencies increase, the effective supply will also be extended.

The picture changes somewhat when growth and inventory levels are divided among the major private ownership classes. Nonindustrial private owners hold 38 percent of the sawtimber inventory. These ownerships account for a similar percentage of annual sawtimber growth. Historically, these owners have harvested a much smaller percentage of the timber growth and inventory on their lands than have large industrial owners. Statewide, harvests from nonindustrial private ownerships have averaged only about 30 percent of annual sawtimber growth. This proportion has been higher in the northern parts of the state and lower in the central and southern Sierra. With increasing urbanization there is also the likelihood that the harvest rates on nonindustrial private ownerships may decline in the future.

Industrial owners hold 62 percent of the private sawtimber inventory. In contrast to nonindustrial private ownerships, harvest rates on industrial ownerships are 23 percent higher than annual growth. This means that without significant increases in growth, inventory depletion could lead to declining harvest levels in the next century. However, timber growth and inventory are sufficient to maintain harvests during the 10 to 15-year life of the Forest Plans.

#### 5. Outlook for Timber Supplies - Imports

As discussed above, the Pacific Northwest is the primary source of imported timber products in California. Through displacement effects in national



markets, Canada and the South also play a major role in determining the supply of timber products from the Northwest that is available to California markets.

According to studies conducted by Forest Service research units, timber supplies from the South are likely to increase, but at a slower rate than experienced over the last 20 years, during the life of the Forest Plans. A decline or falldown in supplies from the South is in prospect for the next century without an increase in investment and timber growth.

Studies conducted in Canada indicate that sawtimber growth and inventory is not expected to restrain exports to the United States until after the turn of the century. However, recent tariff and trade negotiations are expected to moderate Canadian exports to the United States over the near term.

A decline in timber harvests in the Pacific Northwest over the next 10 to 15 years is expected. This is due to reduced availability of timber inventories on both public and private lands.

The overall outlook is that imports will continue to grow to support increased demands by California consumers over the next 10 to 15 years. However, imports will likely increase at a lower rate than over the last 20 years and may decrease in availability beyond the year 2000.

## 6. The Outlook for Timber Supplies - National Forests

The Allowable Sale Quantities set in individual Forest Plans are an indicator of future timber supply levels from National Forests in California. The Allowable Sale Quantity places an upper limit on the average annual amount of green sawtimber from suitable timberlands that can be sold from a National Forest in the first 10-year period of the Plan. Nonchargeable timber (dead timber and fuelwood from either suitable or unsuitable timberlands) is in addition to the Allowable Sale Quantity. The addition of nonchargeable volume usually increases the total amount sold by a few percentage points.

The amount of timber offered for sale in an individual year is determined through the budget process. When the amount of timber sold in an individual year is less than the Allowable Sale Quantity, sales in future years may be higher than the Allowable Sale Quantity, since the Allowable Sale Quantity is a limit on the average annual amount that can be sold over a 10-year period.

Total planned timber sales under the individual National Forest Plans in Region 5 is about 1.86 billion board feet annually. This is slightly above the average volume sold and above the 1.6 billion board foot average annual volume harvested over the past decade. Excluding the period of severe economic recession that occurred in the early 1980's, timber output under the Plans is roughly equal to the 1.85 billion board foot average annual harvest during the decade of the 1970's. Output under the Plans is slightly above the 1985 RPA "high bound" program sale offering goal of 1.8 billion board feet for the year 1990.

## 7. The Subregional Outlook - Overview

The picture is somewhat different when observed at the subregional level. Based on the historical pattern of log flows to mills, the state can be divided into six timber market areas: North Coast, Northern Interior, Sacramento, San Joaquin, Central Coast, and Southern California. National Forests play a significant role in the North Coast, Northern Interior, Sacramento, and San Joaquin areas.

Virtually all of the decline in the state's timber harvest that has occurred over the last 30 years has taken place in the North Coast market area on private lands. The outlook now is for relatively stable output from private lands over the 10 to 15-year life of the Forest Plans in all major market areas.

The relative contribution of National Forests to the timber supply differs markedly between market areas. In the North Coast area where the private timber supply has been falling most rapidly, National Forests supply only 13 percent of the timber. In the Northern Interior and Sacramento areas, National Forests supply 50 percent of the timber. In the San Joaquin area they supply 70 percent.

Timber outputs under the Forest Plans are lower than average annual sale levels over the last eight years in the Northern Interior area and higher in all other areas. This means that adverse impacts on local economies resulting from the Plans will be centered in Northeastern California.

## 8. The Subregional Outlook in the San Joaquin Timber Supply Area

Timber harvests in the San Joaquin area over the past eight years have averaged 407 million board feet annually. Harvests from National Forests account for 70 percent of the total volume harvested. The Stanislaus, Sierra, and Sequoia are the dominant National Forest suppliers, but volume from the Eldorado, Inyo, and San Bernardino is also milled in this market area. Timber outputs under the Forest Plans are above average sale levels during the last eight years by about 25 million board feet.

Private harvests in the area have averaged 131 million board feet annually over the past eight years. This is less than annual sawtimber growth on private lands of 145 million board feet annually. Private sawtimber inventory is 5.8 billion board feet - the equivalent of a 44-year supply (not counting growth) at recent harvest rates. Harvests on private lands are expected to be maintained near present levels during the 10 to 15-year life of the Forest Plans.

There are 14 sawmills with a combined eight-hour shift capacity of 1.8 million board feet in the San Joaquin Valley area. This means that mill capacity is over 60 percent above the available sawtimber supply on an annual basis.

Logs from the Sequoia NF are almost all milled in Tulare County at the southern end of the San Joaquin area. Normally only about 5 million board feet from the Sequoia flow north to Fresno and Madera counties. Within Tulare County, the Sequoia NF is the dominant supplier of logs to mills.

The Sierra, Inyo, and **San** Bernardino National Forests together typically supply about 25 million board feet of logs that are milled in the Southern **San** Joaquin Valley. Harvests from private lands in Kern and Tulare Counties have averaged about 4 million board feet annually over the last eight years. Overall, the Sequoia NF has historically supplied 75 percent **or** more of the logs milled **in** the two counties. This marketing pattern is expected to continue over the life of the Forest Plan. **For** additional discussion, see Chapter 3 of the EIS.

Table 0.1. - California Timber Harvests by Ownership, 1952-86

Year	Private	Other Public	National Forest	Total
-billion board feet-				
1952	4.40	.05	.61	5.06
1953	5.32	.04	.63	5.99
1954	4.79	.05	.76	5.60
1955	4.93	.06	1.03	6.02
1956	4.69	.08	1.09	5.86
1957	4.36	.07	.92	5.35
1958	4.47	.09	1.11	5.67
1959	4.29	.12	1.48	5.89
1960	3.70	.11	1.33	5.14
1961	3.85	.11	1.38	5.34
1962	4.05	.11	1.38	5.54
1963	3.69	.11	1.66	5.46
1964	3.50	.11	1.86	5.47
1965	3.21	.14	1.92	5.27
1966	2.97	.11	1.93	5.01
1967	3.06	.11	1.89	5.06
1968	2.82	.16	2.36	5.34
1969	2.88	.12	2.00	5.00
1970	2.62	.10	1.84	4.57
1971	2.59	.13	2.06	4.78
1972	2.66	.12	2.22	5.00
1973	2.81	.10	2.01	4.92
1974	2.86	.11	1.73	4.70
1975	2.71	.10	1.52	4.33
1976	2.76	.08	1.89	4.73
1977	2.96	.09	1.74	4.79
1978	2.78	.08	1.80	4.66
1979	2.26	.09	1.73	4.08
1980	1.86	.07	1.51	3.44
1981	1.72	.04	1.09	2.86
1982	1.50	.06	.94	2.50
1983	1.89	.08	1.68	3.65
1984	2.09	.03	1.56	3.68
1985	2.17	.06	1.82	4.05
1986			1.96	

Sources: California Department of Forestry and Fire Protection  
 California State Board of Equalization  
 Bureau of Indian Affairs, USDI  
 Bureau of Land Management, USDI  
 Forest Service, USDA

Table 0.2. - Timber Harvest, Growth, and Inventory on Private Land in California

Area	Average Annual Harvest, MMBF 1978-1985	Net Annual Sawtimber Growth MMBF, 1982-1984	Sawtimber Inventory BBF, 1982-1984
North Coast	949	981	34.9
Northern Interior	520	563	18.0
Sacramento	415	502	20.7
San Joaquin	131	145	5.8
Other Areas	22	141	7.4
All Private Land	2037	2332	86.8
Industrial Private	1785	1458	53.8
Nonindustrial Private	252	874	33.0

Source: Harvest data from California State Board of Equalization and forest inventory data from Pacific Northwest Forest and Range Experiment Station, Forest Service, USDA as compiled by the California Department of Forestry and Fire Protection-Forest and Rangeland Resources Assessment Unit.

Table 0.3. - Average Annual National Forest Timber Sales Compared to Allowable Sale Quantities in Forest Plans

Timber Supply Area	National Forest	1979-86 Average Volume Sold, MMBF	Forest Plan Preferred Alternative MMBF
North Coast	Six Rivers	150.0	175.0
Northern Interior	Klamath (1)	223.6	198.0
	Modoc	59.5	52.0
	Lassen	174.7	154.0
	Shasta-Trinity	215.7	226.0
Sacramento	Mendocino (2)	80.7	93.0
	Plumas (3)	208.0	265.0
	Tahoe	141.7	178.7
	Eldorado (4)	146.7	138.0
San Joaquin	Stanislaus (5)	117.4	134.0
	Sierra	128.4	125.0
	Sequoia	77.2	97.0
	Inyo (6)	12.8	10.0
	San Bernardino	8.8	5.2
So. Calif.	Los Padres	1.3	3.8
R5	Total	1,747	1,855

(1) Typically 100-130 MMBF of logs flow into Oregon. Most of this amount is from the Klamath National Forest.

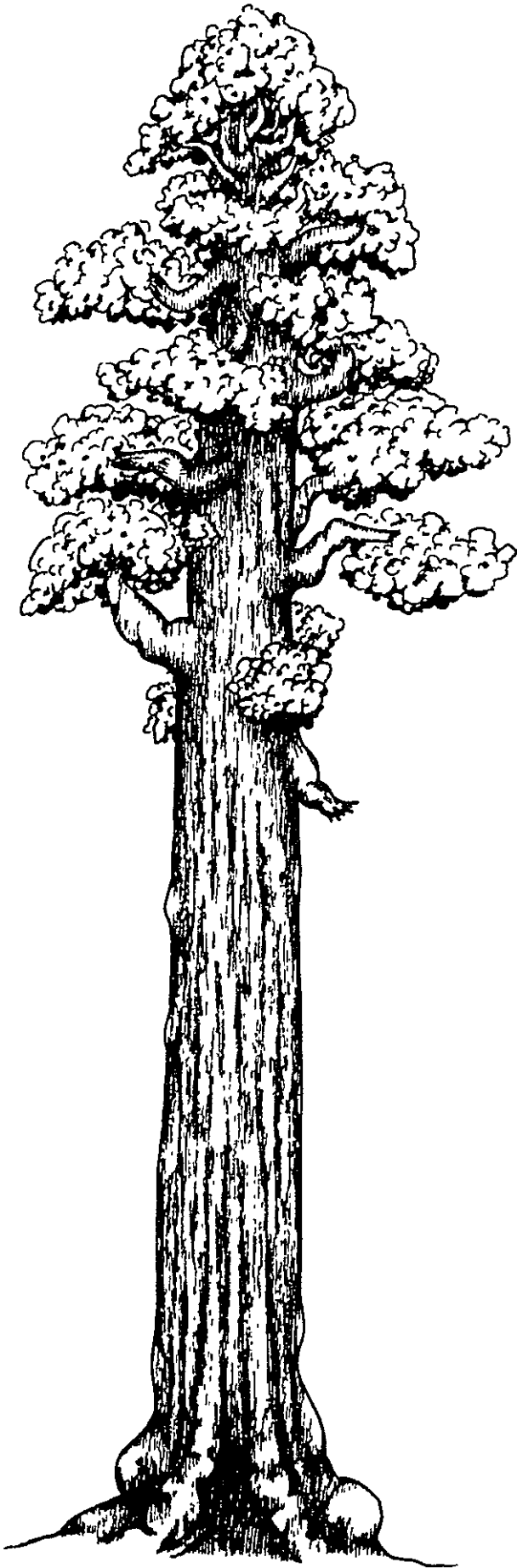
(2) Mendocino logs typically flow 40 percent to the Sacramento area, 40 percent to the Northern Interior area, and 20 percent to the North Coast.

(3) Plumas logs typically flow 40 percent to the Northern Interior area, 60 percent to the Sacramento area.

(4) Eldorado logs typically flow 60 percent to the Sacramento area and 40 percent to the San Joaquin area.

(5) Stanislaus logs typically flow 20 percent to the Sacramento area and 80 percent to the San Joaquin area.

(6) Inyo logs typically flow 50 percent to the San Joaquin area and 50 percent to the Northern Interior area.



## **Appendix P**

# **DESCRIPTION OF MANAGEMENT OF NON-WILDERNESS ROADLESS AREAS**

APPENDIX P

DESCRIPTION OF MANAGEMENT OF NON-WILDERNESS ROADLESS AREAS

Introduction

The California Wilderness Act of 1984 established that approximately 324,000 acres of roadless lands in 14 areas on the Sequoia National Forest would be managed for multiple-use (non-wilderness) values.

None of these non-wilderness areas have been considered for potential wilderness in the first 10-year planning period identified in this Environmental Impact Statement. These areas could be considered for wilderness values in future planning periods if they continue to meet criteria for wilderness designation.

Table P.1 lists non-wilderness areas by code number, name, and National Forest Service acreage in each. Table P.2 displays the management prescriptions under which each area would be managed under the various alternatives.

In order to understand the management of these areas, and how future management might result in change from existing conditions, the write-ups in Chapter 2 of this Final Environmental Impact Statement contain the Management Area Prescription Summaries (beginning with Table 2.4). Chapter 2 provides a description of what activities might occur within a particular emphasis area. Non-wilderness areas being addressed are basically undeveloped at the current time. An understanding of the typical activities and their relationship to the management emphasis as shown in Table P.2 are identified. In order to get more specific, it will be necessary to overlay the vegetation map (which includes the non-wilderness areas) with the management emphasis map and deal with specific areas.

Table P.1 - Non-wilderness Roadless Areas

<u>Code Number</u>	Name	<u>NFS Acres</u> (Net)
B5213	Staff	42,351
05199	Agnew	9,300
05200	Jennie Lakes	3,200
05204	Black Mountain	15,800
05205	Slate Mountain	13,100
05029	South Sierra	9,690
05206	Woodpecker	13,580
05211	Lyon Ridge	5,200
05208	Rincon	58,866
05209	Cannell	47,300
05210	Chico	43,700
05207	Domeland Addition	3,100
05215	Greenhorn Creek	29,400
05214	Mill Creek	<u>29,800</u>
		324,387



**Table P.2 - Acres by Management Emphasis by  
Alternative for Non-wilderness Areas**

Non-wilderness Area Number/Name		Acres. by Emphasis by Alternative						
		PRP	CUR	RPA	AMN	MKT	WFV	PRO
STAFF	Gen Disp				41,600			
(42,351 ac )	WL Disp	31.100	26.600	26,800	800	800	42,400	800
	Rng	8,700	8,600	8,400		32,300		32,300
	Sawtbr	2,500	7,100	7,100		9,300		9,300
AGNEW	Gen Disp		1,800	2,800	9,100	200	2,200	1,200
(9,300 ac )	Wtr Rec			100		1,500		200
	Dvlp Rec	200	200	200	200	200		200
	WL Disp	5.200	7,100			3,800	7,100	1,000
	Sawtbr	3,900	200	6,200		3,600		6,700
JENNIE LAKES	Gen Disp	600	200	1,700	2,100	200	200	200
(3,200 ac )	Dvlp Rec	1,100	1,100		1,100	1,100		1,100
	WL Disp						3,000	
	Sawtbr	1,500	1,900	1,600		1,900		1,900
BLACK	Gen Disp	4,300	3,200	2,700	5,000	2,700	2,700	3,200
MOUNTAIN	Wtr Rec	500	500	500	500	500	500	500
(15,800 ac )	Dvlp Rec					200		
	WL Disp	2,200	2,000	2,000	2,000	2,000	12,700	2,000
	Rng	3,300	4,600	5,400	3,100	3,300		4,600
	Sawtbr	5,500	5,500	5,300	5,300			5,500
	Wtr Yld					7,100		
SLATE	Gen Disp	1,700	1,700	1,700	10,900	1,800	1,700	1,700
MOUNTAIN	Wtr Rec					800		
(13,100 ac )	Dvlp Rec	2,300	2,300	2,300	2,300	2,500	2,300	2,300
	WL Disp						9,100	
	Sawtbr	9,200	9,200	9,200		900		9,200
	Wtr Yld					7,100		
SOUTH SIERRA	Gen Disp	2,500	9,700	1,700	9,700	700	1,700	
(9,690 ac )	Wtr Rec						800	
	WL Disp						7,200	
	Rng			8,000		1,600		2,500
	Sawtbr	7,200				7,300		7,200
WOODPECKER	Gen Disp	10,500	500	400	13,200	11,900		
(13,580 ac )	Dvlp Rec	400	500	400	400	400		400
	WL Disp						13,600	
	Sawtbr	2,700	12,600	10,800		1,300		
	Wtr Yld			2,000				13,200

\* All figures are rounded off to the nearest 100 acres

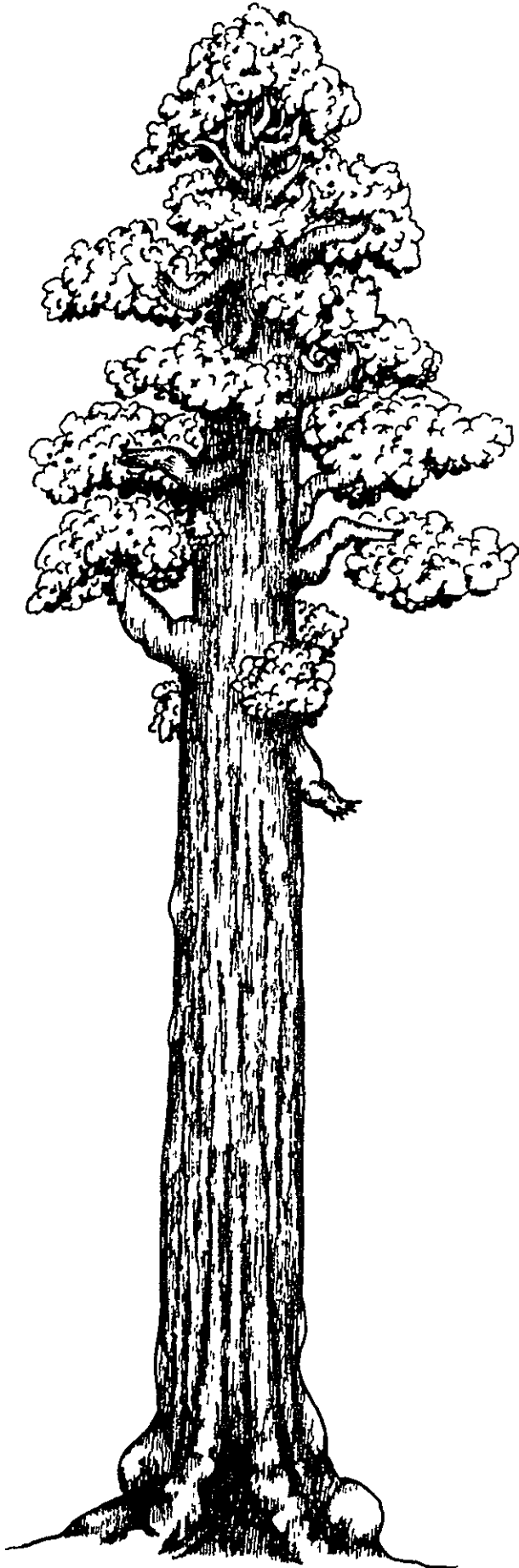
**Table P.2 - Acres by Management Emphasis by  
Alternative for Non-wilderness Areas (con't)**

Non-wilderness Area Number/Name		Acres. by Emphasis by Alternative						
		PRF	CUR	RPA	AMN	MKT	WVW	PRO
LYON RIDGE (5.200ac )	<b>Gen Disp</b>		1,700	1,700	5.200	800	800	
	WL Disp						4.400	
	Rng	1,700				1,000		1.700
	Sawtbr	3,500	3,500			3,500		3,500
	Wtr Yield			3,500				
RINCON (58.866 BE )	<b>Gen Disp</b>	3,200	53.600	9,000	36,400	3,100	1,700	
	WL Disp	26.500	100	22.700	22,500	3.500	57,100	3,500
	Rng			400		16,700		19.900
	Sawtbr	29,200	5.200	26,800		35.600		35.600
CANNELL (47,300 ac )	<b>Gen Disp</b>			1.600	27,000	28,600		
	Wtr Rec	3,100	3,100	3,100	3,100	3.100	3.100	3,100
	WL Disp	31,600	39.200	30.700	17,200		44,200	
	Rng	7,600		7.900		10,600		36,400
	Sawtbr	5.100	5.100	4.100		5.100		5.100
CHICO (43.700 ac )	<b>Gen Disp</b>	200	100	600	14,300	16,400		
	WL Disp	7,800	11.100		29,400	7.900	43.700	11,100
	Rng	28.900	25.800	39.000		12,600		25,800
	Sawtbr	6.800	6,800	1,100		6,800		6,800
	Wtr Yld			3.100				
DOMELAND ADDITION (3,100ac )	<b>Gen Disp</b>	2.000			3,100		800	
	WL Disp						2,500	
	<b>Rng</b>			3.100				
	Sawtbr	1,100	3.100			3,100		3.100
GREENHORN CREEK (29.400 ac )	<b>Gen Disp</b>				27.400	13,700	13.700	
	Wtr Rec	2,000	2,000	2,000	2.000	2.000	2,000	2,000
	WL Disp						13,700	
	<b>Rng</b>	26.100	26,100	26.100		12.400		26.100
	Sawtbr	1,300	1,300	1,300		1,300		1,300
MILL CREEK (29,800ac )	<b>Gen Disp</b>				29.600	17.100	17.800	
	WL Disp	200	200	200	200	200	12.000	200
	<b>Rng</b>	28,800	28,800	28.800		11,200		28,800
	Sawtbr	800	800	800		800		800

\* All figures are rounded off to the nearest 100 acres

Key to Abbreviations Used in Table P.2

1. General Dispersed Recreation	Gen Disp
2. Water-Oriented Recreation	Wtr Rec
3. Developed Recreation	Dvlp Rec
4. Wilderness	Wild
5. Wildlife/Dispersed Recreation	WL Disp
6. Range	Rng
7. Sawtimber	Sawtbr
8. Water Yield	Wtr Yld



**Appendix Q**

**WATER QUALITY  
MANAGEMENT-  
BEST MANAGEMENT  
PRACTICES**

## APPENDIX Q

### Water Quality Management

#### Best Management Practices

##### I. INTRODUCTION

The Forest Service water quality maintenance and improvement measures called Best Management Practices (BMP's) were developed in compliance with Section 208 of the Federal Clean Water Act, PL92-500, as amended. After a lengthy development and public review process from 1977 to 1979, the practices developed by the Forest Service were certified by the State Water Resources Control Board and approved by EPA. The signing of a 1981 Management Agency Agreement (MAA) resulted in the formal designation of the Forest Service as the water quality management agency for the public domain lands it administers. The BMP's are the measures both the state and federal water quality regulatory agencies expect the Forest Service to implement to meet water quality objectives and to maintain and improve water quality. There are currently 99 practices documented, 96 of which are certified and approved as BMP's. The three remaining practices are still being improved before referral to the state and EPA for certification and approval. In like manner, work continues on developing new management practices and evaluating the effectiveness of the existing BMP's. Due to the dynamic nature of management practice development and refinement, the original Forest Service publication documenting BMP's is continually being updated. The current draft publication reference is: WATER QUALITY MANAGEMENT FOR NATIONAL FOREST SYSTEM LANDS IN CALIFORNIA, U.S. Forest Service, Pacific Southwest Region publication, 1986. This publication is hereby incorporated by reference into this document. Work is underway to republish the updated version of this text as a Soil and Water Conservation Handbook.

Water quality management is administered on National Forest System lands through the continued implementation of BMP's and through the guidance of a 1981 Management Agency Agreement with the State of California Water Resources Control Board.

##### 11. IMPLEMENTATION PROCESS

Forest Plans are broad level planning documents that encompass the entire Forest and a multitude of different management activities. Because of the physical-biological diversity of any given National Forest (e.g., different soils, vegetation, slopes, and presence of surface water) and the mixture of activities that can occur on various portions of the Forest, site-specific methods and techniques for implementing the BMP's are not identified at the Forest Planning level. For each individual project that is initiated to implement the Forest Plan, a separate site-specific environmental assessment is conducted. The appropriate BMP's necessary to protect or improve water quality and the methods and techniques of implementing the

BMP's are identified at the time of this on-site, project-specific assessment. In this manner, the methods and techniques can be tailored to fit the specific physical-biological environment as well as the proposed project activities. There are commonly many methods available for implementing a BMP. and not all are applicable to every site. An example is BMP 2.7 control of Road Drainage. This BMP dictates that roads will be correctly drained to disperse water runoff to minimize the erosive effects of concentrated water. There are many ways to drain a road correctly (e.g., outslope the road surface, install water bars, install French Drains, inslope the road surface, and install culverts). It is during the on-site environmental assessment of a specific road construction project proposal that the appropriate method or combination of methods to correctly drain the road are identified.

After the methods and techniques of implementing the appropriate BMP are identified, they are discussed by the project interdisciplinary team. **As** a result of discussions, the appropriate mix of implementation methods and techniques are selected and incorporated into the environmental document as required mitigation measures. These mitigation measures are then carried forward into project plans and implementation documents (e.g., contract language, and design specifications) to assure that they are part of the project work accomplished. Implementation on the ground is assured by the Forest Service official responsible for on-site administration of the project. Supervisory quality control of BMP implementation is attained through review of environmental assessments and contracts, field reviews of projects, and monitoring the quality of the water in the project area when warranted.

#### 111. BEST MANAGEMENT PRACTICES

There are 99 practices identified in eight different resource categories. They are as follows:

##### TIMBER

- 1.1 Timber Sale Planning Process
- 1.2 Timber Harvest Unit Design
- 1.3 Use of Erosion Hazard Rating for Timber Harvest Unit Design
- 1.4 Use of Sale Area Maps for Designating Water Quality Needs
- 1.5 Limited Operating Period of Timber Sale Activities
- 1.6 Protection of Unstable Areas
- 1.7 Prescribing the Size and Shape of Clearcuts
- 1.8 Streamside Management Zone Designation
- 1.9 Determining Tractor Loggable Ground
- 1.10 Tractor Skidding Design
- 1.11 Suspended Log Yarding in Timber Harvesting
- 1.12 Log Landing Location
- 1.13 Erosion Prevention and Control Measures During Timber Sale Operations
- 1.14 Special Erosion Prevention Measures on Disturbed Land
- 1.15 Revegetation of Areas Disturbed by Harvest Activities
- 1.16 Log Landing Erosion Prevention and Control

- 1.17 Erosion Control on Skid Trails
- 1.18 Meadow Protection During Timber Harvesting
- 1.19 Streamcourse Protection
- 1.20 Erosion Control Structure Maintenance
- 1.21 Acceptance of Timber Sale Erosion Control Measures Before Sale Closure
- 1.22 Slash treatment in Sensitive Areas
- 1.23 Five-Year Reforestation Requirement
- 1.24 Nonrecurring "C" Provision That Can Be Used for Water Quality Protection
- 1.25 Modification of the Timber Sale Contract

#### ROAD AND BUILDING SITE CONSTRUCTION

- 2.1 General Guidelines for the Location and Design of Roads
- 2.2 Erosion Control Plan
- 2.3 Timing of Construction Activities
- 2.4 Road Slope Stabilization (Preventative Practice)
- 2.5 Road Slope Stabilization (Administrative Practice)
- 2.6 Dispersion of Subsurface Drainage from Cut and Fill Slopes
- 2.7 Control of Road Drainage
- 2.8 Constraints Related to Pioneer Road Construction
- 2.9 Timely Erosion Control Measures on Incomplete Road and Stream Crossing Projects
- 2.10 Construction of Stable Embankments
- 2.11 Minimization of Sidecast Material
- 2.12 Servicing and Refueling Equipment
- 2.13 Control of Construction in Streamside Management Zones
- 2.14 Controlling In-channel Excavation
- 2.15 Diversion of Flows Around Construction Sites
- 2.16 Stream Crossings on Temporary Roads
- 2.17 Bridge and Culvert Installation
- 2.18 Regulation of Streamside Gravel Borrow Areas
- 2.19 Disposal of Right-of-way and Roadside Debris
- 2.20 Specifying Riprap Composition
- 2.21 Water Source Development Consistent with Water Quality Protection
- 2.22 Maintenance of Roads
- 2.23 Road Surface Treatment to Prevent Loss of Materials
- 2.24 Traffic Control During Wet Periods
- 2.25 Snow Removal Controls to Avoid Resource Damage
- 2.26 Closure or Obliteration of Temporary Roads
- 2.27 Restoration of Borrow Pits and Quarries
- 2.28 Surface Erosion Control at Facility Sites

#### MINING

- \* 3.1 Administering Terms of the U.S. Mining Laws (Act of May 10, 1872) for Mineral Exploration and Extraction on National Forest System Lands
- 3.2 Administering Terms of BLM Issued Permits or Leases for Mineral Exploration and Extraction on National Forest System Lands
- 3.3 Administering Common Variety Mineral Removal Permits

## RECREATION

- 4.1 Sampling and Surveillance of Designated Swimming Sites
- 4.2 On-site Multidisciplinary Sanitary Surveys Will be Conducted to Augment the Sampling of Swimming Waters
- 4.3 Provide Safe Drinking Water Supplies
- 4.4 Documentation of Water Quality Data
- 4.5 Control of Sanitation Facilities
- 4.6 Control of Refuse Disposal
- 4.7 Assuring that Organizational Camps Have Proper Sanitation and Water Supply Facilities
- 4.8 Water Quality Monitoring Off-Road-Vehicle Use According to a Developed Plan
- 4.9 Sanitation at Hydrants and Faucets Within Developed Recreation Sites
- 4.10 Protection of Water Quality Within Developed and Dispersed Recreation Sites
- 4.11 Location of Pack and Riding Stock Facilities in Wilderness, Primitive, and Wilderness Study Areas.

## VEGETATIVE MANIPULATION

- 5.1 Seed Drilling on the Contour
- 5.2 Slope Limitations for Tractor Operation
- 5.3 Tractor Operation Excluded from Wetlands and Meadows
- 5.4 Revegetation of Surface Disturbed Areas
- \* 5.5 Tractor Windrowing on the Contour
- 5.6 Soil Moisture Limitations for Tractor Operation
- 5.7 Contour Disking
- 5.8 Pesticide Use Planning Process
- 5.9 Apply Pesticide According to Label and EPA Registration Directions
- 5.10 Pesticide Application Monitoring and Evaluation
- 5.11 Pesticide Spill Contingency Plan
- 5.12 Cleaning and Disposal of Pesticide Containers and Equipment
- 5.13 Streamside and Wet Area Protection During Pesticide Spraying
- 5.14 Controlling Pesticide Drift During Spray Application

## FIRE SUPPRESSION AND FUELS MANAGEMENT

- 6.1 Fire and Fuels Management Activities
- 6.2 Consideration of Water Quality in Formulating Fire Prescriptions
- 6.3 Protection of Water Quality from Prescribed Burning Effects
- 6.4 Minimizing Watershed Damage from Fire Suppression Related Watershed Damage
- 6.5 Repair or Stabilization of Fire Suppression Related Watershed Damage
- 6.6 Emergency Rehabilitation of Watersheds Following Wildfires



## WATERSHED MANAGEMENT

- 7.1 Watershed Restoration
- 7.2 Conduct Floodplain Hazard Analysis and Evaluation
- 7.3 Protection of Wetlands
- 7.4 Oil and Hazardous Substance Spill Contingency Plan
- 7.5 Control of Activities Under Special-Use Permit
- 7.6 Water Quality Monitoring
- 7.7 Management by Closure to Use (Seasonal, Temporary, and Permanent)
- 7.8 Cumulative Off-Site Watershed Effects.

## GRAZING

- 8.1 Range Analysis, Allotment Management Plan, Grazing Permit System, and Permittee Operating Plan
- 8.2 Controlling Livestock Numbers and Season of Use
- 8.3 Controlling Livestock Distribution Within Allotments
- 8.4 Rangeland Improvements

\* These are the two practices that have not been recommended for certification and approval as BMP at this time.



United States  
Department of  
Agriculture

**Forest  
Service**

Pacific  
Southwest  
Region

# Sequoia National Forest Land and Resource Management Plan

Chapter 7

FEIS APPENDICES

**APPENDIX N**

**VOLUME 2**

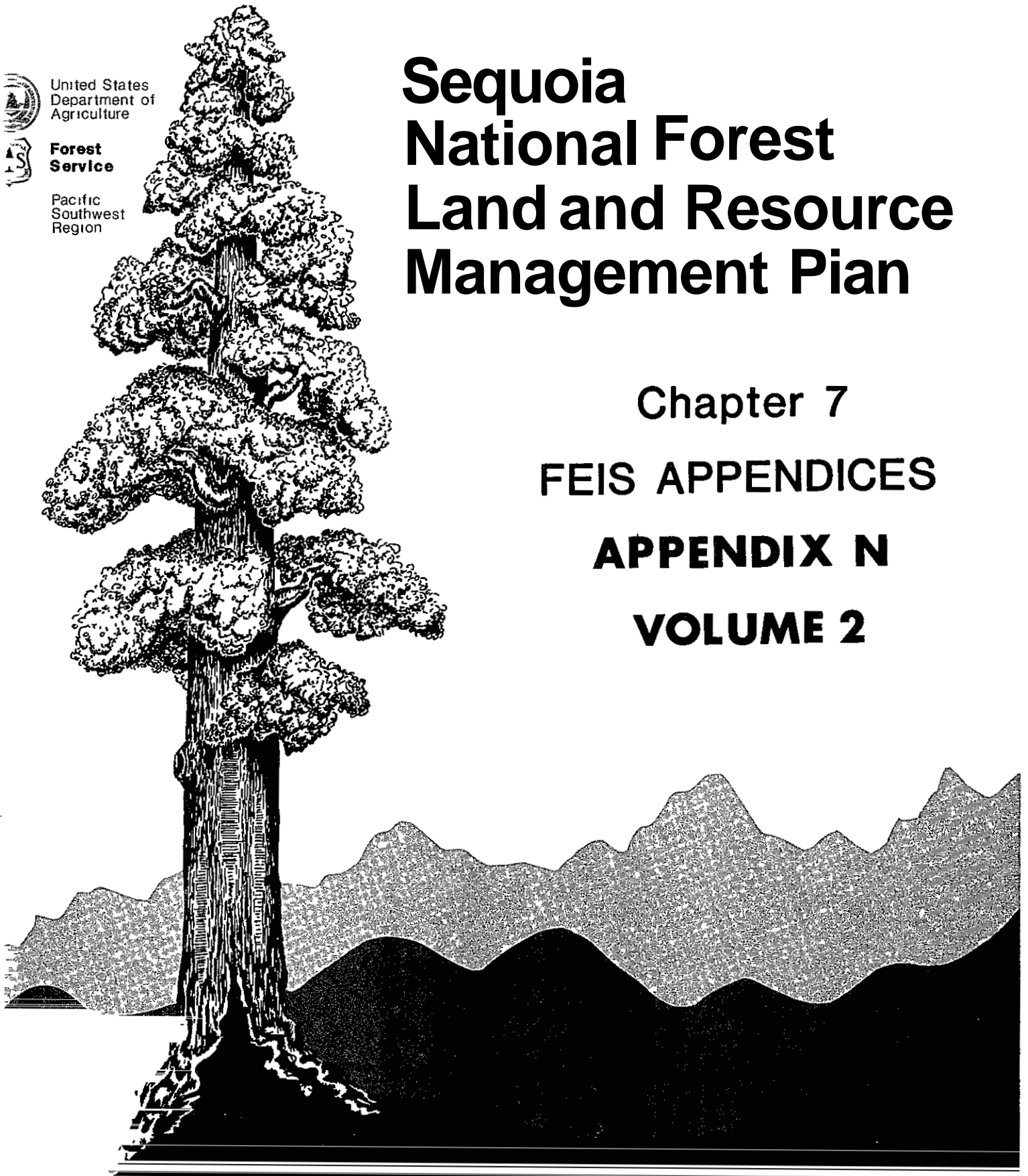


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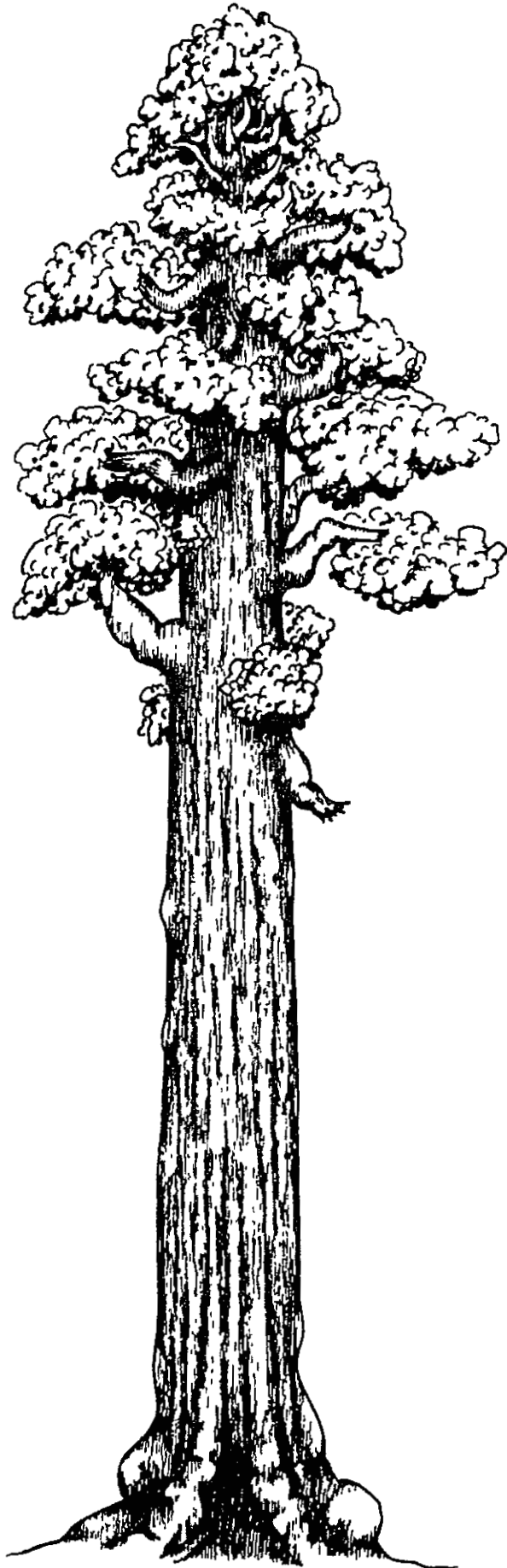
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**Appendix N**  
**SUMMARY OF**  
**PUBLIC RESPONSE**

## APPENDIX N

### SUMMARY OF PUBLIC RESPONSE TO THE DRAFT PLAN AND DEIS

Appendix N summarizes written and oral responses received by the USDA Forest Service on the Draft Forest Plan and the Draft Environmental Impact Statement (DEIS) for the Sequoia National Forest. The Plan and DEIS were distributed to individuals, interest groups, Government agencies, and other interested officials. Copies were also on loan at libraries and Forest Service offices. In addition to direct mailing, notice was given through public notification and direct contact by Forest Service Officials. Please see EIS Chapter 7, Appendix A. II Consultation with Others and Chapter 6, Consultation and Mailing List. *The purpose of* the public review period was to share information on the Plan and the ten alternatives presented in the DEIS. Written and oral comments from the public were considered by Sequoia National Forest Supervisor James Crates regarding the Final Forest Land Management Plan and Final Environmental Impact Statement.

This Summary is divided into nine sections. These sections include: (1) Summary of the Content Analysis System, (2) Demographic Characteristics of Respondents, (3) Summary of Comments by Analysis Categories, Subject Areas and Alternatives, (4) Summary of Comments on Issues, and (5) Summary of Comments on the Document and Process. Following these summaries are the detailed analyses of public comments by Subject matter areas with the Forest Service responses (6). Section 6A is the alphabetical listing of respondents. In Section 7, all letters from public agencies and elected officials are published and answered. Section 8 is the Forest Service response to the CHEC report provided by the Kern Valley Wildlife Association.

#### 1. SUMMARY OF THE CONTENT ANALYSIS SYSTEM

A total of 2,935 responses from the public were received regarding the Draft Forest Plan and Draft Environmental Statement. The analysis of these responses was based upon standard procedures found in Forest Service Handbook 1609.13 that have been developed to summarize public comments objectively. All responses from the same individual, written or oral, were considered as one response. Incoming responses were grid-stamped and coded according to the form of response, interest affiliations of respondent, number of signatures, geographic location, and numeric respondent identifier. Preferences for each of the ten alternatives were grid-coded for each response, and the category of the Plan or DEIS commented on, subject areas discussed by the respondents, and editorial comment. Subject area comments were grouped together by the computer program. Qualitative analysis was then done using content analysis summary procedures focusing on the subject area content of comments. A comment that specifically rejected an alternative was coded "con." In addition, verbatim language pertinent to subject areas was underlined. Information included on the grids was stored as a computer data base. A software package summarized all responses including the underlined verbatim language.

All original letters and other supporting documentation to the development of this summary are available for review at the Sequoia National Forest Headquarters in Porterville, California. The Code Book developed and used

for the analysis of responses to the Draft Plan and EIS is on file and available for review at this same location. Forest Service responses to individual public letters are also trackable by respondent number and available upon request.

Eighty-eight (88) people gave oral statements at two public hearings. These were recorded verbatim by a court recorder. The typed statements were then given the same analysis as other public responses.

2. DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

For the purpose of developing basic demographic information, responses were grouped by respondent category, form of response, and geographic location.

Respondents made an average of 2.44 comments for each response or a total of 7,163 comments.

<u>Respondent Category</u>	<u># of Comments</u>	<u>Percent of Total</u>
(1) Individual	5,492	76.7
(2) Permittee	18	.25
(3) Local Agency	51	.7
(4) State Agency	184	2.5
(5) Federal Agency	104	1.4
(6) Local Elected Official	5	.0
(7) State Elected Official	4	.0
(8) Federal Elected Official	13	.1
(9) Conservation/Environmental Group	577	8.0
(10) Academic Group	25	.3
(11) Professional Society	129	1.8
(12) Civic Groups	31	.4
(13) Business Groups	118	1.6
(14) Commodity Interests	309	4.3
(15) Service Interest	17	0.2
(16) Motorized Recreation Interest	36	0.5
(17) Hiking, Riding, Bicycling Groups	12	0.1
(18) Hunting, Fishing, Sport Groups	53	0.7
(19) Minority Groups	0	.0
(20) Individual, Employee	39	0.5
(21) Tribal Government	2	.0
(22) Other	4	
TOTAL	7,163	100.0

Inputs were also grouped according to the form of their response. Comments by form of response were distributed as follows:

	<u># of Comments</u>	<u>Percent of Total</u>
(1) Letter/Postcard	5,639	78.7
(2) Letter With Enclosure	573	8.0
(3) Form Letter	242	3.4
(4) Blank	0	0
(5) Petition	319	4.5
(6) Resolution	10	.1
(7) Documented Oral Comments	378	5.3
(8) Other	2	0
TOTAL	7,163	100.0

Using the return addresses of respondents, responses were further grouped according to geographic location. The comments originated as follows:

	<u># of Comments</u>	<u>Percent of Total</u>
(1) Not Known	21	0.3
(2) Local	2,855	39.9
(3) Southern California Areas	2,791	38.9
(4) Northern California	1,357	19.0
(5) Out of State	139	1.9
TOTAL	7,163	100.0

### 3. SUMMARY OF COMMENTS BY ANALYSIS CATEGORIES, SUBJECT AREAS, AND ALTERNATIVES

#### A. Analysis Categories

The comments were divided into seven analysis categories. Each response comment was coded to a particular category as follows:

##### (1) ALTERNATIVES

(comments on the Alternative Development Process, the creation of additional alternatives, the alternative selection process, or preference for a particular alternative and land allocations).

##### (2) FOREST ISSUES

(mentions the original issues development process, the issues as stated in the EIS, or discusses a comment submitted during the initial comment period).

##### (3) ENVIRONMENTAL CONSEQUENCES

(specific comment on the consequences as written in the documents).

(4) PUBLIC INVOLVEMENT

(addresses the public involvement process).

(5) GENERAL

(general concern about the management of a particular resource without being specific to a particular part or aspect of the planning document, also includes FORPLAN Analysis, and Management Area Prescriptions and/or Practices).

(6) ANALYSIS OF THE MANAGEMENT SITUATION OR AFFECTED ENVIRONMENT

(comments on background information, assumptions used in the Analysis of the Management Situation for the resource elements).

(7) PLAN AND MONITORING

A numerical summary of response comments by these categories are:

	<u>Comments</u>	<u>Percent of TOTAL</u>
(1) Alternatives	1,978	27.6
(2) Forest Issues	15	0.2
(3) Environmental Consequences	49	0.7
(4) Public Involvement	29	0.4
(5) General	1,704	23.8
(6) Analysis of the Management Situation or Affected Environment	252	3.5
(7) Plan and Monitoring	<u>3,136</u>	<u>43.8</u>
TOTAL	7,163	100.0

B. Subject Area

Each pertinent comment was underlined in the Response, inputted into the computer, and given a theme subject area code as well as sub-theme codes. **These** subject area codes are:

<u>Code</u>	<u>Subject Area</u>	<u>Definition</u>	<u>Numerical Summary</u>	
			<u># of Comments</u>	<u>Percent of Total</u>
010	SOCIAL ENVIRONMENT	Social System, Mentioning "Social"	25	0.3
020	ECONOMICS, GENERAL	General Reference to Economic System, Jobs	140	2.0
021	ECON. VAL. OF FOREST	Economic Value of Forests (makes reference to forest as having economic value)	249	3.5
022	RECEIPTS TO COUNTIES	25% Receipts to Counties. Reference to Schools & <b>Taxes</b>	21	0.3



040	AIR QUALITY, GENERAL	Restricted Air Space, Air Pollution, Noise Pollution	20	0.3
049	BIOLOGICAL DIVERSITY	Specifically States	23	0.3
050	VEG. DIVERSITY, GEN.	Vegetation Diversity, General, Specifically State	16	0.2
051	OLD GROWTH FORESTS	Giant Sequoia Management or Old-Growth Timber.	83	1.2
060	FACIL. GEN.	Facilities, General, F.S. Administrative Facilities	2	0.0
061	FOREST SERVICE ROADS	Existing	34	0.5
062	RD CONSTR CUR UNRDED	Road Const. in Areas Currently Unroaded (nonexisting)	74	1.0
065	TRAILS	Discussion of Existing or Nonexisting (PCT)	141	2.0
070	FIRE & FUELS, GEN.	Fire Management, Prescribed Burning	23	0.3
081	FISH, GENERAL	Fisheries Management	48	0.7
084	OTHER MGT, INDUCTR, SP.	Other Management Indicator Species	39	0.6
085	OTHER WL SPECIES	Other Wildlife Species	208	2.9
086	SPOTTED OWL		46	0.6
092	T&E SPEC. (FAUN&FLOR)	Threatened & Endangered Species (Fauna & Flora)	37	0.5
096	SENSITIVE PLANTS		38	0.5
111	HERBICIDES	Includes Chemical Treatment in General	23	0.3
120	GEOL. & SOILS, GEN.	Geology & Soils, Erosion, General	21	0.3
130	HIST. & CULT. RES., GEN	Historical & Cultural Resources, General	31	0.4
140	ENERGY, GENERAL	Geothermal, Wind Devices. Biomass	16	0.2
150	LANDS, ONRSP, ADJ, GEN	Ownership Adjustment, BLM Interchange, Acquisition, Exchange, General	28	0.4
151	HYDROELEC. DEVEL.	Hydroelectric Development	124	1.7
153	OTHER SPECIAL USES	Recreation Permits: Residences, Concessionaires, Rights-of-way and Urban Interface	8	0.1
154	OCCUPANCY TRESPASS		4	0.1
165	LAW ENFORCEMENT, GEN	Policing Forest, Patrolling	3	0.0
170	MINERALS & MINING, GEN.		42	0.6
180	RANGE, GENERAL	Grazing	250	3.5
190	RECREATION, GENERAL	Includes Interpretation	82	1.1
191	DEVELOPED RECR, GEN	I.S., F.S. Campgrounds Picnic Sites. Vistas, Beaches	21	0.3
192	DISPERSED REC, GEN,	Camping, Hunting, Fishing, Snow Play, Beaches, Riding, Backpacking, Hiking, Target Shooting	87	1.2
193	OHV USE		508	7.1
194	SNOMOBLES. C/C SKIING	Snowmobiles, Cross-Country Skiing	22	0.3
195	SKI AREAS (DOWNHILL)	Development or Current	151	2.1

196	WHIEWATER BOATING	Rafting, Kayaking, Tubing, Canoeing	17	0.2
198	ROS (REC OPNTY SPCT)	See Definition in EIS Glossary.	3	0.0
199	WILDERNESS AREA MGMT.	Existing Areas	18	0.2
210	SPEC. INTR. AREAS. GEN	Special Interest Areas, General, Botanical Areas	21	0.3
211	RESEARCH NAT. AREAS	Research Natural Areas,	21	0.3
212	SPEC. INTR. AREAS	Specifically (RNA) Special Interest Areas, <u>National Natural Landmarks</u>	2	0.0
230	TIMBER, GENERAL		929	12.9
231	SILV. METH. (INCL. CC)	Silvicultural Methods, including Clearcutting	335	4.7
232	BELOW COST SALES	Referring to Timber Sales Losing \$ for Government	114	1.6
235	TIM VALUS IN UNRD AR	Timber Values in Unroaded Areas	4	0.1
260	VEGETATIVE TYPES, GEN	Meadows Management	29	0.4
261	CHAPARRAL	Any Comment About Chaparral, Brush	6	0.1
270	VISUAL RES., GENERAL	Scenery	75	1.0
280	WATER, WATERSHED, GEN	Including Flood Control	55	0.8
289	GROUNDWATER	Being Specific to Groundwater	0	0
291	WATER RIGHTS	Specific to Water Rights	12	0.2
295	RIPARIAN AREAS, GEN	Areas Along Streams Spoken to Directly	40	0.6
300	WILD & SCENIC RIVERS	Existing or Potential	804	11.2
320	WILDERNESS, GENERAL	(BLM Potential Wild Area Rockhouse)	184	2.6
340	POTENTIAL WILD., GEN	Potential Wilderness, General, Roadless Areas	263	3.7
370	OTHER COMMENTS	Multiple Use, General	63	0.9
400	PLAN IMPLEMENT		<u>1492</u>	<u>20.8</u>
			7175*	100.0

\*-A few comments were split into two comments in the synthesis process.

### C. Alternatives

Opinion of each comment was coded in favor of or against, and inputted into the computer program. Respondents most often stated their opinion only once in their response. This opinion then applied to all comments in that response unless otherwise noted.

These identified alternative opinions were as follows:

	<u>Numerical Summary</u>	
	<u># of Comments</u>	<u>Percent of Total</u>
(1) In favor of a particular aspect, practice, activity or use. (Alternative preference not stated.)	3,100	43.3

(2) Against a particular aspect, practice, activity or use. (Alternative preference not stated.)	1,803	25.2
(3) Opinion not expressed or cannot be discerned.	466	6.5
(4) New Alternative recommended and described.	1,171	16.4
(5) FAVOR <u>PREFERRED</u> (PRF) Alternative.	45	0.6
(6) FAVOR <u>PREFERRED</u> (PRF) Alternative with modifications.	137	1.9
(7) AGAINST <u>PREFERRED</u> (PRF) Alternative (no other alternative preference given).	234	3.3
(8) FAVOR <u>CURRENT</u> (CUR) Alternative.	3	0.1
(9) AGAINST <u>CURRENT</u> (CUR) Alternative.	0	0.0
(10) FAVOR <u>CURRENT</u> (CUR) Alternative with modifications.	11	0.2
(11) FAVOR <u>1980 RPA</u> Alternative.	9	0.1
(12) AGAINST <u>1980 RPA</u> Alternative.	0	0.0
(13) FAVOR <u>1980 RPA</u> Alternative with modifications.	10	0.1
(14) FAVOR <u>AMENITY</u> (AMN) Alternative.	17	0.2
(15) AGAINST <u>AMENITY</u> (AMN) Alternative.	12	0.2
(16) FAVOR <u>AMENITY</u> (AMN) Alternative with modifications.	25	0.3
(17) FAVOR <u>CURRENT, ECONOMIC DISPERSED</u> (CED) Alternative.	1	0.0
(18) AGAINST <u>CURRENT, ECONOMIC DISPERSED</u> (CED) Alternative.	0	0.0
(19) FAVOR <u>CURRENT, ECONOMIC DISPERSED</u> (CED) Alternative with modifications.	0	0.0
(20) FAVOR <u>LOW BUDGET</u> (LBU) Alternative.	3	0.1
(21) AGAINST <u>LOW BUDGET</u> (LBU) Alternative.	0	0.0
(22) FAVOR <u>LOW BUDGET</u> (LBU) Alternative with modifications.	5	0.1
(23) FAVOR <u>MARKET</u> (MKT) Alternative.	78	1.1
(24) AGAINST <u>MARKET</u> (MKT) Alternative.	0	0.0
(25) FAVOR <u>MARKET</u> (MKT) Alternative with modifications.	9	0.1
(26) FAVOR <u>HIGH PRODUCTION EMPHASIS</u> (PRO) Alternative.	3	0.1
(27) AGAINST <u>HIGH PRODUCTION EMPHASIS</u> (PRO) Alternative.	1	0.0
(28) FAVOR <u>HIGH PRODUCTION EMPHASIS</u> (PRO) Alternative with modifications.	0	0.0
(29) FAVOR <u>WILDERNESS/CAPITAL INVESTMENT</u> (WLI) Alternative.	0	0.0
(30) AGAINST <u>WILDERNESS/CAPITAL INVESTMENT</u> (WLI) Alternative.	0	0.0
(31) FAVOR <u>WILDERNESS/CAPITAL INVESTMENT</u> (WLI) Alternative with modifications.	0	0.0
(32) FAVOR <u>WILDLIFE, FISH &amp; VISUAL EMPHASIS</u> (WLV) Alternative.	3	0.1

(33) <u>AGAINST WILDLIFE, FISH &amp; VISUAL EMPHASIS</u> (WFV) Alternative.	1	0.0
(34) <u>FAVOR WILDLIFE, FISH &amp; VISUAL EMPHASIS</u> (WFV) Alternative with modifications.	3	0.0
	<hr/>	
TOTAL	7,150*	100.0

- This does not add up to 7,163 since some comments had no opinion.

#### 4. SUMMARY OF COMMENTS ON ISSUES

Computer summaries were made of each subject area code.

Each of these summaries was synthesized by (1) eliminating redundant comments: and/or (2) creating paraphrases that included the specific comments found in the comments for that subject area.

These synthesized comments were then given to resource management specialists. They read all the synthesized comments and, in many cases, the original letters.

The specialists then developed 32 issue statements. These issue statements contained a definition of the issue, a summary of public input, background information, how the issue was handled in the DEIS, and options for resolution.

Those issues were as follows:

1. Air Pollution/Acid Rain
2. Below Cost Sales
3. Budget
4. CAS Landbase
5. Classification of Kings River
6. Clearcutting
7. Coordination With Other Forest Plans
8. Economic Values-FORFLAN
9. Giant Sequoia
10. Hydropower
11. Livestock Grazing
12. Management of Developed Sites
13. Minerals Policy Statement
14. Monitoring
15. Off-highway Vehicles
16. Pesticides
17. Research Natural Areas and Special Interest Areas
18. Road Closure
19. Road Construction
20. Scope and Intent of IMP
21. T & E Species Issue
22. Timber Management for Recreation
23. Trail Emphasis
24. Visual Resources
25. Volume of Harvest
26. Wild & Scenic Rivers - Kings

27. Wild & Scenic Rivers - Lower Kern
28. Water Quality
29. Wilderness - How Much?
30. Wildlife Biologists
31. Cross-Country vs. Snowmobiles
32. Fish & Wildlife

The Forest Management Team then reviewed these issue statements and narrowed them to 12 major issues using the following criteria:

1. Was there a major public concern?
2. Was the issue of concern to major public agencies?
3. Could the issue be resolved within the Forest Plan?
4. Would resolution of the issue result in major changes in management direction, land allocation, or resource outputs?

The major issues and summary of public input are:

#### (1) BUDGET

**ISSUE:** Is there too great a discrepancy between current and projected budget levels required to implement the Preferred Alternative (PRF)? Will substantially lower budgets substantially change resource programs and their priorities?

**PUBLIC INPUT SUMMARIZED:** Respondents are concerned that present budget levels (\$10.6 million in 1986) fall so far short of the level required to fund PRF (\$19.5 million) or even LBU (\$12 million) that there will be major changes in the implementation of PRF or any of the other alternatives. Respondents would like to know how we would prioritize budget expenditures for the various resource programs if the selected alternative is not fully funded. There is much concern that recreation, wildlife and other non-timber programs would suffer disproportionately and that monitoring might be abandoned altogether.

#### (2) CLEARCUTTING

**ISSUE:** How should the silvicultural practice of clearcutting be applied on the Forest?

**PUBLIC INPUT SUMMARIZED:** Public input is polarized on this issue. Many said that clearcutting is ecologically destructive because a reduction of ecosystem complexity in the managed, even-aged stands would make the forest more susceptible to **unknown** virulent pests. Some perceived that a monoculture of tree species would result from clearcutting. This, with the loss of multi-aged stands, would reduce forest stability even more than clearcutting alone. Some thought that clearcutting would cause an increase in soil erosion and an inability to reforest resulting in a reduced long term sustained yield. Some said that clearcutting was not a good economic

choice because all trees, including small, low valued ones are removed at the same time as larger, more valuable ones. Many people objected to the major changes in the landscape when clearcutting is visible.

Other comments supported even-aged management and the use of clearcutting as a tool because of increased water yield; and greater productivity and cost effectiveness. Other interests supported much higher annual timber harvests. They did not mention clearcutting as being a problem in achieving those higher harvest levels.

### (3) FISH AND WILDLIFE

**ISSUE:** Will the management of fish and wildlife habitat be adequate in light of increases in commodity production?

**PUBLIC INPUT SUMMARIZED:** Respondents said the documents were not in compliance with the law or ISM because they did not treat this resource equally with other resources. Individuals and agencies said that monitoring, particularly of potentially damaging management activities, was not sufficient or that it would not be carried out. Others said the substantial reduction in Fish and Wildlife personnel and budgets would not allow maintenance of viable populations of all species over time. Some said that unique areas and biological diversity were not properly addressed or protected. Comments reflected a mistrust of intentions and ability to adequately protect riparian areas. Respondents showed a knowledge of the importance and value of riparian areas: and, generally, encouraged adoption of more protective measures.

### (4) GIANT SEQUOIA

**ISSUE:** What should be the objectives and intensities of management activities in giant sequoia groves?

**PUBLIC INPUT SUMMARIZED:** Respondents had a wide range of opinions on giant sequoia management. They had concern that management activities, particularly logging within giant sequoia groves, would endanger this species. Many respondents said that intensive management of any kind was inappropriate because of the unique features of the species and their ecosystems. Some said that a comprehensive Forest-wide giant sequoia grove plan was necessary prior to any further activity. Some supported action described under the Preferred Alternative (e.g., logging of whitewoods to protect the sequoias from fire). This would secure reproduction and increase the vigor of residual trees.

### (5) OFF-HIGHWAY VEHICLES

**ISSUE:** How much and where should OW use occur?

**PUBLIC INPUT SUMMARIZED:** Comments were generally polarized as being pro-OW or anti-OW. Pro-OHV comments were nearly all from users desiring to protect and improve their activity. Most favored expanded trail

systems, and emphasizing loops and connecting trails. Some specifically support more cross-country travel acreage. Interest was overwhelmingly for trail riding rather than cross-country use. Most opposed recent wilderness designations and effects on OHV trails. Some said that the 24 percent of the Forest in wilderness only produces 4 percent of the recreation use.

Anti-OHV comments said that *OHVs* are not compatible with other Forest uses due to user conflict and environmental damage. Specific concerns were noise, dust, trail damage, erosion, watershed damage, disturbance of wildlife, destruction of plants, air pollution, public safety, government liability, taxpayer-expense, fire hazards, law enforcement costs, litter, and vandalism. Some favored restricting *OHV's* to fewer miles of designated roads and trails. Others proposed a few small OHV "sacrifice areas" in non-environmentally sensitive locations. A number said *OHV's* should be allowed only on roads, subject to the same restrictions as other vehicles.

A few respondents suggested a middle ground. They proposed *OHV's* only on designated roads and trails (no cross-country travel). They would combine these roads and trails with a trail system developed specifically for *OHV's* from Green Sticker programs.

#### (6) PESTICIDES

**ISSUE:** Are pesticides necessary to ensure long-term sustained yield? Are they safe?

PUBLIC INPUT SUMMARIZED: Several letters pointed out that all alternatives in the DEIS assume the use of pesticides to achieve the necessary timber growth to support long-term sustained yield. These letters suggested that the Forest Service should develop alternatives which deal with the possibility of pesticides not being available for use in forest management. Many suggested that a separate EIS was needed before the use of pesticides continues. Many others expressed a fear of either undesirable direct effect on human health or indirect ecological impacts resulting from the use of pesticides. On the other side of the issue, there was general support for the application of intensive forest management practices, including the proper use of pesticides. Many respondents favored the timber outputs of the PRF Alternative, or even greater outputs, and did not mention the use of pesticides as a problem. By implication, then, these individuals accepted pesticides as a part of timber management.

#### (7) ROADS

##### ISSUE

Road Construction: What are the road needs for use of Forest resources?

Road Closures: What are the situations, if any, for road closure?

## PUBLIC INPUT SUMMARIZED

### Road Construction:

Some respondents said that the Forest has sufficient road access. In general many said that new roads are not necessary for recreation and that timber should support road construction costs. They said an unequitable balance exists between road construction and hiking trail construction. Several respondents had concern over road construction near wilderness. They expect that additional roads would result in increased wilderness use (contrary to the wilderness experience). Several comments wanted unroaded areas as semi-wilderness or buffers to wilderness.

Some respondents favored a slower, more limited approach to future road construction that would allow for a more comprehensive impact assessment. Some wanted temporary timber harvest roads and restoration to a more natural condition after use. Environmental concerns focused on effects on water quality, air pollution, congestion, biota damage, erosion, and visual degradation.

### Road Closures:

Respondents were divided equally into conflicting positions. Those in favor of leaving roads open said that more roads should be left open after posting health and safety considerations, that taxes pay for the roads and, therefore, they should be available for use. That more available roads will provide better access to remote areas, and that roads allow a more remote experience for those with hiking disabilities.

Those in favor of road closures want an increase in road obliterations and restoration to natural conditions. They said this would reduce soil erosion and user impacts, and have less impact on biota and visuals. They wanted a road obliteration plan included in the Forest Plan and consideration be given to establishing further roadless areas through road obliteration.

## (8) TRAILS

ISSUE: Does the DEIS and Plan have enough emphasis on the total trail system including construction and trail maintenance?

PUBLIC INPUT SUMMARIZED: Most respondents said that new construction of 21 miles of trail per decade in the Preferred Alternative (PRF) is inadequate to meet demand. Many compared this figure to information about road construction in the Preferred Alternative. They did not identify any specific areas not presently accessed by trails. Some respondents wanted more reconstruction and maintenance of existing trails. They discussed the poor condition of trails. Many respondents, representing both motorized and nonmotorized user interests, had concern about impacts of timber management on recreation values (e.g., visual quality) and investments (e.g., the actual trails), often relating to past practices and to projected impacts under the Preferred Alternative. They often said that timber harvest and associated road construction have destroyed many miles



of trail. Frequent concerns were about slash left on trails and building roads over trails without providing for trail rerouting.

#### (9) VISUAL RESOURCES

ISSUE: How can management practices best maintain visual resources, especially in areas of high visual interest?

PUBLIC INPUT SUMMARIZED: Many respondents oppose activities that would create a managed appearance resulting from continued even-aged silvicultural treatments. They want to avoid a decline in the Visual Quality Index (VQI). Instead, they believe the Plan needs to enhance and improve the current visual condition. Some say that past emphasis on logging and road construction resulted in visual degradation which angered people nationwide. They state that the effects of Forest activities, when analyzed by viewsheds, will create a continuous and long-term visual quality decline. Some express concern that Forest Plan short-term impacts would actually last many years (e.g., 40-50 years). Some questioned why the Plan proposes the Modification objective within the urban interface zone. Others had concern about borders between National Forest and National Park land, or between wildernesses and non-wilderness areas. They see a need for a compatible visual relationship between the two. They state that the Modification objective is inconsistent along these boundaries.

Other respondents supported higher annual timber harvests. They concur with requests of the industry, saying that timber is a renewable resource and that harvesting benefits the land and its resources. Many did not mention visual quality as being a problem in achieving these higher levels of harvest, implying that the higher outputs could be achieved without detrimental effects on the visual resource. Some say that through proper management, the Forest can provide timber production and still insure multiple-use. Others say that aesthetic values can be maintained and trees can be planted to provide for the future.

#### (10) VOLUME OF HARVEST

ISSUE: What should the Allowable Sale Quantity (ASQ) be for the Forest?

PUBLIC INPUT SUMMARIZED: Various concerns criticized the volume of timber harvest in the Plan. Input was generally polarized. Many said the PRF was generally too high or too low.

Respondents gave diverse reasons why the Allowable Sale Quantity under the Preferred (PRF) Alternative is too high. They said that budget levels needed to produce this harvest are unrealistically high. They saw an undesirable subsidy to the timber industry which would result because revenues from the sale of timber would not cover all costs to the government. They also objected to the use of large amounts of pesticides to maintain long-term sustained yield, and to harvests planned on land only marginally capable of intensive forest management. More land allocated to activities other than timber production was requested.

Conversely, other respondents said that the Allowable Sale Quantity under the PRF Alternative was too low. They wanted more of the land base committed to timber management. They stated a desire to maintain at least the current level of harvest even though less intensive timber management may result from a permanent prohibition of herbicide use. Others said that harvest levels under the PRF Alternative would suppress the growth of the local wood industry.

#### (11) WILD & SCENIC RIVERS - KINGS RIVER

**ISSUE:** Should Segment 1 of the Kings River receive a Wild and Scenic River classification?

**PUBLIC INPUT SUMMARIZED:** Many had opinions that the Plan should not delay recommending Wild & Scenic River status on Segment 1 of the Kings River. Respondents want preservation/protection of the existing character of the river and canyon via designation under the Wild & Scenic River Act as a means to prevent a dam at Rodgers Crossing. Primarily, these respondents said the River has recreation and other potential far outweighing potential for a dam with its associated values. In not addressing the suitability and eligibility of this portion of the River, these people said the Plan fails to meet its intended purpose. They have concern about fragmented planning (relative to other segments of the River). The respondents often mentioned that the River has the widest range of remarkable values of any Sierra Nevada river, including magnificent scenery, superb wildlife habitat, blue-ribbon fishing, and easy access to hundreds of thousands of visitors.

Letters said that a decision had already been made to construct a dam at Rodgers Crossing. and expressed disagreement with this position. Similarly, some said it would not be appropriate for the Forest Service to use data and information from dam proponents due to bias in favor of a dam (and against maintaining status quo or Wild & Scenic River designation).

Other respondents said they favor completion of additional studies before a decision by the Forest Service is made either way for a dam or for designation as a Wild & Scenic River. Some occasionally mentioned the unavailability of current information. Enactment of Wild and Scenic River. Legislation (November 1987) has resolved this issue.

#### (12) WILDERNESS

**ISSUE:** What are the recommendations for wilderness classification?

**PUBLIC INPUT SUMMARIZED:** Responses ranged from a desire for maximum wilderness to no more wilderness. Wilderness advocate recommendations ranged from adding a single Further Planning Area to keeping all former inventoried roadless areas (Rare 11) as wilderness, or at least Semi-primitive Non-motorized ROS class. The stated purposes were preservation for future generations, maintenance of ecological and species diversity, and space for mental and spiritual relaxation. Those opposed to any additional wilderness say designation is too restrictive, costs are

high due to the reductions in commodity outputs and/or management, too much land is already set aside for too few users, California has enough wilderness.

Resolution of these illustrative issues/comments are part of the Record of Decision. Comprehensive treatment of public responses and Forest Service Resolution follows in Sections 6, 6A. and 7.

## 5. SUMMARY OF COMMENTS ON THE DOCUMENT AND PROCESS

A. Listed here is a summary of Major Public Comments on the Documents.

Alternatives were confusing to the primary issue of developing a sound management plan. The Plan should have had an alternative between 146 and 186 MMBF annual timber harvest. The data base is flawed, assumptions incomplete and alternatives inadequate. FORPLAN assumptions are false. The process and reasons for selecting the preferred alternative are not shown. Use of acronyms is confusing. Economic relationships with neighboring National Forests and counties are insufficient. Minority population percentages are inaccurate for Kern County.

~~MMB~~ and MIR's should not be imposed on all alternatives. The Plan violates NEPA by not including alternative ~~MMB~~ and MIR's. Cost of ~~MMB~~ and MIR's should be shown.

Pertinent legislative mandates for cultural resources are not discussed. Needs a reference in the text referring to these mandates in the Glossary. Glossary needs to have a definition of an archaeological site. The documents need to study the eligibility and suitability of Kings River for Wild and Scenic potential.

The mitigation of timber impacts on trails needs a better explanation. The documents should have an element addressing user conflicts and how they will be managed. Recreation demand should be expressed as a demand for each ROS class rather than demand for dispersed and developed recreation. Environmental consequences of an alternative on wilderness resources should include more issues than impact on users and others. It should also consider consequences on the natural values.

Goals and objectives for all T&E candidates, sensitive, and declining species should be developed. The documents need to outline plans for surveying and inventorying these species. Individual management plans should be written for each sensitive plant and animal species. The Plan needs to utilize the Natural Diversity Data Base (1108) assembled by California Department of Fish and Game. The Plan does not describe and direct fisheries habitat improvements except for the Little Kern golden trout. Cumulative multiple-use impacts on fisheries should be addressed. Indicator species do not adequately represent all rare species. The vision statement needs to recognize wildlife benefits.

The Plan does not provide information on individual giant sequoia groves. A decision on Research Natural Areas needs to be made in the

Plan. Cumulative impacts of timber management should be more fully discussed in prescriptions. Uneven-aged management as a Timber Management alternative should be given greater consideration. The Plan fails to examine alternatives for assumptions about stand growth discount rates, and stumpage price trends. This violates NFMA regulations. The loss of herbicides should be an integral part of at least three alternatives or in the analysis of alternatives.

The Plan lacks adequate data for site productivity or erodibility of soils, and needs a soil loss table along with Table 4.15.

The Plan should show purpose, method, and use of the geologic resource inventory.

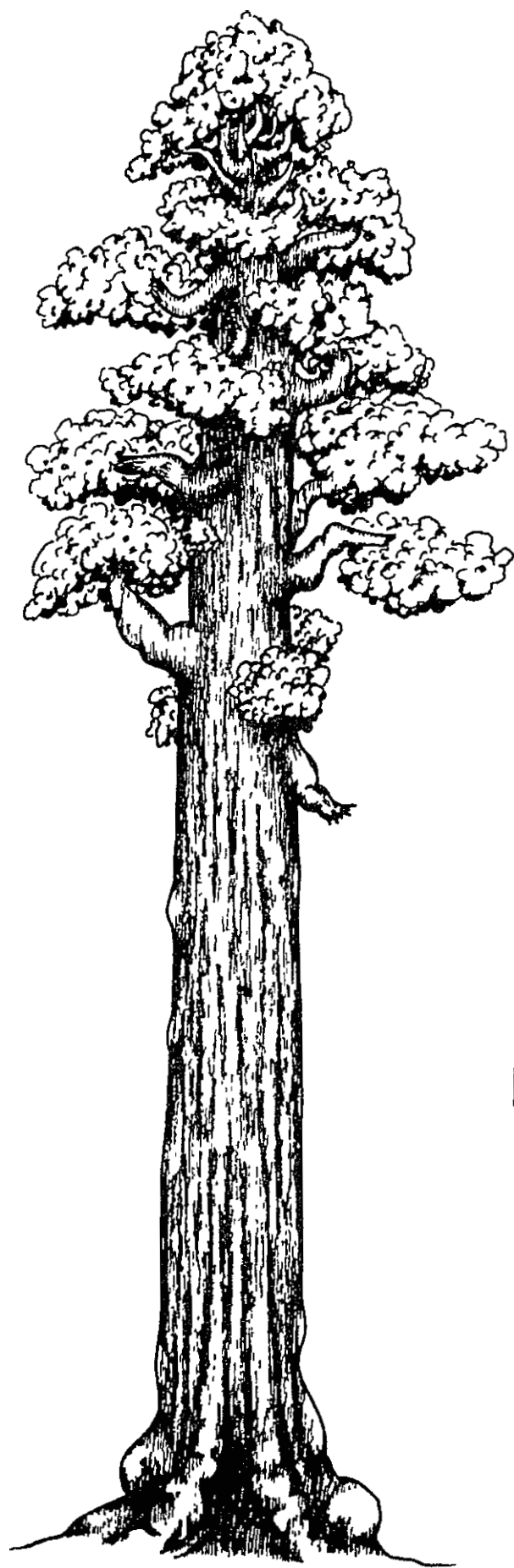
#### B. Summary of Public Comments on the Public Involvement Process

Some respondents asked for extension of time to adequately comment on the Draft documents, and for public hearings and additional public meetings. Others asked that no extension be considered.

Several respondents stated that the bureaucratic language, writing of the documents, and lack of specifics was misleading, poorly written, and easily misunderstood. Others congratulated the Forest Service about the compilation of data, information and organization of the Documents.

Other concerns were that consultation with the California Department of Fish and Game should be shown, the Forest Service should make sure all of the varied interests had an opportunity to provide their comments, and that more public involvement should occur before completion of Giant Sequoia Groves Management Plans.

Comprehensive treatment of these illustrative public comments about the documents, planning process and the public involvement process follow in Sections 6, 6A, 7, and 8.



**Section 6**  
**RESPONSE TO**  
**PUBLIC COMMENTS**

SOCIAL ENVIRONMENT (010)/ECONOMICS (020)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 You are restricting the lumber industry Plan will create havoc for the lumber industry. their families. with the building Industry. lumber prices, interest rates and people of the USA Through rotation, planning and cultivating. the end result is bountiful harvest Reasonable prices and profit If we use logic we can benefit through managed tree farming Balanced usage is the answer Triple the planting

Please see Chapter 4 B 1 (FEIS) for a discussion of socio-economic effects, and Appendix O (FEIS) for a discussion of timber supply

200 The SQF budget has shrunk from \$18 million 4 years ago to \$9 8 million this coming year. and national deficit reduction efforts make realistic prospects for increased funding unlikely Yet each of the 10 alternatives discussed in the DEIS projects a budget higher than this level (and in the case of the PRF. much higher) The Conservation Alternative recommends that the problem of significantly reduced funding be realistically addressed for each alternative. that specific potential program cutbacks be delineated in each case. and that retention of resource protection programs be given a higher priority than that of resource exploitation programs such as timber harvesting

Please see Appendix L (FEIS) for a discussion of the relationship between the annual budget and the Forest Plan

300 The 5th decade budget is wrongly shown at 19 6 million dollars' That is the second decade budget'

Thank you for spotting this error

301 The idea that total clearcuts are healthy because new grasses and the succession of plants that follow Creates good deer habitat is IRRESPONSIBLE MANAGEMENT The agency which is looked at as caretaker of our forests must begin to honor the basic concept of interdependency of species -- all species -- by providing. also. for animals that are not "harvested " The idea of Cutting 10-25 cords of black oak per year being advantageous to wildlife (3-42) would be difficult for you to substantiate. given the fact that representatives of the California Department of Fish and Game claim just the opposite. after careful studies

We are not advocating that total use of clearcuts on all ground is best for any species Just as total retention of old growth is not best for wildlife diversity either Clearcuts do offer grasses and shrubs during part of the cycle This provides habitat. forage. and diversity important to some species The Forest has set aside approximately 24% of the land base (almost 35% of the timber base) in wilderness This provides habitat for species dependent on mature seral stages Special Interest Areas. Research Natural Areas. old growth retention. spotted owl habitat areas, view zones. and riparian areas also provide areas of minimal disturbance to wildlife The needs of wildlife are also provided for with retention of dead and down wood, snags. and wildlife clumps within timber emphasis zones

The Plan States that 10-25 cords per acre of oaks can be Cut and still maintain habitat for wildlife In some areas, cutting oaks to thin the trees to encourage sprouting and the development of large mast producing trees does benefit wildlife

(010/020)

400 Using national forest land to increase the economy in an exploitative way is counterproductive

This statement is too general to respond to other than to note that in our opinion the conservation, or wise use, of natural resources is not an exploitive use of them

500 Our forest resources should never be sacrificed for the profit of private individuals. Even those timber sales which "break even" amount to a give-away of our property. No timber should be sold for less than the administrative **cost** and the costs of repairing all the damage done. The same goes for cattle grazing and other commercial uses of our forest. Your plan should state these objectives in clear and unmistakable terms. Neither your Preferred Alternative nor any of the others give us a fair return for the resources lost.

The modeling process described in Appendix B of the EIS allows all lands to be available for all **uses**, within constraints imposed by the theme of each alternative. The computer model, FORPLAN, then solves for the particular allocation of **resource** uses that produces the maximum present net value. In this process non-financial values, such as wild-life and/or wilderness experience, are evaluated and chosen to the extent that they contribute more to public benefits than **do** values with a financial return. In this method of resource allocation the intent of the 1960 Multiple-Use Sustained-Yield Act is fulfilled. Multiple-use is optimized, but few, if any, specific **uses** are maximized. We have also added a discussion on "below-cost sales" in Chapter 3 of the FEIS.

600 The numbers are in the tens of millions of board feet of timber, or dollars repeated in future profits, or current and projected federal budgets. Much of this data can be gone over and tightened up. It would appear that today's rancher is an absentee landlord or syndicate and **our** public lands are being used strictly for business. The same could be said for ski lodge operations. There has to be a limit to exploitation of open spaces & the wilderness **es-**pecially when it is subsidized at taxpayer expense.

See the answer above. While it is true that commercial **uses** of National Forest land are allowed, they are carefully regulated to ensure protection and productivity of the Forest's natural resources and compatibility with other **uses**. Regarding such recreational ventures as ski areas, they are allowed on National Forest land only insofar as they provide a needed public service.

800 The FS needs to plan to become more efficient and if you will, just to work harder so that the forest may make the contribution that **it** is capable of making without spending **excess** amounts of money. One approach that might be considered is to use more outside help with less government employees. An end result timber sale contract might be one way to do this. The purchaser might take the **area**, harvest the timber and give the area back to you complete with healthy growing established trees.

We are exploring more ways of using contractors and concessionaires **as** a means of improving efficiency.

900 I believe that a proper economic analysis of all the plusses and minuses of benefits which **accrue** to the taxpayers from our SQF would show the following:  
1) For each dollar spent by the FS, more economic benefit results from recreation use of the forest than from timber sales.  
2) More jobs, and more economic support of nearby communities results from development, maintenance and operation of recreation facilities than from expending the same amount of

In most **cases we** are not faced with an either/or situation. With multiple-use we can have both timber and recreation and make a greater socio-economic contribution than by emphasizing exclusive **uses** for individual resources.

(010/020)

money on timber sales. taking account of the costs of roads. supervision of logging operations. and reforestation

1000 I am representing the High Sierra Stock Users Association, an association for recreational purposes. There's been a lot of talk about the importance of the economic impact. Horsemen in California contributed 1.3 billion dollars to the California economy in 1984.

1100 Whatever plan is implemented by the Forest Service, it should live within budget limitation. Current proposals are in variance with the present federal budget. Money obtained from forest uses will be put back into the forest so if the budget is cut, uses such as recreation and wildlife do not suffer from these cuts because of over-emphasis on commodities.

1200 The AER respectfully asks the FS to analyze in depth the current and future needs of the American public in housing, jobs, developed and dispersed recreation outside of wilderness areas and the use of the SQF as a source of revenue for reducing the Federal deficit of the United States.

1300 You have not properly analyzed the mineral situation in your report. You have scarcely mentioned minerals as if they are of marginal importance, when in reality the national defense and economic health of our nation is predicated upon the adequate and readily available supply of raw materials including minerals.

1400 Funds do not seem to be provided to monitor the effects of clearcutting, increased grazing, and off-road vehicle use on wildlife. How can you know the effects of what you propose to do unless you monitor for a long period of time? Monitoring implies management actions will be taken when damage begins to be evident. The Plan does not address the possibility of reduced budgets.

1500 In this period of Congressional struggle with government deficits, below-cost forestry is not likely to withstand budgetary tests. Needed information: 1) Instead of the inflated budgets for below-cost timbering, budget estimates for at least the first planning period based on stringent federal

We have estimated the socio-economic impact of recreation uses of the Forest. This is shown in Chapters 2, 3, and 4 of the FEIS.

Please see Appendix L of the FEIS for a discussion of the relationship between the Forest Plan and the annual budget. Please note that revenues from management of National Forest lands do not come back directly to the Forest Service, but rather are put in the U.S. Treasury.

See the 1980 and 1985 RPA analyses for a broad assessment of housing and recreation needs.

Please see Chapters 2 and 4 of the FEIS for a discussion of minerals. Please see Minerals and Geology sections of the FEIS. Forest-wide Standards and Guidelines in Chapter 2, and the discussions in Chapters 3 and 4 will assist your understanding of the minerals situation on the Forest.

Please see Chapter 5 of the Forest Plan for the monitoring plan. The full cost of this plan is included in the projected annual budget. Please see Appendix L of the FEIS for a discussion of the relationship between the Forest Plan and the annual budget.

Please see Section "e", Timber, of Chapter 3, FEIS, for a discussion of below-cost sales. Please see Appendix L of the FEIS for a discussion of the relationship between the Forest Plan and the annual budget.



(010/020)

budget constraints 2) Analysis of the effect of the 25% Congressional cut (1985) in road appropriations 3) Prioritization of programs to be cut or modified **if** budget anticipations are unmet

1600 What provisions have been made to consider the most economic and environmentally sound use/management of the National Forests as a system or at least on a regional basis vs considering each National Forest as an island? This would especially be significant **in** timber harvest, wildlife management and recreational activities planning If this is not **a** major part of this planning process, why not?

We have a tiered planning process with Regional and National **concerns** covered in the RPA and Regional Guide The Regional Forester is coordinating and monitoring timber harvest levels on a State-wide basis (**See** Appendix O, **FEIS**) This is all done **as** part of a nation-wide program Each forest **assesses** demand for recreation and coordinates with neighboring forests where necessary Similarly, each forest **assesses** impacts on wildlife, and where necessary, coordinates with neighboring forests and the California Department of Fish & Game For example, management of certain threatened and endangered species is closely coordinated among the forests hosting habitat for such species Finally, the Regional Guide provides general coordination, standards and guidelines for resource management throughout the Pacific Southwest Region

1700 I would like to mention that the businesses located in the Kennedy Meadows **are** heavily dependent on the income provided by the sportsmen and recreational users who used to frequent these now closed **areas**

Except to say thank you, we have no substantive response to this piece of information

ECONOMIC VALUE OF FOREST (021)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 It **is** my understanding that we are losing large concentrations of our timber due to forest insects and due to the prohibited use of certain chemicals I feel **it** is time to return to the proven successful Forest Service management policies of the 1960's

On the Sequoia, there are no unusually large losses of timber due to insect damage Even **if** there were, application of chemical pesticides may be less effective than removing the diseased trees At this time, the **use** of chemicals is being evaluated **in** a Region-wide EIS This process will have to be completed before the use of chemicals is **an** option for management

200 Developers have something more **in** mind than cost-effective timber production

We can have no substantive response to such a general statement

300 Save the Forest Service and the taxpayer's money Some of it could be used to encourage low-impact recreational activities, for instance hiking, camping, picnicking, bicycling, fishing, birdwatching, snow-shoeing, cross-country skiing

Except to note that **we** do encourage these types of recreational activities, we have no substantive response to this expression of opinion Please refer to the management direction (Chapter 4 of the Plan) for more detailed information

400 **We** are one of those support industries outside of Tulare County Any decline in lumber production would affect **our** business A slow down would

Since the Allowed Sale Quantity for the PRF shows virtually no change from the historical level of harvest, there should be no impact on businesses

(021)

adversely affect the level of employment we maintain in our operation. The forest products industry is renewing trees at a rate equal to or above the harvest rate. Give consideration to the acceptable level of harvest. They aren't about to cut themselves out of business. Give consideration to the needs of industry.

dependent on timber from the Sequoia NF. We have to address broader level timber supply effects.

500 It is obvious that commodity outputs are being given very high priority by the FS. This is reflected in your alternative as the overriding force in allocating land use and developing management directions. The belief that all things can be reduced to dollar equivalents is tough on amenity resources like fish and wildlife. We urge you to consider our complaints and seek further consultation and advice and make changes in whichever alternative you choose to protect and enhance our natural resources in wildlife and its habitat.

Every alternative contains provisions for both commodity and amenity resources (e.g., the protection of wildlife habitat). The alternatives vary in the degree of amenity enhancement.

600 What will the effects of the timber program proposed in each alternative be on the following list of vendors? -- 0 B Nuzum Tire-Bakersfield, King Bearing-Mojave, Eureka Fuel-Bishop

Since there is virtually no change from the historical level of harvest, there should be no effect on these vendors.

700 Value of new road mileage resulting from timber harvest should only be counted as a benefit where compatible with the ROS (Recreation Opportunity Spectrum) classification for those particular acres. When new log haul roads change ROS class, as from Semi-Primitive Non-motorized to Semi-Primitive Motorized, roads should carry a negative value in appraising benefits.

Roads yield a number of benefits, not just recreational ones. Hence, it would be inappropriate to determine the benefits of a given road according to whether it changed an ROS class.

800 Tulare County Farm Bureau supports the concept of safe, efficient and economic use of our natural renewable resources. Tulare County Farm Bureau has gone on record supporting the Preferred Alternative Plan as drafted. We would also like it noted that we support an increase in timber usage above the one hundred and four million board feet denoted in the Preferred Plan.

Thank you for your support and this expression of opinion.

900 Due to budget cuts, some FS positions have been cut. In our general area, they have lost a wildlife biologist, fisheries biologist, a hydrologist, and a soils specialist. All of these positions are for the protection of the forest (wildlife and their habitat). a) It would be virtually impassible for other personnel to double up, due to the complexity

Regardless of budget, we are responsible for implementing MMR's and MIR's (see Appendix L for additional discussion on this matter). Reforestation on the Sequoia has not been reduced in response to reduced budgets.

(021)

of their own jobs - (silviculturalist, timber management. etc ), and do an effective job b) Again, wildlife and their habitat suffer Budget cuts in many cases have reduced reforestation efforts

1000 The Forest Service appears to be subsidizing both grazing and lumber harvesting on National Forest Lands These areas should be generating income to help with management objectives This income must be generated by increased fees, not necessarily increased leasing

1100 The alternative selected as the long-range forest plan should be determined on what should or what needs to be done on the SNF and not on what anticipated Short-term annual budgets might be

1200 Recreation benefits are not hard cold dollars changing hands This type of benefit is sometimes referred to as "funny money" The point of all this is that if a low budget alternative must be selected it should be one which emphasizes management programs which return hard dollar revenues to the U S Treasury rather than funny money Also, if an alternative is selected and has a good mix of uses, but because of reduced annual operating budgets cannot be fully implemented, then management programs emphasized with the budget available should be those that return hard dollar revenues rather than funny money

When all costs and benefits are considered, the timber and grazing programs show greater benefits than costs Also, please see Chapter 3. FEIS. for a discussion of below-cost timber sales

The PRF Alternative does, in fact, represent what should be done over the long haul as opposed to what the next annual budget might or might not provide for

Please see Appendix L for an explanation of the relationship between the Forest Plan and the annual budget

RECEIPTS TO COUNTIES (022)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Plan does not display an analyses of the effect of alternatives on the 25% fund

Within each alternative there are a variety of ways revenue can be changed Looking ahead to increased recreation use and the possibility of higher use fees, plus an expected continuing demand for saw-timber, receipts to counties will probably increase Because of the number of unknowns (i.e., value of outputs) within each alternative, lengthy analysis would serve little purpose Please see discussions and displays in Chapters 2, 3, and 4 of the FEIS

101 How much more importance to Current and future management will be assigned to programs that enhance hard dollar returns to the U S Treasury and Forest Reserve Fund payments to Counties in light of decreased operating budgets?

Reduction of the federal deficit remains a high priority for the administration Programs that contribute to a reduction will continue to be preferred over those that do not

(022)

102 The Board of the Porterville Elementary School District supports a balanced use of the Sequoia National Forest and any reduction in timber receipts would negatively impact our funding

We have no technical response to this Statement of support for a timber program which does not reduce receipts

103 Recreation related activities account for 2/3's of the income of communities surrounding the Sequoia National Forest

We agree that a large portion of local community income is derived from recreation oriented activities

AIR QUALITY, GENERAL (040)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The Conservation Alternative further proposes that current air quality in all areas of the Forest, not just the Wilderness Areas, be documented for all sensitive indicators for each Air Quality Related Value

Sensitive indicators for Class I Air Quality Related Values (AQRV's) are established as a method of evaluating potential degradation from proposed major emitting facilities. Under the current requirements of the Clean Air Act, the Forest Service only has a legal avenue to make recommendations regarding permits requested by facilities with potential to impact Class I areas. The lack of established indicators in Class II portions of the Forest does not imply neglect. The Forest Service is increasingly involved in research and analysis to determine effects of photochemical oxidants, smoke management techniques to reduce visibility impacts and particulate emissions, and acid deposition impacts to forest resources. Much of the information collected in Class I Areas can be applied to a better understanding of air quality in Class II portions of the Forest.

101 Air quality should be monitored at frequent intervals to determine if changes in air quality are occurring over time

Sequoia National Forest monitors several critical pollutants in an effort to establish baseline concentrations and track changes. The Forest has been involved in monitoring photochemical oxidants and particulates. Wind speed and direction have been collected at several sites in an effort to begin establishing daily wind patterns. In 1987, Sequoia NF initiated a visibility monitoring program for the Dome Land Wilderness.

102 strict guidelines should be adopted to insure that future activity on the Forest such as prescribed burning, visitor traffic, OHV use, and other logging-associated activities such as herbicide application do not become a factor in decreasing Forest air quality below current levels. These guidelines should require the FS to take immediate and effective action to eliminate any source of pollution significantly decreasing air quality over current levels.

Methods to insure evaluation and mitigation of Forest management activities that may impact air quality are currently in place. Environmental Assessments (EA) or Environmental Impact Studies (EIS) are required prior to the use of prescribed fires, logging activities, and major recreational developments. Recent EIS's on Sequoia have addressed air quality. Continued attention to air quality is planned for future EA's regarding prescribed fires and logging activities.

(040)

200 Emphasis should be placed on the following  
8) To promote a better Air Quality Program, and to reduce pollution and emissions caused by vehicles. **erosion**, construction, use of unpaved roads, prescribed burns. wildfires The reduction of acid **rain** which affects our forest, lakes and streams

Please refer to 100 and 102 above

300 The Plan seems to be against the people who like to get out of the town and be at peace in the wilderness To hear the lumber truck and the off road vehicles we may as well stay in the town and cities God gave us this wonderful country, not this wall to wall city. let's leave it this way

This is a general Statement of personal values for which we have no substantive response

400 Air quality in the forest has been deteriorating for a number of years Emissions are harmful. despite this knowledge. the Forest Service Plan offers more and more opportunities for vehicles to go deeper and deeper into the forest While **our** air quality may be greatly affected by pollutants drifting **in** from outside areas. it does nothing to improve it **by** encouraging more and more auto traffic into the forest The Preferred Alternative does this by proposing 3 new ski **resorts**, increasing OBV travel. and more roaded areas

The FEIS does predict significant increases **in** recreational activity throughout the planning period However. major developments such as new ski areas will require an EIS including an air quality analysis to determine impacts and investigate mitigations Project EIS's **will** establish current conditions and trends. and will predict pollutant concentrations added by each proposed development This information would then be evaluated to determine significance

500 Needed information The impact on the Forest of acidic deposits from sources inside and outside the Forest has been totally neglected in the FMP and DEIS

Thank you for bringing this to **our** attention A discussion of acidic deposition has been added to Air Quality Section of Chapter **3**, FEIS. and **as** a research **need** in Appendix B of the Plan

501 Needed information Impact of acid rain on the feasibility of tree restocking after **clear-**cutting and the alternative advantages of preserving and restoring old growth forest with stronger resistance to acid deposition impacts on trees and soil

It is true that more information is needed regarding the impact of acid deposition on various resources The Forest Service is currently tracking and participating in efforts to determine the effects of acidic deposition in the west As the result of impacts in the eastern U S and Europe. the Western States have launched a comprehensive research effort that seems to be preceding significant damage Sequoia National Forest will rely on research to provide information **in** a timely manner to protect resources The Forest Land Management Plan will be reviewed every 10 years allowing for new information to be

502 Needed information Alternate management plans in the event that acid **Pain** further impairs the feasibility of clearcut logging and tree plantations

Please refer to 501 above

(040)

503 Needed information Analysis of EPA studies on acid rain. These data need to be taken into account in the DEIS air quality analysis

Due to the suspected vulnerability of **Sierra** soils and water, acidic deposition **is** one of several transported pollutants of keen interest to the Forest Service. The Forest Service continuously tracks research regarding acidic deposition and joined forces with EPA **in** the sampling effort mentioned. No samples were taken from the Sequoia National Forest. Since acid deposition research **is** **in its** infancy, it would not be practical to discuss or attempt to draw any conclusions from specific research **project** at this time. Research **is** providing needed information that will continue to be supported by the Forest Service.

504 Needed information Analysis of the World Research Institute study documenting the **rise** of acid rain in the Sierra Nevada

Since acid deposition research in the west **is in** its infancy, it would not be practical to discuss or attempt to draw any conclusions from specific research at this time.

505 Needed Information Effect of air pollution practices on Class I areas in the Forest and adjacent **Sequoia** NP. Many of the Forest burning practices and other polluting activities may not proceed as planned under the restrictions of the Clean Air Act **if** they degrade these Class I areas

Although the Clean Air Act does not specifically address smoke as an air pollutant, **it** does provide the states with the responsibility and authority to establish regulations to deal with smoke. The provisions of the Act that deal with the Prevention of Significant Deterioration (PSD) apply only to major stationary sources of air pollution, such as power plants, and does not include prescribed fire which **is** defined as a temporary source. **However**, the Act does mandate a responsibility of the Federal Land Managers to protect the Air Quality Related Values (including visibility) in Class I **areas**. In order to minimize smoke intrusion into Class I areas, the Forest Service has developed smoke management techniques and will continue research to further enhance those techniques.

506 Needed information Prioritization of planned Forest polluting operations to be cut at anticipated levels of pollution exceeding State and Federal standards

Based on recent research, **it** is quite evident that pollutants found in any degree of significance on Sequoia National Forest **are** predominantly from sources found outside the Forest. The percentage of air pollutants resulting from management activities **is so** small that benefits from cutting activities **in** the event of episodes exceeding State and Federal Standards, would not be realized. It should be noted that prescribed fires are conducted only on allowable burn days set by the California Air Resources Board after considering predicted meteorological conditions and pollutant concentrations.

(040)

507 Needed Information . The air polluting impact of Forest-encouraged wood burning by permitting wood cutting for domestic fireplace use. a factor to be considered in cost-benefit appraisal of this activity

The increase in residential wood burning across the nation has sparked interest in assessing the potential effects of such burning on air quality In the event a problem is perceived. the responsibility of controlling such emissions would be that of communities. counties. or air pollution control districts Some such authorities currently restrict the number of wood burning appliances that can be installed in new residences. and others request their residents not to burn wood when ambient air quality is low

508 Needed information . The significance of old growth forests as a pollution detoxifier and buffer

Please refer to Appendix B of the Plan where the need for this type of research is recognized

509 Needed information The effect of air pollution on fisheries

Please refer to 508 above

510 Maintain and restore old growth stands to relieve forests of severe stress from intensive cutting programs. gain maximum advantage from "decadent" forest regenerative power. maximize air purification advantages of tree growth, and benefit from alleged greater resistance of mature trees to air pollution

More research is needed to determine which pollutants, and in what concentrations, adversely impact tree growth Some conclusions are beginning to develop, for instance with ozone, but prior to significantly altering silvicultural practices. more information is needed to determine the significance of alleged mature tree resistance to specific pollutants Please see Appendix B of the Plan where the need for a wide variety of air pollution research is recognized

511 Establish air monitoring stations at strategically located Forest sites (FMP 4-26)

Please refer to 101 above

512 In measuring particulates, discriminate between the various different toxic elements of the particulates and their separate and combined impacts

As Sequoia has the opportunity to continue particulate monitoring, chemical composition of the particulates may be analyzed occasionally

600 Air quality , loss of diversity, loss of habitat and Species - none of this is looked at in terms of cumulative impact

The Forest Plan is designed to establish broad objectives and to develop a fully integrated mix of management practices which provide for the use and protection of Forest resources, satisfy guiding legislation. and address local. regional and national issues Cumulative impacts are considered site-specific and will be analyzed in project environmental assessments Monitoring. as defined in Chapter 5 of the Plan. will ensure that cumulative effects will remain consistent with the intent of the plan

(040)

601 The wholesale destruction of complex ecosystems in clearcutting is NOT described in these documents. The animals, plants, soil and microclimates **are** not analyzed for a typical **40-acre** timber sale so that the public can view the whole or totality of the change wrought by the USFS. **Please see #600 above**

602 No description of the actual results of a given number of revegetation units exists. The public should be given a careful field study of the 10 largest revegetation units in the last **3** decades showing what species exist in what numbers and the diversity, soil quality, growth, etc.

A general description of the process needed to ensure a continuous flow of timber **is** found in the FEIS. Chapter **3**. The consequences of allocating differing amounts of land to varying intensities of timber management are described in Chapter **4**, FEIS. These discussions are intended to be rather general **in** nature, as the site-specific analyses will be done at the project level prior to timber harvesting **or** other activity.

603 NFMA requires the revegetation of logging roads. Please describe that requirement in the legislation and what resources need to be committed to achieve those goals. Has the USFS complied with this in the SNF?

The Section of the National Forest Management Act referred to is Transportation System Section **8** which reads: "(b) Unless the necessity for a permanent road is set forth in the forest development road System plan, any road constructed on land of the National Forest System in Connection with a timber Contract or other permit or lease shall be designed with the goal of reestablishing vegetative cover on the roadway and areas where the vegetative cover has been disturbed by the construction of the road, within ten years after the termination of the contract, permit, or lease either through artificial or natural **means**. Such action shall be taken unless it **is** later determined that the road is needed for use as a part of the National Forest Transportation System." Logging roads are normally permanent and remain in the National Forest Transportation System. Many of these roads are closed to public traffic by earth barriers giving an appearance of being temporary. These roads have permanent drainage structures and will be opened up for further logging activities, planting, and other silvicultural **work**. Such roads do not require revegetation. Reestablishing vegetative cover is primarily required to protect the resource. When roads are temporarily closed with permanent drainage structures, the **Source** is adequately protected. However, the Sequoia NF does occasionally construct temporary logging roads without permanent drainage which falls into the category described in the NFMA. Sequoia National Forest complies with this law by eliminating traffic with physical barriers and allowing the road prism to revegetate naturally.



(040)

604 Research Natural Areas provide baseline Study areas for target species. The legislation requiring this is 50 years old. The SNF has none The four recommended should have been established long ago But priority should be given to establishing these in commercial forest sale areas for baseline purposes

By definition. RNA's provide baseline study for various ecosystems In the final Plan. three RNA's are recommended to the Chief for establishment The three areas are commercial forest types These are Jeffrey pine, giant sequoia, and red fir Since RNA's are nearly pristine. they provide the ecological baseline to compare management activities in adjacent areas RNA's are not located in areas that have received land disturbance

700 The importance and impact of air quality upon forest resources should be more plainly defined. Describe possible impacts upon vegetation and the potential for acid rain problem in high mountain lakes.

Please refer to 501 and 503 above

BIOLOGICAL DIVERSITY (049)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The plan is inadequate in preserving biologic diversity It stresses simplification of ecosystems favor of timber harvest, grazing and mining interests Removal of oak forest. old growth. dead and down logs and snags will cause an overall reduction in plant and animal diversity.

We believe the final Plan provides for preserving biological diversity Presently. nearly One-fourth of the Sequoia NF is within established wilderness Three Research Natural Areas are recommended for establishment and five Special Interest Botanical Areas are established. In addition, Forest-wide Standards and Guidelines for riparian. meadows. hardwoods. old growth, dead and down. and snags ensure that plant and animal diversity is maintained across the planning area In addition. management activities are planned to Create a mosaic of successional stages in portions of the conifer and chaparral ecosystems where these seral stages are lacking Combined. these factors maintain biological diversity of both plants and animals on the Sequoia NF

200 More consideration should be made for increasing biologic diversity by reintroducing native species such as bunchgrasses. big horn sheep. wolves cougars. and grizzly bears

Native bunchgrasses and cougars are found throughout Sequoia NF We are working with the California Department of Fish and Game to determine the feasibility of reintroducing bighorns to the Forest The reintroduction of grizzlies and wolves to the area may bring unacceptable risk to the Forest user and surrounding communities. although the feasibility of their reintroduction has not been studied in detail

300 I urge you to make the welfare of the flora and fauna your first priority.

Welfare of the flora and fauna is a high priority, however, we are mandated to manage for a variety of uses which limits the Concentration of management on a single resource such as wildlife See response to Comment #100 above

(049)

400 Harvesting and reforestation change the Forest composition. Reforested stands are frequently less diverse than natural stands. Forests should be a reservoir for biological diversity. The Forest Service should reduce forest fragmentation through minimizing new road construction and modifying silvicultural practices. We need to learn more about the minimum size of ecosystems. We need further studies examining the consequences of various Forest practices on biological diversity.

Past timber management practices in the conifer forests of selection Cutting has created uniform open stands of timber with brush understories where dense stands of overmature trees once existed. Current timber practices of regeneration cutting create openings of 5 to 40 acres in size. This provides an increased edge effect. The size and location of the broad ecosystems has not, and will not change significantly. Within these ecosystems, however, management activities can alter the patterns of diversity through time and space by changing the distribution and overall balance of vegetative stages. By increasing the kinds, amounts, and distribution of vegetative stages represented within these ecosystems, the size, type, and stability of plant and animal communities can be expected to increase.

500 There should be areas allocated to preserve diversity and protect wildlife.

The Sequoia NF has five wildernesses. Approximately 241 (or 264,071 acres) of the forest are in established wilderness. Management direction within wilderness is that there will be no timber harvesting, no manipulation of vegetation for watershed, wildlife, or range purposes, and no use of motor vehicles, mechanical transport, motorized equipment, nor installation of structures other than as specifically provided in the Wilderness Act. Also there are 50,500 acres preserved for spotted owl management outside wilderness which receive minimal impacts from Forest Management activities. Approximately 15,500 are located in existing wilderness and a portion of the 50,500 is located in riparian areas, scenic corridors, etc. Also, Research Natural Areas and Botanical Areas will be managed specifically for the preservation of diversity and protection of certain plant species.

VEGETATIVE DIVERSITY. GENERAL (050)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Vegetative diversity will decrease due to the planned intensive treatment of stands to reduce competition.

Intensive treatment of timber stands will be limited. Not all stands will be intensively treated. Treatment to reduce competition will only cover the first few years of seedling establishment. Then, vegetative diversity will increase until the conifer trees reoccupy the site.

200 Prescribed fire should not be used to increase vegetative diversity in wilderness.

Please see comment 800 under the resource code 070, Fire & Fuels. General.

(050)

300 The DEIS specifies that at least 5% of each vegetation type/seral stage combination found on the Forest will be maintained. What are these types and stages? Specific methods for attaining protection and monitoring population trends of the elements are not adequately described.

The major vegetation types found on the Forest are described in Chapter 3, FEIS. This requirement is primarily directed toward preserving "high risk habitats" such as old growth coniferous Forest. Most vegetation types/seral stages will incur modification on a programmed basis as outlined in the final Plan. These changes to meet the five-percent requirement will be assessed by aerial photography and in timber compartment planning. Means of attainment include dedication through the establishment of wilderness, Research Natural Areas, Special Interest Areas, and special management plans such as the Forest-wide Giant Sequoia Management Plan.

OLD GROWTH FORESTS (051)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The draft planning documents contain zero information on individual groves. Amidst hundreds of pages of data and text, there is not a single page or table listing the groves or providing any information on the attributes of particular groves.

The Sequoia Land and Resource Management Plan deals with classes of land use. Based on your comment, a table on giant sequoia groves was added to Chapter 4 of the final Plan. Because of the unique features of these groves, a comprehensive Forest-wide analysis will be carried out separate from the Sequoia Land and Resource Management Plan. This analysis will be made with full public participation and will be specific to individual groves. The analysis will be documented in a Giant Sequoia Grove Management Implementation Plan. A preliminary estimated category for each grove has been included in the FEIS.

600 The Forest Service is currently not providing buffer zones around wilderness areas. There is absolutely no need for intensive timber harvesting up to a wilderness boundary. I strongly recommend such zones.

There is no buffer zone identified around existing wilderness boundaries. Timber harvesting can occur adjacent to wilderness to meet other multiple-use objectives. (Also, see Visual Resources, Comment #407.)

700 I support a management plan which would include full inventory of old-growth and near-old-growth trees before any further logging is done. No logging of old-growth trees or previously unlogged forest.

Under the Plan, old-growth timber will remain in wilderness, near campgrounds, along streams, in spotted owl habitat areas, along high use recreation roads and trails, in wildlife clumps reserved from timber harvest, in giant sequoia groves, in some archaeological sites, and in many areas where timber harvest is uneconomical or is not the main management objective of the land.

1100 The decision to manage 8-9,000 acres of sequoia groves containing mature sequoias and mixed conifer with an emphasis on timber management is incomprehensible. The special interest aspect of sequoia groves is not limited to the remaining mature and large immature sequoias themselves.

The number of acres to be managed non-intensively, or in any other mode, is indeterminate until the Forest-wide Giant Sequoia Grove Management Implementation Plan is completed (see #100 above). In the meantime, no further plans will be made for projects of any kind within giant sequoia groves. In the

(051)

Historical and natural aspects of the groves should also contribute to the planning perspective of forest staff

Preferred Alternative the estimated acres dedicated to Preservation is increased to 3.900, and acres to be managed as Intensive is decreased to 0.

FOREST SERVICE ROADS (061)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Keep roads open for public use because

- 1 Logging roads are paid for by tax money and should be available for use
- 2 There is a vast amount of land into which there are no roads
- 3 It is the only way many handicapped people have to enjoy nature
- 4 Health and Safety considerations can be posted

Road construction and maintenance is paid for by public funds and by the sale of National Forest products. However, making roads available without restriction would prove to be irresponsible management of the taxpayer's road investment. Traffic on Forest earth-surfaced roads can result in costly damage to the road surface as well as drainage structures when vehicles attempt to negotiate rain and snow soaked roads throughout the winter. Unrestricted traffic would also pose a threat to soil and Water resources associated with road damage. Most of the roads on Sequoia National Forest are available to the public throughout the summer months when the majority of use occurs and road and resource damage Can be minimized

200 Proper access for routine operation, maintenance and emergency repairs of hydroelectric facilities must be preserved. Access restrictions on hydroelectric operations would create an intolerable Operating burden which would ultimately be paid by PG&E's customers. Our access right as a permittee must be clearly protected and defined in those management prescriptions which limit vehicle access. We ask that you add the following to the OHV section on pages 4-18 and 4-19 "Established utility uses of motorized vehicles and equipment within these areas will continue to be authorized." Furthermore, PG&E must have the opportunity to review proposals for road obliterations which may potentially impact our utility operations

Established access by utility operators for routine operation, maintenance, and emergency repairs of facilities is preserved under existing authorization. Access guaranteed by existing agreements will not be circumvented by restrictions in the Plan

201 The term "road restoration" is not clearly defined. It is our understanding that the term applies to those roads which are "put to bed" or taken out of service until their need is again required. This application conflicts with your glossary definition for restoration

Restoration as defined in the FEIS glossary does not apply to roads. Road restoration is the investment in construction activity required to rebuild a road to its approved traffic service level

300 In many NF's accurate up-to-date planning maps of roads and trails and other routes are unavailable. Now that a vast mileage of roads has been constructed, planning cannot reasonably be undertaken without knowledge of the location of the transport system so that some balance can be reached with respect to all multiple uses, as required by

An up-to-date inventory and maps for system roads on the Sequoia National Forest are on file at Sequoia National Forest Headquarters in Porterville. We agree that the transportation system plays an important role in determining multiple-use of the Forest, and Sequoia's road inventory was utilized throughout the planning process

the provisions of NFMA .

301 We believe the following road information is needed in the FEIS 1) Accurate, updated maps of the forest transport infrastructure and delineation of the clearcut and other forest timbering locations to which the roads lead Inventory and maps of fuel-break systems, their impacts on watersheds, allowable uses on fireroads and firebreaks (cycling?) and the impacts of these uses are essential at the planning stage 2) Completion of a road obliteration plan as an essential element of the FMP-DEIS 3) Definition of standards of road "obliteration" and means employed to return roads to a "natural state" 4) Evaluation of opportunities to create roadless area designations by road obliteration and land restoration

1) The Forest Plan is designed to establish broad objectives and develop a fully integrated mix of management practices which provide for use and protection of Forest resources, satisfy guiding legislation, and address local, regional, and national issues Site-specific data is analyzed and presented to the public in the form of Environmental Assessments for logging activities & in "Level III" planning for fuelbreaks, prescribed burns, and protection facilities Existing fuelbreaks are shown on unit pre-attack maps and plans 2) Sequoia National Forest has completed an inventory of abandoned roads Where possible, abandoned roads not planned for future use will be obliterated Roads classified as abandoned are those no longer needed for access or management and not economically feasible to maintain 3) "Obliteration" is defined in the FEIS Glossary where possible, roads slated for abandonment and not needed for future use will be obliterated As described in the FEIS Glossary, the objective of obliteration is to eliminate the functional characteristics of a road and re-establish natural resource production capability The Sequoia National Forest is satisfying this objective by eliminating traffic with physical barriers and allowing the road prism to revegetate naturally Natural revegetation also complies with the requirements of the National Forest Management Act 4) The RARE II process evaluated all lands within the National Forest System Through this process, all roads existing at the time were evaluated When an area contained man-engineered roads, it was considered roadless This process received extensive public review and a Final EIS was published in 1979 This FEIS established all areas that were considered potentially available for Wilderness

302 We believe the following trail information is needed in the FEIS 1) As a supplement to the Forest transport system inventory and map, an inventory of hiker-equestrian trails, preferably on overlay maps 2) Explanation of methodology employed in collection and estimating past, present, future statistics in the various visitor use categories 3) An appraisal of the feasibility of minimum trail clearance 4) Feasibility of identification and registry of forest trail network as a historical trails system 5) Bicycles are off-road vehicles. A policy Statement is necessary in the DEIS on the impacts of bicycles and other off-road vehicles on foot and horse trails

1) The Preferred Alternative requires that the Forest develop a comprehensive trail plan The actual decisions on new trails to be constructed and the types of allowable use will be made during the development of this plan The existing trail inventory is available for viewing at Sequoia National Forest headquarters in Porterville 2) An explanation of sampling techniques used to collect recreation use information has not been included in these documents This is project specific information thought to be inappropriate for this level of planning However, use information is gathered in a number of ways through approved statistical samples, estimated from actual counts.

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and/or estimated by field personnel. The method used depends on a number of factors, the two most important being the need for accuracy and the cost to collect. Much of our information is derived using the various estimating techniques.

3,4) These are very specific recommendations that are outside the scope of this Plan. The selected alternative requires that the Forest develop a comprehensive trail plan that will specifically determine trails to be constructed, standards, and allowable use.

5) Mountain bicycles are treated as OHV's in the Standards & Guidelines of the Plan and as such will be restricted to designated OHV trails.

303 We propose the following Wildlife-recreation alternative transportation items: 1) Major reduction in new road construction, except for critical transport connectors in areas already roaded. No construction of roads in roadless areas. 2) Obliteration of roads and restoration to natural conditions. 3) Expenditure of transportation funds for construction and maintenance of hiker-equestrian trails. 4) Prohibition of OHV traffic (including bicycles) on hiker-equestrian trails. All OHV use to remain on designated and maintained roads. Cross-country OHV traffic not permitted.

The selected alternative represents what the Forest Service believes to be a responsible balance of natural resources provided under the principals of multiple use and Sustained yield.

400 Maintain all of the system roads to prevent soil erosion.

Forest Service maintenance standards are designed specifically to reduce opportunities for soil erosion. The Forest Service is continually involved in research to improve road and drainage design to lessen soil erosion potential.

500 I urge that provision be included in the Forest Plan for the improvement of road turn-outs and access points along the Upper Kern.

Thank you for expressing your interests. The Forest Land Management Plan is designed to formulate broad guidelines for Forest management. Specific projects such as improving road turnouts and access points along the Upper Kern can be dealt with independently but within the framework of an approved plan. It should be noted that Tulare and Kern Counties are responsible for maintaining the Section of road that parallels the Kern River up to the bridge crossing near Brush Creek and the Forest Service maintains the Lloyd Meadow Road paralleling the uppermost Section of the Kern.

600 No roads should be constructed in currently unroaded lands. There are already many roads that reveal the characteristics of the forest to the public. I do favor more handicapped access along the roaded areas. I don't see where the handicapped

Road construction is reactive to management activities. Management activities in roadless areas will be based upon multiple-use principles that satisfy the legal obligation of the Forest Service to provide a balance of natural resources. Elderly and

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are dealt with in the plan

handicapped standards will be considered during rehabilitation, reconstruction and construction of recreation facilities. Barrier-free trails will be developed near some **areas** (reference Plan. Chap. 4 under General Developed Recreation Sites). This will include consideration for restrooms and/or rest stops. Recognizing some Forest **users** cannot hike and require vehicles to get around, the Forest Plan is not recommending any more wilderness **areas** within the Sequoia National Forest, and 4x4 trails will remain open where **resource** protection **measures** can be assured and where this type of use is lawful.

ROAD CONSTRUCTION & CURRENTLY UNROADED (062)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Road construction should be encouraged because it allows better access to more remote areas and people should be able to get into the Forest without going afoot

Road construction in the Sequoia National Forest is reactive to resource management activities. Various intensities of road construction are presented throughout the FEIS alternatives depending on the management emphasis. Providing for motorized recreation is one of the multiple-use obligations of the Forest Service.

200 Fewer roads should be built because  
1) Road access is sufficient now  
2) Waste of taxpayer money  
3) Extreme impact on the environment  
4) New roads will increase traffic congestion  
5) roads result in more litter & pollution  
6) Logging should be done without roads or only temporary roads  
7) Forest Service does not need additional administrative **access**. Utilize horses instead  
8) roads encroach on wildlife and pose fire hazards  
9) Forest Service moves too fast with road construction. Slowdown and analyze impacts **more** carefully

1) Road construction is reactive to resource management activities. In all of the alternatives presented in the FEIS, some degree of roading is necessary to provide for the management direction of the alternative.  
2) The Forest Service has a legal obligation to provide a balance of natural resources. Roads provide access necessary to fulfill this obligation.  
3) Each management activity requiring road construction is analyzed thoroughly by an interdisciplinary team of **resource** specialists during the Environmental Assessment process. Road construction impacts on flora, fauna, water, and soil are commonly analyzed and necessary mitigations employed to avoid significant damage. Planning and analysis of road construction generally begins 3-5 years in advance of each management activity.  
4) The FEIS predicts a significant increase in recreational users throughout the planning period. New roads would tend to decongest traffic, rather than congest, by creating more opportunity to disperse.  
5) Increased recreational demand will likely increase, to some degree, the litter and **various** forms of pollution on the Forest. **We do** not, however, believe that **new** roads will be a **major** stimulating factor in increasing recreational activity.  
6) As stated in #3 above, road construction is analyzed in the Environmental Assessment process. If difficult terrain will result in exorbitant road costs or if unacceptable

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resource damage is expected, alternate methods such as helicopter logging may be evaluated 7) Roads are not constructed solely for administrative access Administrative access is normally a benefit derived following some type of management activity For example, administrative access is required to plant trees and perform other silvicultural work necessary to insure successful regeneration following timber harvest 8) See #3 above 9) See #3 above

300 Have you learned nothing from the sad experience of earlier forests and parks? It is wrong to build more paved roads than hiking trails People come to parks to **see** majestic nature, not more parking lots and highways

The responsibility of National Forests **is** based upon the Multiple-Use Sustained-yield Act of 1960 that states in part that National Forests "shall be administered for outdoor recreation, range, timber, watershed, and fish and wildlife purposes " The Forest administrators **are**, therefore, obligated to the American public to manage the land for these multiple uses

400 We are not aware of any areas which **are** not accessible We assume "accessed" is an euphemism for "made accessible by road construction " If that indeed is what is meant, **it** should be **so** stated

This is generally true depending on the context used When the word "accessed" is used with regard to logging for example, road construction would normally be the method

500 Why **is it** necessary to build all the road for an amenity alternative? If the entire forest is to meet P,R,PR In AMN, why would the Forest appear other than natural from lightly used roads and trails?

As a result of some management changes in the AMN alternative road construction is significantly **lower** than presented in the Draft EIS Please **see** AMN alternative Outputs in Chapter 2 The forest landscape may appear slightly changed **in** the partial retention **zones** This objective allows for management activities that can be noticed by the average visitor, but does not dominate the naturally appearing landscape We have revised the section entitled "Environment to be Created" **in** Chapter 2, Amenity Emphasis, to further clarify our position

600 I oppose the increase **in** road building I **fail** to see the logic behind the plan to build 95% more miles of new roads than hiking trails This proposal **is** designed to subsidize the business endeavors of loggers, miners and cattlemen The recreational users of the Forest **are** being ignored I support an equitable balance between road and hiking trail construction

The Forest Service has an obligation to provide a balance of natural resources Providing equal road and trail mileage does not necessarily equate to a balance of the **resources** provided by each

700 The Plan **is** contradictory in **its** discussion of roadways It is apparent that when the Plan is addressing environmental concerns, it chooses to ignore road extension, but when addressing the timber interest **it** talks about a 40% road increase

Please note that the Section of the Plan referenced is titled "Future Condition of the Forest" which describes how the Forest is expected to change with the implementation of the Plan In describing the FUTURE condition, Chapter 4 of the Plan reads "Most



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of the Forest available for **resource** management will be roaded " This statement **refers** to the future condition and is entirely consistent with projected road expansion

800 The DEIS contains virtually no discussion of the potential impacts of road construction on water quality

Please see Chapter 4 FEIS. Surface Water Resource

801 Based on calculations performed on data provided in the Plan, DEIS, and the Analysis of Management Situation (AMS), the forest has the capacity to accommodate all forms of motorized recreation at the present time and in the year 2030 Building new roads then, will not serve to increase motorized recreational **use**, only transfer it from one area to another on the Forest Thus, the proposed road construction program will **serve** the single purpose of providing **access** for the timber harvest program Accordingly, the entire **cost** of road construction should be borne **by** the timber program

Dispersed recreation provided by the Preferred Alternative will meet but not exceed the demand New roads and improved **access** will help meet the demand while it is true that some recreation use will be moved from one area to another, this will result in a dispersing of use and an improvement in the quality of the recreation experience The cost of construction of roads and which program is responsible is a function of the EA process which determines the short- and long-term objectives for specific roads

900 The proposed construction of 26 miles of road annually during the first decade for the express purpose of gaining access to timber and providing recreational opportunities for OHV **users** will indirectly decide the future of areas with potential for future wilderness designation

The **Rare II** process evaluated all lands within the National Forest System Through this process, all roads existing at the time were evaluated When an area contained non-engineered roads, it was considered roadless This process received extensive public review and a Final EIS was published in 1979 This FEIS established all areas that **were** considered potentially available for wilderness, including further planning areas which have been addressed in this planning process Although no additional Forest Service wilderness is recommended by this plan, the Preferred Alternative will be able to meet demands for dispersed recreation Please be aware not all areas of the Forest will be managed with the express purpose of timber and OHV use (refer to Chapter 4 or the Plan for more specifics of overall Forest Management)

1000 Accessibility to all parts of our forest by road is adequate for the next ten-year planning period We **are** especially concerned that as roads are built right to the border of existing wilderness areas, there will be a dramatic **increase** in wilderness **use** Concentrated recreation use is contrary to a wilderness experience

Road construction is reactive to **resource** management activities In all of the alternatives presented in the FEIS, some degree of roading is necessary to provide for the management direction of the alternative The restrictive nature of activities within designated wilderness tends to influence demand much more than does **access** to the **area** while it is true that better **access** may influence day-use activities within wilderness, the effects on the traditional overnight wilderness **user** should be minimal Additional access points may actually **serve** to disperse use rather than concentrate The wilderness planning called for in the

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Forest-wide Standards and Guidelines of the plan will consider visitor impacts on the wilderness and alternatives to **resolve** Conflicts

1100 This pay-as-you-go administration in Washington expansion of roads and logging interests into backcountry **areas** alters wilderness areas Backcountry recreational **use** is increasing Expand areas for this use **as** well

The Preferred Alternative provides for an increase in dispersed recreation which includes backcountry **use** outside of designated wilderness. Increased roads will still provide for backcountry activities and will disperse users and reduce concentrations of use

1200 The Plan favors more roads When I visit the Sequoia. I do not want to **see** muddy Streams. "moonscapes". and roads in the forest

Please **see** response #1000 above for a discussion of roads

1300 The comparison between road construction mileage and trail miles to be constructed is pitiful Especially considering all those road miles **are** almost exclusively for the timber harvesting access This is mainly because roads **were** built where trails existed and logging has destroyed sections The number of people using trails has increased The comparison in the DEIS between new road construction clearly expressed forest service priorities and how skewed they are

The Forest Service has an obligation to provide a balance of natural resources, Providing equal road and trail mileage does not necessarily equate to a balance of the resources provided by each Please **see** response #200 Snowmobile -C/C Skiing for a discussion on cross-country skiing and response #100 Trails for a discussion of trails

1400 I feel that the responsibility of the people lies in the ultimate **preservation** of as much acreage **as** possible To maintain the land we do have and the acquisition of **as** much **as** we can acquire is the most important issue **There** are many issues up for discussion and action and the aforementioned issue of AMOUNT OF ACRES ACQUIRED is not **even** being combated With Federal funds we should be attaining and maintaining Anything like roads **or** trails should come slowly and with much thought Once something like a road or trail is laid down. it alters that immediate area forever Mismanaged funds and decisions **are** Sometimes only realized in hindsight

The responsibility of National Forests is based upon the Multiple-Use Sustained-Yield Act of 1960 that states in part that National Forests "shall be administered for outdoor recreation. range. timber. watershed, and fish and Wildlife purposes " The Forest administrators are, therefore. obligated to the American public to manage the land for these multiple **uses** For a response to road construction please **see** #1000 above

1500 Accessibility to all parts of our forest by road is adequate for the next ten year planning period As roads are built right to the border of existing wilderness areas, them will be a dramatic increase in wilderness use Concentrated recreation use is contrary to a Wilderness experience It is important to keep roadless areas in the non-wilderness parts of the Sequoia NF, especially in those regions that **adjoin** a designated Wilderness At the conclusion of timbering activities. logging companies should be required to return the forest to a natural a condition **as** possible This includes

Please **see** #200 above for a discussion of road needs for the planning period

Please **see** #1000 above for a discussion of roads and their relationship to wildernesses

Please **see** Forest Service Roads #301, for a discussion of road obliteration

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the obliteration of all logging related roads

1600 I might say we have one area. one roadless area. that was studied It has been represented in red. the Moses roadless area. and I strongly urge the development of that area in the first decade Contrary to a statement that was made earlier this evening, the timber management on the SQF is cost effective If you consider the last 6 years. starting in 79. the figures are available if anybody would like to see them, that the returns from timber sales. timber harvesting on the SQF far exceeded the money spent on timber management. and I might say this covered 3 years. the poorest years the timber and lumber industry has seen since the depression years Some People are relating to the budget and I think when we are looking at the Management Plan for the SQF in the next 10, 15 years or beyond. that the budget should not be a consideration in that at this time If there are budget restrictions. then that is the Job of the forest supervisor and the regional forester to determine how the money is to be spent. but I think we would be not doing Justice to the Forest Management Plan if there is any restriction put on the budget because we do feel that there may be some restrictions at this time. but who can see 7 or 8 years from now or 10 or even 5?

Development of roadless areas will be based on multiple-use principles We are in the business of managing the land for the "greater good of the greater numbers " We provide economical sale offerings to meet the demands of Congress Our goal is to most efficiently provide goods and services to the people of our nation in an environmentally acceptable manner

TRAILS (065)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Trail construction proposed in the preferred alternative is inadequate More than 21 miles of trail construction in the first decade is needed to meet demand

The Preferred Alternative includes a requirement to undertake trail system planning to identify specific needs for all uses (see Standards and Guidelines) In addition. the Preferred Alternative will allow for modest increases in existing trail mileage if trail planning identifies additional needs

200 More effort needs to be put into trail maintenance and reconstruction

The emphasis on trail maintenance has been increased in the Preferred Alternative However. as with other activities. the amount of on-the-ground maintenance and reconstruction is dependant on the available funding The Preferred Alternative calls for efforts to develop alternative funding sources for trail maintenance If these efforts are successful. additional trail maintenance and/or reconstruction will be possible

300 Trail construction and hiking management should be expanded in non-wilderness areas The 21 miles of new trail construction proposed for the first

See comment #100 above

decade is inadequate

400 We would like to see many more hiking and skiing trails (and perhaps mid-way shelters) I'm sure that building hiking trails would be much less expensive than road building You might even be able to get free labor from environmental groups.

500 I hope you will consider that the Kings is a camping and recreation resource that is unique, and not "just a campground " A hiking trail from Yucca Point to Garnet Dike Would make this stretch of river accessible to hikers and fishermen.

600 I was shocked to learn that directors in the Sequoia District have not applied for any green-sticker funds Connecting loops could be built Trend-setting land management plans' solid savings of funds Without going through the Fed'

700 Two projects that are badly needed are 'connecting links' for riding loops 1) Connect Rattlesnake Creek with the north end of the Stony Meadows Trail 2) Connect North end of Siretta Peak Trail with South end of Boone Meadow Trail via Machine Creek.

800 We use Sequoia National Forest for riding two or three times a year We all would be disappointed if we weren't allowed to ride in the Sequoia NF again Biking is our family R/R We have always supported the BLM through the green stickers, and Would be very disenchanted with the association, seems the more we pay in fees, the more land and trails that are taken away Please, for the future of good family fun and recreation, fight to save the trails in the Sequoia Forest region

900 I am concerned over the fate of the Summit Trail from Quaking Aspen to Windy Gap This trail Should be preserved The trail along the Summit Of Slate Mountain should be preserved Vehicles should be prohibited on this trail

The Preferred Alternative allows for a modest increase in trail mileage. It also Will allow for establishment of overnight or hut facilities for winter activities Because of budget considerations the Forest Service Often utilizes volunteers to help with projects These include both environmental groups and OHV user groups (see Forest-wide Standards and Guidelines in the Plan)

We also appreciate the fact that the Kings is "not just a campground " This extremely rugged canyon offers a variety of opportunities A trail from Yucca Point down into the canyon currently exists An extension to Garnet Dike would be a way to expand those Opportunities Unfortunately, our Studies indicate construction would be very expensive and such a trail is not planned at this time

The Preferred Alternative calls for the Forest to explore opportunities for development of alternate funding sources (see Forest-wide Standards and Guidelines in the Plan) This will include use of California State Greensticker funds to build and maintain OHV trails The Forest is currently using "Greensticker" funds and anticipates that this use Will continue

The Preferred Alternative requires that the Forest develop a comprehensive trail plan The actual decisions on new trails to be constructed and the types of allowable use will be made during the development of that plan The trails mentioned will be considered at that time

OHV use is recognized in the Plan as a legitimate use of National Forest land (see Forest-wide Standards and Guidelines in the Plan) Under the Preferred Alternative, emphasis areas for OHV's will be identified Even though OHV use will be restricted to designated roads and trails, riding opportunities will continue (see Plan, Chapter 4 Forest-wide Standards and Guidelines)

This trail will remain on the Forest trail system It is and will remain a designated National Recreation Trail As such it will be managed in accordance with its approved establishment report which allows motorcycle use As long as resource values

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can be protected, this use will continue

1000 First. the Conservation Alternative strongly recommends that the PS Plan adequately and directly address the following criteria 1) The public should be able to find the analysis of trail status and the proposed prescription for the trail network, 2) The plan should fully address trail-related issues and concerns. 3) The plan should report the current management status of the trail resources The ideal report of trail supply data would therefore include a listing of and/or map showing trail miles --"in system". --in wilderness. --in National Trail System. -- existing but not "in system", -- formerly existing. -- by ROS class. -- current maintenance status. -- current use densities. and -- by use/activity type (e g , hiking. winter OHV, summer OHV. riding, skiing, etc ). 4) The Plan should report the projected trend of mileage and condition of the trail network 5) Projections of recreation demand should be expressed in terms of demand of each ROS class rather than demand for dispersed and developed recreation. The Plan should also describe the demand for recreation on the forest in terms of the local economic contribution generated by the use of the recreation and scenic values of the forest Prescriptions for management areas should specifically and thoroughly plan for the trails found there Each management area prescription should present the changes in trail mileage, condition, Use, mix of activity and experience opportunities. and visual quality that are planned for the area. Currently, the PS fails to designate existing trails as official trails in its system of trail maintenance The 10-year Plan for recreation should. for each RD or management area, identify and assign priority to the specific trails or trail segments. backcountry campsites, trailhead parking. and stream crossings for which maintenance. construction or reconstruction is planned The plan should define in operational terms its proposed trail construction standards and maintenance levels The plan should identify conflicts among different kinds of summer and winter trail users and specify a program for minimizing them Included among these different kinds of potentially conflicting trail users should be commercial and individual users of horses. users of OHV's including off-road bicycles. hikers. snow machine users, and skiers The category of trails as addressed in this document is not intended to include 4-wheel drive roads Please see Off-Highway Policy for Conservation Alternative proposals relating to OHV use. The plan should show the

There have been several changes in the trails section of the Forest Plan (see Plan. Chapter 4 Forest-wide Standards and Guidelines) A number of the items mentioned here have been considered Primarily. the Forest Plan is a general allocation document Much of what the respondent suggests is considered to be project level information As such it will be addressed during project planning One of the action items to be implemented in the Plan is to develop a Forest-wide Trail System Plan This effort will incorporate virtually all of the information requested by the respondent

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interaction between the proposed development of the road system and the trail system of the forest and of adjacent wilderness **or** park **areas**. The plan should address the aesthetic impact on trail corridors of all proposed **resource** development action. The monitoring and evaluation program in the plan should identify and **prioritize** recreation research needs, and it should lay out a program for meeting them. An ideal monitoring and evaluation program will include the following --specify **&** **prioritize** new trail-related data elements. --**set** frequencies **for** producing the data. --**assign** responsible staff, --estimate the **cost** of producing the data. **and**, --specify what degree of variability from the standard **is** needed to trigger further action. The plan should explain the method used **for** determining if existing trails **are** to be abandoned **or** re-routed. This explanation should include **discussion** of criteria and priorities used. The plan should identify and **Plan for** the possibility of increased levels **of** recreation-caused degradation in the backcountry.

1100 I'd like to **see** the following **in** the Plan Completion of the PCT **over** Owens Pt (BLM problem?)

This trail is located on public land managed by the Bureau of Land Management. AS such, **it is** Outside the scope of this Plan (Note The BLM is pursuing Work on this trail at the time this Plan is being printed )

1200 It is good to recognize that the estimated 35% increase in demand for hiking and backpacking **from** 1980 to 2000 will result in demand **for more** wilderness. Unfortunately, the plan seems to be trying to preclude this option **via** an accelerated road building program.

The Preferred Alternative will allow increases **in** trail mileage which could be responsive to **increases** in demand for hiking. Therein, we do not feel that opportunities **for** hiking and backpacking will be foregone through an accelerated road building program. Certainly the Preferred Alternative will involve road construction. This will largely be local roads that will be responsive to various **management** activities. Management activities **in** roadless areas will be based upon multiple-use principles that satisfy the legal obligation of the Forest Service **to** provide a balance of natural **resources**. The Preferred Alternative represents what the Forest Service believes to be a responsible balance of natural **resources** under the principles of multiple-use and Sustained yield, and includes both wilderness and **resource** utilization activities.

1300 The Preferred Alternative **has** a total of 21 miles **of** new trail construction for the next **50** years. Compare this to **777** miles of **new** road **for** the **same** **50**. It is true the Forest Service recognizes the value **of** their trail System and provided for its development and maintenance. A

The requirement to develop a comprehensive trail plan has been added to the Preferred Alternative. In addition, the **Plan** has been adjusted to allow **for** increases in trail mileage and **a** continuing program of trail construction (**see** Plan, Chapter 4, Forest-wide Standards and Guidelines).

comprehensive Plan should be developed for the entire forest that would indicate the existing trail system and Plans for future trail development, including trailheads. Signing and funding

1400 Existing trails should be maintained Non-motorized use should be given preference Reconstruction of existing trails should be given priority *over new* trails: new construction should be kept to a minimum and only approved after public input is taken

1501 Have the impacts of expanded use of OHV's onto 400 miles of trails currently off-limits been adequately considered? Have the impacts of an expanded grazing program on trails been studied?

1502 Has an inventory been performed to catalog trail enhancement needs?

1503 Lastly, the PRP Alternative proposes to construct only 21 miles of trail over the fifty year planning period Is this construction planned in wilderness or Outside of wilderness?

1504 How many miles of "on-wilderness" trail would be lost due to road construction and timber harvest operations over the planning period?

1600 More emphasis must be upon increasing the numbers of field personnel such as trail crews, and less emphasis on administrative staff positions The public has seen the managerial staffs of the National Forests outgrow their facilities, while the high country users watch the trails disintegrate Emphasis must be placed on the practical management of public lands and the theoretical studies put

The Preferred Alternative prescribes maintenance of trails as well as outlines general allocations for "on-motorized and motorized use Another part of proposed management is trail System planning where specific uses will be studied and implemented (see Standards and Guidelines and Preferred Alternative description in Chapter 2) The Plan also calls for reconstruction or relocation of approximately 1/2 of the total trail network during the first decade New trail construction will also occur (see Resource Outputs Table in Chapter 4 of the Plan)

The impacts of these uses have been considered in the Environmental Consequences section (Chapter 4) of the PEIS

This type of inventory is an on-going process The Forest currently has an inventory of its trail system Which catalogs maintenance standards and needs Additional needs will be identified through development of the comprehensive trail plan called for in the Preferred Alternative

The Preferred Alternative has been revised to indicate trail construction continuing into future decades Most of the new trail construction is envisioned to occur outside of wilderness, although trail System planning will identify specific needs

A Standard and Guideline pertaining to this matter was included in the Draft Plan and EIS It has been revised and strengthened in the Preferred Alternative to ensure that the impacts of project Work on the trail System are minimized (see Plan, Chapter 4, Forest-wide Standards and Guidelines, under trails) Beyond this, it is not possible to give a specific answer in miles of trail

The actual allocation of budget items is a complicated matter (see Appendix L in the PEIS for additional discussion on this matter) The Preferred Alternative places added emphasis on trails (see Plan, Chapter 4) As such, subject to final budget allocations, we are confident of an improved situation on-the-ground Other programs, such as volunteers and ERFO, have and will continue to play

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aside In 1984 the U S Forest Service met only 24% of its goals for trail construction, 34% for wildlife habitat improvement. and 38% for soil and water resource improvement In contrast. they met 98% of their timber goals and 140% of their goals for road Construction

1701 Trail maintenance done by volunteer groups is a sound program We recommend assigning segments of a trail to a specific group on more or less a permanent basis or for a period of time

1702 Consider Separate trails for OHV and other users to reduce conflicts Building equestrian facilities at some trailheads is basically sound. but not at all trailheads Build horse facilities only in areas that are popular with the horsemen To encourage cross-country skiing. we suggest designation of routes for safety and to enhance the recreation experience

1800 The present system of trails is adequate for summer use with perhaps some cleanup and reconstruction It would aid in Winter recreation if more trails were constructed at lower elevations A trail on the west bank of the North Fork of the Middle Fork of the Tule River would eliminate two river crossings which are somewhat hazardous during high water The West slope is quite steep and may be subject to slides and late snow retention

1900 There are many hiking trails on the older forest maps that are not maintained and Cannot even be found I urge the USFS to reopen and maintain these trails for hikers The trails in the lower elevation, e g , Wishon and California Hot Springs are desirable for all year use and would be enjoyed by many people in our area

2000 Roads - maintain the current 44% of the Forest as unroaded Upgrade existing roads for safety purposes only Unneeded roads should be returned to natural conditions vice your "obliterating unneeded roads "

important parts in the overall trail situation on the Forest Lastly, be assured the Forest is working to reduce administrative Overhead costs in favor of on-the-ground activities

We agree - The volunteer program is an excellent way to accomplish trail maintenance The Adopt-A-Trail program (which has been in existence for several years on the Sequoia NF) will continue under the Preferred Alternative This program provides for long-term trail maintenance by interested groups

These are excellent suggestions to be considered under project level planning. The Comprehensive Forest-wide trail plan to be developed under the Preferred Alternative will address these site-specific issues

The Preferred Alternative requires that the Forest develop a comprehensive trail plan The actual decisions on new trails to be Constructed and the types of allowable use will be made during the development of that plan

Specific decisions on trails which might be reopened are project level and thus Outside the scope of this general plan However, this is a specific implementation item in the Forest Plan (see Chapter 4, Forest-wide Standards and Guidelines. Trails) and, as such. will be addressed as trail planning is done

Roads are reactive to resource management activities Maintaining 44% of the Forest as unroaded would preclude resource management activities that the Forest Service feels are necessary to fulfill our legal obligation to provide a balance of natural resources The FEIS emphasizes maintenance for basic needs throughout the alternatives For example, see Chapter 2, Facilities (See Comment 301, Forest Service Roads. for discussion of road obliteration and restoration )



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2100 The use of mountain bicycles (Self-propelled) using hiking and equestrian trails is not addressed. Bicycle riding on hiking and horse trails is not appropriate. The bicycles can use motorcycle trails. No new **trails** for mountain bicycles.

Mountain bikes **were** only briefly mentioned in the Draft Plan and EIS. The Preferred Alternative includes mountain bikes along with other wheeled vehicles. Their use will be restricted to vehicle trails. No new trails specifically for mountain bicycles are envisioned.

2200 **Trails must** be maintained. I would like to **see** the McIntyre Trail (from the McIntyre Tract in Camp Nelson to the Summit Trail above Quaking Aspen) be restored or relocated so that a loop from Camp Nelson to Jordan Lookout, back to Quaking Aspen and on to Camp Nelson could be hiked **or** ridden. Also the trail that drops off of Slate Mountain into the Belnap Campground needs **a** new crossing at the Tule River. I would like to **see** the trail from Little Kern Lake to the **Kern** River Ranger Station get some work, **or** even some relocating.

See 1702 above.

2300 No abandonment of hiking trails. Abandoning low-use trails **as** proposed will intensify impact on remaining trails.

Abandonment of **some** trails may be appropriate in instances where resources cannot be protected with continued use. However, the Plan calls for **main-**taining at least the existing mileage of trail on the Forest, and provides for some **increases**. Another aspect is to replace little used mileage with trails in locations **more** desired by recreation-ists (**see** Chapter 4, Plan). Trail specifics will be addressed during comprehensive trail planning.

2400 The Plan documents do not include maps showing existing and proposed trails and roads, how new road construction would affect existing trails, and how loss of existing trails to new road construction would be mitigated. We **are** not able to determine from the Plan documents what would be the visual **or** aural impacts **on** existing trails from proposed timber operations and new road construction. These issues should be included **in** the Plan in specific detail so that their potential impacts **can** be evaluated before **a** Plan is adopted.

Specifics on impacts of other **activities** on trails such **as** those mentioned are beyond the scope of this Plan. Project-specific EA's will implement mitigation measures, including reconstruction/relocation where the management project alters **or** eliminates portions of the long-term Forest trail system (**see** Plan, Chapter 4, Forest-wide Standards and Guidelines Under Trails).

2500 I urge the USFS to actively solicit trail-maintaining person-power from the penal institutions and not incidentally take the convicts out mountain climbing.

The Sequoia NP currently uses inmates and juvenile wards on a variety of **resource** projects. This practice is expected to continue. Many resources have benefitted from the fine work of these people.

2600 I am deeply concerned that your plan **proposes** to build fifty times as **much road** as trail. This is not a proper priority. Trail hiking **is** still the most appropriate national forest recreational experience.

Roads are not constructed in lieu of trails. Roads **are** constructed to support multiple resource objectives which can include providing motorized access to hiking trailheads as well as many other resource management activities. Please **review** the trail portions of the Plan for revisions **in** trail management which show our recognition **of** trails **as** a

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key part of our multiple-use management responsibilities

2700 My husband and I have enjoyed many pleasurable trips hiking Sequoia and Skiing **across** the trails in winter. Now we understand that the new forest plan, **if** fully implemented, would cut the forest with roads and traffic. We would like to **see** many more hiking and **skiing** trails (and perhaps mid-way shelters). I'm **sure** that building hiking trails would be much less expensive than road building. You might **even** be able to get free labor from environmental groups.

The Forest **Service** has a legal obligation to provide a balance of natural **resources** - water, soil, forage, wildlife, recreation and wood. In **all** of the alternatives presented **in** the FEIS **some** degree of roading is **necessary** to fulfill this obligation. To say the Forest will be cut with roads, however, **is** an overstatement. Roads will be constructed, but these will be mostly short local roads necessary to complete specific projects. A network of **trails** (approximately **900** miles) will also exist on the Forest, and there will be **some** increases in this mileage to meet **use** demands. Volunteer efforts to assist with trail maintenance and/or reconstruction **have** been and will continue to be important to the trail program. These efforts have involved both environmental and OHV groups.

FIRE & FUELS, GENERAL (070)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Favors the use of prescribed fire in wilderness and chaparral management

Several alternatives, including the Preferred, allow for this management practice

200 Questions the "100 acre, 90% of the time" **suppression** goal in the Lower Kern Canyon - no damage will **occur** from larger fires.

The "100 acre, 90% of the time" is the initial attack planning objective in this fuel type that will result **in** a "cost-effective" action. Fires escaping initial attack **can** and should probably be larger and allowed to burn **to natural barriers**. Such fires are evaluated using the Escaped Fire situation Analysis.

300 There should be a 100 **foot** buffer **zone** along roads in which no prescribed burning **is** allowed

Areas adjacent to roads that **are** protected from alteration vary **in** width depending on road use, topography and a variety of other factors. **Visual** Quality Objectives **are** assigned Forest-wide and are **one** of these factors.

400 Areas in which the use of natural fire is appropriate should be identified

The Plan allows **for** the **use** of "natural fire". Specific **areas** will be identified and guidelines developed in the Fire Management Action Plan.

500 Many Sequoia groves would benefit from natural fire

Fire, prescribed and/or "**natural**", **can** and will be used **in** giant sequoia groves when it is the appropriate treatment identified **in** a Project Environmental Analysis.

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600 Human caused fires should not automatically be suppressed.

Allowing "human-caused" fires to burn involves a host of legal issues including collection for damages and/or suppression costs as well as suits against the Government. Therefore, human caused wildfires must be suppressed as per Forest Service policy.

700 Excessive chaparral burning may endanger wild-life, especially non-mobile amphibians.

Each prescribed fire will be preceded by an EA which will address such issues and spell out procedures to mitigate this kind of a problem.

800 Limit the use of prescribed fire in Wilderness to fuel reduction work. Do not use fire to increase vegetative diversity.

Fire caused by lightning is "nature's way" of creating vegetative diversity in many ecosystems. The planned use of "prescribed natural fire" simply defines the conditions (weather, risk, values, etc) under which a natural (lightning) caused fire will be allowed to burn.

900 There should be restrictions on campfires because they waste valuable wood needed in the Forest ecosystem, and are an inefficient source of heat.

There may be a need to limit the use of native wood in campfires in some heavily used areas

1000 Recommends that prescribed burning in chaparral be done in the summer or fall to more nearly match natural conditions.

An E.A. will be prepared for each prescribed burn which will determine the desired objectives, timing, and other prescription elements.

1100 Only native plants should be used for re-vegetation or erosion control projects

No large scale use of "nonnative" species is planned. Individual projects may require seeding with nonnative species if such an alternative is selected in the EA process

FISH. GENERAL (081)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 There are no plans for fishery habitat improvement or protection. There should be a more aggressive approach to restoration and improvement of riparian dependent resources

The Forest is actively implementing programs providing for the improvement and protection of fishery habitat. The Little Kern Golden Trout Management Plan has been in effect for several years providing for the protection and improvement of habitat. Our Forest Riparian Standards and Guidelines are implemented on all projects affecting the riparian resources surrounding many fisheries. These guidelines provide for the maintenance and protection of riparian-dependent resources and fisheries habitat. We have accomplished, and will continue to accomplish, stream improvement projects vitalizing timber sale area improvement funds (K-V) and funds from cooperative programs with the California Department of Fish and Game. We also have a very active meadow restoration program to maintain and improve meadow resources which directly affect fishery habitat on the Forest. Every year many acres of

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meadows are treated with rock cheek dams, seeding. erosion Cloth. and other methodologies to enhance and protect this valuable resource. The Forest is also increasing its participation with the California Department of Fish and Game Area Fish Biologists in developing plans and prescriptions providing for the protection of fishery habitat.

200 Educate the Forest user to encourage the philosophy of "limiting your kill, not killing your limit "

This policy is encouraged by the Forest Service but is more in the province of the California Department of Fish and Game Which is responsible for game laws. licensing. and education of hunters and anglers

300 The Forest should make a sincere effort to meet the Forest & Rangeland Renewable Resources Planning Act (RPA)

The Forest and Rangeland Renewable Resource Planning Act (RPA) of 1974 directs the Secretary of Agriculture to periodically assess the status of the Nation's forest and rangeland resources and to recommend a Forest Service program for management and use of these resources. This program is submitted to the President for transmittal to Congress along with a Statement of Policy. The Statement of Policy is the President's intended use of the Program for framing budget requests for Forest service activities. Congress may modify the Statement of Policy and it is then Used in framing budget requests. In that the Sequoia National Forest is a part of the entire Forest Service. we do Conform to the RPA program. It is essential to remember RPA provides direction for the entire Nation and not individual Forests

400 Increased timber harvest, especially clearcutting, and increased grazing will conflict with fishery improvement

Our current and proposed management of resources in and around fish habitat is to emphasize riparian dependent resources over non-dependent resources Such as timber harvest Our use of Best Management Practices (BMP's) and prescriptions developed through our Forest Riparian Standards and Guidelines will maintain fisheries habitat Improvement of fishery habitat will occur through erosion control projects. removal of fish barriers in some areas. planting of willows and other plants to stabilize banks and provide shade. and installing structures, such as boulder clusters. to increase the number and size of pools All of these improvement measures are currently implemented. and will continue to be implemented, through sale area improvement funds. Forest Service appropriated funds. and cooperative funds provided by county and state agencies

Also. the final Forest Plan and EIS recommends no increase in grazing on the Forest

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500 Why is there Only a 1 or 2 % increase in trout production in the WFV and AMN alternatives ? Water quality and stream protection should be much improved Is the Sequoia at near optimum production currently?

In the WPV and AMN Alternatives. the Forest has chosen to emphasize habitat protection and restoration over major improvement projects requiring increased funding. If funding is increased. through Forest Service funds or State cooperative funds. the Forest would be able to increase trout production over the 1-2% increase indicated

600 How can your report say there is no Significant fishery on segments I & II of the Kings River

We have revised the text in Table E 4 to indicate there is a significant fishery on the Kings River We believe you may have misread our text on impacts to fisheries as a result of wild and scenic river designation. Also. the Kings River. or segments of it, have now been incorporated into a Special Management Area providing further protection.

700 I would like more fish stocked.

Stocking of fisheries is the responsibility of the California Department of Fish and Game

800 Damage from logging roads. timber harvest and grazing should be repaired and the costs borne by timber and stock users.

Where Clear, defineable damage has occurred due to violations of regulations. the responsible parties are fined and billed for restoration. Part of the timber and grazing proceeds are used for habitat improvement through range betterment projects and Knudsen-Vanderbilt (K-V) funds. Also. through the use of Best Management Practices (BMP's) and riparian guideline prescriptions. the Forest reduces the need to repair damaged habitat through increased protection.

900 Fish and wildlife plans are O K

Thank you for your comment

1000 There should be studies made to determine what impacts road construction. timber harvest and grazing have on stream habitat and fishery resources.

Cooperative studies have been, and will be carried out with Forest Service research branches. universities. and private individuals. Past studies and research have led to the development of the Best Management Practices and the Forest Riparian Standards and Guidelines that have been developed to protect and maintain stream habitat and fishery resources Also. monitoring of our activities. although not research. constitutes a study of effectiveness of our guidelines

1100 Fisheries planning should be covered Separately from wildlife since the requirements and approaches are quite different

Fisheries planning and management is a separate function administratively in our budgetary process Some planning is also implemented separately such as the Little Kern Golden Trout Recovery Plan Sometimes wildlife and fisheries are treated in the same context. especially when riparian area management is developed and implemented.

(081)

- 1200 Mention should be made of the partnership of the California Department of Fish and Game for planning and management of fish and wildlife resources
- 1300 Isn't the Little Kern Golden Trout a federally listed threatened species?
- 1400 Resident fish production remains nearly constant over all alternatives This ignores looking at ways stream habitat can be improved to increase fisheries (e.g., no livestock grazing in riparian zones. 100+ft. buffer zones on streams, no harvest of timber. etc ). Why weren't these factors evaluated.?
- 1500 The plan fails to recognize the South Fork Kern Golden Trout as a sensitive species.
- 1600 The standards listed for the Little Kern Golden Trout are more like objectives and should be placed in the proper section standards and guidelines Should be adopted which address habitat protection for these species and the development of specific management prescriptions.
- 1700 On 2-8(E) (Draft Plan) the question was what opportunities exist to improve fish and wildlife habitat. not whether the Forest plans to do any enhancement work. Maintaining fish habitat in its existing condition with the existing standards will not meet the management direction of providing increased fish habitat capabilities by 1995
- 1800 The Little Kern Golden Trout Recovery Plan is not limited to the Golden Trout Wilderness. There are 1,000 acres in the Click's Creek and Pish Creek drainages which should be identified and mare
- This partnership is mentioned in Chapter 3 of the Plan
- This was noted in the Draft Forest Plan p 3-49 and Table 3.5 in the DEIS. The reference in Chapter 3 of the final Plan under wildlife has been corrected
- Stream habitat is protected and maintained through the use of Best Management Practices and the Forest Riparian Standards and Guidelines which restrict certain activities such as timber harvesting in riparian areas. Stream habitat is improved through direct habitat improvement projects Such as stream-bank stabilization. boulder clustering to increase the number or depth of pools, and barrier removal to allow for the passage of fish To the degree funds can be obtained. habitat improvement projects such as these will be carried out However, the Forest does feel that improvement opportunities are somewhat limited, hence the figures indicating little to no increase
- See revisions in Chapter 3 of the Final Plan
- The Standards and Guidelines. and specific management prescriptions have been written and are being implemented under the direction of the Little Kern Golden Trout Recovery Plan which is available on the Forest for your review
- Besides protecting and maintaining fish habitat through the implementation of Best Management Practices and the Forest Riparian Standards and Guidelines, the Forest is actively identifying. and. when possible. implementing fish habitat improvement projects such as meadow restoration. streambank stabilization, barrier removal. and general stream cleanup to increase fish habitat capabilities These programs will continue at their current levels or increase as funds become available to to meet the management direction of increased fish habitat capabilities on the Forest
- All of the "Critical Habitat" for the Little Kern Golden Trout has been identified in the Management Plan The Forest Service is fully aware that portions of this designated area are outside of the

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stringent standards and guidelines written for the area including the need for biological assessments on all projects

Golden Trout Wilderness and will continue to comply with Section 7 of the Threatened and Endangered Species Act.

2000 Native trout production will not remain constant through the planning period far much if not all the listed alternatives

We feel that the use of Best Management Practices (BMP), and streamside management zones, in addition to fisheries habitat improvement will maintain existing fishery production

2100 Require fish habitat monitoring as an essential component in monitoring activities such as road building in all areas where these activities are permitted Specify where fish monitoring stations will be located

Fish habitat monitoring is a component of overall monitoring of streamside management zones and riparian management as addressed in the monitoring section of the Plan

OTHER MANAGEMENT INDICATOR SPECIES (084)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The plan is deficient in planning for long term survival and does not adequately represent sensitive, rare and T&E species

Changes in text, direction, and tables in Chapter 3 of the PEIS and Plan ensures that long-term survival of all rare, sensitive, and threatened and endangered species across the Sequoia NF will be maintained Our policy is to manage sensitive species in such a way that federal listing as a threatened and endangered species is not necessary

200 The preferred alternative calls for habitat maintenance for only one pair of nesting California Condors This is underestimated

The Preferred Alternative calls for maintenance of habitat for at least one pair, not only one The Forest is a participant in the California Condor Recovery Plan All Forest Condor programs are an approved part of this process

300 Unable to find a hacking schedule (for peregrine falcons)

Refer to the "Recovery Plan for the Peregrine Falcon," 1982 This document is available for review

400 Spotted owl and northern goshawk received short attention in the draft plan Inventories are incomplete

See changes to the FEIS and Plan that show the Forest is following Regional Guidelines Inventories for Spotted owls were accelerated in FY 1987 Additional inventories, monitoring, and research are Scheduled over the next 4 years Please refer to Chapter 3 of the Final Plan and Appendix B of the FEIS for expanded text on Spotted owl management

500 S O M A network is not enough

Adjustments to the network may be made as a result of inventories, monitoring, and research on spotted owls and their habitat These activities were accelerated in 1987 and are expected to continue in an accelerated mode through FY 1991 Also, we estimate that there is habitat capability to support approximately 35 pairs at this time in addition to the network of 40 SOHA's

(084)

600 The plan should provide for inventory and management plans, and more specific standards and guidelines for T&E, rare and sensitive species

See changes to the Plan in Chapter 4, Forest-wide Standards and Guidelines

700 The Kern Canyon and Tehachapi Slender salamanders should be monitored annually

Salamander monitoring is done on a project basis within the species range to assure species viability is maintained

800 Goshawk nest requires at least 125 acres to be preserved

The Forest follows regional guidelines which recommends 50 acres

900 Species that benefit from intensive, even-age timber management practices will perhaps flourish but at an Unacceptable great cost to many species that will decline

Some decline for older seral species will occur in intensively managed areas. but these same species are provided for in areas such as wilderness, RNA's, riparian areas, etc The Forest will ensure that viable populations for all species will be maintained by providing habitat for these species

1000 M I S definition in appendix "J" (EIS) includes plants. table 3-16 does not

See changes to FEIS Table 3 16

1100 Research need section in appendix "B" should include status and trend needs for great gray owl, willow flycatcher, golden eagles, Breckenridge MT salamander, and goshawks

See changes to Appendix B of the Plan. Research Needs

1200 There is no mention of wildlife resources in the vision statement

See changes to the vision Statement in Chapter 1 of the Plan

1300 Wildlife deserves a greater emphasis in allocation of Forest resources, dollars, and personnel

The Forest has a large number of Users each with diverse opinions on the allocation of the public resource The Land Management Plan attempts to meet a reasonable balance of resource protection and public needs

1400 The Forest plan should be directed to meet the (deer) herd unit objectives for those deer herd plans approved by the Forest

The Plan directs that on key deer areas the Forest will follow the herd plan

1600 I do not agree with your management of Mountain Lions

This is outside of the scope of the Plan, the letter was given to California Department of Fish and Game The Forest Service manages habitat. the management of species is the responsibility of State agencies

OTHER WILDLIFE SPECIES (085)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 How can the Forest adequately manage and monitor fish, wildlife, and other earth science resources

We have little control over budget allocations but are seeking ways to work with the California Depart-



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when positions in wildlife, hydrology, fisheries, and soils have been cut as well as the budget for the management of these resources?

ment of Fish and Game and other cooperators to jointly accomplish the objectives in this Plan. The Plan points out what types of habitat improvements and monitoring needs are required, but ultimately the available funds will dictate how much can be accomplished in a given year. In an effort to maintain current staffing levels, the Forest recently filled Hydrology and Soils positions, a Wildlife Biologist position, and a Shared services Fisheries Biologist position with Sierra National Forest. A monitoring system is currently being developed by the Stanislaus, Sierra, and Sequoia National Forests and the Pacific Southwest Forest and Range Experiment Station that will concentrate monitoring efforts on high risk species and associated habitat. This will narrow the focus of monitoring and more realistically address what studies can be accomplished with current and projected staffing and budget levels. Also refer to Appendix L of the FEIS for further explanation of how the budget affects forest management.

200 Wildlife is an important resource on the Forest and should be given equal treatment rather than the assumption that it will be protected as a by-product of recreation use, and timber and range management.

The Forest Plan, rather than stressing commodity over non-commodity management, actually provides for increased protection and management of several important habitat types including old growth, riparian, dead and down, snags, and oak management. Please refer to revised Forest-wide Standards and Guidelines in Chapter 4 of the Final Plan.

201 Riparian areas and meadows have an importance to wildlife which is highly disproportionate to their limited acreage. Conflicts for use of this limited acreage are between grazing, timber harvest, OHV use, recreation, and wildlife, and yet the FS proposes a significant increase in the first 3 mentioned.

Increases in grazing, timber harvest, and recreation will not occur at the detriment of riparian areas and meadow habitat. Any management activities altering or impacting the habitat in the areas will comply with the Forest Management Guidelines for Riparian Areas and Meadow Management Guidelines which limit the amount and kinds of activities that can take place.

202 Deer seem to be overemphasized where cattle and wildlife must compete for the same area. Cattle ultimately prevail since they have man's assistance as well. Mountain meadows are needed during the fawning season. If adequate food supplies are unavailable, the number will diminish accordingly.

Cattle grazing seasons are adjusted on the Sequoia NF to allow deer to use the mountain meadows during the majority of the fawning season.

203 Meadows should be managed for recreation and wildlife, NOT livestock. The FS projects increased benefits to wildlife by clearcutting and chaparral management, but at the same time they propose to increase livestock grazing in the areas to the detriment of wildlife.

Under the Forest Service Multiple-Use Management, meadows are managed for many uses which include providing wildlife habitat, protecting water quality, recreational experiences, and livestock grazing. It is the intention of the Forest and the Plan to strike a balance between commodity and non-commodity uses for the meadows. Following timber

(085)

harvesting or prescribed burning of Chaparral. cattle may be drawn to these areas because of increased forage capacity, but this does not exclude benefits to wildlife

401 Full preservation of wildlife habitat The Plan states "Because of the losses of habitat outside the Forest due to urbanization, wildlife species are becoming more dependent upon the Forest " (Part 3, p 19) Yet the plan would disrupt and decrease wildlife habitat No trapping, no predator "control" Reintroduction of species formerly native to the Forest but now absent

There are **several** points to make here The National Forest Management Act requires that this plan Shall "provide for multiple **use and** sustained yield of goods and **services** from the Forest in a way that maximizes long-term net public benefits **in** an environmentally Sound manner " This direction precludes the possibility of preserving the entire Forest for pristine wildlife habitat Next, the management activities proposed in the Plan will alter wildlife habitat, increasing some habitat types and decreasing Others Finally, with the exception of controlling gopher populations **in** tree plantations, the Forest **service** is not **responsible** for the trapping of animals, predator control, or the reintroduction **of** species formerly native to the Forest, but now absent The California Department of Fish and **Game** is responsible for those wildlife management activities on the Forest, except for threatened and endangered species which are the responsibility of the U S Fish and Wildlife Service

500 The Plan removes too much old growth and is slanted towards creating young successional stands at the detriment of wildlife

Although the Plan does propose harvesting old growth stands, there **are** many provisions to protect a portion of this valuable wildlife habitat type Old growth located in the wilderness, riparian areas, and **scenic** corridors will be protected Five percent of the old growth **in** each timber compartment will be retained Forty Spotted owl habitat areas, **each** containing 1650 acres will be maintained (these habitat **areas** contain mostly old growth habitat) The old growth present **in** the recommended Research Natural Areas and Botanical Areas will be preserved The protection of all these areas will **insure** old growth dependent Species will be maintained above viable population levels and maintain their distribution across the Forest

600 The **provisions** made **in** the Plan for the retention of snags and dead and down material **are** inadequate **in** providing habitat for wildlife species dependent on these habitat elements

Please refer to revised Forest-wide Standards and Guidelines concerning snags and dead and down material These revisions **were** negotiated with the California Department of Fish and **Game**

700 Wildlife monitoring is totally inadequate Has the Sequoia followed the monitoring guidance provided by the Pacific SW Range Experiment Station

Please see the expanded Monitoring Section

(085)

biological staff. Please provide their analysis for review. The Sequoia monitoring plan is much less intensive than seen in the Stanislaus Plan Why isn't there more consistency between Forests?

701 It is not clear in the DEIS as to the components or factors used determining species viability and habitat carrying capacity. Have the latest available data and techniques been used?

900 I disagree with much of the data base information used to draw conclusions and formulate plans On pg 3-19 you report 43,000 consumptive WFUD's My information Shows 16,600 deer tags alone issued.. with an average of 6-1/2 days usage per tag. or a total of 100,000 WFUD's I am told them are approximately 3 times as many fishing licenses sold Please advise what data you used to arrive at your figures

1000 If the plan is implemented. It will result in major reductions in fish and wildlife resources All alternatives are unacceptable from a fish and wildlife stand point The AMN alternative is also unacceptable since old growth species Show a planned major reduction. grazing still continues above the current Forest capacity and more roads and ski projects are planned

1001 The data base used in preparing the Plan is flawed and that errors and exaggerations must be corrected by improving the Forplan model and Other data between the draft and final EIS

1002 The conflict (between wildlife and Other resources) can only result in taxpayer losses in terms of dollars and resources

1003 Roadless areas should remain unroaded to provide recreation, wildlife habitat. biological diversity and other benefits that will be in Shorter supply in the future Non-consumptive use of wildlife bird-watching. photography, and animal study was responsible for 67,000 WFUD's (3-19 Plan) This confirms our opinions regarding the value of wildlife in the Forest economy

Please refer to information provided on this subject in Chapter 3 and Appendix B of the FEIS.

Wildlife and Fish User Days (WFUD's) are not simply a function of multiplying the number of licenses sold times days of use Refer to Appendix B in the FEIS for a detailed explanation of how WFUD's are determined

The AMN Alternative does not show a "major" reduction nor is grazing above current capacity Fish and wildlife resources are an important multiple-use on the Sequoia NF Revised Standards and Guidelines in the Final Plan ensure that viable populations of all native plants and animals will be maintained on the Forest

We find this statement too general for a specific response

Several areas on the Forest will receive wildlife emphasis over other uses In addition. timber and recreation also are emphasized in portions of the Forest The final Forest Plan provides for a mix of commodity and non-commodity values consistent With the theme of the alternative Both are important in multiple-use management

A large number of areas will remain unroaded Non-consumptive uses of the Forest will remain available over most Of the Forest under the recommended Plan

(085)

1004 Unless we dramatically alter our current practices. the earth will lose a large share of its species during our lifetime. A desirable goal would be to return the Government's full cost of growing and selling trees by halting uneconomical timber sales.

1005 No grazing of livestock should occur on lands that serve as winter range for deer.

1006 Regarding the exotic plants and animals, the dictionary defines "exotic" as foreign or imported. In other words, the bear, deer, fox, raccoon, woodpeckers, goshawks, and condors, plus our native plant eco-systems and their native habitats about which we are concerned, are exotic to these timber people. Do they expect us to believe that the public feels that plants and animals and birds don't really count for much on our public lands?

1007 While all wildlife, including rare and sensitive species would be seriously impacted by the proposed Plan, we will here mention only the birds. Nationally, Song birds are on the decline, traceable in part, to the destruction of the forests in which their survival depends.

1008 I'm concerned about the National Park issues coming before Congress. We need support and protection of wildlife and their habitats.

1009 More backcountry roads will certainly increase wildlife harvesting since these areas will afford easy access to "road hunters." Too much ready access by road by too many hunters.

1010 And what about wildlife? In the last half of the century, the extinction rate has more than doubled at a rate that is the highest of all time. More and more species are fighting their species Battle of Armageddon. This rate is not because of natural selection: it is because of the encroachment of people, and loss of habitat because of land ethic. We're going to be all alone on this planet. Would Sequoia or Chief Seattle desecrate our holy places with an off-road vehicle? Would they kill little squirrels, baby birds, and lizards for the selfishness of a moment, a cheap little thrill? Would they want cattle to eat away a sacred and holy place? Would they allow giant earth-movers to rape

When permanent road investments are considered as assets, timber sales in the Sequoia return the full Cost of selling trees. Timber purchasers are required to pay the government the cost of reforestation of timber sales.

Grazing seasons are adjusted in some areas for the benefit of deer management. There are very few areas where a conflict can clearly be shown on deer wintering areas.

We consider native plants and animals to be an important renewable resource on the Sequoia. Throughout the document, we have planned for maintaining viable populations of all species.

NO sensitive, rare, or threatened and endangered species will be seriously impacted. The final Plan provides for the maintenance of all native species and viable populations. Standards and Guidelines for wildlife, riparian, meadows, old growth, etc ensures that wildlife is adequately managed on the Sequoia NF.

We have no authority regarding National Park issues.

We concur with the first statement. We have no technical response to your opinion expressed in the second statement. To protect wildlife habitat, many timber roads will be closed after harvest.

See response to #1007.

(085)

and scrape away forever the floor of this cathedral.  
this ancient, timeless forest?

1011 This is (DEIS) not a fair presentation of alternatives, and reminds one of the unfair range of alternatives which the FS produced for RARE II in California which was held by the courts to be fatally inadequate. The forest should read carefully the observations by the court in California vs Block and completely rewrite the alternatives to present a true range of alternatives for consideration.

In our judgement we have presented a full range of alternatives varying from emphasis on market commodities to emphasis on nonmarket goods.

1012 The SQF is home to a great diversity of wildlife. Over 300 species of terrestrial vertebrates inhabit a variety of habitat types on the Forest. The Forest provides habitat for 3 Federally listed endangered species, the California Condor, the Bald Eagle, and the Peregrine Falcon. In addition, 3 State listed "rare" species and 5 species considered "sensitive" by the FS depend on the SQF for habitat. As urbanization and habitat loss increase outside the Forest, wildlife will become more dependent on the Forest.

See response to #1007

1013 The sportmen make up a lot of money in the State. You don't see out of state hunters coming to CA. You don't see them coming here because we are so far down in hunting that you can't believe it. When you bring in deer to replant deer in an area, over half of them die because they are not used to the food in the area.

We have no technical response to this expression of opinion.

1014 When you are tearing down all the manzanita, it handles a lot of protein for so many critters to eat, you can't believe it. When you are grazing the mountain meadows, be careful. When you cut down all the oak trees and take them out and there's nothing left for any of the wild critters, be careful.

For the majority of this comment we have no technical response. For the portion of the comment directed at oak management, refer to the Forest-Wide Standards and Guidelines pertaining to hardwood management in Chapter 4 of the Plan.

1015 Management Direction, Chapter 4, Future Condition of the Forest. Overall comments - I do not agree with the DEIS Preferred Alternative and therefore the future condition of the Forest as stated in this Management Plan. If your plan is implemented, it will be a dark day in forest management. You will have degraded one of the few remaining pristine forests in the West and turned it into a beef, timber, OHV, and mini-downhill skier haven. Your general approach seems to be abandoning increasing quality and maintaining or decreasing it instead in terms of air, water, wildlife, visual.

The Forest has tried to present a balanced program to meet the needs of the public. Pristine areas are preserved for some, while other areas provide high quality beef, lumber and recreational opportunity.

(085)

1016 It is extremely important that adequate space be provided for population growth and maintenance. We strongly urge that space be included as one of the habitat elements. Please see pages 3-52 of the DEIS. Several sensitive species are mentioned in the DEIS. The Pileated woodpecker is not mentioned anywhere. This species requires old growth forests for continuance of its kind. Other species that will be adversely affected by the reduction of old growth are the Spotted Owl and the Northern Goshawk. We feel that the DEIS does not adequately provide attention to the above species particularly the Spotted Owl.

1017 Preservation of wildlife should have top priority. Special interests that have a negative impact on wildlife should be eliminated within the next 5 years.

1018 It is folly to believe that building more roads and increasing timber harvests will enhance or even maintain existing populations of wildlife. That these activities will not degrade recreational experiences dramatically, and that recreation based economies in the area will not suffer significantly. The FS underestimates the dollar value of fish, wildlife, and recreation while at the same time, the Plan underestimates the damage that timber production will cause.

1019 In plans, we saw management for everything attempted except wildlife.

1020 The Sequoias emphasis on timber and range outputs (which provide only 20% of the Forests PNV) is clearly inconsistent with the intent of Current law, regulation and FS Manual direction.

1021 The preferred alternative is too expensive and should be pared back in facilities, transportation, and timber expenditures, increased in fisheries and wildlife and better balance.

1100 Do you have any research data to verify that secondary poisonings are not a problem with baiting gophers with strychnine?

Space is considered as a habitat element in Chapter 3 of the FEIS. The pileated woodpecker is classified as a Special Interest Species by the Forest Service, not a Sensitive species, and consequently there are no special management considerations. Its habitat needs will be met by the Plan's provisions for the retention of 5 percent old growth in each timber compartment and special management of riparian and meadow influence zones. Please see expanded portions of the FEIS and Plan for details of the management of the Spotted Owl and Goshawk.

We are mandated to provide a balance of uses to meet public need rather than dedicate the Forest to a single use.

The Forest Service recognizes the value of fish, wildlife and recreation and will continue to provide for these uses to the public. Timber harvest does not preclude other uses of the Forest and has been in part responsible for increased recreational use due to increased access.

Please refer to Chapter 4 (Management Direction) of the Plan where specific Forest goals are outlined as to the management of fish and wildlife.

The Plan complies with Current laws, regulations, and FS Manual direction.

We have attempted to provide a good balance subject to the needs of the public through revisions of the Preferred Alternative. This Alternative is developed in the Final Plan. It is the result of public comment to the Draft EIS and Plan. Please refer to the expanded sections on wildlife management in Chapters 3 and 4 of the final Plan.

There is much research documenting this aspect of gopher baiting. For instance, refer to publications cited in the programmatic environmental analysis entitled "Gopher Control for Reforestation on the Sequoia National Forest, Part A", March 21, 1984.

(085)

Secondary poisoning is not likely because. (1) bait is applied underground and gophers die underground. (2) strychnine is not water soluble, and hence does not leach out of the bait. and (3) soil organisms rapidly decompose strychnine.

1101 If the ban on herbicides is lifted. broadcast spraying should be banned because so many non-target species are killed

Presently there is a suspension on herbicide spraying in Region 5, pending the completion of a vegetation management EIS 2.4.5.T is no longer registered for Forest applications. We only use herbicides which have been registered for the application intended and approved by EPA We carefully select chemicals to best target those plants which compete with young tree seedlings. The chemicals are then carefully applied using EPA and OSHA approved methods. Care is taken to minimize over-spray and drift. The normal application rates of herbicides used on forest lands are not likely to produce acute toxic responses in most "on-target organisms The short persistence. lack of biomagnification in food chains, and the rapid excretion of these herbicides by animals preclude toxic doses being accumulated The primary effect of herbicides on wildlife results from changes in the plant component of their habitat. Only a small portion of the forest will be sprayed each year under the PRP Alternative (if the suspension is lifted) In the PRP Alternative. approximately 136,000 acres are managed intensively for timber (table 2 28, Item VII A, FEIS) In the first decade approximately 1700 acres will be clearcut each year (table 2 21, FEIS) That's 17,300 acres per decade. Each clearcut acre might get sprayed with herbicides two to three times over its century of life Therefore. 51,000 acres are likely to be sprayed in a decade if the herbicide ban is lifted. i e , 5,100 acres per year will be sprayed with herbicides This is less than 0.5% of the total National Forest land

1200 On page 4-3 the Plan provides that it will protect only "selected" invertebrates The plan fails to tell which invertebrates are selected. why and who will do the selecting? On page 4-7 the Plan talks about a decrease in "late succession state animals " This is an unacceptable vague statement Does this in fact mean that there will be less bear. deer and other "popular" mammals under the current Plan? Also, how much of a decrease? why were specifics ignored from the Plan?

Please see revisions to the wildlife section of Forest Goals in Chapter 4 of the Plan Your assessment of the wildlife text is partially correct There will be a decrease in species associated with old growth. most producing trees and snags Estimates of the percentage decline in population are given for each alternative in Chapter 4 of the EIS and the summary The revised plan does provide for increased management and protection of snags and oaks on commercial timber land and 66,000 acres of undisturbed habitat associated with spotted owl habitat areas Old growth habitat will still occur All species associated with this habitat will retain viable populations under the final Plan

(085)

1300 You have greatly underestimated the impacts of oak loss to wildlife.

Please refer to revised Standards and Guidelines and area prescriptions in the Plan providing greater protection and management of oak habitat than currently exists on the Forest

1301 DEIS should clearly state. in laymans terms, (as required by NEPA) how Fish and Wildlife values were treated in Forplan

Please see Appendix B of the FEIS for a detailed description of modeling elements.

1400 Reptiles and amphibians are ignored in the destruction of forest floor habitat, e.g , calls for dead and down wood. firewood removal. slash reduction, and controlled burns

Fire has been an integral Part of Forest ecosystems for thousands of years The use of fire may impact an individual population of reptiles or amphibians, but it will not affect the species throughout its entire range

1401 I have serious concerns with the Sequoia data base on which it can Support the contention that the preferred alternative will result in maintaining "Viable populations of wildlife." There are many good examples showing weakness in your analysis, but the best may be your totally ignoring the herpetological fauna found on the forest

Management of wildlife habitat, as addressed in the Plan. means that all wildlife, including reptiles and amphibians, Will be maintained at viable population levels. Three herpetological species. the Kern Canyon Slender Salamander. the Tehachapi Slender Salamander. and the Southern Rubber Boa are recognized in the Plan as State-listed species and will be managed to maintain viable populations throughout the species range

1500 I do not like either the AMN or WFV alternatives because they will have negative impacts to wildlife habitat.

Thank you for your comment

SPOTTED OWL (086)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Your habitat areas for spotted owls are too large and are detrimental to commodity production. More research is needed to determine the status and needs of this species

Please see the explanation of the management of this species under the Management Indicator Species section of Chap 3 of the FEIS and Plan. Research activities to determine habitat requirements are Scheduled in the Spotted Owl RD & A Program

200 The data in the Forplan Modeling on spotted owls is inaccurate and misleading in its assumptions of what constitutes adequate habitat and its conclusions of how many pairs of Spotted owls the Sequoia National Forest will support

These numbers were hypothetical and were not adjusted for fragmentation. In the final Plan we have updated the spotted owl section based on vegetative conditions, recent owl survey Work, and habitat knowledge for this species Changes occur in all tables displaying spotted owls.

300 Region 5 guidelines in Appendix H of the final EIS for the Pacific Southwest Regional Guide States that "specific numbers of owls must be verified and monitored during plan and implementation " The Guide also requires the Sequoia and most other CA forests to group spotted owl territories into a network covering the range of the owl and to prepare a map of all "Identified and/or suspected locations of

Spotted owl population surveys have been conducted on Sequoia NF since the 1970's Beginning in 1982 work began. using Region 5 Guidelines. to establish a network of Spotted owl habitat areas across Sequoia NF In 1986, with the Completion of field surveys on the CANNELL MEADOW DISTRICT a network of habitat areas was established The only harvest of timber that has taken place in any of the habitat



(086)

territories." Sequoia planners have yet to comply with either suggestion. As a result of this negligence, most locations of spotted owls on the Forest remain unknown to planners (this means that many Current and future timber sales will inevitably and unnecessarily impact the populations of spotted owls and Other bird/mammals Which Utilize Old growth habitat)

areas since their proposal was that already under contract In many cases even this timber was substituted for timber volume located outside of the habitat areas Congress provided funds for an accelerated research effort for spotted owls in FY 1987 The Sequoia NQ has participated in this effort Minor adjustments may be made in the total number and location of spotted owls as a result of new inventories and/or update Of habitat modelling For more details on Current spotted owl management on Sequoia NP please see Chap 3 of the FEIS or Plan Also see Appendix B of the Plan for identified research needs for the spotted owl

400 The spotted owl was classified by the Forest Service as a "sensitive species" in 1975 This classification requires positive management procedures with the aim of preventing further reduction of the existing population, or any habitat loss which would diminish the possibility of restoring the species to its present range.. We believe that the contemplated reduction of Spotted owl habitat and attendant loss of breeding pairs threatens an irreversible loss of species diversity on the Seauoia National Forest

The Forest has taken positive steps to insure spotted owls are maintained in viable numbers over their range Under the direction of Appendix H of the Pacific Southwest Region QEIS On Regional Standards and Guidelines (Regional Guide), the Sequoia National Forest has established a spotted owl habitat network This network consists of 40 Spotted Owl Habitat Areas, 1,650 acres in size or larger, distributed throughout the Forest The best available habitat, including some Old growth and mature forest areas, was included within the network as directed by Regional Guides These measures will ensure that islands of old growth will be protected and distributed across the Forest contributing to the plant and animal diversity of the Sierra Nevada

T & E SPECIES (FAUNA & FLORA) (092)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The plan does not include a Bighorn Sheep, Tule Elk, or Pronghorn relocation plan

Relocation of these species is the responsibility Of the California Department of Fish and Game We are cooperating with them an a survey of potential areas for relocation of Bighorn Sheep Tule Elk end Pronghorn were probably not native to the Forest and no plans for relocation are intended.

200 Transer Pixley pasture to S.S.P. and W.S

Effective 11/18/87, the Secretary of Agriculture transferrd this property to USDI for addition to the Pixley National Wildlife Refuge.

300 Little Kern Golden Trout must be protected wherever they are found.

The Little Kern golden trout is a federally listed threatened species for which a recovery program has been prepared. The Forest will follow that recovery program in an effort to increase numbers of Little Kern golden trout

(092)

400 More specific standards and guidelines should be developed for T&E species

Please see Changes to the Standard and Guidelines sections of the FEIS and Plan.

500 T&E inventories are incomplete

Please see changes to Research and Technical Needs Section (Appendix B) of the Plan

600 The little Kern Golden Trout Recovery Plan is not limited to the Golden Trout Wilderness There are approximately 1000 acres in the Clicks and Fish Creek drainages outside Wilderness if my memory serves me correct This area needs to be identified and more stringent standards and guidelines written for the area including the need for Biological Assessments or USFWS Biological Opinions on all projects to determine compatibility with LKGT The LKGT Plan at last reading contains very limited discussion of fish habitat management Maintaining fish habitat in its existing conditions with the existing standards and guidelines will not meet the management direction of providing increased fish habitat capabilities on the National Forests by 1995

The 1,000 acre area you mention is included in the LKGT Management Plan and projects here must meet with the approval of the USFWS Maintenance of the current fish habitat capability is the best management we can provide given current budgets and demand for goods and services from the Forest

SENSITIVE PLANTS (096)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Planning alternatives do not compare treatment of rare plants.

Rare plants are protected under all alternatives as a Management Implementation Requirement (MIR)

200 The F S has not yet adequately explored or emphasized monitoring techniques of sensitive plants

Please see changes to PEIS and Plan under Standards and Guidelines. and research needs

300 Inventory and management plans need to be written for sensitive plants

Management Guides Will be written on a priority basis for those species Occurring in Intensively managed areas Funding and obtaining necessary ecological data needed to develop a species guide will affect the rate the guides are completed

400 Signing of sensitive plants is inappropriate and trails and roads should be rerouted

Signing Will be addressed in individual species management guides Trails and roads Will be rerouted as needed

500 The plan is vague as to what the species (for management) are to be for sensitive plant species

Please see revised sections of FEIS and Plan, Standards and Guidelines

600 M I R 's on page 2-26 (EIS) does not mention fish, amphibians. reptiles. mammals, or birds.

This paragraph is titled "Sensitive Plants " Fish, amphibians. reptiles, mammals, and birds are addressed later in the chapter

(096)

700 Please include the following taxa on page 3-20 (plan): *Phacelia nashiana*, *Calochortus straitus*, *Carex tompkinsii*, *Mimulus pictus*

*Phacelia nashiana* and *Carex tompkinsii* are listed in the revision in Chapter 3, PEIS. *Calochortus striatus* and *Mimulus pictus* are no longer listed as Forest service sensitive species

800 The M.I.S.'s selected cannot possibly reflect the Status of sensitive plant species or their habitat.

All sensitive plants listed for the Forest are protected. Since sensitive plants occupy so few acres on the Forest, selecting them as an MIS species was not appropriate. Sensitive plants are conserved at the project level to ensure species viability

900 How will sensitive plants be protected in rangelands or in chaparral stands slated for burning?

Sensitive plants are surveyed for and protected under each project EA when burning is planned

1000 A conflict exists between (EIS) table 4-20 (risk factors) and page 4-50 (all plants to be protected) What are tolerable levels of impact and what are they based on?

Risk factors have been eliminated All sensitive plants are fully protected

1100 How much area will be managed for sensitive plant species?

The area to be protected for each species will be defined in the species management guides

1200 Sensitive plant species should be managed to ensure they do not become threatened and endangered

Sensitive plants are managed to eliminate the need for federal listing as a threatened and endangered species

1300 Why have not sensitive plants been federally listed if threatened and endangered?

Sensitive plants are fully protected and managed to prevent the need for federal listing as threatened or endangered. Current populations are, in general, not limited enough to require Federal or State listing

HERBICIDES (111)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Carbaryl and strychnine usage should be restricted to those areas in which endangered predators will not eat the poisoned animals Usage of toxics within the forest should be as a last resort. as the concept of integrated Pest Management indicates

Use Of all toxic substances is controlled by EPA approved procedures that ensure minimum exposure of "on-target species

300 The use of broadcast herbicides can have obvious drastic effects on native plants. whether or not they are the target species

Protection of native plants depends upon the management objective for any particular site Where control of vegetation is necessary to establish timber crops, native as well as alien plants may very well be the targets in herbicide application projects

400 . The Forest Service's Preferred Alternative does not adequately address their proposed use of herbicides/pesticides for vegetation management .

A Region-wide environmental impact Statement Will have to be completed before pesticides are used for vegetation management on the Sequoia National

(111)

Forest. This document is now in draft form. It describes a wide range of environmental consequences resulting from both the use and nonuse of pesticides. Project-level environmental assessments (EA's) will document the decision to either use or not use pesticides on specific sites within the forest. These EA's will disclose site-specific environmental consequences and will define mitigating measures necessary to keep impacts from pesticide application at legal and environmentally acceptable levels.

800 Please detail the herbicides contemplated for use in the Sequoia National Forest Management Plan. Would you also provide copies of studies showing that there are no adverse effects to the soil, fisheries, or human and agricultural use of the water runoff of these herbicides? ..

A Region-wide environmental impact statement will have to be completed before pesticides are used for vegetation management on the Sequoia. This document is now in draft form. It describes a wide range of environmental consequences resulting from both the use and nonuse of pesticides. Project-level environmental assessments (EA's) will document the decision to either use or not use pesticides on specific sites within the forest. These EA's will disclose site-specific environmental consequences and will define mitigating measures necessary to keep impacts from pesticide application at legal and environmentally acceptable levels.

900 Our vegetation control programs are abysmal if we have to resort to the spraying of chemicals that are so hazardous that they are not allowed to the homeowner .

Most herbicides used in forestry applications are readily available for use by homeowners. A few are simply unsuitable for gardening and are therefore not registered for that use. In no case are the commonly used forestry herbicides so toxic that they are not permitted to be used by homeowners.

1000 I understand that logging companies are responsible for the cost of replanting clearcut areas. The first replanting is not always successful. The taxpayer should not have to pay for each successive planting.

As with any agriculture crop, some mortality of planted trees is expected as is an occasional failure of an entire plantation. Our experience with artificial regeneration shows that technology is available to keep such failures well within tolerable limits as defined by minimum timber growth goals. Because of a relatively low failure rate, and the unpredictable nature of failures, it would not be practical to hold the purchaser of National Forest timber responsible for work that may or may not be needed in the future.

GEOLOGY & SOILS. GENERAL (120)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Is increased erosion acceptable'

Our goals in managing the forest are to maintain the long term productivity of the forest's soils and to prevent any significant reductions in water quality. We are committed legally, morally, and professionally to meeting these goals. Consequently, we designed each of the alternatives to meet these

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goals Some of the alternatives would result in less soil erosion. but all meet our goals of protecting soil productivity and water quality

200 Since the AMN Alternative is much better in terms of soils than the PRF, WFW, or CED Alternatives (Table 4.15), should it be discussed separately (p 4-29)?

Please refer to the next to last paragraph on page 4-29 of the DEIS which states: "Low amounts of ground preparation for reforestation, low amounts of disturbance from timber harvest, and high amounts of prescribed fire produce the positive effects on soil productivity in the AMN Alternative The AMN Alternative has a high likelihood of maintaining long term soil productivity."

300 Is erosion damage done by OHV's acceptable?

We are very sensitive to the potential for OHV use to cause erosion damage That is why we have gone to great lengths to regulate the use of OHV's on the Forest so that the effects are localized and minimized We do feel, however, that we can provide OHV Opportunities without causing unacceptable resource damage

400 Recommended warding change in Management Direction. Chap 4 Water, Soil and Air - Add the following goals Increase water and air quality to high quality sustainable levels through an aggressive program of management and regulatory action Change the following goal 3) Improve stream ecosystem

The first goal for water, soil and air is to maintain and not degrade these resources This should not be changed This section does address improvement of soil productivity and water quality protection In these situations where the resource is not meeting quality standards and/or the opportunity exists to improve the resource quality, the Forest Service has aggressive programs as stated in Section F Forest-Wide Standards and Guidelines

500 Should projects be allowed on slopes steeper than 60%?

We feel that we can manage land steeper than 60% Without significant environmental impacts by use of careful project planning and implementation Our recent experience harvesting timber on the Sequoia NF on lands over 60% has proved this to be the case There are some excellent examples on the Hot Springs R D involving cable logging, broadcast burning, and planting

600 Should new timber roads be returned to a natural condition by the purchaser immediately after use at no cost to the Government?

Indeed where this is possible, this is current policy and practice However, it must be remembered that many new roads are needed after the initial harvest for reforestation activities, future timber harvests, and other Forest management activities Our overall policy is to obliterate unneeded roads at the least cost to the Government possible

700 Will funding be sufficient to provide for the level of watershed protection and rehabilitation proposed in the Plan?

The level of funding available in any given year for any activity is governed by our annual budget which Congress approves For an explanation of the

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relation between costs projected in the Plan and that  
annual budget please see Appendix L Appendix L PEIS.  
may be further assistance

HISTORICAL & CULTURAL RESOURCES, GENERAL (130)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The Native American Heritage Commission is mandated to preserve and protect places of special religious or cultural significance to Native Americans. It has the responsibility of assisting Native Americans in cemetery and burial protection. Should human remains of Native American origin be encountered during the project, we request that the County Coroner's office be contacted. To mitigate potential impacts to California Indian ancestral burials and other Cultural resources during the course of this project, we request that you consult with Indian individuals and/or in the project area.

The Sequoia National Forest has initiated, and will continue consultation with. Native American groups with cultural and historical ties to Forest lands regarding potential project effects. Forest policy requires that the Coroner's Office be notified if human remains are discovered on Forest lands. The Coroner's Office, in turn, is responsible for determining the age and ethnicity of the remains and then notifying the Native American Heritage Commission, if necessary.

200 Certain areas of the Sequoia NF show an important living part of our National heritage that should not be allowed to disappear from the American scene. Present day cattlemen continue to operate and manage their livestock in much the same way their ancestors did over one hundred years ago. They use the same cow drives and inhabit the same cow camps with very little change. Use of mountain meadows by cattlemen has occurred for over one hundred years. Summer range is essential for year-long operation, and ranchers depend on this grazing to support their herds during the summer. Surrounding communities depend on dollars generated by a healthy cattle industry. This living example of our western history should be preserved. Historical buildings associated with stock use, early packing use, and Forest Service use should be maintained and preserved as a living part of our heritage for future generations to see and use. Whatever plan is implemented by the Forest Service, it should live within budget limitations. The cost of the final plan should be reasonable from the point of view of the public who has to live within budget restrictions. There needs to be some assurance that money obtained from forest uses will be put back into the forest and that as the Sequoia NF proposed budget is cut, uses such as recreation and wildlife do not suffer because of over emphasis on commodities.

The Forest is committed to the preservation and management of all cultural resources, including those historic sites associated with the ranching industry. All project areas are inventoried for cultural resources prior to project initiation. If cultural resource sites are found, they are recorded and appropriate protective measures are devised in consultation with the State Historic Preservation Officer. The matter of budgets has been a concern as the Plan has been developed. The Final Plan represents a balanced program for which budget projections have been developed by the computer program FORPLAN. These estimates are based on a number of factors. In actuality, the budget process is very complex. Appendix L has been added to this FEIS and contains a discussion on the budget which will help one's understanding of this matter.

300 Surely the example of the mining companies in the lands of the Navajo and Hopi cannot be brushed aside when considering the current proposals for the future of the Sequoia National Forest.

Cultural resources and Native American concerns are fully considered in project planning as required by law and Forest Service policy.

400 The inventory of cultural sites should *be* expanded as rapidly as availability of manpower and finances will permit. Vandalism occurs. Often end permitting more OHV use will no doubt aggravate the problem.

All proposed project **areas** including **OHV** trails are inventoried for cultural **resources** during the project planning phase. At that time the potential direct and indirect effects of the project **on** cultural resources are considered and mitigative **measures** devised. Vandalism of cultural resource sites is recognized by the Forest as **a serious** management problem. Unfortunately, the only sure way to eliminate vandalism is to eliminate public **access** to Forest lands. This is not, and never will *be*, an option. The Forest will continue to educate the public about the importance and fragility of their cultural **resources**, while prosecuting vandals as required by law.

500 Understand that some of our western heritage must be preserved along with the environment. Allow for areas where ranching, grazing and **some** mining may continue. Recognize that 100% of the population uses wood and wood products and that timber harvesting **is** necessary and **must** come from **someone's** forests. Use alternative management techniques such as mutually agreed upon zoning restrictions on developed private property **near** sensitive areas. Understand that budget and manpower restrictions **are** going to require **a** broader base of support. Seek out private and public communities that **are** using and living near the forests. Finally let us do all of this by creating citizens committees made up of local leadership with public and private interests. Include them in helping you determine the best environmentally sound management practices **for** public lands. This will create understanding, cooperation and **a** resolve to support and **care** for the forests by all people. I believe that this is one way to put democracy back into the process of public land use and planning.

Thank you for your comments. Certainly communication will be **an** integral part of successful long-term management of the Forest. We routinely work with many people who have an interest in the Forest. We are always available to work with anyone who has a need involving the Forest.

600 Archaeology. Regarding timber sales - I believe sale administrators **are** in the best position to determine the significance of archaeological resources within a sale **area**. They should have the responsibility for protecting and enhancing archaeological resources while keeping **a** timber sale viable and **cost** efficient. **For** this reason, I believe all sale administrators should be certified. I would like to **see** the CRM program kept **as simple as** possible and on the district level. It **has** become **a** tremendously complex and time consuming program.

Actual determinations of significance **can** only be made by qualified cultural **resource** professionals. **This** authority **is** delegated to the Forest Archaeologist to **ensure** full consideration of cultural resource **values** as required by law and Forest **Service** policy. Timber sale administrators do work with the CRM program. They are certified, receive training relating to CRM, and play an important part **in** protecting these resources. The Forest Archaeologist works with these people, and, as with all our programs, efficiency to reduce costs is a consideration.



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700 Cultural Resources - Black Mountain has significant cultural importance to members of the Tule River Indian Reservation. The Tule River Tribal Council should be consulted if any land management activities are planned in the Black Mountain area on the Tule River Ranger District.

We appreciate the importance of cultural resources to the members of the Tule River Indian Reservation. The Forest is committed to the preservation and management of all cultural resources prior to project initiation. If Cultural resources are found, they are recorded and appropriate protective measures are devised in consultation with the State Historic Preservation Officer. This step would involve communication with concerned Native Americans, as appropriate. One way for the Tribal Indian Council to keep abreast with activities on the National Forest is to receive a copy of the Forest Quarterly Planning Schedule. This is available upon request.

ENERGY, GENERAL (140)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The Plan does not contain positive guidelines for facilitating the production and transmission of electric energy. Prescriptions fail to discuss hydroelectric opportunities in any detail. The process must contain a comprehensive analysis and evaluation of energy production opportunities.

The development of hydroelectric power has historically been done by private enterprise. Where, when and how this is done is beyond the scope of National Forest management. Accordingly, we have not gone into detailed analysis, but have noted (see the energy paragraph in Chapter 4, Plan, under Future Condition of the Forest) that hydroelectric projects are expected to increase. Leaving the entrepreneurship in private hands, we need to remain receptive to proposals, amenable to mitigation (where MORE needed), and not preclude development through administrative actions that ignore hydroelectric possibilities.

101 Zone C does not allow authorized OHV use by utility companies (to maintain their facilities).

Zone C has been eliminated and Zone B contains the provision that incidental access off designated roads and trails will be authorized by permit.

LANDS, GENERAL (150)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 " individual landowners rights (should be protected in any new use of wilderness designation "

Public input is now regularly sought on such decisions. Additionally, the individual should contact his Congressional representative and provide input.

101 " all inholdings should be acquired.. ."

Many inholdings on the Sequoia were subdivided many years ago and are fully developed. Some contain small communities. Others are not available from the landowner. We will continue to pursue those opportunities to acquire inholdings as they become available, are needed, and as Program limitations allow.

102 When the USFS places wilderness at the feet of developed communities, the FS adversely affects the people in those communities. If citizens affected could be involved, it would avoid 3 inconsistencies: 1) threatening citizens rights and the right to own property, 2) having the FS involved with planning on BLM land, and 3) tying up more of the South Sierras in wilderness because this use subverts the rights of citizens and property owners of Kennedy Meadows.

It is important that the respondent understand that the Forest Service role in wilderness establishment is one of recommending boundaries and that Congress actually establishes wilderness via legislative action. In some instances, Congress chooses boundary locations other than recommended by the agency. Such was the case with the 1984 California Wilderness Act. In all instances, public involvement is an important part of the process. The RARE II effort by the Forest Service (which established PS wilderness recommendations for all National Forest areas) had extensive public involvement. Similarly, there was extensive news coverage as Congressional action commenced, and many publics were involved with members of Congress as actual wilderness legislation was developed.

The Forest Plan recommends a 12,500-acre addition to the existing Dome Land Wilderness (referred to by the respondent as the Rockhouse Wilderness). This proposed addition is a parcel of BLM land without private land, roads, trails, or other improvements located in terrain that currently receives very little use. It does provide a logical addition to existing wilderness, and, in our opinion, would not adversely impact citizens or private property owners. Since Kennedy Meadows is located some miles away, we do not perceive a threat to folks there.

Throughout the planning process, the suitability for and the consequences of wilderness designation have been a consideration. The Preferred Alternative is designed to produce a balanced level of goods and services from Forest land. The existing 264,071 acres of wilderness will be sufficient to supply a complete range of opportunities therein. No additional NP wilderness is recommended.

Regarding why the PS is involved with BLM land -- the BLM and FS, recognizing 1) the responsibility of the BLM to analyze the Rockhouse Study Area for wilderness, 2) its relationship to the adjacent PS Dome Land Wilderness, and 3) the need for efficiency in planning, agreed that the Forest Service would take the lead in this study effort and include it in its Forest Plan evaluation. Similarly, it was expeditious for BLM to take the lead on another study (Cypress) which included a portion of the National Forest. This agreement limits responsibilities only to planning and coordination leading to a recommendation. Management responsibilities remain with the individual agencies. Should any recommended portion of the area be designated

(150)

wilderness. we envision that it will be necessary for both agencies to jointly develop management needs and together establish a cost-effective program of greatest benefit to taxpayers.

103 "I would like to see consolidation Of USPS lands. "

We have no technical response to this expression of personal observation

105 Areas where insufficient data exists to determine productivity were included in the land base . Economic suitability calculations were based on inflated productivity estimates

The productivity in the model was selected to facilitate the analysis A more detailed analysis Would have complicated the model to the point it would not function To change the premises of the model at this point now could result in delaying the process indefinitely At the end of the planning decade. the plan will be reviewed and revised as needed

106 If lend uses are not an issue. Why such strong statements to reduce these uses? Table 2-31 (2-207 DEIS) fails to address the consequences of the actions on existing land uses Without this discussion and analysis. there is no basis for impact analysis in Chapter 4 and p 3-69 of the DEIS

The number and complexity of special-use permits is not of a magnitude to classify this process as an issue. and initial scoping with the public failed to reveal an "issue" That is not to say that an individual use is unimportant to the permittee. but those concerns are dealt With in project level environmental assessments The District Ranger seeks specific input from concerned people when a timber sale or other project is proposed adjacent to a use area Additionally. the statement in the Lands section of the Forest-wide Standards and Guidelines in Chapter 4 of the Plan does not seek to reduce these uses, but to limit the granting of new authorizations The Statement in Chapter 3 of the DEIS is intended to reflect the reduction of new authorizations and to State that uses no longer valid should be recaptured In that latter respect, uses would be reduced after thorough investigation. but, again, on a case-by-case basis

107 Do you expect those people who live at Chimney Peak to give up their land and homes?

No The Chimney Peak area is Outside the authority Of the Forest Service and is not addressed in the Plan

108 I see no evidence of a land adjustment program Landline location activity should be speeded UP and the right-of-way program needs strengthening and more positive action

The Lands section in Chapter 4 of the Preferred Alternative contains the philosophy of landownership adjustment. rights-of-way and boundary marking and posting Financing for the first two items has been virtually nonexistent in recent years Accordingly, detailed plans in these areas are not needed at this time. actions are taken on a Case-by-case basis Funding for land line location work has also begun to fall off and this program. funded largely by timber sale activities. will continue to slow down

(150)

109 Please keep me informed as to proposals to designate land as wilderness adjacent to my land The South Fork must be designated "recreational" with access to all The ski resort on Sherman Pass is a plus to this area

Your name has been placed on our mailing list. but we have no technical response to your personal observation.

110 Designate corridors for future rights-of-way (Chap. 5 Management Direction. Forest-wide Standards and Guidelines).

Not able to find the referenced items Suffice it to say that the Sequoia is so located that utility corridors are not (and have not been) needed Existing ones are located many miles to the West and east of the Forest in more easily accessible land

111 I support the efforts to move the Scodies to the BLM

It requires Congressional action to transfer public lands from one agency to another Such action. then. is outside the scope of this Plan.

HYDROELECTRIC DEVELOPMENT (151)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Dams are Outweighed by the importance of preserving the natural environment

This statement of opinion is too general for a specific response.

101 Opposition to the construction of Rodgers Crossing Dam was expressed for the following reasons. a) the potential loss of deer wintering habitat, peregrine falcon and golden eagle, b) the river's popularity for Wild trout fishing. the irreparable damage to the fishery. e) a wild river would be lost, d) water sources within the Park must be kept to protect wildlife and men. e) the dam is environmentally and cosmetically unsound. I want to preserve the river's natural beauty, f) wealthy developers are proposing another dam on the Kings. g) an area that provides hiking. white-water rafting and Other valuable Outdoor recreation activities as well as a unique environment will be destroyed; h) it is rare to find a wild river accessible by car with good camping Sites, clean for swimming and boating and can be enjoyed by all ages and physical abilities, i) it is an ineffective Site unneeded for flood control, j) it needs increased protection and should receive wild and scenic designation. k) protective measures Should be taken and the fishery upgraded. l) It would ruin the wilderness of the Kings River. m) power production would be unreliable

Legislation to classify the Kings River under the Wild and Scenic Rivers Act, and to designate a Special Management Area within the river canyon has recently been signed Under provisions of this new legislation. no federal lands may be used for the construction of any dam or diversion within the boundaries of the Special Management Area without Specific authority of the Congress.

(151)

103 Water releases from Pine Flat Dam should be controlled so as not to kill all the trout with warm water

The Pine Flat Dam is not on National Forest Service land and, therefore. Control of water releases are not within the Sequoia National Forest's scope of authority.

105 Virtually every stream draining the Sequoia is dammed and its water diverted to bring life to a parched semidesert scrubland. ". Costs in water quality are high and exceed any. potential benefits "

We have no technical response to this personal observation For the record, there is only one dam inside the Sequoia National Forest boundaries. that being at Hume take on Ten Mile Creek The larger dams the respondent appears to be referring to (i e Pine Flat) are all outside of the National Forest and beyond the scope of this Plan

106 (Kings River) With increased population and the resulting increased demand for quality water-related recreation forecasted. there is a reasonable expectation that Without protection this unique resource will be destroyed by water development

See 101 Above

107 No hydro-power facilities should be built unless no adverse impacts can be proven. or unless all local. cumulative. and compounded impacts are mitigated

Proposals for hydro-power development require an In-depth environmental study to be prepared for the Federal Energy Regulatory Commission In addition. the Forest Service requires extensive public input and performs a review of the environmental study

108 The Plan Should indicate a commitment to require suitable instream flows below any new (FERC) projects

The Forest Service and California Department of Fish and Game review all new hydroelectric Projects and require adequate downstream flows to protect the natural resources (riparian. fisheries. etc ) as well as enhance recreational opportunities

109 Is the few dollars the Forest Service stands to make on grazing and hydroelectric permits Worth the immense harm these practices bring to wildlife?

The Forest Service mission is to provide a mix of activities which allow both use and protection of Forest resources What we strive for is wise use of nature's bounty with minimal impact on the environment

110 A dam on the Kings River is supported for the following reasons a) flood control is necessary, b) it needs to be completed. c) water makes the Valley thrive. d) it is needed for irrigation. e) it California can use the electricity and the benefits outweigh the costs

See Comment 101 Above

111 The Forest Service decision to defer any recommendations for Rogers Crossing Dam Project on the Kings River until the KRCD study is completed is supported for the following reasons. a) it makes sense to store water above the immediate needs. water supply is vital to the economy: water storage will help us achieve a better water supply: development of water storage is essential to the survival of the San Joaquin Valley. b) with the overdraft

See Comment 101 Above

of ground water. it is important to develop new facilities, the South San Joaquin Valley is faced with a serious groundwater Overdraft problem that is going to get a lot worse, releases from reservoirs are more Cost effective than ground water for irrigation; c) we need to develop all reasonable sources of water supplies. each river in the Sierra is going to have to develop additional water storage facilities; d) We need conservation as well as alternative water supplies. e) agriculture is dependent on future decisions being correctly made by those empowered to do so, f) we need more energy. g) a decision before a study would be inappropriate.

5

112 Hydroelectric projects Should be prohibited from all tributaries, streams, and forks of the Tuolumne River; any river or stream feeding into the Tuolumne River, and the North Forks of the Stanislaus and Mokelumne Rivers

The Tuolumne, Stanislaus, and Mokelumne Rivers are not located in the Sequoia NF and, therefore, are not within the scope of this Plan

120 Opposition is expressed toward the installation of an Uneconomical hydroelectric plant that would dewater the South Fork of the Kern River for two miles and create a nuisance of noise and environmental degradation of the Forest and the Dome Land Wilderness It Would dewater the South Fork through our property and the Kern River Wildlife Sanctuary, including the hamlet of Tubatulabel Indians located on the Sanctuary

The hydroelectric project in question is currently under consideration by the Federal Energy Regulatory Commission (FERC) Following environmental studies, they will issue the license to construct the plant if their findings are favorable If the project is constructed, environmental factors will be considered Minimum flows will be maintained for fish and wildlife needs

121 The Hobo project intends to dam up the Kern River This would not be fair to all those folks Who Want to enjoy the river for recreation damming the river will devastate this beautiful run. If this project goes through. the people Of Calif will lose another beautiful whitewater river, the only such river in close proximity to the Los Angeles Basin

To date. an Application for License for a Lower Kern River dam project has not been Submitted to the Federal Energy Regulatory Commission (FERC) A preliminary Permit had been Issued, however. it will expire in December of 1987 This permit does not authorize project Construction, nor does it commit FERC to the issuance of a license

If an Application for License is Submitted to FERC. they will publish. in the Federal Register. and in local newspapers, a Notice describing the project and requesting comments from agencies and the public The Forest Service will be actively involved in providing input since the proposed location is on NF lands

OTHER SPECIAL USES (153)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Make some land available to present holders of (special use) permits (for recreation residences) that (now) have buildings

The main focus of landownership activities in the Forest Service is to consolidate public lands in the backcountry and private lands around urbanizing areas. Creation of 'new' inholdings completely surrounded by public land is not considered to be in the public interest.

101 I wish to see commercial businesses reduced and limited

Commercial enterprises on public land are authorized by permit only and are perceived by the Forest Service as providing for a specific public need. Limitations and reductions can be considered if the need for the enterprise becomes lessened.

102 Can the Forest Service provide funds and/or influence to facilitate the improvement of this road (Nine Mile Canyon) by Inyo County?

This road is part of the 'Forest Highway System' and is scheduled for reconstruction in FY 88. Funds will be provided and the work done by the Federal Highway Administration.

103 The partnership between the Forest Service and the private sector should be encouraged

We have long held the viewpoint that much of the recreation on National Forests can be provided by the private sector. We see no reason to deviate from that stance.

104 The frequent references to beneficial exploitation by local business and governments reflects an apparent intent to patronize those who support a consumption-oriented plan

We have no technical response for this personal opinion. The Plan is prepared to respond to the various Federal laws governing the actions of the Forest Service. It is designed to serve all the people and care for the land.

105 We feel that a clear statement needs to be made as to the fate of existing special use permits. VIS page 3-69 of DEIS which says that an emphasis will be placed upon reducing commitments of public land for non-public land uses

Concerning non-recreational special uses in the Lands Section of Chapter 3, the statement of the DEIS intends to convey the (1) new uses will be carefully screened for validity before public land is committed to its use and (2) that existing uses, no longer considered valid, should be phased out and the use of the land recaptured. In practice, most of the existing uses still retain validity, however, for those that do not, the option to terminate must be preserved. This has been our practice in the past. No major change is contemplated.

106 Stock outfitters and groups such as Pyles Boys Camp must teach and demonstrate by their actions the proper way to dispose of human waste and to treat other campers. Perhaps a little education of the staff would solve several problems at once

We have no technical response to this worthwhile suggestion. However, the Sequoia NF is initiating efforts to address these problems.

OCCUPANCY TRESPASS (154)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 I think the Valley View and Claraville **areas** "possess the potential to affect the management of adjacent public lands" **and** therefore, should be included as an Urban Interface area

This is probably true **for** some future decade but not for the next 10-year planning period. This Plan will be updated periodically or revised based on future events. Should either **area** become more intensively developed, a revision to the Plan would be apropos.

101 **Some** forest land should be made available to private ownership when the land is better maintained by the private owner

Although the question of when 'land is better maintained by the private owner' is arguable, the basic philosophy of Consolidation remains the bulwark of our land ownership adjustment policy. Where opportunities to consolidate become actionable, certain National Forest System lands could be exchanged to the private sector.

102 Your **assessment** of foothill community cohesion indicates that, other than speculators, Old and new agree upon preservation of environmental and social values, yet your interpretation erroneously emphasizes divergence. I completely disagree with the statement that firewood **is** the most important factor in Forest living **for** retirees.

The existing wording did not intend to emphasize divergence, but we have reworded the section to read as follows: "Some of the values of newcomers, **A few newcomers are** little more than " Note that newcomers **are** separated into speculators and Urban refugees, with the latter group more closely aligned with the old timers. Therefore, the **few** speculators **are** the ones meant to be the people with divergent concepts. The **first** sentence of the next paragraph is also revised to reflect the general agreement but discussing the minority divergents, thusly: "The minority of speculators have strained the old "

103 The urban interface should be **more** specific as to key problems and their solution under the Plan. Also, what powers do you possess to prevent adverse damage to forest resources **from** mining activities.

We have added more **specific** discussions of the problems associated with the urban interface to help clarify the misunderstanding.

As to the mining question, there **are** several safeguards to **minimize** adverse environmental effects. Primarily, a claimant needs to file a Notice of Intent to Operate with the District Ranger. In this Notice, the Claimant outlines the **major** activities that are planned. If they **are** potentially damaging to the environment, the District Ranger requests an Operating Plan, which then details the scope, type and intensity of the planned work. Mitigation **measures** will be agreed upon and a bond posted before the Plan is approved or work begins. Thereafter, the activity is monitored **for** compliance and shut down if not within agreed upon parameters. After the mineral is removed, the Site is rehabilitated to **minimize** future environmental degradation. The miners have a right to develop the mineral resource of the nation and they have agreed to work with the Federal Regulations.



LAW ENFORCEMENT. GENERAL (165)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Recommends that target shooting be allowed only in specified areas and that it be carefully controlled

Current regulations prohibit shooting from roads and near places of habitation Plans are to monitor the activity and add additional restrictions if public Safety is compromised or serious conflicts develop

200 An increase in the level of law enforcement is desired to control OHV use

An increased public education effort combined with additional law enforcement training for Forest Service employees will be needed to deal with many types of law and regulation violations

MINERALS & MINING. GENERAL (170)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Wild and Scenic designation (along the Kern River Fault) Would prohibit future mining claims " . stating that there will be no mining expansion in the next ten years is nebulous and not so'"

Wild and Scenic River designations do withdraw an area from location under the mining laws This strip of river was Included in recently enacted Kern River Wild and Scenic River legislation

101 The Conservation Alternative proposes that the Statement on P 4-4 ("encourage exploration and development of mineral resources'.) be changed to read "The Forest Service will allow areas to be Studied " Also. specific sites -- should be studied to determine whether (1) adequate mineral resources exist --- to yield an economically viable operation. (2) each site is environmentally sensitive and (3) unique scenic. wildlife, roadless and recreational qualities would be lost to mining

These proposals are not legal and we cannot effect them The Federal agencies do not "allow" mining The Mining Law of 1872 gives the right to prospect and mine on public lands Also. we do not "study" the areas. a mining proposal is developed by the industry They consider the economics end the Forest Service works with them to make the operation as environmentally benign as possible and mitigating whatever cannot be

102 The National Forest should not be in the business of promoting its resources...or encouraging mineral activity.

We have no technical response to this personal opinion However. National Forests do not "promote" mining The Mining Law of 1872 gives citizens the right to prospect and mine on public lands

103 Standards of mining that assure protection of ground and surface water. recreation. and other values need to be included in the DEIS

These standards are included in the approved Operating Plan for each mining Operation The point is well taken and is done on a case-by-case basis

104 One of the largest potential tungsten producing areas in our state was eliminated by the California Wilderness Act of 1984. Many of these natural resources are threatened by wilderness designations . We are now importing a large percentage of minerals and metals from foreign countries . This is one reason defense budgets are so enormously high

We have no technical response to this personal opinion

RANGE, GENERAL (180)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Livestock grazing should be maintained at current levels based on the benefits received from the program and present economic conditions don't warrant increased dollar expenditures. Benefits include products produced, employment, grazing fees, possessory interest tax, fire hazard reduction, range improvements that also benefit wildlife and have responsible individuals on the land to detect law enforcement problems.

The Forest Service recognizes the full range of benefits received from proper livestock management. The Preferred Alternative for the Final Land Management Plan maintains existing 1986 livestock numbers with local adjustments being made based on fluctuations in feed conditions. Management emphasis is based on ecological principles aimed at reducing conflicts with other resources and uses. Conflicts will be addressed on a case-by-case basis using applicable research as it becomes available. Range improvements will continue where cost-effective to reverse deteriorating range condition, maintain livestock numbers and adequately distribute livestock. Changes, if needed, will be addressed in the updating of allotment plans.

200 Grazing should be decreased because livestock and improvements destroy visual quality.

Visual quality in the National Forest System is measured by natural variety in the landscape and is described in terms of the visual elements (form, line, color, texture). Activities which reduce visual quality are those which introduce unnatural or contrasting elements. Although there are exceptions, grazing is generally a low impact activity that rarely disrupts the visual elements to any lasting degree. Grazing can, and does, occur in some of the most scenic areas on the Forest - the mountain meadows. Meadows naturally appear brown in late summer and fall as plants reach maturity. Grazing reduces the height of meadow vegetation during this period. However, this is restored to a more natural appearing state by the following spring.

210 Grazing should be reduced or not increased because of 1) adverse environmental impacts (i.e., wildlife habitat, native plants, fisheries, water quality, erosion and oak regeneration), and 2) beef consumption is declining.

The increases in livestock numbers proposed in the DEIS and Draft Land Management Plan were based on the 1980 RPA Study. This study indicated beef consumption was expected to increase throughout the planning period. The President's statement of policy (3/30/81) directed National Forests to meet their proportionate share of increased demand for range grazing (46% increase by 2030). This increase in demand did not materialize. Beef consumption has declined since that time. Present information indicates this decline may be leveling off. The Preferred Alternative for the Final Land Management Plan holds livestock numbers constant with the 1987 levels for the first decade (66,000 AUM's of term grazing permits plus 4,000 AUM's for recreation stock and temporary grazing permits based on favorable forage conditions). Local adjustments will be made.

(180)

based on fluctuations in forage conditions. Management emphasis will be based on ecological principles aimed at reducing conflicts with other resources and uses. Conflicts will be addressed on a case-by-case basis using applicable research as it becomes available. Any increases identified through the remainder of the planning period will be based on the cost-effective treatment of the chaparral ecosystem. These increases will be reevaluated in future updates of this Plan.

220 Grazing should be reduced or not increased because the Forest Service is not recovering costs

Grazing fees and annual Forest service budgets are determined by Congress and are outside the authority of this Plan. The grazing fees from 1966 through 1985 were based on a formula based on the cost of livestock production and red meat prices. In 1986 the Administration held grazing fees at 1985 levels

230 Grazing should be decreased or eliminated in Wilderness areas because it destroys wilderness values and is not compatible with human use

Livestock grazing in wilderness is authorized Under the Wilderness Act Of September 3, 1964. Elimination of grazing from wilderness is outside the authority of the Forest Service and this Plan. Livestock management can, however, be modified in areas of identified conflict

240 Grazing should be reduced, controlled or not increased in mountain meadows to reduce impacts on other resources.

Riparian areas and meadows are managed under multiple-use and sustained yield principles with emphasis on maintaining and improving meadow ecosystems and water quality. Grazing is allowed where the meadow ecosystem or water quality will not be significantly affected. The Preferred Alternative for the Final Land Management Plan does not identify any increases in livestock numbers for mountain meadows. Conflict between grazing and other resources will be addressed in Allotment Management Plans and resolved on a case-by-case basis. The Forest is presently preparing meadow management standards and guidelines. Grazing, as well as other activities, will be evaluated and monitored. As additional feed is produced on transitory range and livestock are distributed to utilize this feed, use on meadows is expected to decline.

250 Grazing should be decreased because of Conflicts with recreation uses and/or recreation economy

Areas where recreation is the management emphasis, livestock management will be modified where in direct conflict with those recreational uses. Livestock numbers Forest-wide will be held at 1986 levels. Local adjustment will occur based on conflicts and feed conditions

260 Grazing should be reduced or not increased because mulch requirement is inadequate to provide for wildlife needs

Mulch requirements are based on 30 years of research from the San Joaquin Forest and Range Experiment Station. This is a Regional standard. Low mulch

(180)

levels tend to favor forbs the following year High mulch levels tend to favor grasses. The optimum from both the wildlife and livestock standpoint is to have a spatial mix of these successional stages. The 400 pound level is a minimum acceptable level and, for the most part, will not be reached except in isolated cases

270 Grazing should be reduced or not increased because livestock are not monitored and/or control is inadequate

The monitoring section of the Plan has been changed to reflect the grazing monitoring that occurs Allowable use factors are set based on applicable research and condition of range Changes in condition are noted and livestock use is adjusted accordingly. Annual utilization inspections determine if allowable use is reached or exceeded In areas where lack of livestock control is a problem. conflicts will be addressed in the allotment management plan

271 How can decision be made to increase livestock grazing if range condition has not been analyzed

Range condition is determined through range analysis which is part of the allotment management plans (AMP's) AMP's are tiered to the Forest Land Management Plan

280 Grazing Should be decreased because it promotes desertification

The primary cause of desertification is lack of precipitation to adequately sustain plant life Grazing becomes a factor when there is an absence of this precipitation This is not the case in the Sequoia National Forest

290 Grazing Should be reduced or not increased  
No Reason Given

Since your comment gave no reason why you feel grazing should be reduced we can not give a technical response to your expression of opinion

300 We oppose the plan's recreation oriented approach shown by the expanded "developed recreation" areas and the priority of recreation over grazing when there is a conflict between the two The large areas set aside for "developed recreation" conflict with grazing and do not benefit the public or promote stability on the Forest Cattle grazing is compatible with and beneficial to many of the other uses of the Forest We pay our fair share in fees. land management and improvement, therefore grazing needs to be considered and accommodated in all areas of the Final Forest Land and Resource Management Plan

Thank you for your Comments We have tried to achieve a balance between different user groups in the Forest Plan The management of the National Forest is based upon the Multiple-Use Sustained-Yield Act of 1960 that states in part that the Forest "shall be administered for outdoor recreation. range. timber. watershed and wildlife and fish purposes" Forest Administrators are, therefore, obligated to the American public to manage the land for these multiple uses

Grazing needs will continue to be recognized

310 What impact will this plan and bill (Wild and Scenic Rivers Bill) have on those which have grazing leases with the Forest Service and the movement of cattle across the area covered by the bill?

The Forest Plan will initiate little change in the grazing of this area The Wild and Scenic River Bill which affects parts of the Kern River is outside the scope of this Plan. but little additional effect on grazing is anticipated

RECREATION, GENERAL (190)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Facilities and Opportunities should be provided for handicapped users

Reststops/restrooms should be provided for handicapped users Wilderness designation makes areas unavailable for handicapped/elderly/very young Don't close off all the 4x4 trails in the high country Remove part of Wilderness at Kennedy Meadows to allow access.

200 I am opposed to increases in recreation users fees

300 I am in favor of increasing fees for recreation users, but don't implement a fee system which has administration and collection costs equal to fees collected. be wary of fee systems that will increase "on-compliance with visitor permit systems. etc , Recreation doesn't pay its way and therefore user fees should be implemented. Incorporate Golden Age/ Golden Access Passport to provide reduced fees for elderly/handicapped, ORV users should pay to use designated ORV areas. Would like to see entry fee

400 Recreation use and development should be emphasized on Sequoia National Forest. More camping, cabins and trails are proper. more campgrounds Campgrounds should be maintained at high levels (Standard) to avoid deterioration and health and

Elderly and handicapped standards will be considered during rehabilitation. reconstruction and construction of recreation facilities Barrier-free trails

will be developed near some areas (reference Plan Chap 4 under General Developed Recreation Sites) This will include consideration for restrooms and/or reststops

Partly in recognition that some Forest users cannot hike and require vehicles to get around, the Forest Plan is not recommending any more wilderness areas within the Sequoia National Forest: and 4x4 trails will remain open where resource protection measures can be assured and where this type of use is lawful wilderness is designated by Federal Law Withdrawal of portions of presently designated wilderness areas requires Congressional action This is not within the scope of this Plan.

We do not have the authority to charge recreation user fees except for campgrounds which provide certain specific facilities and services (as specified in the Land and Water Conservation Fund Act [L&WCF]) or reservation fees for instances where only limited permits are available Campground fee rates are adjusted to come in line with costs, to be commensurate with those fees charged by other agencies. and to reduce public competition with the private sector Any changes in the LhWCF Act or additional user fees would require new Congressional legislation and, ultimately, Presidential approval

See #200 above

Use of the Golden Age Passport by persons over age 62 and the Golden Access Passport by disabled persons is currently part of our fee process, providing a 50% discount to passport holders where recreation use (camping) fees are charged

Recreation development and facility expansion in public use sites will be considered on the Forest These will most likely be where new water developments occur, where existing water-oriented sites are being overused and to facilitate wilderness

safety problems Eliminate self service. emphasize developed site management. Recreation is important to local economies

access (see Plan, Chapter 4 under General Developed Recreation). Expansion in the number of recreation residences (cabins) is not scheduled. Management direction is to maintain all developed sites over time at a high standard level which will eliminate the self-service operational level (see Plan, Chapter 4 under General Developed Recreation). Our ability to achieve this will be a direct function of our budget. Therein, a lower standard of management (and possibly self-service) may be appropriate, particularly during low use periods. We agree with the statement that recreation is important to local economies

500 Timber management should not destroy recreational opportunities and facilities. The decision to retain/expand/create campgrounds and recreational developments should be based on recreation demand and objectives, not on timber objectives. Present Net Value is greater for developed recreation than for timber management. Campgrounds such as Troy & Fish Creek in the Commercial Forest Zone should be shown as CF3 rather than CF7. Trails have been obliterated by roads, clearcuts, and slash, slash should be cleaned up and trails re-routed or not displaced by mads.

Recreation demand has played a key role in the decision process for the amount of recreation development provided on the Forest (see EIS, Chapter 3, Recreation). Facilities to ensure meeting this demand will be continued.

Existing recreation facilities within the CP7 Management Area have been reevaluated and placed under the CF3 Management Area in the Preferred Alternative. As such, they will be treated as inclusions and maintained and rehabilitated compatible with recreational demands and objectives. Silvicultural prescriptions will be designed to protect recreational and visual needs. Dispersed recreational opportunities could be enhanced.

The Trails section under Recreation of the Forest-wide Standards and Guidelines in Chapter 4 of the Plan directs the implementation of mitigation measures, including reconstruction/relocation of trails where other management projects eliminate or alter portions of the long-term Forest trail system. This will help to ensure that trails are not lost as a result of other management activities.

600 I am opposed to commercial development of recreation facilities and activities by the private sector, including concessionaire campgrounds

A part of the overall direction of the Forest Plan (Forest Goals, Chap. 4) is to "encourage investment of private risk capital for development of appropriate facilities and services on National Forest System lands." Recreation service and facilities such as outfitter-guiding, resorts, campground concessionaires, etc. are examples of activities that could be evaluated as to who (public or private) could provide the best services, depending on existing and anticipated budgets, experience with the activity and the ability to perform over time.

(190)

This will require careful evaluation. The private sector **has and** will continue to play an important role in the overall scheme of recreation on the National Forest.

700 you need to give thought to seeking locations for a very significant increase in the number of traditional. USPS style small, dispersed. recreational sites.

Dispersed recreation is emphasized in the Forest Plan As **such**, the Forest will be working to help identify and publicize information about recreation opportunities for a wide range of users Camping in undeveloped locations is permitted on the National Forest An increase in use of undeveloped occupancy spots is anticipated.

800 Tahoe N.F publishes a quarterly bulletin which details major projects proposed The Sequoia should

The Sequoia National Forest develops this information on a quarterly basis also, and it is available on request

900 Serious consideration must go into providing "on-motorized. dispersed forms Of recreation on a year-round basis

Emphasis in the Preferred Alternative is on dispersed Opportunities. The entire planning area is open to nonmotorized forms of recreation Wilderness are open to only nonmechanized form of recreation. Recognizing winter snow precludes use (and access) in many areas. the Plan also provides for Cross-Country skiing. recognizing the need to segregate this use from oversnow vehicles (see Plan. Chapter 4, Nonmotorized Recreation)

1000 We support the Vision Statements concerning recreation (1-1) and suggest an addition "Enhance public knowledge of forest management through visitor information, especially by showing examples of successful management practices

One of the Forest goals is to "provide interpretive end orientation services and instruction with emphasis on resource use and environmental quality" (Refer to Plan. Chap 4 under Forest Goals) We feel this provides the emphasis requested by the respondent

1100 Increasing the quality and variety of recreation experience will hardly bring about reduction of conflicts between users.

User conflicts should be reduced by increasing the quality and Variety of reerection experiences within the Recreation Opportunity Spectrum (ROS) framework This ROS framework will aid in the systematic provision of diverse opportunity settings that build to different styles as well as kinds of activities (Refer to Chapter 4 under Recreation Opportunity Spectrum) Further. use of various visitor information techniques to help people know what to expect will also help decrease Conflicts among users

1101 Roads should be held to the minimum necessary for timber management Roads unused for this purpose should be abandoned

Road construction in the Sequoia National Forest is reactive to resource management activities. various intensities of road construction are presented throughout the FELS alternatives depending on the management emphasis Please see Forest Service Roads, #501 for a discussion of abandoned roads and road obliteration

<p>1200 What will be the nature and purpose of the auto tours?</p>	<p>(190) The auto tour mentioned in the Plan. Chap 4 Under Resource Direction refers to self-guided auto tours on established public roads Scenic vistas, Forest Service management activities. historical sites, etc. could be examples of stops along a self-guided auto tour.</p>
<p>1300 I would like to see a heavy emphasis on wild-life and biological values (interpretation) of the forest along with fishing, camping, hiking, and horse use of the forest rather than the attempt to "brain wash" the public with the "Ahead you will see signs of a working forest" interpretive signs that seem to be designed to diminish public negative reaction to logging</p>	<p>Emphasis will be placed on providing educational and user interpretive services to assist understanding of all resource management programs, including timber management, wildlife and biological values. These educational and/or interpretive services will be provided through such actions as outdoor programs, self-guided auto tours, interpretive trails, 3-PIA publications, wildlife habitat project signing, etc (Refer to Plan, Chapter 4 under Office of Information and Interpretive Services)</p>
<p>1400 Public Issues and Management Concerns, Chapter 2. Recreation - Where recreational conflicts exist, they should be resolved in favor of minimizing the impact to natural wildlife and visual resources</p>	<p>Where there are conflicts between opposing recreation values or recreation and other resource values (wildlife, timber, etc ), resolution will depend on the management prescriptions for the area, the VQO involved, and the area's ROS objective. Unique values, such as a threatened and endangered wildlife species, will also enter into the resolution.</p>
<p>1500 Management Direction. Chapter 4, Goals Recreation - Add the following goal Ensure that any new recreational Opportunity does not reduce visual, natural wildlife, or wilderness values.</p>	<p>The Plan includes a goal to "Emphasize and facilitate opportunities for recreation in a natural setting" (see Chapter 4) The intent is to minimize impacts on the recreation opportunity by other resources and resource values through the ROS framework</p>
<p>1600 Delete the following goal Encourage investment of private risk capital for development Of appropriate facilities and services on National Forest System Lands Comment this is a National Forest, not a private reserve for venture capital, private investors are not interested in preserving wildlife or enhancing visual quality Their prime motivation is to make money, which is not an appropriate goal for a NF</p>	<p>The goal to encourage investment of private risk capital for development of facilities and services on NP System land is appropriate This is a good way to provide necessary facilities and services for the public when NF budgets are limited or when NF expertise for a particular service is limited (e g , resort developments) The protection of other resources involved in the development and/or operation of these facilities and/or services is handled through the NF special-use permit process</p>
<p>1700 The Plan does not include a Recreation Management Plan for the Hume Lake Basin We feel that a Recreation Management Plan for Hume Lake must be a part of any overall Forest Plan adopted There is likewise no boating management plan or permit system for the Kings River in the Plan. We feel that such conflicts create serious problem or have adverse environmental impacts on the Forest before estab-</p>	<p>The Land Management Plan gives broad management direction or sideboards to subsidiary plans yet to be developed Adopting several individual plans without any philosophical bondage will fragment administrative goals in a more comprehensive plan Plans for Hume Lake Basin and floating on the Kings River, along with several other plans, are called for by the Forest Plan (see Appendix A of the Plan)</p>



lishing an appropriate philosophy of management is to jeopardize the future of the Forest's unique resources

1800 Interpretive Services I would like to see increased emphasis placed on this program. This includes emphasis on campfire programs. bulletin boards, one-page handouts. also direction tours for auto. cross-country skiers. hikers, etc These signs must be easily understood without unnecessary wording and convey our message in a competent. professional manner

1900 Legislation needs to be enacted which returns user fees back to the districts

2000 Management emphasis (and related funding) needs to be directed to those recreation facilities which are located in areas of concentrated recreation use, i e , Kern Canyon. Hume Lake, etc We need to make a maximum effort to get people out of these heavily used sites and get them directed to other less intensively utilized recreation areas, such as the Boole Tree. Chicago Stump. etc

2100 The Draft Plan States that recreation Sites Would be developed during the first and second decades only when new water developments and/or licensing actions occur or when wilderness access could be improved We interpret this to mean that new sites will only be developed with funds provided by project proponents Will the requirement to build new facilities extend beyond project-related recreation?

2200 How will needs for new facilities be met when such needs are not associated with new water developments -- transferring your responsibilities for recreation development onto the private sector?

The Forest Plan provides for a moderate level of emphasis on Interpretive Services, which includes such activities as campfire programs. self-guided auto tours. interpretive signing, etc Subject to budget allowances. all of our programs and activities will be implemented in a competent, professional manner

We agree. however. securing legislative action which returns fees to the Districts where fees were collected requires Congressional action and is not within the scope of this Plan Also see 200 above

Management emphasis is to manage existing sites to facilitate dispersed recreation. to encourage use during weekdays. and to extend the season of use In dispersed areas, emphasis will be to encourage this use

Development of new recreation sites associated with water developments and/or licensing action could be funded by the project proponent or by the government or by both New facilities to improve wilderness access most likely would not be project-related. and would, therefore, be funded via normal appropriation of funds

Demands for developed recreation facilities on the Forest can be satisfied with existing facilities until shortly after the year 2000 (see EIS. Chapter 3, Recreation) However. some sites (particularly those with a water orientation) may reach capacity within the next few years To help deal with this situation, the Forest will be using information media to encourage People to do such things as frequent more lightly Used Sites and/or recreate during midweek periods Operating seasons of some sites will be extended to facilitate people during early and late season periods The Forest will face a challenge to meet demands at water-oriented sites as the planning period continues. but those sites away from water should easily meet demand on all but a few days each year (e.g., major holiday weekends)

2300 We also request that the Plan include a discussion of how the Forest will deal with Overcrowding and resource damage that may result from an inadequate supply of developed recreation facilities

The Plan does not go into this level of detail. It is envisioned that the situation described will be a rather localized situation, and application of a Forest-wide "blanket" statement would be rather meaningless. Our approach will be to assess resource impacts on an ongoing basis (see Chapter 5. Monitoring Plan) utilizing those assessments to help identify problem areas and direct solutions. This is an ongoing process now, and a variety of solutions might be utilized, including such things as encouraging users to access other areas, recreate at different times, utilize quotas or other restrictions, and Constructing additional facilities

2400 Finally, the Plan should explain and specify management practices which will be used to increase occupancy through extended seasons and to enhance dispersed recreational opportunities at developed recreational sites

We plan to encourage more use of our developed facilities during weekdays and off-season periods through effective public information programs (Reference EIS, Chap 3 under Developed Recreation Opportunities). The extension of the use season should provide anglers, hunters and other recreationalists who want to avoid the normal high-use season crowds an opportunity to use recreation sites that would normally be closed. The intent of the statement "enhance dispersed opportunities at developed recreation sites" is to capitalize on helping the public understand what opportunities exist in the area. Via Such actions as signing, providing information and building trails to Outlying areas

2500 The Sequoia is located within easy reach of two major population centers and making its potential for providing prime recreational use of primary consideration with timber and livestock uses secondary

The Forest Plan recognizes its position of serving the needs of large population centers. Growth in these areas including the San Joaquin Valley is predicted to dramatically increase. This will produce notably bigger demands on all the Forest resources. Recognizing the multiple-use mandate of the Forest Service, the Forest Land Management Plan attempts to satisfy these demands through public service, forest conservation, and a balance of Uses

2600 Greater attention should be given to the problems of concentrated use of key areas of so-called dispersed recreation and the problems that result. These areas need greater attention in the management program

Emphasis is being placed on the management of several developed recreation sites and surrounding dispersed recreation areas, recognizing they are areas of exceptionally heavy recreation use (Kern River, Lower Tule River Canyon, Hume Lake and Lloyd Meadows) (reference Plan Chapter 4 Under Recreation). This should provide for the attention necessary to protect resources in these areas

(190)

2800 Management of Sequoia National Forest should emphasize preservation, conservation, and non-destructive forms of recreation. The Forest Service's current and past emphasis on timber production directly conflicts with these goals. Timber Production should be substantially reduced because the Sequoia National Forest serves large population centers where recreational demands already exceed supply and continue to increase. Demand for timber, however, is decreasing. Even now, the Forest Service now has difficulty finding buyers for the timber tracts it has placed for sale at below-cost or break-even prices.

The modeling process described in Appendix B of the PBIS allows all lands to be available for all uses, within constraints imposed by the theme of each alternative. The computer model, FORPLAN, then solves for the particular allocation of resource uses that produces the maximum present net value. In this process nonfinancial values, such as wilderness experience, are evaluated and chosen to the extent that they contribute more to public benefits than do values with a financial return. We feel the Preferred Alternative provides a reasonable balance among the various resources on the Sequoia NP. This is consistent with our multiple-use mandate. The respondent is referred to #502 under Plan Implementation (Subject Code 400) for additional discussion on below-cost sales.

2900 The management theme for semi-primitive non-motorized areas could be greatly affected by the management prescriptions allowed. Although we assume there will be no regulated timber harvesting allowed. Unregulated harvesting could be significant (the Lake Tahoe Basin Management Unit plan, for example, shows no suitable timber in the entire Unit, but allows for an annual unregulated harvest of 44 MMBF in the preferred alternative).

There will be no regulated harvesting in Semi-Primitive Non-Motorized (SPNM) areas. Where SPNM occurs in conifer forest land, the management prescription will allow harvest on an unregulated basis, recognizing that all criteria for SPNM will be addressed in the site-specific environmental analysis completed before such a project is started.

DEVELOPED RECREATION, GENERAL (191)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 I think the downgrading and/or closing of established campgrounds is a mistake. People are going to camp and if facilities for camping, such as toilets, are removed, unsanitary conditions will prevail.

Experience has taught us that, in general, there are fewer sanitary problems at sites where we provide no services than at developed sites where we cannot afford to maintain or rehabilitate facilities to conform with minimum health and safety standards. Therein, some sites that cannot economically meet those standards should be withdrawn. These are generally very small and remote sites with very minimal facilities.

101 I understand other alternatives are available such as Amenity Emphasis, that will allow camp activities and recreation in beauty, wildlife and wilderness to remain, and not disturbed like Tiger Plats has been.

The respondent is referring to a small, lightly used site (Tiger Plat) where some substandard developed facilities were removed several years ago. This site is currently available for use as an undeveloped site. Some alternatives specifically mention evaluation of the potential to convert additional small, lightly used and minimally developed sites to undeveloped occupancy sites. Others, including AMN, are silent. This was a matter of writing style. The reader needs to be aware that as we strive to provide for public needs while being efficient with available funds, this action may be investigated under any alternative.

(191)

200 The forest personnel are doing a very fine job at maintaining the campground and the roads

Thank you for your kind statement. This should continue under this Plan

300 How are existing destination sites to be managed cost-effectively by increasing occupancy through extended seasons?

We plan to encourage more public use of our campgrounds during weekdays and normal off-season periods through effective public information programs (reference - PEIS Chap 3 under Developed Recreation Opportunities). The extension of the season provides for early and late users. Hopefully, this will aid in reducing the overcrowding of facilities during the normal high use season. This should prove to be cost-effective

400 None of the alternatives provide adequate consideration to protect the interests of Camp Mountain Meadows. We feel that non public providers of outdoor recreation opportunities such as Camp Mountain Meadows and Shirley Meadows Ski Area should be considered as Developed Recreation/Conifer Management emphasis. Short of the development of this new alternative we propose the following specific mitigation, 1) The camp area will be fenced to exclude livestock 2) The camp viewshed will have a VQO of 'R' Retention 3) Timber harvesting within the SUP area will be limited to Salvage and sanitation cuts only at times when camp is not in session 4) Timber harvesting within the viewshed will allow for development of mixed vegetative species and create multi-layer appearance

Adequate consideration will be given to protect the interests of activities under special-use permit. This will be assessed in site-specific project environmental analyses. Adopted Visual Quality Objectives, timber harvest prescriptions, and other project activities and impacts will be studied and, if needed, modified to provide consideration for a specific site (reference Plan, Chapter 4 - Forest wide Standards and Guidelines under General). Input from Permittees will be a key factor during these studies.

500 I support a management plan which would include the following elements 1) Management of visitor use to avoid habitat destruction Permit-program if necessary to prevent damage to sensitive areas

A significant portion of the Forest is to be managed with emphasis on wildlife and dispersed recreation Under these prescriptions, habitat protection is of prime importance (reference - Plan Chap 4 under Management Area Prescriptions).

600 The rationale for managing developed recreation at low standard is not evident in the document This feature of the alternative design appears to have a drastic effect on PNV

The AMN Alternative was modeled with low standard developed management primarily for two reasons The first was in order to correspond with the theme of the alternative--which States that market resources (e.g., developed recreation) are produced at economically efficient levels to support nonmarket resources Low standard was deemed more economical based on existing site conditions and the investments necessary to be able to achieve standard levels of management Second, our planning guides indicated we needed to provide a mix of management throughout the alternatives Given the AMN Alternative theme, a decision was made to model it using low standard developed site management

(191)

601 P. 2-98 (DEIS) It does not seem appropriate to provide low levels of self-service in the IS program even if there is high level of direct public contact

Our thinking With respect to Interpretative Services is that the high level of direct public contact negated the necessity of a high level of self-service This is a judgement call we feel remains appropriate.

602 I question the viability of such heavy emphasis on road program (in AMN) when it buys so little in recreation use

The AMN Alternative places emphasis on the road program as a means to facilitate recreation opportunities outside of developed areas, that is, disperse people widely around the Forest Since the nature of management envisioned under this alternative is less concentrated, roads are necessary to achieve this end

603 Without displaying current ROS acreages, this Table (on pg 2-204 DEIS) does not provide the reader with a good indication of the effects of the alternative ROS The same applies to VQO displays

We have considered the request to include 1982 (base year) information on the charts included in Chapter 2 of the FEIS to facilitate understanding of effects The purpose of Chapter 2 is to identify the alternatives and the differences between them, and not to deal with effects Chapter 4 of the FEIS discusses environmental consequences in detail and includes displays of both ROS and Visual Quality (including 1982 baseline information) Please refer to this chapter for detailed information on effects

604 Pg 2-243 (DEIS) Are the DISC Benefits of Timber for MMR, VCC, and MLV really those that should be shown for recreation?

We have reviewed the table referenced, and made necessary corrections in the Final EIS

605 Pg 2-244 (DEIS). It would appear that if standard rather than low standard recreation were applied to AMN, the PNV would have zoomed up to about 775 Then if the road costs were dropped to the level of PRP, the PNV of AMN would have gone to 800 Such changes in that alternative design would have made it superior to PRF' The MLV PNV and Water (columns in TABLE 2 35) appear to be in error

We concur with the conclusion drawn. If PNV were the only decision variable considered, all alternatives would be modeled at standard levels However, in order to demonstrate effects and provide a range within alternatives, low standard was used in some instances AMN was chosen as one (see comment 600 above)

Regarding the MLV, PNV, and Water values, please see Footnote 5 of Table 2 31 in the FEIS Minimum level values have been subtracted from Costs and benefits Shown for the items listed above in order to show incremental values and costs The intent of this display is to distinguish benefits and costs resulting from the management program from those attributed to only retaining the land in Federal ownership

606 P 4-39 (DEIS) The apparent reason for the heavy road program in AMN is to provide safe transportation network for recreationists Does this mean that the much reduced road program in PRF will create an unsafe network?

We feel the reader has misinterpreted page 4-39 of the DEIS regarding roads and safety The road network ultimately provided under all alternatives will consider Safety

(191)

607 P B-35e (DEIS) The rationale that developed recreation is produced at low standard levels in order to emphasize dispersed recreation Opportunities is badly flawed

We do not find the detail discussed by the reader on page B-35 of the DEIS. so cannot respond further See responses above for similar discussions Which may be appropriate

700 Recreational values must be considered when prescribing silvicultural Systems For example. in Management Area Prescription CF3, uneven-age management should be considered outside the confines of developed sites, to protect/enhance recreational values This is in keeping with FS policy that the purpose of developed sites such as campgrounds is not just to serve as destinations in themselves but to facilitate public recreation use of the surrounding areas for activities Such as fishing, hunting. hiking. etc

The specific silvicultural prescriptions for these areas will be developed through the site-specific environmental assessment process Recreation values will be covered during this process The use of uneven-aged management, as one tool. has been added to this prescription (see Plan. Chapter 4)

9990 HOW are existing destination sites to be managed cost-effectively by increasing occupancy through extended seasons?

Wording has been changed to clarify the intent of the statement Increased demand will be satisfied by extending seasons rather than developing new sites

DISPERSED RECREATION, GENERAL (192)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 I am opposed to target shooting on SQF Shooting should be prohibited Completely Shooting is dangerous. frightening. caused litter, and results in vandalism and property damage

Target shooting is a legitimate, recreational activity on Forest land Proper management Will reduce conflicts With other uses and resource damage The Preferred Alternative allows target shooting but requires that the use be monitored and managed to reduce conflicts (refer to Forest-wide Standards and Guidelines in the Plan)

200 I am opposed to target Shooting on SQF Shooting should be restricted to small, designated areas,  
- It is dangerous to people. animals -  
- Results in littering of shooting areas -  
- Results in vandalism and property damage -

See 100 above

300 I am in favor of current management of target shooting on SQF

See 100 above

400 I Support increased maintenance of hiking trails  
- Current maintenance is so low that trails are becoming hazardous -

Trail maintenance will be emphasized with attention to the more popular end higher used trails and at levels to minimize trail degradation While some increases are planned in the trail system, it will be necessary to insure maintenance dollars are not spread too thin It is planned to rehabilitate or reconstruct 50% of the trail mileage with the first decade (reference Plan. Chapter 4 Under Trails) (Also. see the trails portion of this response section )

(192)

500 Non-motorized recreation such as hiking, back-packing, and X/C skiing should be emphasized.

Emphasis in the Preferred Alternative is on dispersed opportunities. The entire planning area is open to nonmotorized forms of recreation except wildernesses, which are not open to mountain bikes, but are open to other nonmotorized forms of recreation. Recognizing winter snow precludes use (and access) in many areas, the Plan also provides for cross-country skiing, recognizing the need to segregate this use from oversnow vehicles (see Plan, Chapter 4 Under Nonmotorized Recreation)

600 Motorized recreation and developed recreation should be emphasized. Preservation is detrimental to the forest.

Motorized recreation and developed recreation are being emphasized in some areas consistent with the ROS system of planning. Primarily, emphasis will be in the Rural and Roaded Natural areas and to a lesser degree in the Semi-Primitive Motorized area (reference Plan, Chapter 3 Under Recreation). It is important to note that the Plan includes a broad spectrum of recreation, ranging from primitive to highly developed.

700 Equestrian use should receive more emphasis. Camping sites should be designed to accommodate horse use.

This emphasis is within the scope of the Preferred Alternative. We are planning to take a comprehensive look and identify the needs of equestrian uses of our Forest trails. We are emphasizing the improvement and development of equestrian trailhead facilities for wilderness uses. Public pastures will be established and maintained for both dispersed and wilderness overnight camping opportunities (reference Plan, Chapter 4 under Recreation, Trails - Wilderness)

800 Hunting and fishing should be encouraged.

Hunting and fishing are being encouraged through the Forest's Plan which places emphasis on dispersed recreation activities. Emphasis is also being placed on maintaining high quality wildlife and fisheries habitat (reference Plan, Chapter 4 under Dispersed Recreation Management and Fish and Wildlife)

900 I am opposed to hunting.

It is the Forest Service's responsibility to manage the habitat for wildlife to maintain adequate population and distribution. The State is charged with the responsibility of managing the wildlife species including hunting quotas. Both agencies work together in the area of wildlife (and fisheries) management, and, generally, the Forest Service supports the wise utilization of wildlife via hunting (reference Plan, Chapter 4 under Wildlife and Fish)

(192)

1000 Equestrian use should be prohibited where rutting or other resource damage will occur.

System trails will be managed and maintained to minimize trail degradation (refer to Plan, Chapter 4 under Trails) If an unacceptable resource problem occurs, the Forest Supervisor has the authority to restrict or close an area to a specific use. Hopefully, other mitigative measures will solve the problem.

1300 Roads should not be built or maintained for recreational purposes

Recreation is a viable and legitimate activity on NF lands. A wide diversity of recreational opportunities are provided by the Preferred Alternative. Since virtually all activities are dependent to some extent on road access, it is essential that roads be built and maintained for recreational purposes where appropriate.

1500 Water oriented use. A switch to day-use emphasis should occur on the Lower Kern only from Democrat Beach to the mouth of the Kern Canyon, rather than on the whole length of the Lower Kern as proposed. Whitewater boating activities require overnight use above Democrat Beach, and other users should also be able to camp in this upper stretch of the Lower Kern.

The day-use emphasis in the Lower Canyon will not preclude overnight camping when this activity is authorized by permit. Similarly, some overnight camping facilities are envisioned in the Canyon. However, a move away from the amount of camping currently occurring (particularly in the lower part of the Canyon) will be necessary to meet future demands for space within resource constraints.

1600 The Forest must utilize areas already opened up by logging roads for motorized camping instead of creating a situation where everyone parks at the ends of roads at the gateway to the wilderness areas. There are many prime camping areas that could be "developed" in a low-key way to encourage dispersed camping.

The Forest Plan places emphasis on developing or improving wilderness trailhead facilities (refer to Plan, Chapter 4, under Developed Recreation Sites and Wilderness). While access into some areas opened for logging will be closed following logging, there will be many miles of roads open for use. Camping is permissible in any suitable location. These sites will not be developed, rather, campers can utilize them in a fashion that meets their needs.

1700 Additional camp sites at Trout Meadow should be established. Also, it seems to me that Willow Meadow has a couple of areas that could be designated as areas for camping during Stage I alerts.

The Forest Restricted Use and Fire Closure Plan (revised in 1987) permits temporary fire-safe areas which may be made available at the discretion of the District Ranger pending need, location, and the severity of the existing fire danger. Before going camping during fire season, individuals are encouraged to check with the Forest office in the vicinity for specifics regarding camping in undeveloped areas. There are no plans at this time to expand camping sites at Trout Meadow since this area is within the Golden Trout Wilderness.

1800 Areas such as Trout Meadow, Gray Meadow, etc., should have at least one area set aside for grazing of private livestock. It is wrong to force the public to impose on leasee's facilities, or to put their livestock out to eat meager bits of bunch

The Preferred Alternative has been modified to include the establishment of a public pasture system to enhance overnight use by equestrian users. Specific pasture locations and development will be covered in separate site-specific environmental



(192)

grass in the forest when most of the time the feed assessments  
is waist high in the fenced off meadows

<p>1900 Minimize the number of new roads. Confine road work to maintaining existing. necessary roads Curtailling road-building for logging certainly is in line With this suggestion</p>	<p>The Forest Service has a legal obligation to provide a balance of natural resources - water. soil. forage. wildlife. recreation. and wood In all of the alterntives presented in the FEIS. some degree of roading is necessary to fulfill this Obligation Maintenance of existing roads is also part of each alternative</p>
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ORV USE (193)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

<p>101 Respondent supports the multiple use concept on public lands</p>	<p>The Forest agrees with the multiple-use concept and the Plan is developed under this principle</p>
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<p>102 Respondent supports the PRF Alternative Plan for the Sequoia with the CORVA restrictions</p>	<p>We have no technical response to this expression of opinion The Preferred Alternative in the Plan has been modified considerably and Should be consulted for details (Chapter 4)</p>
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<p>103 Trail rerouting in RNA areas must be allowed</p>	<p>Trails will be relocated out of RNA's if conflicts develop RNA's are established. as the name implies. primarily for research and educational purposes As such. recreation use will not be encouraged</p>
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<p>104 All trails should be Open to OHV use (including motorcycles)</p>	<p>The Preferred Alternative limits OHV use to designated roads and trails (Forest Plan Chapter 4) While many trails will be open to OHV use. there are also trails where OHV use is inappropriate because of resource and/or user conflicts These trails will be closed to OHV use</p> <p>The actual decisions on which roads and trails will be available for OHV use will be made during development of the comprehensive Forest Trail Plan (see Forest-wide Standards &amp; Guidelines) This will be a significant undertaking and will include input from all users</p>
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<p>105 Forest user should have access to all other special areas</p>	<p>Forest users have access to virtually all areas of the Forest However. the type of access may vary An exception is Research Natural Areas. where use is not emphasized in favor of gathering scientific information</p>
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<p>106 All OHVs should be allowed to use fuelbreaks for travel</p>	<p>OHV use of some fuelbreaks may be appropriate (See 104 above) Planning will help make this determination end those open will be so designated</p>
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(193)

- 107 OHV use should continue during Stage II closures on the Kern Plateau. Stage II fire restrictions are implemented during periods of high fire danger to prevent fire occurrence. OHV use (like **several** other activities) during such periods **is** inappropriate **since** our emphasis is to reduce the potential of destructive wildfire during these critical burning periods. Therein, OHV use will continue to be restricted during Stage II closures
- 108 Two-wheel existing trails should be protected from ATV use by using steel poles in strategic locations to prevent use. This is one possible management technique that may be used under **some** situations. Specific conditions will determine the most appropriate solution.
- 109 Signing and education **are a** must. We agree. This is an important part of OHV management under the Preferred Alternative.
- 110 Meetings with **user** groups **are a** must. We agree. Again, this is considered an important part of OHV management under the Preferred Alternative.
- 111 Expand the "Adopt-A-Trail" program coupled with reasonable use of the "Green Sticker" Fund. This can and will be done within the context of the Preferred Alternative (**refer** to Chapter 4, Forest-wide Standards and Guidelines).
- 112 Develop the Greenhorn District (Flutes, etc) and Seodies **for** trail expansion. **See** 104 above. Comprehensive System planning will provide the specifics of what the Forest trail System will be in time. It is not possible to say at this time if additional trails will be developed in either **area**.
- 113 Hook up trail between Troy Campground and Black-rock Ranger Station. Keep Troy Meadows open. This trail is currently planned and has been approved for construction as part of a previously approved Green Sticker project.
- 114 Allow ATV use on old logging road next to Jackass. Refer to 104 above.
- 115 Construct trails in the **conifer zone** and pinyon **sage** with speed control in mind. We **agree**. Speed control is a Critical part of all OHV trail construction and have added it as part of the Preferred Alternative (**see** Standards and Guidelines for Dispersed Recreation). This will be a Consideration **in** all OHV trail construction and reconstruction.
- 116 Develop **more** ORV trails **for** all types of ORVs including ATVs. The specifics of types and amount of trails to be designated and/or developed will be addressed in a comprehensive Trail System Plan (refer to Standards and Guidelines for Dispersed **Recreation**). This will be developed under the umbrella of the Forest Plan.
- 117 Build and maintain new loops and connector trails. **See** 116 above. This is a standard for trail development on the Forest (**see** Forest-wide Standards and Guidelines).

(193)

118 Have dispersed campsites and no logging across ORVAC Trails.

Nothing within the Plan will change the existing policy that allows dispersed camping (camping in undeveloped areas) on the Forest. This is a permissible use of Forest land and an important part of the overall recreation opportunity spectrum.

Logging will continue as one of the multiple uses of the Forest. Since trails exist through commercial forest areas, it is reasonable to expect logging may affect the trail system in some instances. Where it does, mitigation is required and damage to trails will be corrected (see Trails section of the Standards and Guidelines).

119 Do not close any more wilderness off -- wilderness closures took some of the best loops (Jackass Peak Trail)

New wilderness is not recommended for National Forest System land. A small extension to the existing Dome Land Wilderness is recommended in the Plan. This would involve lands administered by the BLM. The area involved is not currently used by OHV's.

120 Place restrictions or regulations on the use of firearms on ORV roads and trails

Certain regulations exist now regarding the use of firearms on roads and near developments in the NP. It is illegal to discharge a firearm across or along roads, and within 150 yards of an occupied area with this in mind, target shooting is a legitimate, recreational activity on National Forest System land. However, restrictive orders may be imposed if necessary. Proper management will reduce conflicts with other uses and resource damage. The Preferred Alternative allows target shooting, but requires that the use be monitored and managed to reduce conflicts (refer to Forest-wide Standards and Guidelines in the Plan).

121 Would like to see camping in the "B" Zone

Camping is allowed in the "B" Zone. The "B" Zone refers to OHV administration (designated roads and trails only), and includes all of the Forest outside wildernesses. As explained under 118 above, camping is permissible in dispersed areas as well as developed sites.

122 Do not close Big Meadows area to trail biking

Refer to 116 above. Since Big Meadow is not within an emphasis area, OHV use will not be encouraged there.

123 Would like to see new ORV trails from Stony Meadow to Rattlesnake Canyon (connect 33E22 to 33E24)

Refer to 116 above.

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124 Sirretta ORV trail Should remain

The management emphasis for the Sirretta Area has been revised from what was proposed in the Draft. Under the Final Plan. the Sirretta Area will be managed under a SPNM (Semi-Primitive Non-Motorized) category. As such. OHV's will not be permitted in this area. The trail will be closed to their use. This decision was made recognizing the fragile soils in the area. in Order to improve compatability with the adjacent Dome Land Wilderness and in recognition of the Twisselmann Botanical Area Which will be established

125 Revise OHV plan

With the changes proposed in OHV management under the Preferred Alternative. it will be necessary to revise the OHV Plan. This is called for (see Plan, Chapter 5).

126 Proposed increase in OHV opportunities is inadequate to meet projected demand

We appreciate your comment. Our projections indicate that demand can be met through the planning period (refer to the Recreation Section in the FEIS. Chapter 3). Additionally. there will be comprehensive trail System planning effort for the Sequoia NF (see Plan. Chapter 4). This will include consideration for all trail uses. Demand will be a factor considered during this planning process

127 Continue/expand volunteer trail maintenance/construction

We agree. See Forest goals in Rural Community and Human Resources section

128 Forest needs an OHV map with information Such as type of trail. time and mileage, safety information, travel tips as well as information about seasonal closures, and a number to call for information about trails

We agree. A key aspect of OHV management under the Preferred Alternative is sharing information with users. Much of this detailed information will be developed during preparation of the Trail Plan (see Forest-wide Standards and Guidelines). Currently. information for parts of the Forest is being developed. Hopefully. it will be available soon

200 I believe OHV use should be substantially reduced and limited to small designated routes (no "C" zones)

The Preferred Alternative limits OHV use to designated roads and trails on the entire Forest outside designated wildernesses (which are closed to all motorized/mechanized vehicles) (see Plan, Chapter 4). Open areas will not remain on the Forest

201 OHV use disrupts wildlife cycles, destroys vegetation and erodes forest land. provides an ever present fire hazard. increases law enforcement costs. increases accident rate both to riders and hikers, creates litter and vandalism. and has a negative affect on the visual aesthetics of the forest

While these impacts may happen if OHV use is unmanaged, the Preferred Alternative requires management of OHV use to minimize these problems (refer to Chapter 4, Standards & Guidelines). We are confident that OHV use can be managed in an acceptable manner on the Forest

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202 We can expect the landscape crisscrossed with ORV trails, streams churned into quagmires, seedlings and Saplings crushed under tires. more litter. policing problems beyond the control of rangers. With less and less money to spend, the F S seems to be over-extending itself in opening up these areas to OHVs ORVs are Sport-toys for people who have no destination

To reduce these problems. the Preferred Alternative will limit use to designated roads and trails as well as address the administration of this activity Again. we are confident that OHV use can be managed in an acceptable manner on this Forest

203 For hikers. horsemen. campers. backpackers, fishermen. and other outdoor recreationists it is miserable to have all dust and noise I am worried about air quality

Comprehensive trail System planning will result in identification of trails for all users Some trails will not be available to OHV's An important aspect of the Preferred Alternative will be Information dissemination. that is, helping users know what to expect in areas of the Forest That way. they can better plan their outings to achieve their expectations Air quality is not a perceived problem with OHV use

204 An increase of 15% ORV use can only have detrimental effects on the Sequoia National Forest

Application of Forest-wide Standards & Guidelines and Sound administration will minimize impacts from Increased use

205 Increased routes for ORV's are contrary to the conservatory nature of the intent of preserved open spaces and personal needs of Solitude & quiet in the NF's

Refer to 201 and 202 above Also. funding will be necessary to deal with OHV's on the Forest Needs may include additional trails Currently. a significant Part of the Forest's OHV trail work is done by volunteer users and/or financed by OHV users via the State "Green Sticker" fund This situation will continue. with Specifics identified via the comprehensive trail planning effort identified in the Preferred Alternative

1 I Suggest ORV be restricted to less fractual areas of the national forest. or already established areas Money should not be spent to build more OHV trails

Refer to 104 and 202 above OHV's are a legitimate use of the National Forest We are confident that this use can be managed in an acceptable manner on the Forest

206 Every year we lose more and more public land for OHV use I hope this doesn't continue It excludes the traditional users of the Forest One road can ruin an entire valley Government Should protect the Forest for the majority of the public

207 Oppose allowing cross-country vehicles (OHVs) use on 60% of the forest plus another 10% on designated trails.

Refer to 104 and 202 above

208 Most of these people care nothing for our wildlife

We have no technical response to this statement of opinion

209 Such uses destroy native vegetation. damages Water Shed and Water quality. creates soil compaction. and disrupts wildlife cycles It frightens the animals. including cattle

Refer to 201 and 202 above

210 The proposed plan for SQP would allow ORV activity in most. if not all areas except Domelands (sic) and Golden Trout Wilderness Areas I object Such a course will lead to the destruction of the forest.

Refer to 104 and 200 above

211 No ORV on Piute Mountains. Kern Plateau or Scodies

The Preferred Alternative has greatly changed from the proposals presented in the Draft Plan and should be consulted for specifics OHV's will be allowed on designated roads and trail6 (outside wilderness) Forest-wide This Will include the areas mentioned Actual trail specifics will be determined via comprehensive trail planning

212 The Preferred Alternative Plan does not adequately address the protection of sensitive plant and animal species nor does it provide Sufficient funds to monitor the effect of clearcutting, increased grazing. and OHV use on wildlife

Please refer to revisions made to sensitive plant and wildlife portions of the Plan. The Forest Service does not have control of funding levels for specific programs such as monitoring The Stanislaus, Sierra and Sequoia National Forests are working with the Pacific Southwest Experiment Station in developing a low Cost, but reliable monitoring plan for wildlife based on high risk and analysis (refer to Plan, Chapter 5, for monitoring plan specifics).

213 The Environmental Impact Statement falls to analyze the impact of ORV use on wildlife, Water quality. soils. fire hazards. noise pollution. and Don-motorized recreation

The FEIS does not attempt to identify every specific impact -- attempts to do so would result in a much larger (and more confusing) document Instead, the environmental consequences of the various alternatives have been assessed by identifying key indicators for each resource (see Introduction for Chapter 4 of PEIS) These indicators reflect the overall impact on the resource in general Noise and fire hazard are site-specific items and are the types of impacts generally included in project level EA's

214 Peaks Such as Bohna, Sunday. Split, Black #5, Heald, Scodie, Bald Eagle. Sirretta should be protected from ORVs. Also. Lightner, Nicolls, Pinyon, Sorell, Piute Lookout. Moses. N Maggie Mts., Taylor Dome

Refer to 104 above

300 I favor OAV use in the Kennedy Meadows Area

National Forest System land areas immediately around Kennedy Meadows, with the exception of a road and trail corridor along the Blackrock - Sherman Pass Road, are within the South Sierra or Dome Land Wildernesses As Such. they are Closed to OHV use

Many trails in the Troy Meadows and Fish Creek areas of the NP (approximately 4 miles West of Kennedy Meadows) have been designated for OHV use and will remain available

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The lands outside the NF near Kennedy Meadows are either public (BLM) or private. OHV use on these areas is subject to respective landowner or agency direction.

340 The OHV designations are too liberal to adequately protect important forest resources. We do not believe the draft document adequately addresses the negative impacts on wildlife that will result from increased ORV access. We believe that Forest access should be limited to existing roads and trails or the "white arrow" system employed on many forests. "Off road With minimum resource damage" could be designated in conjunction with fuelwood gathering, or other special use areas. The potential risk for resource damage by unknowing or uncaring OHV Forest users is too great to accept. The costs of rehabilitating damaged areas could be avoided by stronger protection and enforcement before the damage occurs.

400 I urge the SQF to prohibit ORVs on all of the Forest except mads because ORVs cause erosion, destroy watershed, destroy animal habitat, cause obnoxious noise, cause obnoxious dust, create a fire hazard, and result in law enforcement problems and costs. Executive Order 11644 requires agencies to allow OHV use only where minimum damage and conflicts will occur. Prohibit ORVs on trails until studies show environmental impact is negligible.

500 I favor ORV "C" zone designation for Scodies and Piutes.

600 ORVs should be limited to designated roads and trails only - no "C" zone, only "A" and "B" zones should be designated.

The Preferred Alternative has eliminated the open for cross-country "C" Zone contained in the DEJS. OHV use will be limited to designated roads and trails (see Plan, Chapter 4 for specifics of OHV use).

OHV use on National forest System land is a legitimate recreational activity. The Preferred Alternative will provide areas outside wilderness where OHV use is not emphasized or encouraged, as well as some OHV emphasis areas, that is, areas where we will direct OHV users. In either instance, use will be limited to designated roads and trails, subject to seasonal or permanent restrictions to prevent resource damage, facility damage, and/or user conflicts (refer to Recreation Section of Chapter 4 of the Forest Plan for specifics). The proposed management will keep impacts and conflicts within acceptable limits.

Opportunities for OHV use can best be provided through a system of designated roads and trails. The designation of an open ("C") zone limits the ability to manage use. Based on public comments opposing this open designation, coupled with the potential impacts and anticipated increases in demand, the identification of open ("C") zones is considered inappropriate and the Sequoia NF will be managed under a designated roads and trails concept (refer to the Recreation Section of Chapter 4 of the Forest Plan for specifics).

This has been done in the Preferred Alternative. Please refer to the Recreation Section of Chapter 4 of the Forest Plan for specifics.

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700 ORVs should be allowed to operate only on roads (Level 1, 2, and 3 only), and on trails below 4,000 feet elevation which do not lead to Wilderness.

800 I favor "A" ORV Zone designation for West side of Kern Plateau, especially around Horse Meadow Campground

900 ORVs should be restricted to designated roads and trails only. Additional management actions which should be taken are

- 1 Prohibit ORV use when soils are wet
- 2 Require mufflers to reduce noise to same level as normal passenger vehicle
3. Restrict tire type to designs which are least damaging to roads and trails
- 4 Register ORVs at Ranger Stations to monitor use
- 5 Set and enforce speed limits for ORVs
- 6 Close a significant portion of non-wilderness component to ORVs.
- 7 Restrict some trails (outside Wilderness) to non-motorized use only

Refer to 400 above. It should be noted that Maintenance Level 1 roads are closed to vehicle use, and OHV's are not permitted. Comprehensive trail system planning will include consideration of roads necessary to round out the OHV system. If roads presently classified under Level 1 are considered a necessary part of the system, they will be reclassified to Level 2 and managed in an appropriate manner for OHV's.

The Preferred Alternative will provide areas where OHV use is emphasized as well as those where OHV use is not emphasized. The west side of the Kern Plateau is an area where OHV use will not be emphasized.

The designation of this area as an "A" Zone would preclude any opportunity to identify an OHV corridor through the area to adjacent areas or to respond to needs identified in the Comprehensive Trail System Plan. In those areas where OHV use will generally not be encouraged, use will be directed away from developed sites such as Horse Meadows. Please refer to Chapter 4 of the Forest Plan and accompanying maps for more information on emphasis areas.

ORV use will be limited to designated roads and trails as suggested.

1. The Preferred Alternative allows for seasonal closures to protect facilities when wet (see Recreation Section of Chap. 4 of the Forest Plan for specifics).
2. The Forest has been, but will be emphasizing the monitoring of OHV noise to ensure compliance with existing state and federal noise regulations. A standard identifying this management emphasis has been added to the Forest Plan (see Chap. 4 - Recreation). Establishing more stringent regulations for the Forest is not appropriate at this time.
3. Other management techniques such as controlling trail locations and design (which will reduce speed), seasonal closures for wet soils, and user contact/education are usually more effective and require fewer administrative expenditures.
4. The concept of a registration or visitor permit may be appropriate if a quota system is anticipated, or if other forms of communication with users have been used and shown not to solve problems. There are other methods (such as maps, information, signing and handouts) which have not been used with OHV's that should be utilized before initiating a



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permit System. The Preferred Alternative includes emphasis on these items (see Recreation section of Chap 4 of the Plan)

5 There is no practical way of enforcing a speed limit for OHV's. The only way speed can be practically reduced is through trail system designs which slow travel to acceptable levels. A standard pertaining to this factor has been added to the Preferred Alternative (see Plan, Chapter 4 - Recreation Section)

6 Refer to 400 and 800 above

7 This has been done in the past, since not all trails have been available to OHV's. The practice will continue under the Preferred Alternative. Comprehensive trail planning will deal with the specifics of this matter.

950 Forest-wide Standards and Guidelines (should say) "No ORV usage shall be permitted within the Forest. The present net value does not justify the potential irreversible wildlife and habitat damage the FS cannot effectively police the continued and destructive abuse that Sequoia has received from past OHV uses. Encouraging future OHV use will only compound an already unmanageable problem.

OHV's are a legitimate use of the National Forest. We are confident that this use can be managed in an acceptable manner as defined in the Preferred Alternative. Standards and Guidelines have been strengthened so that OHV use will be limited to designated roads and trails (Plan, Chapter 4). Further, the Forest will be undertaking a comprehensive trail system planning effort to determine specific uses on trails. See Comment 900 above.

1000 1 Combining mountain bikes with hikers and equestrian use creates problems. Mountain bikes should be limited to vehicle trails.

1 Mountain bikes are considered to be a wheeled OHV (see Chap 4 of the Plan). As such they will be confined to designated vehicle routes.

2 Management prescriptions under dispersed recreation indicate OHV trails will be developed in Roaded Natural Areas. This should also include Semi-primitive Motorized Areas.

2 The Plan has been revised to eliminate the reference to Roaded Natural areas.

3 CF 7 - Dispersed Recreation R2. Does this infer that no new trails will be developed? It could be interpreted this way. New trails should be allowed when needed.

3 Chapter 4 of the Plan has been revised to allow for trail construction when justified.

4 CF 7 - Dispersed Recreation. There is no discussion of OHV use and opportunities.

4 The opportunity to provide OHV recreation in CF7 Zone is allowed. See management direction.

5 CF 7 - Transportation R3. Local roads could also provide recreational opportunities if they are part of the OHV system.

5. Under the provisions of the Forest Plan, many local roads will be available for OHV's. Generally, native surface (local) roads maintained to a Forest Service level 2 standard will be available to OHV users except when closed by Forest Supervisor order to prevent resource damage, improvement damage, and user conflicts as described under Wheeled Off-Highway Vehicles (OHV's) in Chapter 4 of the Plan. Maintenance level 2 roads would include most native surfaced roads not barricaded or signed to prevent public use.

1100 DEIS, page 3-87, fifth paragraph "This Paragraph "Off-highway vehicle (OHV) use has intensified the recreational pressures on public lands and has resulted in some additional air and noise pollution. Noise pollution may disrupt wildlife and can also

We have reviewed this paragraph and feel it is correct as written. It does not make any comparisons or attempt to rate the relative impacts between OHV use and other activities.

reduce the esthetic (sic) quality of the environment" contains a false hypothesis, innuendos, and value judgments. The truth is that according to a Forest Service paper a human on foot is more disruptive to wildlife than a trailbike, the air or noise pollution due to OHVs is unmeasurable with respect to the entire forest and is most certainly less than that caused by timber activities, and aesthetic quality is totally in the eye of the beholder such to some OHVs. Increases this quality

1201 CORVA strongly supports the Preferred Alternative with the enclosed revisions. CORVA and other OHV groups should be consulted if management practices would have an adverse effect on our access and possible closure of existing or future planned OHV routes. We will be willing to help mitigate any problem areas. Mitigating may include controlled access to river and creek crossings, rerouting of trails that may be damaging to meadows, rerouting of trails and routes that may be nesting areas of wildlife, etc.

1202 Comments On Dispersed Recreation Management OHV recreationists traditionally look for low level campgrounds. Most desire larger pads for their equipment, sanitary facilities, water, and interpretive services. Forest Service should meet with all user groups in the near future to mitigate differences between these camp facilities users. Some suggestions include segregation of user groups in popular camp facilities (Troy, Fish, etc.) Develop new facilities. Adopt educational signs to inform the public of competing uses and ways to satisfy them all.

1203 CORVA sincerely believes that the designation in Zone "B" "Limited Use-Roads and Trails Only" should be revised as follows "Zone B Limited Use All Roads and Trails Open Unless Posted Closed."

Consultation with users will be an important part of both comprehensive trail planning and future management on the Forest. However, the ultimate management decisions will remain with the Forest Service. The Forest will be looking toward users/cooperators to help as volunteers when problems are identified. Based on past responses, this help will be readily available.

See 1201 above.

The Preferred Alternative allows for a diversity of camping facilities. Consideration for the type of use (e.g., self-contained motor homes, OHV's and trailers) is a factor in site design for either construction or reconstruction projects & addresses specific needs at that level of planning. There will also be increased emphasis on information dissemination and user education under the Preferred Alternative.

The Preferred Alternative limits OHV use to designated routes only (see Chapter 4 of the Plan). Therefore, if a route is not designated (e.g., posted as open or shown on maps), it is considered closed to OHV use. Our justification for this position is based on past administrative experience which has shown the way requested to be unmanageable---there has simply been too much sign vandalism which has resulted in vehicles traversing areas to be closed and damaging resources and facilities. Under the proposed method of implementation, sign vandalism renders a road or trail as not available for use. The end result is less resource damage.

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1204 CORVA Strongly objects to the following SPNM designations. These proposed areas will further shut down access to existing or proposed trails. In keeping with the "loop trail" concept, please consider the following changes to the ROS maps: SPNM to SPM Location R34E,T22S. Reason: to allow access on 33E28 to Sirretta Peak. Note: we are willing to relocate the trail out of the riparian area to mitigate problems with wildlife. SPNM to SPM Location R33E and R34E,T21S. Reason: Access lost from 33E22 to 33E24, from 33E22 to 34E23, 34E04 and possible rehookup of 33E22 to 33E19 to 33821. Note: this area is very important to long time trail riders. As such, connecting the above trails will help with the erosion problem on 33E22. Additionally, this will help with the Golden Trout Wilderness trespass problem.

1300 The Sierra Nevada is our most valuable water resource and OHV use and expanded grazing would be detrimental to the watershed. I oppose any increase in grazing and OHV use. The Kern Plateau at such areas as Manter Meadow are evidence of the damage by over grazing. Areas such as Parker Meadow and Horse Meadow are now even beginning to take on the characteristic sand-grit border of the Kern Plateau.

1400 We should limit motorized intrusions into the forest. We should attempt to preserve the pristine nature of as much of the forest as possible. Once the forest has been disturbed, it takes centuries to pass through the successional development required to return that piece of ground to its natural state. Disturbance of the soil allows noxious weeds to grow, gradually altering the character of the forest.

1500 This trail connection would encourage only the downhill usage of the switchbacks on Rattlesnake, minimizing erosion damage. Rattlesnake could also be connected to the Beach Meadow area by opening 34E04. Both these connections would make very challenging loops possible for experienced riders. Jackass Peak/Broder Meadows--As you well know, the ridiculous arbitrary boundary of the So Sierra Wilderness wiped out our connection with the Monache Meadows area. It is now imperative a trail is made to reconnect these areas as your reps mentioned at the public comments meeting. We lost excellent loop trails to that wilderness and I feel the USFS can make this connection happen this summer (1986). Sirretta Peak Trail--Likewise, we lost one of the most desirable trail loops when the Dark Canyon and Woodpecker Trails were included in the

The ROS proposals for the Forest have been reviewed and changes made (refer to the Map for specifics). Management Team review resulted in two changes involving the areas mentioned. The SPNM designation for the Sirretta Peak Area has actually been enlarged. This was done in recognition of a fragile soil situation, to improve compatibility with the adjacent Dome Land Wilderness, and in recognition of the Twisselmann Botanical Area, which has been established. As such, OHV's will not be allowed in the Sirretta Peak Area.

The SPNM designations in the Rattlesnake Area have been changed to SPM. As such, OHV use will be permissible on designated routes.

We agree with the respondent on the importance of water. There is currently no intention or desire on the part of the Forest or the affected ranchers to increase grazing on Sequia NF, particularly around Horse or Parker Meadow. As discussed above, OHV use will be limited to designated routes and with management, we feel proper recognition of the water resource has been achieved.

Motorized use of the Forest is legitimate. Proper management, as identified in the Preferred Alternative, will result in acceptable conditions.

This comment contains a lot of specifics that are beyond the scope of the Forest Plan. However, the comprehensive Trail Plan, which will be developed following approval of the Plan, will address specific trail routes and types of use. This input will be considered during this planning process.

Refer also to 104 above.

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expanded Domeland Wilderness This loop could be reopened by some reconstruction of the Machine Creek Trail (33E28) to motorcycle standards This would minimize erosion on the Sirretta Trail because it would encourage Only one way traffic Bonita Meadows—Reopen (if it is closed) 34E01 from Bonita Meadows to the Sherman Pass Road to give us a legal way to get to the Boone Meadow area without using the paved highway Little Cannell Meadow Area--This range/sawtimber area could be easily connected With the Southern Desert areas into the forest This trail could be connected to the Piutes via Wolfstaff Meadows. allowing a super neat, long distance. point to point ride With all kinds of changes in topography and scenery Scodie Mountains--I realize this area may already be destined for Wilderness Status. but I must insist that the road to McIvers Spring and the Scodie Trail (36804) remain open to motorcycles These trails I have ridden for 15 years and are some of the beat experiences in dirt bike riding in all of California I highly encourage the district manager to do whatever is possible to exclude these two trails from the wilderness by some kind of exception. (Bob Addison. Help us fight for the "C" status on your forest plan )

1600 I am in opposition to the Preferred Alternative Plan The Service appears to be an eager partner with such eminent benefactors of the American Forest as Suzuki, Kawasaki & Yamaha It can be reasonably argued that when Mr T Roosevelt invited the public to make greater use of the forests, that he did not envision an invasion by millions of monster machines and thousands of snarling. caterwauling off-road vehicles

We have no technical response to this expression of opinion. It should be noted. however. that the Preferred Alternative has been modified significantly from the Draft. The respondent is referred to Chapter 4 of the Plan for Specifics

1700 Opening connecting trails will reduce the potential for irresponsible riders to use Closed trails that connect to open trails Please allow the following trails to remain open for motorcycle use I Piute Mountain Area - 1) Trail from Steve Springs to Long Canyon (34E31) 2) Woolstaff Meadows down to Kelso Creek - well used unmarked trail 3) The trail from the Piute Mountain Road near Harris Grade Spring down through Burning Moscow Spring and down to Kelso Valley 4) The unmarked trail along St John Ridge II Scodie Mountain Area - 1) The main access road to McIvers Spring (27S11) and the unmarked motorcycle trail down "So Cal Hill" to Sage Canyon 2) The marked motorcycle trail down to Chollo Well (36E04) and the

Refer to 104 and 1500 above

Unmarked trail down Cane Canyon III Troy Meadow/Sirretta Peak Area - 1) Open a new connecting trail through Machine Creek connecting Boone Meadow to the Sirretta Peak trail (34E12) 2) Open an access trail from the Fay Ranch area up to Cane Meadow using (34E28) or (34E24) 3) Keep open (34E01) the trail connecting Rattlesnake Creek with Beach Meadow (21S19) 4) Keep open the trails (34E16), (34E17) and the other existing trails in the Taylor/Little Cannell/Cane Meadows area 5) Keep open the existing trails in the Sherman Peak. Bonita/Boone/Durrwood Meadows area

1801 OHV map and the ROS map of the preferred plan - there appears to be a contradiction There are SPNM ROS classes in B & C OHV areas The OHV map is used to comply with EO11644, we maintain that it has precedence over the ROS map We do not see any way to manage a SPNM ROS in an OHV C area where the boundary is not some geographical line as a road or trail short of fencing

1802 Specific SPNM concern areas are In the Piutes-4, the 2 northern ones have existing trails currently receiving moderate OHV use Breckenridge-3. Cannell Meadow-2 At the NW corner of the Dome Land there is 1 that crosses 33E28 Which should be opened to connect the dead end 34E12 to the Sherman Peak (sic Sirretta Peak) area Along Rattlesnake Cr there is one on each side Id southern one an existing trail 33E24 gets illegal use that should be Opened to OHV use to Connect the dead end Stony Meadow Trail to the dead end Rattlesnake Trail In the NW corner of the Forest. there are 6 more

1803 DEIS. page 4-13. Resource Outputs - There is no planned increase in the miles of trail Open to OHV use We do not believe that the existing trail system is adequate. This Plan should address some form of corrective action for this loss of recreational opportunity The plan acknowledges the "Statewide Trail System" which will require many new trail segments to complete

1804 Page 5-6, Monitoring Plan - The Only recreation activity that is scheduled for monitoring is the "effects of OHV use on land and Other resources" Since most OHV activity is on existing trails. and Forest Service studies Show that OHV's do not necessarily have the greatest effect on the land or wildlife. it Would appear prejudicial to Only monitor OHVs Because of the documented conflict between timber sales and existing OHV routes. we

The Preferred Alternative has eliminated the open to cross-country "C" Zone and, therefore. eliminates the Conflict with ROS designation SPNM

The ROS map for the Forest has been reviewed and revised It should be consulted for specific revisions to determine if concerns have been addressed for those SPNM areas broadly described Specifically. trail 33828 will not be available to OHV's -- the Sirretta Peak Area will be included as SPNM (see 1204 above) The SPNM areas in Rattlesnake Creek have been revised to recognize conflicts with OHV's

The Preferred Alternative allows increases in trail mileage Actual mileage and specific trails needed will be developed in the comprehensive Trail Management Plan (see Plan, Chapter 4).

Monitoring the effects of OHV use on land and other resources is a requirement of EO 11644 The monitoring plan as shown in the DEIS has been revised and also includes other elements important in determining if ongoing management is within the scope of the Plan (refer to Plan. Chapter 5 for details on monitoring)

believe there should be **some** formal monitoring **of** timber sales

1805 Page 3-88. Sixth Paragraph - Although in this paragraph the Statewide Trail System **for** OHVs is mentioned, the plan does not address whether this System is compatible and if it is, how it would be implemented. The San Bernardino LMP's preferred plan states that there will be such a trail. Page **4-66**, OHV Use, This paragraph is one **of** the best stated management plans we have seen.

**1900** The FS admits to the damage done to the environment by ORV use and that the monitoring of resource damage is based on low level funding. What **assurance** does the Public have that the monitoring funding will be increased to handle the increased acreage for ORV use proposed in the PRF Alternative?

**2000** CORVA is **aware of** many outstanding OHV opportunities in the mentioned areas.

2100 An additional benefit **of** such an action would be to decrease areas of OHV **use** and provide a **more** balanced division **of** lands between OHV and non-OHV users.

**2200** OHV's hardly **seem** congruous with the PCT. It would **seem** that true multiple **use** of Rockhouse would designate at least part of the FPA as non-motorized. Again, I must state that OHV **use** seems most incongruous with the PCT, which runs through the northern portion **of** the Seodies.

**2300** Dispersed Recreation - Move system trails **out** of meadows. Excellent! OHV's also

2400 **I** agree with the proposed action map of the FS and the OHV's.

The Preferred Alternative calls for coordination of trail planning with the Statewide OHV Trails Plan (**see** Plan, Chapter 4). It will be necessary for the Forest to undertake comprehensive trail system planning before a determination of compatibility can be made and appropriate implementation schedules set for any part of the Statewide system. Thank you **for** your compliment.

The monitoring **of** impacts **of** OHV use will continue under **various** funding levels. The intensity and types of monitoring will vary with funding, but problem areas will be addressed in priority order.

The knowledge and input of users will be useful as the comprehensive trail plan is developed as directed in the Preferred Alternative. We look forward to working with CORVA and other user groups during this process.

The Preferred Alternative will limit OHV **use** to designated roads and trails and will establish emphasis areas for OHV use. As such it will provide a balanced allocation of lands between OHV use and non-OHV **use**.

The Preferred Alternative limits OHV **use** to designated roads and trails. The PCT **is** closed to OHV **use**. The specific trail plan to be developed **for** the **Forest** will determine which **uses** will be allowed on specific trails.

Relative to the **BLM** Rockhouse Wilderness Study Area, Forest **Service** planning efforts are limited to a joint study leading to a determination/recommendation **for** wilderness. Administrative actions beyond this (e.g., nonmotorized management **of** specific areas) remains with the BLM.

It is planned to **move** system trails, including those used by OHV's, **out of** meadows where resource damage is occurring.

OHV use under the Preferred Alternative will be considerably different than that shown in the Draft, since all use outside wilderness (which is closed to all vehicles) will be restricted to designated roads & trails, Forest-wide. Please

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check the Plan, Chapter 4 for specifics

2500 DEIS, page 3-86 - The first sentence states "much of the Sequoia NP area is available for non-motorized activities" It is our understanding that all of the Forest is available for non-motorized activity This whole paragraph applies to motorized activities Just as much as it applies to non-motorized activities In the second paragraph, the use of All Terrain Vehicles by the elderly and handicapped should have been mentioned Also, as was stated previously, there is no mention of exactly which roads are open to use by "Green Sticker" vehicles This is a very important issue with these two groups The statement that "the increase in OHV use as well as hiking and equestrian use will likely result in increases in conflict as competition for trails increases" can only be a result of a desire for conflict by hikers and equestrians or the Forest Service itself It was previously stated that only 4% of recreation use took place on the 24% of the Forest where OHV's are prohibited by law It is obvious that good and efficient management practices would dictate that all hiking and equestrian activity should be directed to the wilderness areas and that outside of wilderness, it is multiple use The statement "at the same time, decreasing trail maintenance funding makes it more difficult to maintain trails to the levels necessary for OHV and equestrian use" totally neglects the availability of "Green Sticker" funds and as mentioned on Page 3-88, volunteer trail maintenance by OHV users As far as the quantity of trails open to OHV's is concerned, the determining factor is not money or manpower, it is the Forest Service Page 3-88, Fourth Paragraph - again the subject of user conflict is raised Unlike the previous discussions, this time the position is that conflicts are minimized This is difficult to understand with only 4% of the recreational use taking place in wilderness Since this is a Management Plan there should be elements addressing user conflict and how it will be managed This paragraph states that there are trails "designated specifically as OHV routes". This is of course, not true All trails that are open to OHV's are open to any other user group Page H-7, 4th paragraph--While this trail is a limited hiking attraction with 31 persons per year signing the register, it is an important OHV trail with an estimated annual use of over one thousand

All of the Forest is available to nonmotorized activities. However, Table 3 22 (Chapt 3, DEIS) indicates that much of the Sequoia land base is comprised of slopes over 40% and may not be useful for many recreation opportunities

The discussion on OHV's under Dispersed Reereatron in Chapter 3 of the EIS has been reviewed and Statements referring to use of mads by Green Sticker vehicles and Green Sticker funding added

Comprehensive trail System planning will make the final determination ON the number of trails and their availability for certain uses Funding will be an important aspect of implementation of programs including those dealing with OHV's Additionally, volunteers will help considerably with items such as maintenance and rehabilitation/reconstruction of trails

The Preferred Alternative discussion on OHV's identifies user conflicts as one factor which may trigger a Forest order to resolve Each case will have to be assessed on its individual merits Therein, it is inappropriate to try to include a blanket Statement about how conflict will be managed in the Plan Rather, project level activities can best handle this matter

The Forest land base outside of wilderness will be managed under the multiple-use concept "including trail use However, this concept does not mean equal use for every resource type (timber, range, recreation, etc ), or style of use Within a resource type, in any one area of the Forest, Trail design, resource protection, user conflicts, and ROS objectives will be some of the factors Used in determining the type of uses for each trail in the Forest trail System We are encouraging more equestrian and hiker use of the wildernesses by emphasizing trailhead facilities construction to facilitate wilderness access (Refer to Plan, Chap 4 Under Developed Recreation and Wilderness )

The Forest is pursuing the use of Green Sticker Funds For maintenance Of OHV trails The use of volunteers for maintenance of OHV trails has, and will continue to be an important program On the Sequoia NF However, adequate funding is critical for maintenance of a great portion of the total Forest trail system

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We have removed the word "specifically" from the statement. "Numerous trails Outside wilderness area designated Specifically as OHV routes" since these trails are not exclusively OHV trails

Under the Preferred Alternative. Sirretta Peak and the Ernest C. Twisselmann Botanical Area falls within an area to be managed under the Semi-Primitive Non-Motorized ROS class and are not available for OHV access.



SNOWMOBILES. CROSS-COUNTRY SKIING (194)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Snowmobile use should be limited to designated areas. Snowmobiles seriously conflict with cross-country skiers.

The Preferred Alternative identifies areas where various winter recreational activities are emphasized. Because of the high potential for conflicts, the separation of motorized and nonmotorized uses will be encouraged through user education and personal contacts (see Chapter 4 of the Plan).

101 Snowmobiles should be restricted to designated areas. Kennedy Meadows to Sherman Pass should be open to snowmobiles. Snowmobiles should be excluded from South Sierra area of Kern Plateau. Cherry Hill Road to Cannell and Taylor Meadow areas. Snowmobiles should be excluded from the proposed "C" Zone in the Hume Lake District. Kern Plateau area should be restricted to non-motorized winter sports.

The need to do comprehensive planning for winter activities is also identified in the Preferred Alternative. The identification of specific restrictions that will be placed on over-snow vehicles will be addressed during development of this Site-Specific plan (see Plan, Chapter 4).

200 Cross-country ski areas/trails should be developed. Areas which should be favored for cross-country are Big Meadows, South of Grant Grove (HLRD), and Slate Mountain (TRRD). Forest Service should provide parking, access, and control user conflicts. Hut system should be developed. Develop Big Meadow/Stony Creek-Chimney Rock/Baldy Ridge on Hume Lake Ranger District with cross-country ski trails and warming huts with refreshments by private sector.

Identification of specific trails or sites for Cross-country Skiing is outside the scope of this Plan and will be addressed during development of the site-specific plan identified in Forest-Wide Standards and Guidelines. The Plan does identify emphasis areas (on the Hume Lake and Tule River Ranger Districts) and provides for a hut system. How it might be provided is a project-specific item yet to be addressed.

300 Page 3-89. WINTER RECREATION OPPORTUNITIES - This section addresses snowmobiling, but a more versatile nomenclature which is used elsewhere is Over-Snow Vehicles.

The wording has been changed as suggested.

400 We recommend increased management for cross-country skiing in the Hume Lake Ranger District as an alternative to development of an alpine ski area.

Cross-country skiing Opportunities on the Hume Lake Ranger District will receive management emphasis to help balance the needs of the winter recreation user. Additionally, a potential alpine ski area has been identified in the vicinity of Mitchell-Maddox Mountains east of Big Meadows. It is appropriate that this area be studied so a sound judgement can be made about its suitability for development. This study will follow the NEPA process.

500 What kind of overnight cross-country skiing and snowmobiling Opportunities will be available on the Kern Plateau?

The Forest currently authorizes under special-use permits the kinds of activities discussed. We plan to explore the need for commercial development and management of portable overnight facilities (huts) to promote and aid winter snow dispersed recreation (refer to Plan, Chap 4 under Winter Snow Dispersed Recreation).

SKI AREAS. DOWNHILL (195)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 We **are** in favor of and do encourage the development of the Peppermint Ski **Area** We **feel** it would be an **asset** to the USFS as well as surrounding **area** economies

We have no substantive response to this expression of opinion Our Final Environmental Statement on Peppermint establishes our decision to proceed With the development process

101 We do not oppose the construction of the ski areas We Urge that no other use of this land be permitted

We have no substantive response to this expression of **opinion**

102 New downhill ski areas Should be developed

The determination of Which. **if** any. downhill ski areas should be developed and the specific impacts from development **are** outside the scope of this Plan

200 No **new** downhill ski **areas** are needed

The determination of Which. **if** any, downhill ski areas **are** needed and the specific impacts from development **are** outside the scope of this Plan

Impacts of ski area development include road construction, waste disposal. liability against Government. law enforcement. degraded visual quality. degraded air quality. user Conflicts. adverse impacts on wildlife, vehicle traffic congestion and additional power lines Snow is not predictable

Development of Peppermint **was** Covered **in** a Separate EIS Consideration of other downhill facilities would also require following the NEPA process and would be undertaken only as demand warrants

300 I **am** writing to express **concern over** the proposed downhill ski facility at Mitchell-Maddox as outlined **in** the Sequoia National Forest Land Management Plan This area is right on the boundary of Kings Canyon National Park A ski resort would severely impact the national Park **in** the **form** of increased traffic, overcrowding, litter, poaching. and water. **noise** and visual pollution National Park has called for the creation of buffer zones surrounding the national parks

The language in the Forest Plan is to Study the potential for construction of the Mitchell-Maddox and/or Sherman Pass Ski Areas Separate EIS's will be done for each in which demand **for** skiing. potential effects on nearby lands (including wilderness) and on-site effects of their development will be analyzed

400 This plan allows **for** the development of two ski resorts **in** the plan area **in** addition to the Peppermint mountain ski resort already being planned These resorts will attempt to use riparian rights to obtain this water for storage to use **for** snow making **if** any impoundment of water is considered under riparian rights for use by the developers of the ski resorts for snow making, **such** use is not **in** accord with California Law.

The wording **in** the DEIS **may** have been misinterpreted by the respondent The Plan **does** not allow for development of two ski resorts **in** addition to Peppermint Our intent. and the Final Plan **so** states, is to study the feasibility of Constructing either one of two sites (Mitchell-Maddox or Sherman Pass) The initiation of **such a** study Would be determined by demand for additional skiing opportunities, and would follow the NEPA process, that is, an environmental impact statement with full public involvement Specific issues. **such as** water and riparian rights. and snow conditions would be addressed at that time

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500 New downhill ski resorts should not be permitted on the Forest unless they can demonstrate they will not require federal funds to provide access, lodging, utilities, and sufficient natural snow will be available to make them economically self-sustaining

We have no substantive response to this expression of opinion other than to note that virtually all major successful ski areas in California have some amount of artificial snow making and none are directly subsidized by the Federal Government

600 Downhill ski areas should not be established bordering wilderness areas

We have no substantive response to this Opinion other than to note it is possible in many instances to manage land up to wilderness boundaries without compromising values of the wilderness This determination is logically made during project level Studies

700 Ski areas are a valid use of forest land However, there should be some form of assessment levied against the operators to Offset costs the Forest Service incurs Roads leading to Ski areas Should also serve campgrounds.

Ski area operators are, in fact. required to pay a percentage of their gross income to the Forest Service While these funds go into the U S Treasury, they are more than sufficient to cover the additional costs incurred by the Forest Service

800 Develop these ski areas Sherman Peak and Peppermint can be developed in such a way as to Concentrate the consequent disturbance to the environment in areas already served by roads and already semi-developed (in the case of Peppermint) I can also Support the expansion of the Shirley Meadow area

The Peppermint FEIS shows that Peppermint can be developed without unacceptable environmental effect Until a similar Study is completed for Sherman Pass, we will not know whether development of that area is feasible and acceptable

900 I recommend only two downhill ski resorts be developed. one on the east slope and one on the west slope

We have no substantive response to this expression of opinion Other than to State that demand will be an important factor in determining if future studies will be undertaken

1000 The Sherman Peak area is just northwest of the Domelands (sic) Wilderness While the demand for new ski resorts is growing, more consideration to environmental impacts are just as important

All environmental effects of development of Sherman Pass as a ski area will be explored in a separate. project EIS

1100 Abandon all plans to develop ski resorts Intensive development of this sort is inappropriate It is bad economics. and bad management The Peppermint Ski area is a massive boondoggle The proposed ski resort would cause extensive. irreparable damage to public lands in order to provide recreation for a relatively small number of people And. it would consume an estimated 271,000 acre-feet of water per year on-site, contributing to the water problems that already exist in the Valley below (A 171,000 acre-foot dam and reservoir would have to be built on Peppermint Creek to provide water for snowmaking That is greater than the capacity of either Kaweah Lake above Visalia or Success Lake )

The Final Plan directs that potential resort feasibility be Studied in detail consistent with NEPA requirements The reader is referred to the Peppermint Mountain Resort Final Environmental Impact Statement in Which these issues are addressed in detail It is important to point out here that the FEIS Shows the proposal to be within acceptable ranges of environmental effect It is also important to point out that the respondent is incorrect in the matter of water use Only 271. not 271,000 acre-feet would be used, not consumed The only consumptive use would be evaporative loss from the water Storage pond(s) and snow making equipment No on-channel dam and reservoir is proposed for Peppermint Creek

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1200 I object to the inadequate manner in which the Environmental Impact Statement addresses the impact of the proposed Peppermint, Mitchell-Maddox, and Sherman Peak Ski Resorts. The EIS does not adequately address the impact on wildlife and water quality. The Service has already approved the Peppermint proposal, despite problems with wildlife impacts, sanitation and difficult access. I support a thorough examination of these ski resort proposals by the Forest Service.

1300 I would like to see more places for homes and lakes, and maybe a winter resort.

1400 I support the two proposed ski areas and accommodations for the elderly and handicapped.

1500 I oppose any new ski resorts re Shirley Meadows. Every year that there is a shortage of snow, the owners complain about not making enough money to finish the improvements they have started. In meantime, the whole mountaintop is a mess of earthmoving equipment, torn up trees, trailers, piles of earth, etc. After each skiing season, the surrounding areas look like trashdumps. Do not need more of these "resorts", the one we have cannot attract enough skiers nor expect enough snow to make a profit on a regular basis.

1600 We support the plan for skiing and a lodge in the Sherman Peak area.

1700 Mitchell-Maddox. I strongly support a destination bound ski resort for Mitchell-Maddox. I have walked many times over this area and find it to be a superb area which would be conducive to large scale ski development. Realignment/relocation of the Big Meadows would be a necessity. Base lands are private.

Each proposed ski area does, or will, have a project-specific environmental impact statement that considers such issues as wildlife and water quality. This will provide the thorough examination requested.

We have no substantive response to this expression of opinion other than to note that up to three winter resorts might be developed on the Sequoia National Forest over the long term. However, development of homes on National Forest System land has never been authorized. In the past, summer cabins (recreation residences) have been built under special-use permit on National Forest land. In many areas, these are being phased out because public demand for recreational opportunities continues to rise sharply and those lands are now needed for public access or use. Additional recreational residences will not be considered on the Sequoia NF.

We have no substantive response to this expression of opinion other than to say that barrier-free accommodations for the elderly and handicapped will be a part of any recreation construction on the NF.

Any new ski area development is closely governed and monitored under the terms of its environmental impact statement, prospectus, site development plan and EA, and special-use permit. These documents establish parameters for construction and operation (including clean-up) of the resort.

See 1000 above.

We have no substantive response to this opinion other than to note that such things as realignment of the Big Meadows Road would be analyzed in a project-specific EIS (also see response to 300 above).

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1800 We feel that skiing is a beautiful sport and can be done in our National Forest with minimal damage to wildlife and their habitats with careful conscientious planning Put in trams from resort to closest already developed areas Would reduce driving hazard on very dangerous roads Would leave skiers rested for their return trip to their homes Would reduce air pollution Would cut down considerably on sewage problems Keep building and facilities to a minimum Food, rest, refreshments during the daytime activities Keep the area as natural as possible Provide cross-country trails that can be used for hiking trails in the summer Tram could be used all year around as they do in many other areas The tram would take some more initial Cost, but in the long run Would save road maintenance and enlarging, widening of bridges, adding of additional turnouts Less construction - use of already established sleeping facilities, hotels, motels, etc

1900 The PEIS (Peppermint) states that the sewage effluent will be disposed of by percolation and/or irrigation and will not be a tertiary treatment plant We need experts to check the USFS data on nitrogen or direct affluent pollution of streams (Peppermint Creek), the Kern watershed, and Lake Isabella The problem of sewage has not in any way been effectively addressed

2000 Emphasis on downhill skiing development assumes a continuing future demand, while present information shows a lack of interest in commercial development in areas with short and unpredictable snow seasons, owing to the high Capital outlay required The Sequoia Forest planners are being challenged to provide an economic package attractive to private ski resort investors - hardly the intended purpose of managing public lands

2100 Page 2-23 DEIS The Forest Service Cannot have a complete range of alternatives if direction common to all alternatives assumes the construction of the Peppermint Ski Area This Ski area does not exist The Slopes of this area currently are in the Slate Mountain roadless area, so there should be alternatives which keep this land undeveloped The environmental impact statement for the Peppermint Ski Area is under appeal, and one of the issues raised by the appellants is violation of the National Forest Management Act by the project preceding the Sequoia NP Land Plan and DEIS. If this forest plan does not consider a range of alternatives which

We have analyzed the feasibility of rapid transit (trans. etc ) for Mineral King and Peppermint, and found that the cost is much greater than the cost of road improvements, etc At this time, there seems to be no way to develop an economically feasible rapid transit system to serve these ski resorts Nevertheless, this option will continue to be explored in future ski area EIS's on the Sequoia National Forest

Please refer to the FEIS for Peppermint Mountain for details on this matter

The Preferred Alternative provides for Study of two resorts on the Forest, if demand indicates the need Each proposed Project will be judged on its own merits

Several very recent documents, which were done in conformance with existing planning direction and which had extensive public involvement, are being incorporated into the Forest Plan The Golden Trout Wilderness Management Plan and the Peppermint Mountain Resort PEIS are two examples In our judgement these inclusions are consistent with NFMA Regarding the Slate Mountain Roadless Area, this area was released by Congress for "on-wilderness use via the 1984 California Wilderness Act There is no requirement to show a roadless option in either the Forest Plan EIS or the Peppermint EIS The respondent is referred to Appendix C of this EIS for dis-

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includes no ski area, then it, too, is legally deficient

cussion of how this released Roadless Area is handled under the various alternatives. Finally, it is not improper to proceed with the Peppermint project before the Forest Plan is complete NFMA explicitly States that Pending completion of the new Forest Plans, the Forests are to be managed according to the plan now in force The Tule River Multiple-Use Plan provides for study and possible allocation of slate Mountain as a potential ski area By proceeding with the Peppermint EIS and Subsequent allocations, we were following the direction of the plan now in force for the Tule River District

WHITEWATER BOATING (196)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Whitewater rafting on the Kern River needs to be more tightly controlled.

The Preferred Alternative calls for continued Implementation Of Kern River Whitewater Floating Management Plan with periodic evaluation (see Forest-wide Standards and Guidelines - Water-Oriented Use)

In particular, use from Riverkern down has adversely impacted local residents with

The specific information presented here has been and will continue to be considered during the evaluations of the Kern River Whitewater Floating Management Plan It is important to note that boaters can access the river just below Riverkern Beach without entering the National Forest Boaters using the river in this way down to Kernville are entirely outside of National Forest jurisdiction Further, the number of commercial rafting operations on the Kern River is limited Fees are paid to the FS by these commercial rafting companies under special-use permit. However, the Forest Service does not have authority to charge others (private parties) a user fee. this Would require Congressional Legislative action and is outside the scope of this Plan The Kern River Whitewater Floating Management Plan establishes specific direction for the River where boating may occur Monitoring and evaluation provide on-going feedback to managers If additional restrictions on users are necessary, this can be done within the parameters of this Plan

- 1 Traffic congestion and Safety problems
- 2 Conflict with fishermen and Swimmers
- 3 Sanitation problems
- 4 Trash and litter
- 5 Noise
- 6 Erosion of river banks and disturbing wildlife

Suggests Setting aside limited areas of the river for rafting, with rafters paying fees or building facilities to support the rafting program Areas set aside for rafting should be those that are not wild, residential, or used for camping

ROS (RECREATION OPPORTUNITY SPECTRUM) (198)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 How is ROS acreage going to be tracked so it can be determined if Plan objectives are being met?

The Preferred Alternative Shows the lands allocated to the various ROS classes Site-specific environmental assessments will be used to determine how projects Will be accomplished, but Will not change ROS allocations in excess of that shown in the Plan.

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200 Dennison Peak It is misleading for the FS to say that since no roading will take place. the naturalness of the area will generally be maintained Or, despite the area not being designated wilderness. it will continue to be managed as a backcountry unit in a manner similar to wilderness. Visual quality objectives in the area are primarily "modification" and, to a lesser degree, "retention." Grazing improvements will further degrade the naturalness of the area as would the level of OHV allowed under a Roaded Natural Recreation Opportunity Spectrum (ROS) classification.

300 These areas still have wilderness value which should also be protected in semi-primitive non-motorized recreation prescription The Forest Plan appears to lack a true semi-primitive non-motorized prescription The plan should have a new prescription exclusively providing semi-primitive "on-motorized recreation with logging prohibited, road building prohibited, and wilderness qualities preserved

400 Over half of all the existing use in the Moses area is in the semi-primitive non-motorized ROS class. while less than half this amount is motorized Again, wolverine and fisher are known in the area Additionally, black bear are common in the area, and the entire area is either key winter range or is summer or transition range for the Tule River deer herd A significant number of pristine fisheries exist in the area Opportunities for solitude and primitive recreation are generally high and two sensitive plant species are found in the area Despite the above values, the SQF has targeted the area for extensive timber harvest Five individual sales. and approximately 19 miles of road are planned for the area between 1986 and 1995

500 Wilderness or semi-primitive "on-motorized designation for released and other roadless areas Black Mtn , Slate Mtn , Cannell. South Sierra. Rincon, Chico, Mill, Lyon Ridge. Greenhouse Creek. Agnew. Kings Canyon. Woodpecker, Domeland addition. Jennie Lakes. Woolstaff

700 The roadless areas that the Forest Service is not required to consider for wilderness should be protected as semi-primitive, non-motorized areas These areas, 331,649 acres, are the Agnew. Black Mountain. Cannell, Chico, Cypress. Domeland Addition. Greenhorn Creek. Jennie Lakes. Kings canyon.

The Forest Service believes the naturalness of the area will generally be maintained during the planning (10-15 year) period under the Preferred Alternative. No additional roading is planned, and. in fact. most of the area has been placed into a SPNM (Semi-Primitive Non-Motorized) ROS class The Visual Quality objective for the SPNM area is Retention Some prescribed fire may be used for range and wildlife vegetative treatment/improvement purposes at various times within the planning period This will have an insignificant change on the naturalness of the area since the opportunities for this type of management are limited

The Preferred Alternative has identified areas of the Forest where the Semi-Primitive Non-Motorized ROS class will occur These areas will provide a semi-primitive recreation Opportunity However. they may also contain primitive roads which are closed to public use and they may also be subjected to very limited (unregulated) timber harvest (e.g. one entry for natural losses every 15-20 years)

The Moses Further Planning Area will be managed for its resource outputs during this planning period. All activities including the protection of sensitive plants. wildlife species. fisheries. etc will be addressed with specific project environmental analyses as the planning period progresses

Portions of these areas mentioned may be maintained in a Semi-Primitive Non-Motorized ROS classification (refer to ROS Map for specifics) However, the majority of the areas will be opened to other non-wilderness activities See comment 700 below

All or part of several Roadless Areas mentioned were made wilderness under the California Wilderness Act of 1984 These include Agnew (Monache Wilderness). Jennie Lakes (Jennie Lakes Wilderness), South Sierra (South Sierra Wilderness) and Woodpecker (Dome land Wilderness) Other Roadless Areas identified in the

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Lyon Ridge. Mill, Rincon, Slate Mountain, South Sierra. Woodpecker, and Woolstaff roadless areas.

RARE II process have been mapped by ROS class following established criteria. As a result. classes range from Roaded-Natural to Semi-primitive Mon-Motorized, and will be managed accordingly Criteria for ROS class delineation is remoteness, size. evidence of humans, social and managerial setting

800 The plan does not protect all of the roadless areas All of the further planning areas. Scodies, Oat Mtn, Dennison Peak. and Moses must be placed in the semi-primitive. "on-motorized (SPNM) category and appropriate wilderness recommendations must be made The fact that these areas were not designated as wilderness in the Calif Wilderness Bill does not mean that they should not be protected The spiritual values of going to an area that is in a truly natural state and recognizing our American heritage of wilderness values Cannot be overemphasized The following former RARE II roadless areas Should also be placed in the SPNM category for their protection Black Mountain, Slate Mountain, Cannell. South Sierra. Jennie Lakes. Rincon, Chico, Domeland Additions. Mill, Lyon Ridge, Greenhorn Creek. Kings River. Agnew. Kings Canyon. Woodpecker. Woolstaff, and Cypress

Many of the Roadless Areas identified under the RARE II process were subsequently released via the California Wilderness Act of 1984 for multiple-use management Other areas were placed in a Further Planning category Those Further Planning Areas which are the responsibility of the Sequoia have been reviewed under this PEIS Each has been mapped by ROS class ranging from Roaded Natural to Semi-Primitive Won-Motorized Protection/mitigation of these areas will be considered through ROS objectives. the NEPA process (which calls for an environmental analysis for any proposed project within their boundaries), and the land management prescriptions designated by the Preferred Alternative

900 Since so much of the forest plan refers to the various recreation opportunity spectrum classes, it is not enough to reference the "Recreation Opportunity Spectrum Users Guide " Reviewers have no way of determining the proposed management of the Sequoia NP if they do not have a copy of this guide The management theme for semi-primitive. "on-motorized areas could be greatly affected by the management prescriptions allowed

A basic Understanding of ROS can be found in the Glossary and in Ch 3 under Recreation in the PEIS The ROS Users Guide is available for study at each N P District Office and the Sequoia N P headquarters in Porterville

WILDERNESS AREA MANAGEMENT (199)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Include in wilderness areas and on Wild and Scenic Rivers. special paths and facilities for the aged. the handicapped. the disabled and the very young

Needs of elderly and handicapped individuals will be considered in development of recreational facilities at developed facilities on the Forest An emphasis will also be placed on development of barrier-free trails in certain areas (e g , near campgrounds for interpretive purposes) (see plan. Chapter 4) Developments (that is. trail facilities) for handicapped, disabled. etc. within wilderness or wild and scenic corridors will generally not be done with specific emphasis toward this group Trails will vary from easy to most difficult These groups may be able to use some of the easier trails.



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but should not anticipate using the more difficult sections Users should plan to check with local ranger stations for specific trail information prior to Starting a trip Certainly, artificial barriers to elderly or handicapped individuals will not be created

200 All maps in the DEIS and Forest Plan indicate Dome Land Wilderness begins at the north end of a riparian sliver extending a mile into the Forest in what should be Wilderness. We object to this We believe Segment 1 of the South Fork should Stop on the west boundary of Section 24 We ask you to change your designation of Segment 1 and begin Segment 2 at the same Forest boundary, above which the river is wild and scenic and properly classified "Wild" as you propose in the Preferred Alternative and in the Forest Plan

The boundaries of the Dome Land Wilderness have been Set by Congressional action and are outside the scope of this Plan We have checked the map and it is correct as printed

Segmentation Of the South Fork of the Kern River is based on major changes in land management emphasis and, as such, will remain as originally defined This question became a moot point when Kern River Wild and Scenic River legislation was enacted and established the actual river segments (and Used the Dome Land Wilderness Boundary)

300 It is not clear from the table showing wilderness use if the base year of 1982 includes the same areas as that for the following five decades Since additional wilderness areas were designated by Congress in the California Wilderness Act of 1984, it would be helpful to know if wilderness use for these new areas and additions is included in the 1982 base year

Wilderness use shown for 1982 is only for those areas that existed at that time, namely, the Dome Land & Golden Trout Wildernesses All figures shown for the 5 decades include those established in 1984 also A note has been added to the tables in Chapter 2 of the FEIS & Chapter 4 of the Plan to clarify this matter Thanks for pointing it out

SPECIAL INTEREST AREAS, GENERAL (210)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The plan should recommend establishing all five proposed Botanical Areas The final biological inventories for these areas should be priority items and budgeted for in the final plan

The final Plan establishes all five Botanical Areas based on public comment

RESEARCH NATURAL AREAS (211)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 There should be a strong statement for recommendation of establishment for the Research Natural Areas Current direction is inadequate

Recommended changes in wording have been made

200 The four recommended Research Natural Areas should be established, but priority should be given to establishing these in commercial forest sale areas for baseline purposes

The Sequoia's program of Research Natural Areas is a part of a coordinated effort to preserve areas for scientific study throughout the Region which covers most forest ecotypes found in California Our direction is to achieve a balance between the need for forest products today and research needs of tomorrow All three RNA's on the Sequoia National National Forest are recommended to the Chief for establishment

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300 Where is the policy statement regarding Research Natural Areas? Why are there no RNA management objectives which are as clear and decisive as for other elements?

An RNA prescription has been added Actual management will be dictated by the individual establishment reports when completed

400 Many more Research Natural Areas, Botanical Areas, and National Natural Landmarks should be proposed The plan only proposed four RNAs This is not even close to the potential number and size of areas which deserves this designation

The Sequoia's program of Research Natural Areas is a part of a coordinated effort to preserve areas for scientific study throughout the Region, covering most forest ecotypes found in California Our direction is to achieve a balance between the need for forest products today and research needs of tomorrow Botanical Special Interest Areas have been selected with aid from the California Native Plant Society They serve an entirely different purpose These areas were selected to protect resources with unique characteristics and to foster public use and enjoyment of their significant values The non-conifer RNA target elements were deferred to the next round of forest planning

The National Registry of the National Natural Landmarks program is administered by the National Park Service In all cases, their recommendations replicate the same areas that have been identified for our Research Natural Areas and Special Interest Areas.

800 A budget as well as a specific monitoring objective which ensures the establishment of each RNA should be included

The budget prepared for the Preferred Alternative reflects the needed funds to prepare establishment reports There will be no other management activity associated with these areas and nothing to monitor

SPECIAL INTEREST AREAS (212)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The Moses Mountain RNA and Long Canyon RNA Sites Should be established as National Natural Landmarks.

These areas will be evaluated in coordination with the National Park Service for designation as National Natural Landmarks In general, these areas are protected under other designations or proposed status as RNA's

TIMBER, GENERAL (230)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 What is a timbered compartment,

A compartment is a division of forest land defined by natural and human features usually between 3,000 and 15,000 acres in size, used to facilitate planning. The term "timber compartment" refers to areas where timber is growing and timber harvest is a potential use of the land.

200 I do not think it is realistic to try to increase both timber harvest and recreational use as you propose.

It is realistic to increase multiple land uses as long as the level of use is compatible with biological and/or other defined capacities of the land base. The Land Management Plan will attempt to provide the most optimal and compatible mix of land uses that satisfy identified issues and concerns. This mix will always involve compromise.

300 We request you give serious consideration regarding the effect on our County's economic growth.

Chapter 2, Section B of the EIS describes how alternatives are developed. Chapter 2, Section E-6 summarizes how alternatives differ in the production of resource values. The Preferred Alternative will offer a reasonable compromise in trade-offs between competing resource values.

400 I feel strongly that issues be carefully weighed against social, economic and environmental factors.

Please refer to 300 above.

500 The MKT alternative will be in the best interests of the people.

These are statements of value for which we have no substantive response.

600 , The level of timber management will tend to stifle future development of the timber industry.

See Response #300.

700 You have built in the potential for future conflict and economic hardship.

The Plan is a dynamic one which is subject to periodic review and adjustment. If unforeseen conflicts and economic hardships result, the Plan can be modified to the extent that the modifications can be implemented with sound resource management.

755 Clearcutting induces increases in available water. Water has value. This value should be shown somehow as a timber value.

The computer model PORPLAN uses the value of water in determining the timber harvest.

800 Most of the output levels anticipated could be realized with a lower budget. Why did you not produce such an alternative?

The FEIS examined a wide range of budgets as required by NEPA.

850 The socio-economic environment of the forest extends well beyond Kern and Tulare Counties.

The majority of the direct effects of the FEIS and Plan are on Kern and Tulare Counties. We have also added a discussion of broad level timber supply effects in Appendix O, FEIS.

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900 If the annual cut was reduced The economy of our community will be drastically affected. Our firm is very dependent upon wood products in our design

Timber and related industries affected by timber harvest levels on the Sequoia NF are indeed recognized as a major issue in development of the Sequoia Land Management Plan Effects on receipts to counties. jobs and community employment are considered in the development of each alternative The intent of the Recommended Alternative is to strike the best balance between trade-offs in all of the various resource values

901 The proposed plan considers only 1,080 people as being directly affected by the actions of SQF There are far more than this estimated 1%, actually, 3,240 to 5,400 jobs are created by companies which provide services to the timber industry It is estimated that for each employee directly involved in the industry 3 to 5 more jobs are generated Nearly 100,000 people are employed by the timber industry in California These individuals and companies will be severely affected with any decrease in timber production

When dealing with effects concerning employment, the FEIS considers only those jobs locally affected by timber harvest on the Sequoia National Forest. not those in the wood products industry and its suppliers throughout the state The Sequoia's Plan clearly affects the former. but only tangentially influences the latter We recognize that non-local jobs are indirectly affected. however, the degree to which they are is not separable Because the Preferred Alternative Shows no change in historical levels. no change in employment due to the Sequoia's harvest level is expected See Appendix O in the FEIS for a discussion of broader level timber supply effects

1000 The DEIS and the Plan both recognize Tulare County's timber industry Both documents are silent on timber industry employment elsewhere. including Kern County

It is true the DEIS did not consider timber industry employment in Kern County Since publication of that document. however, the mill at Inyokern has been closed permanently Thus there is no Kern County timber industry to discuss. Otherwise. the discussion of industry employment was intended to focus on local, not statewide levels Please see Response #901 above for further information

1100 Wood products company employees and relatives work at a variety of volunteer and service jobs in the community

These activities generally improve the quality of life in the community

1200 wood products workers have the same dependence on and proprietary interest in good resource management that you have ascribed to the ranchers

We have added a discussion of this to Chapter 3 of the FEIS

1300 The social and economic benefits for non-timber resources that are enhanced by timber activities should be directly displayed

Benefits to non-timber resources from timber management activities are described numerous times in the FEIS and Final Plan Quantification of these benefits. however. would be difficult due to their intangible nature and change in effect over time

1400 If the Forest Service were to adopt a significantly more restrictive herbicide policy, it should consider new alternatives

For the planning period, We do not anticipate a more restrictive herbicide policy If the herbicide policy does become more restrictive and monitoring indicates future yield goals may not be met, then

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corrective action as described in Chapter 5 of the Plan will be implemented

1450 The proposed draft plan falls short of meeting demands for wood fiber. Yet all other factors meet or exceed the guidelines. Wildlife habitat needs are met and minimums are exceeded. Habitat is provided for 105 pairs of Goshawks. 130 pairs of spotted owls. Streamside management zones are extended to include intermittent streams.

You are incorrect in assuming habitat for 105 pairs of goshawks and 130 pairs of spotted owls will be protected exclusively for these species. The FORPLAN modeling table, from which you derive your figures, lists the acreage available and suitable for these species, not what will actually be managed and protected. Please refer to the Management Indicator Species section of Chapter 3 of the Final Plan for more detailed information pertaining to the management of these species. Also, the table figures for spotted owls have been revised. Your comment concerning Streamside management zones is correct.

1500 The use of the 1982 base year is misleading.

Use of 1982 was needed for consistency with the 1985 RPA. Timber harvests were depressed in 1982, but not timber sale offerings. Sale offerings are what are compared in the FEIS.

1600 .. A more detailed analysis of demand. .. would help the reviewer understand overall market demand picture.

We have added Appendix O, FEIS, to discuss a broader level timber supply demand situation. Also, see discussions of demand in Chapter 3 of the FEIS.

1700 The analysis of timber impacts would be considerably strengthened if the beneficial impacts were also identified, displayed, and valued.

Thank you for your comments. Please refer to Comment #1300 above.

1800 We disagree with the projection of those cost trends into the future.

The timber cost increases used were based on the projections of per capita disposable income. As stated, this is "because timber management cost increases have historically been highly correlated with increase(s) in per capita disposable income." The basis for this assumption is supported by Haynes, et al., as referenced. This does not mean that timber management costs are based on the public's ability to pay. It only states that in the past, the two variables (timber management costs and per capita disposable income) have been correlated. The reason for this correlation is the high labor content in timber management activities and the need to pay competitive wage rates. Whether they will continue this correlation is only conjecture. It is the best information available at this time. At the end of the planning decade, if our assumptions have not been borne out, we will revise our projections and EIS.

1900 Projections of timber yield appear to be conservative ..

Our timber yield projections are based on the best information we have available at this time. See comment 1800 above.

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2000 The ten-year timber sales program After the second year it is merely a vague statement that some volume will be sold

The five-year sales program was not well defined by timber sales past the second year at the time the Draft Plan was written This was due in part to the uncertainty created with the timber buyback program The Plan does show the planned sell volume by species for each District for the last eight years of the planning decade This program is continually monitored and updated as necessitated by management The quantities will be evaluated at the end of the Planning decade along with the rest of the Plan and revisions will be made for the second decade

2100 Neither is there a discussion as to the treatment of backlogs in planned Outputs for timber or for Other resources

The backlogs may or may not be made up The timber sale program is driven by Congressional appropriations If we are funded at a level Commensurate With the Plan. we can produce the planned timber Outputs If at the end of the planning decade we are not on schedule, appropriate adjustments will have to be made

2200 should analyze the potential effects of budget shortfalls

We have added Appendix L in the FEIS to discuss budget effects

2300 anomalous budget increases for the fifth decade

The budget increases referred to might be explained by increases in Chaparral treatment Which translate into increased grazing

2400 , Much of the incremental gain in water yield is induced by timber harvest

The increased water yield comes from increased runoff from the acres where the vegetation has been removed or altered This could occur by timber harvest, increased wildfire, increased prescribed burning Of chaparral. increased road construction. etc Much of the runoff comes in the Spring from snowmelt The snow melts earlier from the openings and has less opportunity to be retained on the Site for plant growth or to be evaporated The increased yield translates into less water retained on or evaporated From the Forest and more Water in the reservoirs for recreational and agricultural use

2500 regulated timber harvest acreage by prescription and by CAS determination do not agree

AS listed in Appendix C of the Plan (Table C 1), 35,000 acres on the Forest are used for unregulated harvest and 276,000 acres are for even-aged management (regulated) The remaining 109,000 acres include areas managed using uneven-aged methods and spotted owl habitat (see also Table C 11)

2600 . monitoring would be strengthened by a discussion of ways and means to make corrections if and when deviations are detected

Weaknesses in the monitoring process for the Forest Plan were recognized The Final Forest Plan contains Stronger and more specific monitoring requirements Please see Chapter 5 of the Plan for the revised monitoring plan

2700. The plan should strive for improved economic efficiency

Achieving the highest net public benefit and becoming more cost efficient is a mandate under NPMA See Chapters 1 and 2 of the Plan. and Appendix D Of the EIS

2800 The FS should identify. the potential for sustained Yield of timber. based on a careful financial evaluation . NF lends yielding negative net timber receipts Should be identified as economically unsuitable for timber production the FS Should introduce a phased reduction of uneconomic timber harvesting

The biological potential for sustained yield of timber From the Sequoia N F has been established The economics of the timber sale program is a more elusive subject The Forest Service is required by law to manage the National Forests for multiple-use The real measure of the worth of the timber program is not Costs versus revenues, but costs versus public benefits Public benefits can be measured as receipts and as the dollar value of benefits for which revenues are not received. such as recreation Unfortunately. some benefits are impossible to value in dollar term or other readily quantifiable measure In the broader context. sales with revenues less than costs are Justified when important non-timber objectives, which are Justified on their own merits. are being provided and the timber program is the most cost-effective way to achieve those Objectives Another Consideration is that many communities rely on National Forest timber for a significant portion of their economic support

2901 We are/I am opposed to the Plan on the Sequoia National forest concerning increasing timber harvesting because

The modeling process described in Appendix B of the FEIS allows all lands to be available for all uses, within constraints imposed by the theme of each alternative The computer model. FORPLAN. then solves for the particular allocation of resource uses that produces the maximum present net value In this process nonfinancial values, such as wilderness experience. are evaluated and chosen to the extent that they contribute more to public benefits than do values with a financial return In this method of resource allocation the intent of the 1960 Multiple-Use Sustained Yield Act is fulfilled Multiple use is Optimized. but few. if any. specific uses are maximized The above response is applicable to points 1.3.5.7.8.11.13-15 and 17 Response to Other points are as follows

1 The yield rate is too high. sawtimber should be stopped or drastically curtailed. not escalated from 97 MMBF in 1980 to 136 MMBF in 30 years

2 A detailed review of modeling methods and assumptions has shown that expected timber yields from existing and regenerated stands are reasonable and even conservative

2 Planners have overestimated future growth in existing trees and in regenerated Stands. therefore the timber industry Should be directed towards selective cutting methods in areas already logged, not towards virgin forests

4 The process for selecting lands suitable for timber management is described in Appendix C of the Plan

3 Further Planning Areas and released roadless areas will be opened to timber production

6 Harvest of mature timber is generally more economically sound than harvest of young timber It is true that we do not expect to maintain trees

4 Marginal areas. those with poor soil. difficult terrain and arid climate. are not considered with correct Judgement concerning timber harvesting This constitutes poor regeneration and problems with erosion

5 Timber production is the primary use of more than 70% of the forest (294,000 acres), and therefore the plan does not consider the primary users of the forest.

6 Old growth timber is negative growth timber. harvest of these Stands is economically unsound, these trees cannot be replaced as they are now

7 The Giant Sequoia should not be harvested

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8 It promotes clearcutting  
9. The housing market and construction trade is uncertain at this time  
10 The Forest Service is competing unfairly with owners of private timber lands.  
11 It provides for building more than 800 miles of new roads. 17-26 miles per year. and only 21 miles of new hiking trails over the entire 50 year planning period. The logging roads cause additional expense at the taxpayers loss. and decreases and damages existing foot. and ORVAC trail network  
12 Cutting trees will cause damage to water quality. heavy drain on the forest soils. increased noise and air pollution and an increase of the level of carbon dioxide in the atmosphere  
13 It decreases visual quality  
14 It decrease vegetation diversity, promoting a monoculture forest system. and therefore decreases wildlife through destruction of their habitat  
15 It will eliminate recreational uses  
16 It will decimate the forest ecosystem  
17 Rim-to-Rim protection is essential to maintaining the health of the rivers associated with logging within river canyons  
18 All streams must be protected on all sides for at least 150 ft from timber harvesting  
19 Timber harvesting does not generate enough revenue to cover long term costs. especially during times of budget cutting. such as Gramm/Rudman  
20 Increases in timber harvests are difficult to justify in light of the current glut of the timber market causing companies to cancel contracts. and in terms of SNF annual dollar loss, as much as 40% on each sale from timber operations Subsidies to timber industry are at the taxpayers expense

3000 you have included such alternatives as MKT and FRO so that you can scale back the more extreme proposals .

3100 The volume of timber harvested in AMN is extremely low Reg Class 1 harvest is not as efficient as II or III . It is not clear if the 17,000 acres constrained to Partial Retention are all CAS acres P G-1 thru 24 This is an excellent attempt on a difficult subject. but it remains highly biased towards even-aged management

Older than about 110 years on lands managed with an emphasis on timber production

9, 10. Economic predictions are certainly debatable However. we used the most reasonable assumptions and trends available to us

12, 16, 18 The mitigating requirements for each project or timber sale are developed on a site-specific basis by professionals and specialists to protect the land and the life-forms associated with it and to meet legal requirements.

19, 20 The Forest Service is mandated by law to manage the National Forests for multiple-use As a consequence. the timber program. as well as all other National Forest programs. must be evaluated in terms of costs versus all public benefits Revenue earned from the sale of timber is just one of these benefits Congress did not intend that the National Forests be managed in a manner that would ensure that revenues exceed costs.

The MKT and PRO Alternatives emphasize market outputs As such they establish one end of a spectrum of alternatives ranging from emphasis on market outputs to emphasis on such nonmarket outputs as recreation

The reason the timber harvest level is relatively low is that amenity values such as visuals are given a higher priority in the program formulation Neither Modification nor Maximum Modification Visual Quality Objective is allowed in the Amenity Alternative AMN was reformulated to eliminate even-aged management This results in no clearcutting and a greater emphasis on uneven-aged management. thus. one reason for no Regulation Class I harvesting in AMN (which may result in Modification or



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Maximum Modification) The relative efficiencies in the different harvest systems did not determine the outcome. The model was only using CAS acres in the solution. However, in practice, salvage will be done on "on-CAS acres where fire, insects and disease, or other natural phenomenon has killed trees

3200 . method of delineating vegetation types is inadequate in that it does not sufficiently illustrate critical habitat types

Critical habitat types, mainly attributed to wildlife and plant species, are displayed in other documents, where map resolution is greater. This insures that the boundary and area locations of these habitat types are clear to all personnel involved in managing the Forest resources. Examples of such documents include Condor Recovery, Peregrine Falcon Recovery and Deer Herd Plans. All of these documents are available for review upon request at the Forest Office in Porterville.

3300. harvest of Black Oak will reduce wildlife

Management direction given in Chapter 4 of the Plan requires that hardwood species, especially oak, be maintained in sufficient amounts to insure viability of species dependent on hardwoods.

3400 How will you protect snags from woodcutters over time and provide replacement for those lost?

It is impossible to protect all soft snags. As described in Chapter 4, Section F of the Plan we do have direction in the Plan to provide habitat for wildlife species that are dependent on snags. We are preparing Environmental Assessments for each project. Wildlife biologists are evaluating the projects in order to ensure that sufficient quality habitat is provided for the affected wildlife. Management has determined that the snags provided through the timber sale program are sufficient to meet wildlife requirements.

3500 Why hasn't the Sequoia developed prescriptions with protective wildlife standards governing timber harvest. Such factors as 1) limited harvest seasons and vehicular travel in key deer areas 2) modification of Cutting Units

We feel that such rigid standards are not sufficiently flexible to provide the correct treatment for each project. We prefer to analyze the site-specific needs of the affected wildlife and document the needs in our Environmental Assessments.

3900 aerial harvest methods are much more amenable to uneven-aged harvest. There are numerous benefits to uneven-aged (management) on steep slopes

Appendix G of the FEIS discloses the complete state-of-the-art knowledge, in condensed form, on even-aged and uneven-aged systems of timber management. Uneven-aged management is described in the Standards and Guidelines. Aerial harvest methods will be evaluated for use in the sensitive areas at the time the project EA's are prepared.

4000 I am pleased to see Sequoia reforestation in the Plan .

These are statements of value for which we have no substantive response.

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4100 be sure that full utilization of the capabilities of the helicopter System has been considered

The Sequoia NP has used helicopters in many projects. The need for special requirements such as helicopter logging is evaluated through the ID Team process and is documented in the Environmental Assessment

4200 Enough of the Forest has been devoted to non-use wilderness

Refer to #200 under "Wilderness".

4300 timber industry representatives and recreationists have expressed to me their concern over the practice of clear cutting

Table 2 25 in the PEIS summarizes how much Clear-cutting is done in each alternative The environmental consequences of each alternative are discussed in Chapter 4 of the PEIS

4400 , You must pay the companies for the roads they build while cutting they are cutting vast areas completely without doing any replanting

Often the timber purchaser build roads without payment The public receives the road as long-term capital investment in return for lowered timber prices In addition. they maintain those roads and perform many Other "services" which benefit the many varied users of the National Forest The timber purchaser is required by law to pay to regenerate the stands they cut Environmental analyses are made for all our timber Sales The lagging operations are carefully monitored to insure that they Conform to the timber sale contract.

4500 The EIS Should contain a thorough discussion of the impacts on water quality and fish habitat

Fisheries are discussed in Chapter 4 of the PEIS The monitoring of streams is discussed in Chapter 5 of the Plan The impacts of a timber sale on a stream are evaluated in the environmental analysis on a project-by-project basis Site-specific requirements are analyzed and appropriate protection is provided

4700 The timber industry has done a lot for the public

This is a Statement of value for Which we have no substantive response

4800 ..the wholesale spraying of herbicides would have a devastating effect on water quality, wildlife and human habitats.

Presently there is a moratorium on herbicide use in Region 5, pending the completion of a Vegetation Management EIS 2,4,5 T is no longer registered for Forest applications We only use herbicides which have been registered for the application intended We carefully select chemicals to best target those plants Which compete with young tree seedlings The chemicals are then carefully applied using EPA and OSHA approved methods Care is taken to minimize over-spray and drift. The normal application rates of herbicides used on forestlands are not likely to produce acutely toxic responses in most nontarget organisms The short persistence. lack of biomagnification in food chains, and the rapid excretion of these

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herbicides by animals preclude chronic exposure and, therefore, chronic toxicity. The primary effect of herbicides on wildlife results from changes in the plant component of their habitat. Only a small portion of the forest would be sprayed each year. Each clearcut acre might get sprayed with herbicides two to three times over its approximate 100-year life span. Therefore, 24,750 acres are likely to be sprayed in a decade if the herbicide ban is lifted. That is 2,475 acres per year will be sprayed with herbicides. This is less than 0.7 percent of the total forest land available for timber harvest. See also Y400 in "Herbicides."

4900 I Wish to see the lumber aspects minimized

This is a statement of value for which we have no substantive response.

5000 four wood products companies harvesting timber in the Sequoia National Forest conducted a survey among their vendors to assist the U S Forest Service in gathering social and economic information that relate to timber harvesting there is a lack of any definitive data concerning the social and economic impact of forest service decisions regarding the annual volume of timber harvest.

Chapter 4 Section B 1 includes an analysis of both direct and indirect effects on local employment in the various levels of harvest assigned to the Plan alternatives. These levels of employment are related to Sequoia National Forest production alone. Consequently, the survey results submitted are not comparable to our figures. The four mills in the survey reported total employment, not the share supported by the Sequoia National Forest timber. Similarly, the vendor survey reports total employment rather than a prorated share. The employment analysis in the PEIS does focus on the local geographic area, as the primary loci of effect. Appendix O regarding timber supply effects has been added to cover broader level, regional concerns. See comment 1000 above.

5100 A return to selective cutting is imperative to maintain a diverse & productive forest

A combination of even- and uneven-aged management systems will be used and diversity will be maintained. A discussion of the effects of timber harvest on diversity is contained in Chapter 4 of the FEIS.

5110 harmful consequences of timber harvesting ignores the obvious fact that such benefits are transient, while the cumulative effect of habitat destruction is permanent. A species such as the spotted owl, goshawk, or pileated woodpecker displayed by clearcutting of mature forest does not share the benefits of new open space.

The choice of silvicultural systems to best manage wildlife habitat depends on which species are to be emphasized. Almost all forest wildlife species could use a particular young growth stand at some time in its development regardless of the silvicultural system. Old-growth habitat is being reserved on the Sequoia National Forest for those species which are dependent on a climax forest. For a more detailed discussion on silvicultural systems, see Appendix G of the EIS.

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5120 Timber to be cut in the Big Meadow - Buck Rock, Stoney Creek, Chimney Rock, and Baldy Ridge areas should be selectively cut to preserve the beauty of this magnificent recreation area. At least 40 healthy trees per acre should be left for future generations to enjoy

The management of the National Forests is dedicated to multiple-Use. Therefore, all suitable timber land is not managed for maximum timber production. An interdisciplinary team of Specialists and professional foresters analyze each timber sale to ensure that the sale and associated activities are environmentally sound. A landscape architect is consulted in visually sensitive areas. Public participation is solicited in the Environmental Assessment (EA) process. Individuals with concerns about particular activities are invited to participate in the EA process.

5150 These documents (Plan & DEIS) are very largely inadequate in terms of fully informing the public as to the true consequences of the proposed actions. The program does not meet the goals of NEPA to conserve for future generations natural resource values and environment. These need full study. (1) The value and unique qualities of old growth forests. (2) Cumulative impacts on climate from large scale and successive clearcuts of old growth forests. (3) Lacking is appropriate Valuation for the water resources that unlogged forests provide in terms of long term volume and quality.

The documents contain the information required by law. National resource values and environments are conserved for future generations in the forest lands which were withdrawn from timber activity or which have restrictions imposed on them to protect certain aesthetic or ecological values. (1) The value and unique qualities of old growth forests are one reason the Sequoia NF has removed over one-third of its productive forest land from timber harvest and has lowered the intensity of management on an additional one-third. (2) There is no danger that the clearcutting on the Sequoia NP will alter the climate. Less than two percent of the Forest will be clearcut in the next decade. Each clearcut will generally be less than 25 acres, and will be interspersed with older timber stands. (3) Appendix B describes the modeling and analysis process used in developing the FEIS. The process meets NEPA requirements in evaluating the Water Resource BMP's (Best Management Practices) will be used on all clearcuts to protect Water quality on the Forest.

5200 A serious flaw is the failure to identify land that is unsuitable for timber management. The combination of known erosion hazard information and the lack of quantitative data on soil productivity tends to challenge the adequacy of the timber suitability analysis. The DEIS states that Best Management Practices (BMP's) will be used to protect such resources. This treatment is clearly inadequate. The NEPA requires a "reasoned discussion" on potential impacts.

The degree of accuracy of the sampling procedures and resource data used to allocate land to the various management prescriptions is appropriate as this is a general plan. Actual implementation is subject to the Standards and Guidelines in the Plan (Chapter 4) and on-site project environmental analysis which will determine project design, mitigation measures, etc. A discussion of environmental consequences is contained in Chapter 4 of the FEIS.

5400 Timber would be the primary purpose, but other uses would be permitted when they are compatible. The FS should use all of the harvest methods that are available.

The management of the National Forests is dedicated to multiple-use. Therefore, all suitable timber land is not managed for the maximum timber production. Other uses and values are considered. Both even- and uneven-aged systems are to be implemented under the Plan.

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5500 (Manage the forest holistically without disturbing the natural process)

It is impossible to manage the Forest without disturbing natural processes. Millions of acres of wilderness have been set aside within the National Forest System to protect these lands from disturbance. Yet, even in the wilderness, visitors disturb the natural processes.

5600 We should have 250' stream management zones along Class I & II streams

The mitigating requirements for each project or timber sale are developed on a site-specific basis by professionals and specialists to protect the land and the life-forms associated with it and to meet legal requirements. Also, refer to response #100 under "Fisheries, General" (Subject Code 081)

5700 the Forest management is being handled just fine

These are statements of value for which we have no substantive response.

5800 The traditional emphasis on timber production is devastating our national forests. emphasis should be on the maintenance of an ecologically sound system

At the time a project is planned, specialists evaluate the area and only recommend treatments that will not result in irreversible or irretrievable environmental impacts.

5900 We compliment you on the documents. They definitely meet the requirements of NEPA and the National Forest Management Act

The Acts that you mentioned directed the planning process.

6000 We support intensively managing those lands where timber production is cost-effective

Our commercial timberlands are managed intensively where there are no conflicts with other uses. Where conflicts exist, an interdisciplinary team of professionals and specialists analyze the situation and present environmentally acceptable alternatives which satisfy the needs of the competing users to varying degrees. The land manager responsible for the decision selects an alternative.

6100 We support even-aged management as the principle system in all forest types and over most of the Sequoia NF

These are statements of value for which we have no substantive response.

6200 The Sequoia National Forest contains a remarkably high percentage of late succession habitat. No more old-growth forest should be cut until we fully understand the impacts that its removal has on organisms dependent upon this vanishing forest type. We must not destroy the last intact pieces of our climax Sierran Forest. There is still much to be learned and we need the genetic and silvicultural information stored in these living laboratories. There is enough high-quality second growth forest

Productive timberland is being managed to emphasize uses other than timber on over 50% of the 679,000 acres of productive timber on the Sequoia. This includes timber in wilderness, along travel corridors, along streams, on erosive soils, around recreational areas, and in spotted owl habitat areas.

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6300 The clearcutting system should also be available and implemented to regenerate pine stands

Both even- and Uneven-aged management Systems will be used in all forest types Clearcutting to regenerate pine will be considered The actual silvicultural prescription will be based on site-specific conditions and direction contained in the Plan

6301 The rotation of cutting on the Sequoia must be bolstered back up to 200-300 years so that trees can reach their full size or nearly so

A discussion on the trade-offs between rotation age, timber production and other values is found in Chapter 3, Section E 22 e of the PEIS

6400 We support the use of a full range and variety of harvest systems. We support the principle of integrated pest management

See #6300 above

6500 The Preferred Alternative (Plan) should retain the highest land base for full yields of timber

The modeling process described in Appendix B of the EIS allows all lands to be available for all uses, within constraints imposed by the theme of each alternative The computer model, PORPLAN, then solves for the particular allocation of resource uses one that produces the maximum present net value under the conditions that pertain to each alternative

6501 The SQP should support the reasonable requests of the timber industry concerning the amount of timber to be harvested The respondent demands a minimum annual cut of 104 MMBF but would prefer 134 MMBF for the following reasons 1) The timber industry provides economic and social stability for a large populous within the counties affected by the Forest's zone of influence and local communities (Auberry, Dinuba, Inyokern, Porterville, etc ) 2) Wilderness expansion would further hamper the timber industry's ability to obtain a sustainable timber yield in the future 3) The increases in foreign imports (especially from Canada), and higher interest rates are harming the timber industry These aspects help increase unemployment, raise the price of housing and lumber products, and cause families relying on the timber industry to suffer economically. 4) Counties receive 25% of the National Forest System revenues that come from timber sales and other land uses This amounted to 29 million dollars in 1985 received by the counties in Central California benefiting directly from SPP These revenues are used for the betterment of local schools, roads, and government 5) Timber harvesting benefits the land and its resources resulting in a) more land suitable for wildlife and grazing, b) a reduction in fire hazard, c) a means of preventing timber from going to waste through insects, disease, over-maturity and other damaging agents.

The modeling process described in Appendix B of the FEIS allows all lands to be available for all uses, within constraints imposed by the theme of each alternative, The computer model, PORPLAN, solves for the particular allocation of resource uses one that produces the maximum present net value In this process nonfinancial values, such as wilderness experience, are evaluated and chosen to the extent that they contribute more to public benefits than do values with a financial return In this method of resource allocation the intent of the 1960 Multiple-Use Sustained-Yield Act is fulfilled Multiple-use is optimized, but few, if any, specific uses are maximized The above response is applicable to points 1-9

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d) firewood accessibility; e) new road construction, and therefore, **more access** to recreational activities Such as, hunting, fishing, hiking and camping; f) fuel for the lumber mills eo-generation plants. Which provide energy for 10,000 homes at one mill alone 6) Timber is a renewable **resource** Through proper management the SQF **can** provide for the timber industry's demands for timber production and still insure that the multiple-use concept is followed 7) Asthetic values can be maintained, and trees planted to provide for the future. 8) The SQF should not let the lobbying **pressure** from a small number of people reduce the amount of timber that may be harvested Political pressure combined With voices of hysteria concerning environmental issues have been drowning voices Of reason from the industry 9) Timber ranks as one of the top agricultural products in California, and although 75% of those products are utilized Without leaving the state, many individuals and businesses would suffer across the nation if production is reduced on the SQF

6503 The **SPP** should support the reasonable request of the timber industry concerning the amount of timber to be harvested Some request the maximum annual cut of **186 MMBF**, others **support** the High Market (MKT) Alternative, for the nine reasons listed in #6501 above

6600 Conservation of timber should be the primary objective Timber management **is** for the experts but their expertise should not be hampered by politics, **short-run** economies or **special** interest groups Our children should have Old Growth trees to **fuss** over

6700 We also desire that a member or members of the **Kern** Valley Indian community be allowed **access** to both archaeological information and any known or suspected Sites

6800 (Manage forest resources aggressively to compete in the world market place)

6900 **False scarcity** of timber is one of the main **reasons** for extremely high bidding, which led to the recent buy-out program,

Please see the response given to the **Tulare** County Board of Supervisors later in this Appendix.

These are statements of value **for** Which we have no substantive response

The Sequoia NF will continue to consult with Native American peoples regarding their Cultural and religious **concerns** for all projects Conducted **on** Forest lands However, **we are** prohibited by 36CFR69 18 **from** granting public **access** to cultural site location information except under very restricted circumstances

The Forest **Service** manages Its land under the multiple-use doctrine which demands that all resources be managed for the public benefit This **means** that intensive timber management is limited to a small percentage of the Forest Instruction to change this direction must **come** from Congress

Historically, high bidding has not occurred on the Sequoia The maximum potential yield given in the Plan represents a volume that could be produced **if**

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we practiced intensive management on all the commercial timberlands on the Forest. This is not possible with all the multiple-use considerations that are a part of forest management. The 97 MMBF figure is a realistic yield which can be met

7200 logging prescription for the Piute Mountains needs to be changed to eliminate clear cuts. The area is too arid,.

Historically, we have clearcut and successfully regenerated timber stands on the Piutes. Proposed timber harvest areas are examined by professional foresters and a variety of specialists. Their findings are documented in an Environmental Assessment for public examination. We do not clearcut land that we feel cannot be successfully reforested.

7100 the 20 employees of Salvage Loggings, Kiper Lumber, and many others don't think the impact is negligible.

We do not mean to imply that the management practices do not have an influence on these individuals or others that make their living on the Forest. However, socioeconomic effect is estimated for whole spheres of economic influence, not for individual firms.

7200 Because the Sequoia assumes timber values will dramatically increase in the future, timber is withheld until later decades.

The Sequoia does not assume that timber values will dramatically increase in the future. The values used are listed in Table 8.3 in the Appendix of the FEIS. The level of timber produced in the alternatives is primarily determined by multiple-use constraints required in the model. The PORPLAN modeling used to develop the EIS and LMP meets NEPA requirements.

7300 The assumptions about stand growth, discount rates and price trends are the most important determinants of timber sale levels. The same tables, rates and trends are used in every alternative. This violates the National Forest Management Act regulations. The budget constraint on the Preferred Alternative is not justified. Any cost figures in the plan are highly suspect.

Originally the budget constraint of 20% over CUR was imposed because in our judgment we had to constrain the FORPLAN model to stay within what at that time appeared to be a reasonable budgetary range. The 20% figure was judged to be reasonable and is in use region-wide. The Preferred Alternative is "constrained" to stay below \$30 million. A constraint which from a practical standpoint exerts no influence on the model because it is so high. The range of alternatives presented in the FEIS does represent different ways of dealing with public issues and does in fact reflect resource potentials, both market and nonmarket. Hence, we feel we have responded properly to NFMA requirements. Regarding basic assumptions about stand growth, discount rates, and price it is not, in our opinion, appropriate to vary those assumptions just for the sake of varying them. Growth rates are based on stand data. Price trends were based on over 20 years of data and our best judgment as to what might happen in the future. Thus, we have no sound basis for varying any of these three assumptions.



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7400 The Sequoia plan fails to identify the resource **use** and development opportunities as required by **36** CFR **219-12(b)** .

**36** CFR **219-12(b)** is a regulation dealing with the evaluation **and use** of Public input received during the planning process. Regarding identification of resource use and development opportunities it reads "The Forest Supervisor shall determine the major public issues, management **concerns**, and resource use and development opportunities to be addressed in the planning **process** " The Forest Supervisor did **in fact** do this using public input as advice. Therefore, we judge that our planning process and documents **conform to 36** CFR 219-12 (b)

7450 There is a 40 MMBF gap of unexplored decision space that the Forest **Service** has not considered

**It is our** judgment that no balanced alternatives exist **in** this 40 MMBF "gap " At levels of harvest above the 133 MMBF level of PRO. management of the Sequoia would be **so** skewed toward timber production that the concept of multiple-use management would be severely constrained

7500 The final EIS Should run the preferred alternative through the Forplan computer with and Without herbicides

The herbicide **issue** will **be** resolved with the **final** decision on the Vegetation Management for Reforestation EIS which may take **some** time. All Forest Plan alternatives **in** the FEIS **are** based **on** the **use** of herbicides continuing to **be** available. Estimates of reduced timber yields and higher vegetation management costs Without **use** of herbicides **are** also described **in** the Forest FEIS. Section E 2 f of Chapter 2

7600 The Sequoia has violated NEPA by not including alternatives for **MMR's** and **MIR's**. The Sequoia has effectively shielded one-fifth of the Suitable lands from NEPA **review** .

Please see Chapter 2, sections C and E for an explanation of how **MMR's** and **MIR's** **are** used **in** alternative development. Just **because** **MMR's** and **MIR's** are constraints **does not mean** they have been "Shielded from NEPA review " They **are** explicitly set **out** **in** Chapter 2 of the FEIS

1620 Need to evaluate a visual quality constraint imposed on 17,000 **acres** **along** state scenic highways

Regarding scenic **or** eligible scenic highways, **it is** our policy to manage these as Sensitivity Level 1 (foreground Retention) Which **means** that the existing character of the landscape will not be evident by any land management activity. Hence, the constraints designed to retain visual quality along these highways is consistent **with** present policy

7700 we want to renew a plea to display the **cost** of individual **MMR's** in terms of timber Output

The **MMR's** and **MIR's** together **cause a loss** of 1.219 MMBF **over** the 50-year planning period **or** 24.4 MMBF on an average annual basis

7800 continue emphasizing the importance of recycling our **used** paper products. **in** order to help **save** 25% of our wood products

The **Sequoia** **does not sell** any of Its wood to pulp mills. Therefore, **conserving** paper through recycling Would not reduce the timber **cut** on the Sequoia

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7850 It appears that there's probably 2-4 times the amount of acreage set aside for the spotted owl, which is **above** the minimum requirements

Please **see** the revised explanation of the management of this species under the Management Indicator Species Section of Chapter 3 of the FEIS and Plan

7900 The NF's were originally created with the management emphasis on timber and water

Thank you for **your** comment

8000 Ensure all timber activities **minimize** conflicts with existing wildlife.

The interdisciplinary environmental analysis performed during project planning identifies mitigation to protect wildlife and other values. The Environmental Assessment highlights any predictable environmental impacts that will **occur**. If the impacts **are** significant, they must be documented in **an** EIS. Also, refer to **response #200** under "Other Wildlife species."

8100 the combination of the **various** multiple use outputs into the ten alternatives was decidedly biased towards the two extremes and the do-nothing (CUR) alternative

We disagree. Examination of Table 2 22 shows that outputs are not biased toward the extremes, but rather that they cover the entire spectrum.

8150 No alternative exists which proposes moderately increasing timber production, reduced **new ski areas**, moderate water recreational uses, non-increasing range usage, and increasing wildlife habitat

While **it** is true that not one of **our** alternatives matches the one you outline, the WFV Alternative comes close. However, instead of a moderate increase in timber production it shows a moderate decrease, from 97 MMBF to 82 MMBF.

8200. the FS **is** yielding to big spending commercial timber interests

**See** Response #300

8300 Management direction says, "There will be **more** evidence of landslides **more** evidence of erosion. This violated NPMA, Section **6(g)(2)(E)**,

Projects are planned and executed to minimize erosion and other adverse environmental impacts. **Some** massive land movement will occur regardless of management practices. The items mentioned are not irreversible. Small landslides and sites of erosion from OHV can be repaired.

8500 "Management **problems**" need to be defined. CP 7 - Timber #1 should **also** include heavy **use recreation areas in** areas with modified harvest. It appears that considerable effort has been made to play down timber impacts. Combining the PRF and CUR alternatives **causes** confusion. p 4-99 indicates "both alternatives will utilize about 300,000 **acres** for timber" p 4-100 indicates "most of the land used for timber management is in regulation class I & II. These statements are true but do not address **a major** shift from regulation class II where timber production is constrained to regulation class I where timber production is unconstrained

"Management problems" is a subjective statement. It includes anything that would give the land manager **concern**. CP7 **is** not compatible with heavy **use** recreation. No attempt was made to "play down" timber activities. The PRF and CUR Alternatives were **combined in** the discussion to compare the selected alternative with our present program. Table 4 33. FEIS, clearly shows the acreages that **are** being managed in each Regulation Class. Regulation Class I does not mean that harvest is unconstrained. Approved and environmentally sound timber management practices **are** still required in all Regulation **Classes**.

8600.. Budget **cuts** and declining personnel should not adversely affect our forest lands and

Regardless of budget constraints we **are** required to conduct environmental analyses **for** each project.

wildlife..

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Wildlife Biologists evaluate the projects in order to ensure that sufficient quality habitat is provided for the affected wildlife. Refer to response 100 under "Other Wildlife Species". Also, refer to Appendix L for a detailed discussion of the budget process.

8700 (Past timber management practices need to be improved. Don't let budgets or politics interfere with good forestry.)

These are statements of value for which we have no substantive response. Also, refer to response 18600.

8800 I don't believe that a management plan is necessary.

Chapter 1, section A of the FEIS, describes the purpose and need for Forest Plan.

8900 . The principal silvicultural system used should be chosen on a site specific, rather than forest wide, basis. Regardless of the cutting method applied, the existing species composition should be maintained following timber harvests.

Silvicultural Systems and timber cutting methods are chosen through the interdisciplinary process on a stand basis for each timber sale. The Forest Plan and DEIS are general planning documents. To model alternative scenarios on a forest-wide basis, general silvicultural systems and cutting methods are applied to each analysis area on the basis of general compatibility with the site and objectives described in the alternative scenarios. A mix of cutting methods will normally be used on the project level in actual practice to be compatible with site-specific conditions and objectives. Natural species composition will be generally maintained through the reforestation program (see FEIS, Chapter 4, "Timber", Regeneration Method).

9000 Intensive management of young-growth Giant Sequoia will be beneficial in perpetuating the species.

This aspect of giant sequoia management is stressed in the Plan. Chapter 4, "Giant Sequoias".

9100 With a few exceptions, current management of the Forest has been satisfactory and it is a known system.

This is a statement of value for which we have no substantive response.

9200 the Forest's personal-use firewood program is superior. The personal-use demand for firewood should receive preference over commercial firewood sales.

While this activity does not return the revenue to cover costs, it does produce considerable benefits to the public. Individual Ranger Districts employ personal use and commercial fuelwood sales as management tools as well as a means to satisfy demand. Personal use and commercial demands will be met in most cases. Preference of personal use or commercial will be given on the basis of area and circumstance situations on the district level, not as a general forest policy. Forest direction is to satisfy both demands whenever possible and reasonable.

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9300 Sale offerings are held artificially low in the Preferred Alternative and should be raised to more closely approximate current demand. Wildlife habitat needs are met and minimums are exceeded. Habitat is provided for 105 pairs of Goshawks in decade one - 400% above the 21 required by MMR. Habitat is also provided for 130 pairs of Spotted Owls in decade one - almost 300% above MMR. Also streamside management zones are extended to include intermittent streams to increase the amount of land available to meet riparian resource needs. While all these needs are being met and exceeded, the need for timber is being short-changed.

Timber sale offerings in any alternative are functions of the alternative scenario and are not held at any "artificial" level. Timber harvest levels within each alternative scenario are constrained by economic efficiency (present net value). The Market Alternative, for example, is more heavily concerned with meeting timber demand. The Preferred Alternative displays the Forest's best (optimum) mix of all resource outputs at economically efficient levels. Timber demand is not being short-changed by the Preferred Alternative. Also, see Chapters 3 and 4 of the Final Plan and Appendix B of the FEIS for expanded explanation of goshawks and Spotted owl management. The figures in your comment represent the amount of suitable habitat currently available for these species. The amount of habitat actually managed and protected will be less.

9400 The general nature of the Plan is recognized however, does this mean that the adopted alternative calling for x number of acres for timber harvest and x% trails open to OHV use preclude public participation in an EIS process in specific areas of implementation?

Public participation is invited (and solicited by policy) at all levels of planning. Interested parties will be notified of pending project level planning by requesting their names be added to Forest Supervisor and District Ranger public involvement mailing lists.

9500 National Forest receipts in lieu of taxes may seem proportionately insignificant to the Plan authors but county government and school officials would be hard-pressed to budget replacement income.

The significance of receipts in lieu of taxes income to County governments is recognized. (See FEIS, Chapter 3, D Economic Base, Forest Reserve Funds, for each county.)

9600 Less subjective and more concise accurate descriptions of the difference between alternatives in the DEIS would have been helpful to reviewers in determining their own preferences.

Please refer to the summary tables at the end of Chapter 2 of the DEIS. Tables 2-21, 2-22, 2-25 are of particular assistance in concisely identifying differences among alternatives.

9700 The outer reaches of preservation were thoroughly explored but plan scenarios which would have coordinated and harmonized optimum outputs of the various multiple uses were ignored in this planning exercise.

It is our opinion that the existing range of alternative?, "coordinates and harmonizes" various appropriate mixes of market and nonmarket outputs. No single output is maximized. In our view the optimum mix - that is, best combination of market and nonmarket outputs - is embodied in the Preferred Alternative (PRF). Note that "optimum" means "best" while "maximum" means "most" or "greatest". PRF represents the best mix, but not maximum commodity output. Detailed planning records are available for public inspection at the Forest Supervisor's Office.

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9800 **Issues and concerns** raised on the **Sequoia** Forest during the planning process can only be responsive to the extent that they **are** not in derogation of the body of **law** which authorized Forest Service planning

We have no Substantive response to this observation

9900 Of **particular concern** to us is the **manner in** which **MMR's** were imposed upon every alternative The cost of these constraints is not evident from the Plan documents except for an unqualified **restriction** of 79,000 **acres** of the total suitable forest land base You have not followed NEPA and NFMA procedures until these **costs are** made visible and **are** clearly demonstrated as being **justifiable in** each alternative

Please refer to response #7700 above

9901 We oppose 91 46 thousand acres being sent to other **resource** uses, **particularly** 15 6 thousand to timber harvesting, and 19 36 thousand to range

This is a statement of value for which we have no substantive **response**

9991 I/We oppose the proposed timber harvest in the Cannell Meadow Ranger District because

- 1 It does not protect against soil erosion on already **poor** soil types With dry climates
- 2 It doubles the timber harvest
- 3 It should **require a** separate **Environmental** Impact statement because of the plans magnitude
- 4 Demands for other resources and environmental concerns are so great on the Kern Plateau

1 The Forest **Service** is prohibited by **law from** producing "substantial and permanent impairment of the productivity of the land" (NFMA, 1976) **Guidelines** that **ensure** the maintenance of **soil** productivity will be followed regardless of activities carried out on the land

2-4 The modeling process described in Appendix B of the FEIS **allows** all lands to be available for all **uses**, within constraints imposed by the theme of each alternative The computer model, FORPLAN, then **solves** for the particular allocation of **resource uses** that produces the maximum present net value In this **process** nonfinancial values, such as wilderness experience, **are** evaluated and chosen to the extent that they contribute **more** to public benefits than to values with a financial return In **this** method of **resource** allocation the intent of the 1960 Multiple-Use Sustained-Yield Act is fulfilled Multiple-use is optimized, but few if any specific **uses** are maximized

SILVICULTURAL METHODS (231)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 I object to the use of clearcutting when it is in the vicinity of riparian **areas** and wilderness areas.

It is the Forest Service policy to protect riparian and wilderness **areas** from disturbances which will result in irreversible or irretrievable damage

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200 The fact that soil productivity is decreasing on much of the private land in the US should make the Forest Service extra careful in preserving Public soils

The Forest Service is prohibited by law from producing "substantial and permanent impairment of the productivity of the land" (NPMA, 1976) Guidelines within this Plan are designed to provide a comprehensive approach to incorporating soil productivity into land management decisions through soil resource inventory, soil management support service, soil quality monitoring, soil Interpretation, and soils information training

300 Can the 5% of each Compartment set aside for Cavity and Snag using wildlife be Outside the conifer zone?

The portion of each compartment reserved for snags will be designed for use by the appropriate wildlife species present Therefore, the tree species may be other than conifers

400 "Maintain at least 20 sq ft /ac basal area of black Oak where it Currently exists " How do you propose to do this?

With the exception of cable regeneration units, oaks will be protected or managed to maintain at least 20 square ft/acre basal area where it currently exists This will require pre- and post- project monitoring of hardwood basal area to insure compliance with this standard

500 The Management Emphasis Map Shows a large portion of the Piutes is not proposed for intensive timber management. Are the Jawbone and Woolstalf Compartments in the mixed conifer type? Should clearcutting be done in these areas?

The Statement that restricts timber production to the mixed conifer type only was intended to mean that we will avoid the marginal desert conditions found at lower elevations in portions of the Piute Mountains We do not intend to avoid timber management on sites that are clearly suited for that purpose from an ecological point of view The suitable sites may include some eastside pine type

600 Pg. 4-77 Fish & Wildlife Is the 10% figure in Conflict with the 5% used in Snag and Down Log Management on pg 4-27

The Statement on page 4-77 of the Draft Plan should have read "Managed at least 5% ", not 10% The Final Plan has been corrected

700 Starting with the 5 decade. 5200 acres will be clearcut (pg 4-14) How does the Forest Service propose to maintain 50% of the area on a 120-140 year rotation?

The 2132 acres shown as reforestation in decade 2 of the Draft Plan (page 4-14) include 2,000 acres of clearcutting The remainder is a harvest designed to provide seed tree on areas where a two-Step shelterwood prescription was initiated in the previous decade 1978 acres will be clearcut and regenerated annually during the 5th decade

800 Pg 4-10 Timber By the year 2030 about 135,000 acres will have been clearcut Also, 188,000 acres will be "relatively unchanged " This is 323,000 acres According to Table C4 2, pg, C-21, the total suitable forest land is 289,000 acres Does the Forest Service propose to manage for timber 34,000 acres of unsuitable lands?

The 345,000 acres of "relatively unchanged" timbered land referred to on page 4-10 of the Draft Plan is the sum of regulated acres in the Preferred Alternative and includes those acres that are in the regulated component but not yet selected for harvest by the year 2030 There is a total of 420,000 acres of timbered land tentatively suitable for harvest, of which 345,000 was available for timber management in the Preferred Alternative with 20% of that receiving uneven-aged treatment

900 an exposed snowpack melts much more quickly, thus, water is available for tree growth and reproduction for a shorter period in the spring. The availability of water is a major factor limiting tree growth on SQF

The only water available to plants, except for very minor summer rain, is what is stored in the soil profile within the rooting depth of approximately two to four feet. Regardless of the timber harvest method, this depth of soil is normally saturated with water at the onset of the spring growing season. In areas of heavy snowfall it has been shown that snow accumulating in clearcut openings yields more water because of less evaporation during the winter and a dense pack melts more slowly in the spring, thus prolonging the runoff period.

1000 The Region has concluded that if clear-cutting is proven to be the most economically-efficient silvicultural system, then it is "Optimum" and NFMA is satisfied. This is incorrect.

Each alternative was modeled using FORPLAN. All applicable constraints were included for each alternative. FORPLAN then selected the harvest method most economical in terms of costs and benefits that would meet the prescribed constraints. A relatively high proportion of clearcutting was identified by FORPLAN as part of the optimum solution. However, a significant amount of timber will come from harvests other than clearcutting.

1100 There is no valid reason for estimating typical stand size. The enlargement of natural stand sizes is apparently an attempt to justify the Forest Service bias towards large opening clear-cutting.

We do not mean to imply that managed stands are intended to correlate with natural stands. Within the capabilities of the ecosystem to respond, managed stand boundaries are determined by management objectives and practical logistics. In defining stand boundaries consideration is given to tree and low vegetation plant physiology, fire management, soil productivity and a host of other ecological concerns, in addition to the purely physical aspects of forest management such as road construction and logging methods. Clearcut stands on the Sequoia NF have averaged less than 20 acres in size in the past. No material change in size is anticipated in the future.

1200 Maintaining good vigor can be very difficult under even-aged management systems.

Regardless of the silvicultural system used, the vigor of individual trees is only assured through intensive management efforts.

1300 It has not been demonstrated that the even-aged systems provide more useable livestock forage than uneven-aged.

Before clearcutting was a significant part of the timber harvest on the Sequoia NP, meadow utilization by domestic livestock was considerably higher than it is today. This indicates that grazing animals are taking advantage of the transitory forage produce in even-aged plantations. As long as more plantations are created each year there will continue to be transitory forage available, even though older plantations have ceased to be of value.

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1400 Native wildlife species **were** thriving in California forests . before the first forester wrote the first **silviculture** prescription

Timber harvest prescriptions are designed to be consistent With management objectives **for** wildlife **However.** there is no intention **to** maintain wildlife populations in their pristine State The decision on how to manage wildlife habitat is an integral part of the decision on how to manage timber

1500 Many **areas** have to be planted **more** than once because of poor Seedling survival

As with any agricultural crop, **some** mortality of planted trees is expected as is an occasional **failure** of an entire plantation Our experience with artificial regeneration shows that technology is available to keep **such failures** well within tolerable limits as defined by minimum timber growth **goals**

1600 I would like to **see a more** intensified educational effort directed to the public about reforestation

Forest-wide Standards and Guidelines of the Plan provide for educational and user services Appendix A of the Plan refers to **an** Interpretive Services Plan This **Plan** includes interpretation of timber management activities

1700 I plant **for** private enterprise on forest lands Their reforestation costs are at the **maximum \$150 per acre** Your costs approach 51.200 per **acre**

The goals of intensive forest management **are** reflected in what appear to be high reforestation costs. These costs are justified on the basis of the financial return that they will produce in the future Our costs include a number of **silviculture** treatments in addition to simply planting trees These treatments **are** designed **to** ensure good early growth and future stocking in regenerated timber stands.

1800 Overstory removal **was** not included as a silvicultural prescription

We intend to **use** removal Cutting as a shelterwood method where appropriate It is applicable When an adequate number of seedlings become established after a shelterwood seed cut, and when natural events have created a similar condition

1900 Logging companies should be required to **post** a performance bond A three year guarantee regarding satisfactory growth of new Seedlings should be required

Timber sale contracts currently **require a** performance bond to be posted by the purchaser These bonds do not **cover** post sale activities because this is beyond the requirements of present regulations and **law**

2100 In our opinion, a bill Should be passed to allow the U S Forest Service to be able to keep a certain Percentage of **revenue** that they receive

The Forest Service is currently Using existing legislation to collect funds from various users and utilize these moneys **in** the respective programs

2300 The Plan is unacceptably **vague** as to what exact silvicultural methods **it** will **use** to harvest timber .

The amount and method of harvest **for any particular** area will **be** determined through individual project environmental analysis This PEIS is not intended to be site-specific



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2400 Herbicides Should be limited to non-phenoxy, non-toxic

The decision Of what. if any. herbicides will be used will be made in a Separate Environmental Impact statement.

2500 It is difficult to believe there are zero acres unsuitable because of irreversible resource damage

The process for selecting lands suitable for timber management is described in the Forest Plan. Appendix C. Determination of Land Suitability

3601 DO NOT CLEARCUT (CC) BECAUSE

- FS plans to destroy 2000 ac/yr with its CC program
- timber sales are uneconomical and CC is less so
- small diameter trees are wasted in CC
- we should not CC marginal sites
- the SQF is too Steep and arid to intensely manage
- there are insufficient funds and technology to replant and maintain plantations
- many cases of plantation failures (especially in red fir) - falsified records make plantations look better
- CC is detrimental to the *forest*
- there is no conclusive evidence that Cc is sustainable in long run
- nutrient removal from the soil
- deminished site productivity
- fire hazard increased in the future when canopies close
- fire ecology is destroyed
- microsites are destroyed
- erosion is increased with removal of all litter
- monoculture increases hazard of insects and disease
- fisheries are degraded with reduced thermal cover and increased siltation
- non-game wildlife habitat is diminished (incl gophers. porkies. etc)
- non-timber vegetatin is not replanted
- it makes herbicides necessary
- it reduces recreational opportunitites
- campgrounds and picnic areas are needed mare
- visual quality is reduced
- we want visual quality and a relaxed situation in the forest
- it will remove all the trees
- selective cutting is better
- non-timber species are not replanted
- selective cutting is better
- "on-timber species are not replanted

Appendix G of the FEIS discloses the complete state-of-the-art knowledge. in condensed form, on even-aged and uneven-aged systems of timber management The even-aged system includes clearcutting where appropriate We have not ruled out the application of uneven-aged management We do intend to practice uneven-aged management in areas where management objectives make it desirable to create small. dispersed openings. or where it is desirable to maintain continuous tree cover The environmental consequences of the proposed action as well as all other alternatives is included in Chapter 4 of the PEIS

3605 . The most scientifically conservative positions on clearcutting have held that much of It was done in inappropriate areas

The scientific community has historically accepted clearcutting as a viable silvicultural system Most clearcuts on the Sequoia National Forest have *been* successfully regenerated Appendix G of the FEIS summarizes. with references. the complete state-of-

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the-art knowledge on even-aged and uneven-aged systems of timber management.

3650 Forest inventory is the all important first step in setting harvest levels. If the inventory is overestimated, more acres must be harvested to sustain a particular level of outputs. Specific problems with the inventory include Use of out-dated aerial photos for baseline timber typing, widescale summing of timber types (Table C3 1, C3 2) accidental bias of sample tree measurement and extreme variability .

The volume estimates used In the Forest Plan have been checked and verified using District volume estimates based on District inventories. It is true that some timber strata were combined in the analysis. We feel that the accuracy is sufficient for Forest planning purposes. We will be monitoring volume. If discrepancies are noted, adjustments will be made.

3660 The appendix (G) reflects a bias for even-aged management, particularly clearcutting, as the dominant harvest method on our NF's. Apparently a conclusion has been made that since clearcutting is the most administratively efficient harvest method, it is therefore the most "optimum" method as well. The NPMA is not satisfied by a determination that ignores physical and biological factors .

Appendix G objectively reviews the silvicultural methods used on the Sequoia by considering physical and biological factors as well as administrative factors. Silvicultural prescriptions are made on a site-by-site basis using the interdisciplinary process. The NFMA is thereby satisfied.

#### BELOW COSTS SALES (232)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Let the timber companies absorb the Cost of their logging roads. Better still stop the sale of timber completely and put the \$17 mil to use attracting more visitors and creating a more complete use of the park. Leave all cutting to persons employed by the National Park and only for the purpose of scenic appeal.

The Sequoia National Forest is not a park and works Under legal direction to produce goods and services to the public. Timber purchasers do absorb the cost of roads, either in the price they pay for stumpage, or in the case of deficit sales, by building roads at their own expense. The Forest Service does not use its own employees to harvest timber because it would require huge investments in skills and equipment that are readily available in the private sector.

200 What is the net profit on timber sale in SNF? I have read that there is a net loss on timber harvest. If so, why is such a practice pursued with such heavy emphasis in the Preferred Alternative? Even in the AMN, WLV, and LBU Alternatives? If this net loss is the case, this amounts to subsidizing certain industries at a tremendous cost to the public and to the environment.

The Forest Service is mandated by law to manage the National Forests for multiple-use. As a consequence the timber program, as well as all other National forest programs, must be evaluated in terms of Costs versus all public benefits. Revenue earned from the sale of timber is just one of these benefits. Congress did not intend that the National Forests be managed in a manner that would ensure that revenues exceed Costs. However, if permanent roads are considered an investment, the sales program is not below cost. Certain types of sales, including fuelwood use, generate negative revenue, but considerable public benefits are realized. Also, while reforestation is considered a Cost, one must also consider that such investments provide forest products to future generations.

TIMBER VALUES IN UNROADED AREAS (235)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 , . Concerns are (CAS) land base. .. proposes to utilize 190,000 acres . . for timber production this is a mistake by 2030 demand for wood products will exceed supplies by 7%

The process for Selecting lands suitable for timber management is described in the Forest Plan. Appendix C. Determination of Land Suitability

VEGETATIVE TYPES. GENERAL (260)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Mountain meadows Should be managed for one of the following resources wildlife. fisheries, recreation. educational purposes, visual quality. or grazing

Mountain meadows *are* managed under the multiple-use concept with emphasis on maintaining the meadows and water quality The Forest is presently developing meadow management Standards and guidelines Acceptable activities in and around meadows will be identified at the project level The activities will be evaluated and monitored based on the Standards and guidelines

200 Mountain meadow standards and guidelines need to protect meadows for end include needs of wildlife. recreation. fisheries. grazing and visual concerns

The Sequoia National Forest is presently developing standards and guidelines for mountain meadows The goal is to maintain or improve meadows. the existing meadow acreage and their associated productivity Acceptable activities in and around meadows will be Identified. evaluated and monitored

310 Grazing Should be eliminated from mountain meadows

Elimination of grazing is outside the authority of this Plan. Mountain meadows are managed for multiple-use with emphasis on maintaining and improving meadows and water quality Grazing is allowed where the meadows or water quality will not be significantly affected

320 Meadows should have cattle enclosures for comparative Studies on effects on wildlife

Pacific Southwest Forest and Range Experiment Station is presently involved in such research The Forest Service uses research from experiment stations in its management as it becomes available

400 Nature should be allowed to take Its course in meadows Don't stop encroachment

Meadows are a very productive and valuable part of the forest ecosystem Presently. meadows represent less than 2% of the conifer ecosystem Loss of meadows to encroachment would be a loss of wildlife habitat. recreational Opportunities. and livestock forage

500 Meadow restoration funding should be doubled

Meadow restoration funding is prioritized through the watershed improvement needs inventory Congress allocates watershed improvement funds

510 Meadow restoration should treat the source of the problem and treatment should be the responsibility of the person causing the damage

The Forest Service inventories riparian and meadow areas that are in need of improvement (watershed improvement program) Watershed restoration funds

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are Used to treat erosion that occurs or has occurred downstream from the source The source, if originating from roads or trails, would be repaired through Forest Roads and Trails fund. If Sites needing restoration are within areas Used for intensive ongoing resource management activities, the activity causing the impact bears the expense of restoration Often times a source of erosion cannot be attributed to one activity or it is a natural process It is often a cumulative effect over time and throughout a watershed Best Management Practices identified in "Water Quality Management for National Forest System Lands." cumulative Watershed impact analysis, and the Meadow Management Standards and Guidelines are used to identify acceptable activities and mitigation to prevent future erosion problems

600 Meadows under 2 acres in size need to be managed

The Final Plan has been updated to include meadows under 2 acres in the Riparian areas As projects occur in and around these areas, riparian standards and guidelines will be applied

CHAPARRAL (261)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Prescribed burning in chaparral is said to benefit Water yield and is recommended for 10 to 20 year cycles or less for "resource protection" (whatever that means) Is this statement supported by long term studies by experts-

What "that" means is water yield could be enhanced by more frequent burning, but due to the potential for increased erosion from frequent disturbance, we recommend a longer cycle between treatments Numerous studies exist and are available upon request to provide detailed information on the effects of chaparral burning both in general and specifically on water yield enhancement

200 What studies have been made of the SQF chaparral areas in terms of diversity and unusual or rare plant communities on a 12 month basis? This program is inadequately studied Prescribed burning may well be beneficial but you haven't the data to support this.

James Shevock, former Forest Botanist. Conducted extensive surveys of most ecosystems and seral stages found within the Sequoia National Forest Numerous other botanists, including Twisselmann, have surveyed parts of the Forest Locations of rare, threatened, or sensitive plants have been identified and will be protected as will unusual plant communities identified in the Botanical Areas No sensitive plants are known from the Chaparral area of the Sequoia The effects of chaparral burning on vegetation and species diversity is well documented

300 Conversion of chaparral to grass will negatively impact wildlife if not done properly

The Forest Service and cooperating agencies such as the California Department of Fish and Game have been prescribed burning in chaparral for many years We are aware of the effects of burning and type

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conversion of chaparral **One** of the primary **reasons for** this program is the enhancement of wildlife habitat. Appropriate guidelines have been developed to meet this need.

400 Management of chaparral should include greater **acreage** each year.

The recommended chaparral program reflects a balanced program of what we think we can do within the limitations of the available **workforce**, funding and other resource conflicts. The intent is to **provide a** balanced diversity of **age** classes, special areas of fuel reduction for fire protection, enhanced wildlife habitat, **forage** production for grazing, and enhanced recreation access.

500 The chaparral management program is very important. **Fire** is an important part of **resource** management. **Fire** should be allowed to burn in all wildernesses unless the fire threatens high **value** "on-wilderness areas. Mechanized equipment and aircraft should not be used in wildernesses.

Thank you for your Comment5. **We** agree that fire is a very important part of **resource** management. In **general**, the direction in the **Plan** concurs with your **suggestions**, although there **are** times when it is in the best interests of the public and human safety to **use** mechanical equipment or aircraft in the wildernesses.

VISUAL RESOURCES. GENERAL (270)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The **visual** quality objectives should not be compromised. They **are** especially important to retain along the margins of all **major** roads, trails, campgrounds and other **areas** of heavy public use either from a **distant view** or a **closer** vantage point it should not be sacrificed.

Visual Quality Objectives (VQO's) are developed by, first, using the Forest Service Visual Management System and, second, evaluating the trade-offs with other **resource values**. The evaluation has occurred in this Environmental Impact Statement through the alternatives analyzed. Consideration was given to **views** from all major roads, trails, campgrounds and other **areas** of **heavy** public use. The Preferred Alternative assures the dominance of the naturally appearing landscape **along** the margins of these **areas** by assigning Retention (R) or Partial Retention (PR) Visual Quality Objectives. Distant views, greater than **five miles**, generally allow greater alterations of the landscape without compromising **scenic** values.

101 **Leaving** a Strip of **trees along** a road or trail in an attempt to mask a clearcut is a form of management **visitors can** do without. Our concept of visual quality is the entire **visual** experience. We do not go to the forest to **view** human activity at any distance.

The management of the National Forest is based upon the Multiple-Use Sustained-Yield Act of 1960 that states in part that the Forest "shall be administered for outdoor recreation, range, timber, watershed and wildlife and fish **purposes**"\*. Forest Administrators are, therefore, obligated to the American public to manage the **land** for these multiple uses. Outside classified wilderness, **activities** may be seen and, in **some cases**, dominate the **view**. Intense management practices will, however, occur primarily in the lesser seen and **more** distant views. The Forest is committed to maintain a quality scenic

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experience along major roads and trails. from **major** Campgrounds and other **areas of heavy public use** Also **see** comment 100 above

103 The Vision Statement section of Chapter 1 should be changed as **follows** Improve the **overall** natural appearance along heavily traveled routes through the Forest

We use "maintain" rather than "improve" because **we** believe our heavily traveled routes **now** offer a travel experience with a natural appearance **and** will continue into the future. Activities will **occur** and will be seen. however. the naturally appearing landscape will dominate overall Also, **see** 100 above

110 No decline in the visual **resource** Should be allowed and that every effort should be made to enhance and improve the current **value** of the VQI

The visual resources Section of Chapter 4, FEIS explains Why the VQI declines under all alternatives Please refer to that section and comment 302 below.

What **are** the costs and effects of providing the public With the same or better **visual** quality forest as they currently enjoy?

Costs and effects are evaluated through the **range** of alternatives Chapter 4, FEIS. discusses the **con-** Sequences of each alternative Table 2 22 in Chapter 2, PEIS, compares ranges of Outputs for each alternative Table 2 29 in Chapter 2, PEIS compares the economic effects of each alternative

111 Your proposed **14Y** decline in the Visual Quality of the Sequoia NF is unacceptable to this group We want assurance that our children and grandchildren and stand **on** top of Sherman Pass on the **Kern** Plateau. **look** east toward the desert. and **see** a real forest with **some** old growth timber. not Just a tree farm On the **Kern** Plateau. where timber **harvesting** activities will increase by 100% in the next ten year period. the decline in Visual Quality and resulting alteration **of** the forest environment will be much greater than forest wide **averages** The timber harvest **increase in** the Cannell Meadow District represents **a** significant change in comparison to other areas **in** the Forest **Plan** that should be discussed on a separate impact statement

In the Final Plan, the Visual Quality Index (VQI) is greater than that for the Initial Visual Quality Objectives (IVQO's) Forest-wide This suggests the change in visual quality is **well** within acceptable limits Many areas of the Kern Plateau will be treated to maintain natural appearing landscapes Viewsheds from Monache Meadows. the Sherman Pass Overlook, and the **Salmon** Creek-Blg Meadows **area** are examples as well as foreground **views** from the Sherman **Pass** Road **and** the Blackrock Mountain Road One of the intentions **of** these systems is to insure a Variety of tree sizes remains We **feel** this FEIS adequately addresses the changes in the Forest. and another impact statement is unnecessary.

112 I especially enjoy the Kern Plateau and would **like to see** any management activities conducted there to be performed **in** such **a** way as to maintain the natural visual appearance **of** the forest In accordance With the visual quality objectives listed in the DEIS, I **favor** retention and partial retention **for** the Plateau because they **seem** to **favor conserving** the natural appearance

The Preferred Alternative has assigned Retention and Partial Retention Visual Quality Objectives **along** the heavier used travel and viewsheds of the Kern Plateau

113 I looked **on** my way to school at Maggie and **Moses**, Homer's Nose Those were an inspiration **far** me **and** always drew me **back** to the **Sierra** If you walk that **same** route today. you **are** lucky if you **can**

We have **no** technical response **to** this statement of opinion You Should note that this plan is **for** a 10-15 year period The FEIS analysis is **over a 50-** year period

see those mountains It doesn't take a research scientist or a forester to recognize the changes in the valley and the foothill environment and forest I have lived here less than 50 years, the length that you proposed your plan to last b the major values and things that matter in this valley, their health have dropped. forest. air, and water quality are all obviously dropping The forest has declined, the wildlife in the forest has declined

120 The FS has developed the Visual Quality Index (VQI) as a means of evaluating visual resources on NF lands The existing VQI for SQF is 76.6 (DEIS pg 4-106) The FS predicts that the VQI will decline to 66.2 as a result of the management practices proposed in the PRF Alter Mathematically this is a decrease of what appears to be only 14% However, this figure is highly misleading The FS estimates that if the entirety of SQF lands Outside of wilderness is managed using the maximum modification (MM) Visual Quality Objective, the VQI of the Forest will remain at a relatively high 50.0 Thus, the FE is actually proposing a drastic decline in visual quality, aprox. halfway between what Currently exists and what would be a totally unacceptable level of visual impairment

200 The patronizing vocabulary in the definition of maximum modification angers those of us who have spent many hours trying to make sense of the FS Plan 367,000 total conifer acres are suitable for timber production (pg 3-41, Plan) Then it states that the remainder of the forested land will meet either M or MM VQO's when timber harvest is emphasized (pg 4-22, Plan) Does this mean that all this acreage will meet M or MM VQO?

230 We feel that the degradation of visual quality caused by emphasis on logging and road construction on the National Forest is the one issue that has angered the public nation-wide, thereby resulting in the confrontation between the Forest Service and the public

We have recognized an error in our original calculations and have adjusted accordingly see the visual resources section of Chapter 4, FEIS, for the revisions and a discussion on the VQI decline Note, also, that "a totally unacceptable level of visual impairment" equates to visual condition Class VI This level is not a planned occurrence If this happened, it would drop the VQI below the 50.0 value set as the bottom level

The 367,000 conifer acres referenced in the Draft Plan are those identified as tentatively suitable for timber production (see Table 3.23 of the FEIS) The glossary in the FEIS contains a complete definition of "tentatively suitable lands" Appendix C of the Final Plan describes how land is evaluated for suitability for timber management Page 4-22, Draft Plan, is a Forest-wide Standard and Guideline It says all conifer acres found suitable for timber harvest, given a CF7 Management Prescription, and outside the Retention and Partial Retention zones mentioned on that same page will be managed for M or MM Refer to the Forest-wide Standards and Guidelines in the Final Plan for the changes to this section

It is true that some logging practices created a nationwide confrontation between the Forest Service and the public The Visual Management System and the recognition that the visual resource should receive equal analysis with other resources resulted The National Forest Management Act of 1976 was also enacted after the confrontations The Act established rules that directly affect visual quality by setting specific requirements for forest service activities that reduce visual impacts

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300 The attitude of the stewards of our public lands (FS) that our forests must be "regulated and managed" is just not acceptable. We are not willing to invest our taxes to convert our wild lands into neatly rowed tree plantations, depriving our wildlife of their habitat.

Spare us the vandalism of improvement. Observing wildlife in their natural surroundings is most assuredly an experience in visual quality and this is not possible when their habitat has been destroyed and then replaced with rows of even aged timber.

301 Clear-cutting, road building, OHV damage should be curtailed. Roads should not be built or maintained for recreational purposes. Clear-cutting should be limited (2-5 acres) and far enough apart. Boundaries should be irregular and narrow to provide effect for wildlife habitat.

302 DEIS 4-106 Visual Resources - "change from a naturally appearing condition to that of a managed state." What is a managed state? How was it decided that a managed state was preferred to the "naturally appearing condition"? How was it determined that the decline in visual quality was within the limits of acceptable visual quality objectives? The preferred alternative is certainly not within the acceptable limits as it relates to the needs of Joshua Tree Girl Scout Council. It is interesting to note that visual quality is expected to decline in all alternatives. Will there be any action taken to enhance visual quality in areas of poor existing quality?

The Multiple-Use Sustained-Yield Act of 1960 states in Part. "It is the policy of the Congress that the National Forests are established and shall be administered for Outdoor recreation, range, timber, watershed, and wildlife and fish purposes." This Act supplements the Organic Act of 1897 which states that National Forests shall furnish a continuous supply of timber for the use and necessities of citizens of the United States. Based upon these Acts, the Forest Administrators manage the lands entrusted in their care (see comments 302 and 310 below). As to the wildlife, we are committed to maintaining habitats that ensure viable populations of species found on the Forest. Plantations become habitat for species associated with young growth forests (early successional stage habitat).

The multiple-use concept of the Forest Service is well established. See the resolution to Comment 300 above. OHV's in the Final Plan will use only designated roads and trails. We believe this will minimize the damage you mention. Concerning limits on clearcutting, the Plan will harvest approximately 30% of the annual timber volume by using uneven-aged silvicultural systems. Group selection, which has a maximum size of five acre openings, is one of these systems. The other, individual tree selection, results in even smaller openings.

A "managed state" simply means that activities will be occurring to maintain a healthy, productive forest and continue the multiple-use concept of the National Forest System. It does not mean a Forest visitor will see neat rows of trees all the same size, rather, views of managed areas within the Forest will show evidence of past and current activities.

A "managed state" is not always preferred over a "naturally appearing condition." In those areas assigned Retention or Partial Retention Visual Quality Objective, natural appearing is preferred and will dominate in those areas. In addition, all classified wilderness (264,071 acres) will remain totally natural.

The discussion about the Visual Quality Index in the Visual Resources section of Chapter 3, FEIS, describes how a reduction in visual quality would be "within the limits of acceptable visual quality objective." Essentially, the Initial Visual Quality Objectives are the acceptable limits of visual



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alteration When visual quality changes Forest-wide. but does not change greater than the IVQO's, then we consider the change acceptable within the visual Management System

Enhancement of visual quality includes revegetation of poorly growing sites or thinning of overstocked, visually impenetrable Sites Prescribed burning in decadent chaparral often results in a more varied, colorful landscape Area closures for resource protection allows sites that have deteriorated visually to "heal" and grow back to naturally appearing Recreation Sites that lose vegetative cover are replanted Roadside cut and fill slopes are reseeded to reduce the visual Impact of denuded soils

303 The Forest Service states that the Visual Quality of the forest will decline dramatically as a result of the Proposed Plan "Except for existing Wildernesses, the trend of visual quality in the Planning Area is to change from a naturally appearing condition to that of a managed State The average Forest visitor, in the conifer zone, will be well aware of timber harvesting activities along all but the most visually sensitive roads and trails " These two statements alone testify to the need to reevaluate and revise the Proposed Plan

We have, in fact, reevaluated and revised the Draft Plan to include uneven-aged silvicultural systems Please see comment 301 and 302 above

310 The plan states that the FS accepts short-term departure from VQO's in order to maintain long-term desired visual character (pg 4-22, Plan) We do not consider "several decades" a short-term departure as mentioned in paragraph 3, pg 3-46. Plan A tree farm appearance is not visual quality under any circumstances in a National Forest

This Standard and Guideline provides for those conditions where a poorly stocked, slow growing Stand of timber could be harvested and replanted The departure mentioned would occur in Retention and Partial Retention areas and would generally last no more than three decades and less in most cases For the following reasons, we believe the typical tree farm appearance will not occur on the Sequoia (1) forest lands are Irregular, (2) vegetation grows at different rates, and (3) the Preferred Alternative includes uneven-aged silvicultural prescriptions that will retain many age classes within a single viewshed

311 Studies indicating that "the visual resource could be maintained consistently Forest-wide" is misleading and crazy This is maintenance only after severe deterioration

We believe that once the forested landbase has reached a fully managed State, the visual quality will be maintained See 302 above

312 In terms of visual sensitivity to reduce "visual monotony " Through the use of clearcutting is a highly subjective statement with which we disagree strongly

We believe that within expansive stands of some timber types, the best method to reduce monotony and create diversity in size class and species is to harvest and replant

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320 On page 4-22, Plan, it states that retention of VQO in the foreground will be met on Highway 190. This is misleading. As one drives along 190, there is evidence of human activity in terms of fallen logs, debris and the highway itself strewn with debris. As to whether this is firewood cutting or timber harvesting, either way, this should be monitored.

400 Visual Quality Objectives Map a) Why is there a narrow strip of Modification along the lower Kern River and 2 large areas of Retention (not visible from Hwy 178)? b) Why is the Woolstaff Meadow area (Piutes) Partial Retention? c) Why is the Kelso Drainage (Piutes) Partial Retention and the area north of Bright Star Canyon Retention? d) In the Piutes, except for the PCT, why do the scattered Retention areas have a higher classification than Highway 155 (Greenhorn Summit)?

401 The DEIS States that about 252,000 acres will be managed for the modification VQO and another 77,600 acres for maximum modification. This represents nearly 40% of the Forest Land Outside classified wilderness. The Forest is projecting a great deal more M and MM than is likely to occur with the levels of commodity outputs suggested.

402 I doubt that much of the non-timbered land would ever be managed for M VQO, most activities in these lands would meet at least Partial Retention and would often meet Retention. The Plan should not be suggesting a lower VQO than would normally be expected.

403 ..Some of my specific areas of concern are 1. Hume Lake District-All the MM east of Hume Lake should be eliminated. Lands visible at middleground distances from the Kings Canyon Overlook, foreground from Buck Rock Lookout and foreground from Highway 469 through Hartland to Eshom CG need to be managed for PR. 2. Tule River District - The MM south and east of Mountain Home and all MM within the Lloyd Meadow Basin should be eliminated. Because of terrain and watershed constraints, I doubt that the Forest would ever want to manage this part of Lloyd Meadow as MM. FG views from the Needles trail end Lookout need to be PR. 3. Hot Springs District - Much of the steep land between the Western Divide

State Highway 190 traverses the Forest from the westerly boundary near Springville to Quaking Aspen Meadow at the intersection with the North Road (FS21850). The highway is maintained by the State, the land on either side by the Forest Service (except the private land around Camp Nelson). Timber activities that have occurred in the past along this road are well within the guidelines set by the Retention Visual Quality Objective.

The Visual Quality Objectives of each area mentioned were assigned to be compatible with the Recreation Opportunity spectrum as stated in the Resource Program Direction for Visual Resources, Chapter 4 F Visual Resources, Forest Plan. Since the Preferred Alternative of the FEIS is different than the PRF Alternative presented in the Draft Plan, another review for specific objectives is advised.

Revisions to the PRF have resulted in a visually improved alternative. The Preferred of the FEIS. This new alternative has about 195,000 acres in Modification and 63,000 acres in Maximum Modification. This revised acreage equals about 30% of the National Forest outside wilderness and 23% of the total Forest landbase. Given the Outputs of the RCM, the Forest Management Team found the adopted VQO's compatible and the M and MM lands justified to meet the highest resource values.

About 40,000 acres outside the conifer forest vegetation type will be managed for M or MM. Activities such as wildlife management, type conversion and fuelbreaks result in these visual objectives.

Resolutions of each of your concerns follow in the order listed:

1. The land with MM is heavily roaded in places and is primarily steep timberland. We find the MM VQO appropriate. The Kings Canyon Overlook will be treated as Sensitivity Level 1. Buck Rock Lookout and Highway 469 are considered low use and assigned Sensitivity Level 3. M is consistent with the Forest Service Visual Management System.
2. These areas have been reexamined and the VQO's are believed justified given the terrain and resource values. The Needles Trail will be treated as Sensitivity Level 2, the lookout as Level 3.
3. These areas have been reexamined and the VQO's

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and Lloyd Meadows Road should be PR since roading and timber harvesting is Unlikely and typical activities would not meet M VQO Much of the MM west of the Western Divide is unlikely to occur because of Soil and water constraints, particularly south of Bone Creek 4 Cannell Meadow District - The MM around Sirretta Meadow/Peak Should be reduced in area The PG views along the roads and trails between Smith Meadow and Bull Meadow need to be PR as well as the PG along 21S02 past Beach Meadow to Lion Meadow. The M within the Scodies is unnecessary 5 Greenhorn District - State Highways 155 and 178 need to be managed for R in the FG and PR in the middleground These are heavily travelled State Highways that require USPS attention The MM around the GSA Camp (Sunday Peak) needs to be pulled back out of view of the camp and their facilities; M is the lowest VQO that Should be assigned here. There needs to be PR in the PG of Shirley Meadows Summer Home Tract. the ski areas and 25S03 between the Greenhorn Summit and the vicinity of the ski area

404 The visual integrity of Forest land bordering National Park land should be compatible with Park visual standards (example Panoramic Point road and clearcuts )

405 . In the area of Visual Quality Objectives p 3-119 thru p. 3-121, in the DEIS, CORVA supports the table 3 25 located on p 3-121 of the DEIS. with the following revisions a class B and C areas should allow Modification only and only in areas that do not disturb the VQ's on existing and planned trails Exception. areas which are diseased or are mutually agreeable with timber. Forest Service. and OHV concerns Maximum Modification is totally unacceptable in OHV areas Retention and Partial Retention (selective logging) may be acceptable With OHV recreationist

406 With VQO of M and MM it is obvious that visual quality in the Mountain Meadow area is not of major concern to the Forest Service It is definitely a major concern of ours We feel that

are believed Justified given the terrain and resource values

4 The MM around Sirretta Peak has been completely eliminated The roads and trails you mention are assigned Sensitivity Level 3 and will be so managed Much of the M in the Scodies has been eliminated In the Final Plan

5 Highway 178 will be managed for Sensitivity Level 1. Highway 155 for Sensitivity Level 2. The MM in the vicinity of the GSA camp has been eliminated The other areas mentioned were reexamined and the VQO's are believed Justified given the terrain and resource values

We have recognized the travelways and use areas within National Park and other adjacent lands A Forest-wide Standard and Guideline has been included Specific to that concern See the visual resources section In Part F, Chapter 4, Final Plan

The road you mention is considered moderate sensitivity The cut units you mention are visible from the Panoramic Point Trail and Vista Point They are in middleground and background distances from the observer At this distance clearcut Units are compatible end. we believe in keeping With the multiple-use concept Of the National forest system

The table you referenced defines Initial Visual Quality Objectives (IVQO's) developed through the Forest Service Visual Management System The direction for developing IVQO's are found in Agriculture Handbook 462 and are briefly discussed in the visual resource section of Chapter 3, PEIS The revisions you Suggest are more appropriately made later in the planning process, during the alternative stage of project-specific EA development

Any activity in your area of interest will receive a project environmental analysis You will have an opportunity at that time to Comment We fully expect exceptions to occur throughout the Forest

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with appropriate sensitivity level as discussed in comment #1 that the area around Camp Mountain Meadows would receive a higher VQO more in keeping with our objectives at Camp Mountain Meadows

407 The VQO Map Why is M VQO located along the shoulders of Pine Flat Reservoir? I would have expected R or PR There is M adjacent to the National Park. Is not it visible from the travel routes and use areas in the Park? There is M adjacent to the Golden Trout Wilderness which seems out of line with the current Wilderness policies in PS2320

In the case of VQO's. the Forest Plan VQO's will be met or exceeded Where Modification is shown, for example. Modification is the greatest visual impact we would plan Many places within that area would meet higher objectives at any given time

The M shown along Pine Flat was in error and has been rectified in the Preferred Alternative Travel routes and use areas in the Park were considered when VQO's were recommended and we feel is appropriate where shown

Current wilderness policy pertinent to your question says "Because wilderness does not exist in a vacuum, consider activities on both sides of wilderness boundaries during planning and articulate management goals and the blending of diverse resources in Forest plans Do not maintain buffer strips of undeveloped wildland to provide an informal extension of wilderness Do not maintain internal buffer zones that degrade wilderness values Use the Recreation Opportunity Spectrum (FSM 2310) as a tool to plan adjacent land management "

We believe we have followed this direction and, where Roded Natural Recreation Opportunity Spectrum occurs along the wilderness boundary, we find Modification Visual Quality Objective appropriate.

410 We believe the construction of PLEIADES might be hampered by the "retention" designation under Visual Quality Objectives The short stretch of PCT which could view the proposed instruments in direct line with backdrops of Indian Wells valley where human occupation is clearly evidenced Descriptions of the spectacular nature of such views (see "C-58") do not match our experience in this area We suggest a reconsideration of the "retention" designation of the northeastern corner of the Scodies

The project environmental analysis will consider all values and appropriate mitigation measures to meet the Visual Quality Objective The PCT and Highway 178 are assigned the highest visual sensitivity We believe the views from these travelways must be analyzed before a project can be implemented

411 We Support most of the alternative actions with the clear exceptions of DEIS Alternatives WLI, LBU and AMN which, by their wilderness designation. Pre-empt the construction of an important wild class research instrument We support particularly PRP, CUR, MKT, PRO and WFV If Alternatives WLI, LBU, or AMN are considered. We request an opportunity to argue "on-wilderness status be granted to the northeastern most section of R37E, T26S, allowing for construction of the PLEIADES instrument

The Final Plan does not recommend this area for wilderness designation

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412 Visual Quality Objectives - We are uncertain if the draft Plan's visual quality objectives apply to projects involving modifications to existing facilities. We request clarification of the Plan's policies regarding for example, the reconductoring of transmission lines (i.e., the replacement of conductors with higher voltage lines). In this case we contend that these activities should not be subjected to visual quality objectives since existing visual characteristics would not be altered.

Visual Quality Objectives apply to all projects on National Forest System land. When a project is proposed, whether to a new or existing facility, a project level environmental analysis will be completed. Effects on visual quality and other resource values will be evaluated in detail.

It is incorrect to say that since the existing visual characteristics would not be altered, the activity should not be subjected to VQO's. The Existing Visual Conditions (EVC) may not meet the Visual Quality Objectives of the Forest Plan. In which case, the environmental analysis would recommend visual rehabilitation.

420 CORVA strongly supports the Multiple Use concept on public lands. Through the past ten years Multiple Recreationist and the timber industry have relied on each other in the fight against wilderness additions in the Sequoia. CORVA believes that the DEIS addresses this concern on p 3-113 and 3-114. We therefore respectfully request the OHV groups will be consulted and included in these for years to come.

Involvement with OHV groups is a central part of OHV management in the Preferred Alternative (see OHV section of Standards and Guidelines in Chapter 4 of the Final Plan). It is important to understand the needs and desires of users in order to ensure the program is heading in the proper direction. This includes both the OHV community as well as non-OHV'ers. Getting various groups together to resolve problems and issues has been successful in the past and will continue in the future.

421 Cooperation between Multiple Use advocates and Forest Service personnel is a must. Formal, informal and telephone discussions must be used to mitigate differences between these groups. CORVA believes that this request should be implemented immediately as it is a reasonable solution to a long time problem. The Forest Service should look for ways to work with the competitive concerns. That being recreationist and business concerns. Our basis for this concept is the Statement on p 4-108 of the DEIS "changes will often dominate the landscape" and on the same page "The average forest visitor in the conifer zone, will be aware of timber harvesting activities along all but the most visually sensitive roads and trails". CORVA hopes that "trails" includes OHV trails.

All travelways and use areas are considered in the sensitivity level analysis. Those trails found to be the most visually sensitive will receive management emphasis commensurate with the sensitivity. Also, see comment 420 above.

430 p 2-19 DEIS - Based on the comparison of timber outputs in MMR and CEE, the effect of the Scenic Highway MMR is very high. The data on acreages involved in Appendix B is insufficient to allow analysis as to why this should have occurred. The loss of timber outputs is higher than most other forest which have much greater scenic highway mileage and timber producing lands.

In the comparison you describe, the FDRPLAN model would choose the timber most available at the least cost. The CEE constrains the model from harvesting much of the timber along the scenic highway corridors. The MMR does not. With roading in place, the cost would be less to harvest the large volume of timber along these roads, so in the MMR Benchmark, this extra volume would be realized.

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In addition, the scenic highway corridors on the Forest contain very few acres of intersection with Other MMR zones. such as those for streamside management and wildlife, This is not the case on many of the Forests to the North and would explain why a seemingly greater reduction in volume occurred because of the MIR Note that the biggest drop occurs in the first two decades, when the model would harvest the greatest amount from these corridors

431 p 2-187 DEIS - For some Strange reason the WFV Alternative managed to meet R and PR or better, but yet produced much greater timber outputs If this could be done in WFV. it appears that some of that timber harvest scheme would have been utilized in Alternative AMN to increase its viability

We believe we have done this in the PRF Alternative Through adjustments in the "typical" clearcutting practices, the Forest will maintain. wherever practical. residual vegetation within openings This will Soften the visual impact. In addition. the normal maximum opening will be 25 acres and the lands managed for timber production will be given a 110-year rotation (rather than the 80 to 90-year rotation in the Draft Plan)

432 p 2-225 DEIS - The statements about percentages of existing visual conditions maintained on all alternatives appears to be in error .

P 2-225, P 3-121 DEIS - These Statements were in error and have been corrected in the FEIS

p 3-121 The reduction in visual condition Should be shown as 13%, not 5% Same problem in IVQO percent reduction applies The reduction in visual quality for the PRF Alternative would be almost 40% That is insignificant'

P 4-106-110, DEIS - The percentages of decrease have been corrected where applicable

p 4-106-110 Percentage of decrease in visual quality are all understated Table 4 35 indicates a reduction of acres in VCB Class II from 467,400 to 40,300 in PRP--an increase of about 8 times the acreage in B III and increases of about six times the acreage in B IV and V These are highly significant changes in the environment. but elsewhere in the document there are statements that the effects on scenic quality would be insignificant

The figures referenced are EVC Class I lands that will receive management activity during the 50-year planning period of the PEIS The percentage increases in Classes III, IV and V are, for the most part. the acres from I and II that will be managed Please see the visual resources section of Chapter 4, FEIS, for discussion about this reduction in visual quality,

We do not wish to Suggest the effects on scenic quality will be insignificant. but, rather. within the acceptable limits Forest-wide as established by the Visual Management System The effects on the total forest landscape will not be significant

433 DEIS p 4-130. This indicates that the effects on visual quality will be short term The effects will be continuous and long-term when analyzed by Viewsheds

The "short-term adverse effect" is the time required for a harvest unit or road construction to visually "recover " On a project-by-project basis, this will be relatively short-term with the initial effects of exposed soil. stumps. and lack of vegetation within five years after harvest completion Forest-wide we expect it Will take about 30 years on the average for replanted conifers to reach a size Sufficient to visually blend into the surrounding landscape

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The continuous, long-term impact you mention will occur when a total viewshed is analyzed. We believe such an impact will be reduced in the Preferred Alternative. The Sequoia NF harvest practices will save young growth and clumps of mature trees on tractor loggable ground whenever feasible for regeneration, wildlife and visual purposes. The size of harvest units will generally not exceed 25 acres and uneven-aged silvicultural systems will be used to harvest about 30% of the annual harvest volume from the land used for timber management. Spotted Owl Habitat Areas (SOHA's), giant sequoia groves, Streamside Management Zones and botanical areas are scattered throughout the conifer forest land. Each of these will receive special management that will additionally reduce the overall visual effects when analyzed by viewsheds.

434 It is not clear why urban interface areas would allow M VQO in foreground or middleground. Was the IVQO traded down in those areas? The sensitivity level would have been a 1 in such areas.

We have revised the Forest-wide Standard and Guideline for Urban Interface to specify these sites would be treated as Sensitivity Level 1 in the Visual Management System. Projects in these viewsheds will receive a site-specific environmental analysis to determine particular resource sensitivities.

500 Visual Quality - This subject is an outstanding example of the attempts by planners to quantify that which cannot be quantified. As a consequence, the resulting terminology and techniques are confusing and irritating to non-planners. Comments re Wildlife and Air Quality also apply here.

The Forest Service Visual Management System, developed in the early 1970's, is a well documented method of classifying the visual resources of a National Forest. By applying the System, an individual trained in the environmental design arts is able to quantify the relative importance of aesthetics. Like any technical subject, there are terms and acronyms that are unfamiliar to many individuals. The FEIS provides a list of acronyms (Appendix I) and a glossary (Appendix J) for your assistance. Other resource areas are handled similarly using their own systems, procedures and acronyms.

600 I question if adequate monies for monitoring (of visual resources) are available.

Please see Chapter 5 of the Forest Plan for the monitoring plan. The full cost of this plan is included in the projected annual budget. Please see Appendix L of the FEIS for a discussion of the relationship between the Forest Plan and the annual budget.

700 The FS explains (pg. 19, Summary DEIS) that the primary indicator of visual change is the number of acres to be clearcut for timber. The Conservation Alternative, in other sections, has strongly recommended that clearcutting and other even-age timber management practices not be used in SQF. The

The Preferred Alternative cuts about 30% of the annual harvest volume using uneven-aged silvicultural systems. See the visual resource section of Chapter 4, FEIS, for the effects of this and other changes from the Preferred Alternative of the Draft EIS.

Conservation alternative would **conserve** visual **resource**

710 This letter is to introduce my set of comments FOREST LANDSCAPING AND A NEW UNDERSTANDING OF ADAPTABILITY FLOW which is subtitled NOTES ON THE ECODYNAMICS OF VISUAL QUALITY My comments tie in visual quality and **some** discussion of Forest Service landscaping procedures from the Forest Service landscaping manuals with the movement of widespread adaptability processes The main argument shows the mistake of clearcutting, as expected to be widespread in the Plan This is proven through explaining the very, very close connection between visual quality and damage to the ability of the forest and its life to adjust

711 I do not believe we have been harvesting our forests by any basic understanding of a natural law Underlying the projected visual quality decline in the Sequoia National Forest Plan **are** interruptions in the flow of the ability to make adjustments It is this adjustment-making adaptability that flows **out** of the root of stability of undisturbed wilderness It restores the system of visual balance which shifts in compensation for stress

712 BLOCKING AND DIVERSION OF ADJUSTMENT-MAKING ADAPTABILITY FLOW BY STRUCTURES ALSO CAUSES DECLINE IN VISUAL QUALITY LOCAL STABILITY-THREATENING FORESTRY TACTICS HAVE EFFECTS WHICH ARE BOTH SEEN AND INVISIBLE This stability in a local **sense**, for specific local regions of the forest, is partly a matter of input equals output balance

713 Visual quality **is** actually connected to the underlying undisturbed Stability of deep wilderness **If** Forest systems **are** cut off from a strong connection to these **roots**, decline **in** visual quality that follows **is** a symptom of blocked adaptability flow The **more** silvicultural practices interrupt the balance of the connection of these Systems to their deep Wilderness, the **more** the steady State of Forest ecosystems is disturbed Decline **in** visual quality is a Symptom Of this silvicultural stress From another viewpoint it is a **cause** Visual damage to Forests is actual damage to Forests The **re-** sponse to silvicultural practices which interrupt the balances of the forest resembles a pivot, or leverage base The beam balanced **on** this leverage basis may shift its balance to adapt to swiveling loads on the beams As these loads are shifted, the beam which is off balance gains its balance back by

We **are not** familiar With your hypothesis Therein. we have no technical response to this item.

The underlying principle of Forest Service timber management practices is to maintain a sustained yield **over** time We recognize that natural changes will **occur**. that natural **processes** are slow, and that without human intervention, we could not successfully undertake the tasks assigned by congress

We agree that Structures will be evident to those nearby and that they often cause a decline **in** visual quality We expect, **in** the **more** sensitive landscapes, to design and blend Structures well enough into the landscape so that an observer from 1/4 - 1/2 mile distant would not immediately recognize the structure Without having it pointed out

The Visual Management System clearly establishes the criteria for determining Variety classes of all Forest landscapes Since variety is a **measure** of **scenic** attractiveness, we believe visual quality is actually connected to the natural variation in form, **line**, **color**, and texture Decline in visual quality occurs when this natural variation is interrupted Project EA's are completed to analyze the **resources** affected by a proposed action When visual quality is found to be an issue or **concern**, these Interruptions in the natural variety are minimized to the extent possible



a flow of adaptability It gets its ability to adjust from the pivot it swings on The wilderness pivot is so deep and stable it can shift energy back into the beam, unlike a simple machine This means the system under stress, unlike a mechanical beam, is very flexible The adaptability given to wilderness ecosystems is more economical than artificial machinery

714 A natural forest landscape may be very simple and not necessarily visually contrasting This provides a stability whose apparent monotony is actually of very great value in its own way Its value, in fact, lies in its very low and calming level Especially as part of a contrasting whole at the right point in a view scape, this calming level according to other visual excitements, or even almost on its own, is a type of landscape of great value Its forms are extremely regular, showing a vast undisturbed evenness, but they are not regimented

715 Clearcuts are, on the contrary, regimented The plainness of the clearcut shape deprives its viewer of visual stability A clearcut is a disturbance to both visual and adaptability flows of stability The artificial uniformity of the clearcut is a disturbing effect, even where the eye cannot precisely locate it in the landscape Clearcutting is unlike the great flat, rolling, even natural vistas It is a different landscape because it is cut off too far from the common evolutionary stability Clearcutting sacrifices flexibility for a military uniformity Clearcutting, by disrupting delicate energy flows, and failing to highlight their shapes, places a misdirected artificial pathway for overall damage to slowly follow on Clearcutting over isolates damaged and disordered cores of activity so that their cores of activity do not blend and disappear well into the great forests After all, natural balance includes its own disorder but it does not isolate and strengthen its activity like the disorder caused by the clearcut Clearcuts fragment the forest - they break off pieces Ecologically sensitive timbering should trim along the natural boundaries of shapes to give the adaptability room to flow But it must not block natural flow at the boundary by cutting or cutting residues

The Visual Management System recognizes that variety in the forest landscape is a desirable visual characteristic In rating landscapes, we analyze the basic elements of form, line, color, and texture to determine the existing variety Lands of low variety are generally of lesser visual significance than those with greater variety

Under the National Forest Management Act of 1976, harvest units must be blended into the natural surroundings whenever feasible Although 40-acre blocks are approved for use in the Sierra Nevada, the Final Plan envisions a normal unit that will not exceed 25 acres We believe that current direction will eliminate the kind of regimentation that you discuss

(270)

716 In general, the Forest Service gives the greatest ratings of importance to those areas visible at a short distance to many viewers. This is a question, however, of artificial access rather than viewer sensitivity. Viewer sensitivity, since it depends on variety, depends on a stable condition to contrast the variety so it can be noticed. Thus a wiser attitude would be to value both variety and sameness in balance like the balance of the steady state of the normal forest ecosystem's scheme of input equals output. For sameness and variety participate in the balance that gives and shapes that flow of ability to adjust the same adaptability flow that is visible to the viewer of the forest.

717 The Forest Service landscape manuals list five visual quality objectives. These are preservation, retention, partial retention, modification, and maximum modification. However, as management objectives, they must be further related to some natural principle in a direct way. Otherwise, they may act artificially and stifle the adaptive recovery flow of the forest. If management is not checked by some natural principle of the natural forest way, it may overstress the forest steady state by too zealously serving human goals. With less foresight than the forest's own millions of years old way of keeping things going, a wise forester knows his or her own intelligence must constantly learn from the ancient forest which could survive and adapt long before there were ever foresters to manage.

800 The Current Plan and DEIS are not adequate as they address issues only on a forest wide basis where the average increase in timber sales is minor. Clearcutting on the Sequoia NF is a most objectional part of your proposal from our point of view. If we must have tree farms, let us take a lesson from another group in the agriculture industry. You do not find intensive cattle grazing on unproductive land. Intensive grazing takes place on pastures that can support the greater numbers. Can we not do the same thing with intensive timbering? Areas that will not support predicted regrowth cycles, once cut, could be lost for ever. These areas will need 300 to 500 years to reforest adequately. But under present Forest Service proposed plans, they will be cut again within about 100 years. Old growth, large trees will become extinct. This creates an ecological deficit - a borrowing from the future.

Foreground (FG) landscapes (0-1/4 to 1/2 mile in distance) are seen in greater detail, and, therefore are recognized as more important. The Visual Management System, however, recognizes that middle-ground views (FG to 3-5 miles) are often more difficult to manage because more area is seen from which to compare and recognize change.

We do not believe that viewers sensitivity depends on variety. Rather, sensitivity depends on number and types of users combined with the distance zone. See 714 above.

The Visual Quality Objectives are just that, i.e., management objectives that define the desired visual management scheme of the forest landscapes. Preservation allows for the natural forest process to occur, the others allow human intervention in various intensities which, in time, permits the Forest Service to accomplish the multiple-use mandate of Congress. See the resolution to comment 300 above.

We do not propose to harvest timber in areas that cannot be regrown within a predictable amount of time. Appendix C of the Final Plan describes how land is evaluated for suitability for timber management.

Old growth, large trees will be retained as desired visual characteristics in many parts of the Forest.

Please note that although the Sequoia Forest Plan addresses forest-wide resources, other plans have been completed to address Regional and National issues. The Renewable Resources Planning Act (RPA) of 1974 and the National Forest Management Act (NFMA) of 1976 established a process for integrated national, regional, and forest level planning.

At the National level, the RPA Assessment and Program is completed every 10 years by having information generated at the local and Regional

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levels Included in this Program is the distribution of nationwide resource of objectives among the nine *Regions* of the National Forest System

At the Regional level. planning links the RPA Program with local Forest and State planning Each Regional plan. called "Regional Guides." plays a dual role by channeling management direction From the national to the local level and information from the local to the national level The Regional Guide for the Pacific Southwest Region was issued in August. 1984 This Guide sets management direction required by NFMA and Regional direction that responds to public issues and management concerns The Sequoia Forest Plan then follows the Regional Guide and integrates National and Regional issues Into the local planning effort

WATER. WATERSHED, GENERAL (280)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

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100 Should watersheds be protected from logging?

We are charged with protecting watersheds from effects of logging, not from logging per se We have established that this is possible through the use Of Best Management Practices and mitigation

200 Should a comprehensive water quality monitoring program be established for all the major rivers. streams. lakes and reservoirs on the Forest?

Extensive and comprehensive water quality monitoring programs. such as the one suggested. are extremely expensive Moreover, the benefits of such a program are limited We have found that it is more cost-effective to detect real and potential problems through frequent observation. and to use comprehensive water quality monitoring programs in situations where there are, or are likely to be. water quality problems

300 Does the Plan ignore water development?

The Plan recognizes that water derived from the Forest will become an increasingly important environmental. agricultural. power. and recreational resource in the coming decades

400 Should all natural waters on the Forest be protected?

Yes, and indeed they are protected Protected from non-point sources of pollution through the use of Best Management Practices (BMP's) Protected from point sources of pollution by local. State. and Federal regulations

(280)

500 Is the way FORPLAN treats water values derived from timber harvest realistic or Imaginary?

FORPLAN generates water yield based on a current average of annual water yield. augmented by water yield tables that take into account evapotranspiration lost from timber harvest. The values used in the water yield table were taken from Studies conducted on many Forests. During this planning period small watersheds on the Sequoia National Forest will be studied to determine if these values are realistic.

700 Should the Plan and/or the EIS go into detail regarding the use of Best Management Practices (BMP) a legally binding agreement with the State Water Resources Control Board (SWRCB)?

There is sufficient detail contained in "Water Quality Management for the National Forest Systems Lands. in California (BMP Handbook)" (R-5 USDA Forest Service). It is not appropriate to repeat this level of detail in the Forest planning documents. Copies of the BMP Handbook and its Supporting documents are available.

800 Should the Plan specify grass types For seeding?

No. however. the point is well taken that seeding native grasses is often preferable. particularly as native grass seed is now becoming commercially available in limited quantities.

900 Can water yield be increased without significant environmental damage?

Yes. though environmental constraints limit the amount that water yields can be increased. and we will not trade off environmental or water quality for increased water quantity.

1000 Is increasing water quantity in the Southern San Joaquin irrelevant?

No, even though water yield increases are most often derived during periods of peak flow. almost all water in the Southern San Joaquin System is used. This System has no natural outflow to the ocean, as most other systems in California have. and aquifers under the Southern San Joaquin Valley have a tremendous capacity to store water without evaporative losses.

1100 Is the Forest Service degrading water and watershed through current and proposed intensive management in specific areas?

It is our goal to plan and implement projects that do not significantly degrade water or watershed.

1200 Should standards relating to cumulative watershed effects (similar to ones include in other Sierra Nevada National Forests) be included in the Plan?

Standards like this could very well be modified and incorporated into the Plan. Standards would have to be modified to encompass conditions found on the Sequoia NF. particularly in the Forest's more arid regions.

1300 Should new hydroelectric developments be allowed in the Forest?

Hydroelectric development will be considered on a case-by-case basis. It can be compatible with other Forest uses and is part of the Forest Service's multiple-use concept.

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1400 Should water quality be improved to a high quality level?

Most of the water currently derived from the Forest is very high quality water with rare exception. In situations where human activities have lowered water quality, we are striving to correct the problem. Some places on the Forest have naturally low water quality, such as the radioactive springs in the lower Kern Canyon. In these cases, we only take action if the naturally occurring lower quality water is affecting some beneficial use.

1500 Should the Forest pursue opportunities to increase water yield?

Yes. Though the opportunities to increase water yield from various Forest management activities are limited, additional water is needed in the southern San Joaquin Valley, and all cost-effective, environmentally-sound techniques should be used. Moreover, water is a primary facet of the Forest Service Mission.

1600 Does the Plan underestimate the impact of management activities on water quality?

We believe the Plan and EIS accurately reflect the impact of management activities on water quality, and paint a complete picture of the potential effects of each alternative on water quality.

1700 Should the Plan describe detailed measures to protect water quality?

References can be found in the Plan, but more comprehensive details are in "Water Quality Management Plan National Forest System Land in California" (Region 5, USDA Forest Service 1979) and its supporting documents.

1800 Is essential information relating to resource capabilities and limitations missing from the Plan?

Basic data is available to make sound management decisions in the Plan. We expect to collect and apply considerably more information during the next planning cycle.

1900 Should timber be cut or brush be burned solely for the purpose of improving water yield?

The Forest Service would consider manipulating vegetation for the sole purpose of improving water yield, if there were a demand that would pay for it.

2000 Should the Forest determine instream flow needs for all the perennial streams on the Forest for this planning cycle?

Those streams that are proposed for diversion will be studied, and instream flow requirements will be negotiated. The State of California has the ultimate authority to set minimum instream flow requirements on all lands within the State.

2100 Should more attention be paid to the management of water resource in the Plan?

The Forest Plan adequately addresses the water resource. The water resource will get more attention at the project planning level.

2200 Will mitigation keep downstream damage within limits implied by Figure 4.2 (DEIS)?

We believe we can limit cumulative watershed effects through the use of Best Management Practices, streamside management zones, and monitoring projects for potential cumulative effects.

(280)

2300 Under CP 7 - Watershed. this Statement could be used to reduce meadow restoration in the CF 7 zone It should be changed to allow restoration in other areas

We make every opportunity possible to restore riparian habitat The wording is not meant to be a limitation

2400 Water quality is fine

Thank you for your comment

GROUNDWATER (289)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

200 Is there adequate groundwater to support the proposed Peppermint Ski Area?

This is beyond the scope of the Forest Plan Please refer to the Peppermint Mountain Resort FEIS

300 Should an extensive general survey of groundwater be conducted on the Sequoia National Forest?

No. such a Study done for its own sake would be expensive and probably not very useful Some general information does already exist. however, problems associated with groundwater on the Sequoia NP are very site-specific by virtue of the nature of the groundwater in the Sierra Nevada Consequently. investigations are best done on a site/project-specific basis, with the information gained in each case retained for reference on future projects

400 Should groundwater be monitored?

Groundwater quality and quantity are monitored with the respect to the operation of the 24 wells and 35 springs providing water to campgrounds and administrative sites Further monitoring. Without a specific purpose in mind, would not be an efficient use of resources

500 Should potential impacts on groundwater be listed in the Forest Plan and/or EIS?

These potential impacts are spelled out in the Forest Service Manual and other sources Inclusion in the EIS is possible. but it would be analogous to adding the whole Best Management Practices Handbook to the PEIS Such lengthy detail is not warranted in a general document such as the Forest Plan and FEIS

RIPARIAN AREAS. GENERAL (295)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Should grazing and timber harvest be excluded from streamside management zones?

Streamside management zones are managed for multiple-use with an emphasis on water quality Grazing and timber harvest are allowed where the water quality will not significantly be effected

200 Streamside Management zones should be widened to include all riparian vegetation

Streamside management zones encompass riparian vegetation and are referred to as riparian areas

(295)

300 The zone (SMZ) of protection should be based on actual distances from the watercourse at any given point throughout the disturbed area and should not be based on average distance. as is currently proposed.

The streamside management zones (SMZ's) in Table 4 32 of the DEIS are minimums. not averages as stated This correction has been made

400 Riparian resources can't be professionally managed with silviculturists and range conservationists

The Plan has been updated and now states that the new Riparian Standards and Guidelines will be followed One of the new Standards is "Whenever riparian vegetation is subject to proposed manipulation or utilization. the project's (Activity's) interdisciplinary team will include or consult a person trained in both formulating effective prescriptions for streamside Management Zones and in monitoring the field results "

500 The plan fails to emphasize . or state how riparian conditions will be conserved and enhanced

The Plan has been updated and now states that the new Riparian Standards and Guidelines will be followed These standards and guidelines protect riparian areas If a riparian area needs improvement it will be added to the Watershed Improvement Needs program and treated

600 Would you please detail the management practices that will guarantee adequate riparian zones to protect wildlife habitat and to assure against unacceptable silting of the forest waterways

The Plan has been updated and now States that the new Riparian Standards and Guidelines will be followed These Standards and guidelines direct the management practices that will protect riparian wildlife habitat and assure against unacceptable silting of forest waterways

700 Is 56.000 a Sufficient annual budget for monitoring the riparian program'

This amount has been changed to \$30.000 annually

800 Are riparian areas included in streamside management zones? If so, are they wide enough and do they receive special management?

Riparian areas are included in streamside Management Zones The Zones receive special management for the protection and/or enhancement of the Riparian ecosystem and the Widths are set accordingly

900 To protect riparian areas from sedimentation. tractor logging should be limited to slopes less than 35%. and 30% when soils are more susceptible to erosion

We feel that tractor logging on slopes up to 40% can be done without significant soil movement TO insure this we have added in the standards and guidelines for timber management that tractor logging on slopes above 35% will require an on-the-ground interdisciplinary team evaluation to set mitigating guidelines for soil protection

1000 Targets should be set for streambank erosion control in meadow areas

Streambank erosion control is part of the Watershed Improvement Need program (WIN) The plan States that we will treat 140 acres of watershed annually A great deal of this treatment is streambank erosion control in meadow areas

(295)

1200 SMZ's are not sufficient.

Streamside management zones that are stated in this planning process are Only minimums. The actual SMZ will be set by a person trained in both formulating effective prescriptions for SMZ's end in monitoring the field results

1300 Validation of riparian S&G use does not identify the need to modify an S&G if riparian dependent resources are being negatively impacted

The Plan has been modified and now states that the new Riparian Standards and Guidelines will be followed These standards and guidelines identify the need to modify and continually strengthen the regulations in riparian areas.

1400 In riparian zones an emphasis should be placed on high quality aquatic habitat

Through the implementation of BMP's and the Riparian Standards and Guidelines. the Forest Service has emphasized aquatic habitat The emphasis is to protect the existing aquatic habitat and where them is an opportunity. improve it.

1500 Streamside management zones should be widened and activities (logging, grazing, vehicle traffic) prohibited from the zone

Streamside management zones that are stated in the planning process are only minimums The actual SMZ will be set by a person trained in formulating effective prescriptions for SMZ's The prescription will State what is prohibited in the zone

1600 A more comprehensive plan of inventorying and management is needed for riparian and meadow areas

The Forest Service inventories riparian and meadow areas that are in need of improvement (Watershed Improvement Needs program ) An extensive survey done for its own sake would be expensive and probably not very useful The Forest Plan has been updated and now states that the new Riparian Standards and Guidelines will be followed and Meadow Standards and guidelines will be produced These standards and guidelines direct the management practices tnat will protect these ecosystems

1700 No grazing, logging, or fuelwood cutting in riparian zones

The Forest Service has Riparian Standards and Guidelines that to a great extent limit, and in many cases prohibit. these activities

1800 Streamside management zones should be managed to increase water yield

The emphasis in SMZ's is to protect the riparian ecosystem Chaparral treatment and timber harvest Outside of SMZ's will be assessed for increasing water yield



WILD & SCENIC RIVERS (300)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 The Forest Should protect the Kings River up-stream from the confluence With the North Fork by recommending it as part of the Federal Wild & Scenic River System for the following reasons 1) It is an outstanding area for boating with clearwater and easy access. 2) It is the only true "Big Water" experience in the southern 2/3 of the state, 3) It has unique scenic and recreational values that far outweigh the values of a dam, 4) The river canyon provides 40% of the winter habitat of the North Fork Deer Herd, 5) Segments 1 and 2 have been identified as part Of the California Wild Trout Program

Legislation (HR799) for the Segment of river discussed was enacted in November 1987 This has established the Kings River Special Management Area as well as designated a 5-mile segment of the main Stem Kings. and all of the south and middle forks as components of the Wild and Scenic System Please refer to Forest-wide Standards and Guidelines in the Forest Plan, Chapter 4, for direction regarding candidate Wild and Scenic River Management

Please note that at the time of this writing. the Kings River Conservation District (KRCD) had withdrawn their proposal for a dam at Rogers Crossing

200 I oppose deferring or delaying a recommendation of the Kings for inclusion in the Wild & Scenic River System

Refer to 100 above

201 The recommendation on the Status of Segment 1 of the Kings River should be deferred

Refer to 100 above

300 The "Monache Segment." of the South Fork should be recommended for Scenic classification

This change has been made in the Preferred Alternative except about 1 2 miles on the north end has been found eligible for wild and is so recommended The recommendation of Scenic classification is made with the understanding that such classification will not preclude ORV use in the river corridor

301 I oppose the apparent intention to develop paved road access to the Monache Meadows area and the South Fork of the Kern There is no need or justification to introduce major new public impacts in that Special and relatively secluded area

There is no plan to develop paved road access to the Monache Meadows area and the South Fork of the Kern

400 The Lower Kern River below Lake Isabella should be evaluated for potential inclusion in the Wild and Scenic River System It is a valuable recreation resource to thousands of individuals

A review of this river has been done and is included in Appendix E of this EIS Even though this review determined not to pursue Wild and Scenic River Status, we recognize the importance of this resource and have included emphasis on water-oriented recreation in our plan management direction (see Chap 4)

410 Do not include the lower Kern River and Lake Isabella in the Wild and Scenic River System.

Refer to 400 above

500 The North Fork of the Kern from the Kern/Tulare County line to its headwaters Should be classified under the Wild & Scenic Rivers System

Enactment of S-247 in November 1987 Included all of the North Fork Kern River from the Kern/Tulare County line to its headwaters as a Wild and Scenic River The Forest Plan includes classification for individual river segments ( see chap 4) A management plan for this river will be prepared within

3 years and address all activities which occur in the corridor. Public input will be an important part of this effort.

600 The dividing point between Segment 1 & Segment 2 on the South Fork of the Kern should be moved downstream to the Forest boundary to protect the riparian areas & preclude FERC project No. 4805 which would dewater the river for nearly 2 miles.

The California Wilderness Act of 1984 specifically precluded wilderness designation of the river corridor along the South Fork of the Kern from the Forest Boundary to original Dome Land wilderness boundary to allow for evaluation of this potential small hydro project. It would be inappropriate to change segmentation of the river to preclude the project at this time. Any proposal to develop a small hydro project will require the evaluation of all environmental effects following NEPA requirements.

700 Segment 1 of the South Fork of the Kern should be classified as recreational under the Wild & Scenic Rivers System.

Segment 1 of the South Fork of the Kern River was found to be eligible for classification as a recreation segment. However, nearly all of the segment is on private land. Congress considered this point in developing legislation and chose not to include Segment 1. Hence, S-247, which designated the South Fork Kern as a component of the Wild and Scenic River System, includes Segments 2 through 6 and not Segment 1.

800 Humans have a long and intimate relationship with rivers. Providing concentrated resources in their canyons, rivers were the cradle of civilization and remain its lifeblood. In today's modern world, a new focus on rivers has arisen - recreational use. The Outdoor Recreation Commission Study of several years ago documented that almost no activity has increased at a faster rate than river-related recreation in the last 15 years. Today, less than 2% of America's river mileage remains natural enough to be protected as part of the National Wild and Scenic River System. Of this fractional amount, only approximately 9% has been formally designated as part of the system. Thus, at a time when river-based recreation is growing faster than any other, less than 2 out of every 1000 river miles in America are formally protected for their natural values and recreational use.

Of the three rivers surveyed for inclusion in the Wild and Scenic River System, the Forest recommended designation of 118 miles in its DEIS. Enactment of S-247 and H.R. 799 in November 1987 designated all of these miles as part of the Wild and Scenic River System (see Plan, Chapters 3 and 4).

900 Whereas, the Kern River is a resource that should be protected due to its remarkable scenic, recreational, geologic, fish and wildlife, and historic values; and whereas, the inclusion of the reach of the North Fork to the Tulare County line would protect areas of substantial and remarkable scenic, recreational, geologic, fish, and wildlife, and historical importance .....

The Forest-wide Standards and Guidelines in the PRP Alternative indicate that management of the North Fork of the Kern River (as well as other wild and Scenic Rivers) will be in accordance with legislation on Wild and Scenic designation.

(300)

1000 Part of the Draft Plan that I find totally inadequate. The socio-economic portion states the only 15 part-time Jobs would be lost. At Zephyr alone there are 15 full-time seasonal employees who work on the Kings. I would guess a minimum of 25 for Kings River Expeditions and 15 for Spirit Whitewater

We cannot relate the 15 number to any part of our documents. However, be aware that all employment figures discussed in the Plan and the FEIS are net totals and include Jobs lost as well as gained

1100 With respect to the proposed management plan for you to take a Stand on the Rodgers Crossing area without all the facts available would not be prudent or objective. If the Kings River Conservation District Studies indicate a favorable opportunity to capture additional Sierra Nevada run-off, which would lessen the already severe underground over-draft situation in the Southern San Joaquin Valley, it would be wrong to have included that portion of the Kings River in the Scenic and Wild Rivers Act.

We agree that it is essential that important decisions should be based on evaluation of all available data. That is why we deferred the decision on Segment 1 of the Kings River in our DEIS. However, enactment of HR799 resolved this matter. Also see #100 above

1200 Segment 2 (South Fork Kern River) - FS boundary through Dome Land Wilderness, 28.5 miles. Already protected by flowing through the Dome Land Wilderness, this segment of river is presently receiving the highest level of preservation. Highest Potential Eligibility = Wild; Cons. Alter. Recommendation = Wild

We have established wild classification for this segment (see Plan, Chap. 4)

1300 Segment 5 (South Fork Kern River) - through Monache Meadows, 8.2 miles. Received an eligibility rating of Scenic from SQF, but because of its location and its own special values, it should receive a higher designation in order to provide more complete protection. In past controversies over the prior existence of 4-wheel drive roads in areas designated as wilderness, decisions have favored wilderness. The present roads should not preclude a wild designation for these miles of river. Highest Potential Eligibility = Wild; Cons. Altern. Recommendation = Wild

Our evaluation indicates that the highest eligible classification for most of this segment is scenic. Approximately 1.2 miles at the north end has been found eligible for wild. The Forest has established the highest eligible classification of scenic for about 7.0 miles and wild for about 1.2 miles. With the understanding that scenic classification will not preclude OHV use within the river corridor

1400 Based on the well-known resource values of the Kings River, the segmentation and recommendation here are quite different from those of the FS Segment 1 - Pine Flat Reservoir to confluence with North Fork, 1 mile. This segment is utilized by boaters, picnickers, swimmers, anglers, and others and has access provided by a parallel road and is crossed by two bridges. Highest Potential Eligibility = Recreational; Cons. Alter. Recommendation = none. Segment 2 - to Garnet Dike Campground, 7.1 miles. This segment is heavily used by boaters and

Enactment of HR799 has rendered the specifics of resegmentation between Pine Flat Reservoir and Garlic Meadow Creek a moot point. The stretch between Garlic Meadow Creek and the confluence of the Middle Fork and South Fork has been established as wild classification. Please refer to the Forest-wide Standards and Guidelines in the Forest Plan, Chapter 4, for direction regarding planning for designated rivers.

(300)

is paralleled by a road, providing access, but detracting from the otherwise outstanding scenic surroundings. Highest potential eligibility = recreation, Cons. Alt. Recommendation = recreational Segment 3 - to confluence of Middle Fork/South Fork. 9.5 miles. Access to the river is limited to trails. The portion of this segment up to Garlic Meadow represents that which could be flooded by a completed Rodgers Crossing Reservoir. The values described for the river in general are obvious here, making this segment easily eligible for Wild designation. High Potential Eligibility = wild. Cons. Alt. Recommendation = Wild

1500 The Conservation Alternative proposes to resegment to allow the full values of the entire length (South Fork Kings River) to be considered Segment 1 (as redefined) enjoys little access, is surrounded by fairly steep canyon walls and presents many of the outstanding values of the entire length of the canyon. Highest Potential Eligibility = Wild. Cons. Alt. Recommendation = Wild Segment 2 - to Road's End, 12.5 miles. Paralleled by State Hwy 180, this segment is easily reached by anglers, swimmers, hikers, and campers. Highest potential eligibility = Recreational. Conservation Alt. Recommendation = Recreational Segment 3 - to headwaters in Sequoia/Kings Canyon National Park, 22 miles. This segment, entirely within Kings Canyon National Park, is truly deserving of Status as wild. Highest Eligibility Potential = Wild. Conservation Alternative Recommendation = Wild

1600 KRCD first touted this project as a means to help correct the ground water overdraft problem in the valley but has turned the project into a hydro-power project so as to make it economically feasible. The Water gained by this project is so marginal the dam could not be paid for on its water storage merits alone. They have to tack on the Hydro to pay for it and the fact is, we don't need this additional power generation so why destroy the Kings for such ridiculous reasons? The river in its current State offers premium whitewater rafting and kayaking which are outstandingly remarkable. The river has one of the longest boating seasons. Some years see a season of April through Sept. The river has one of the largest run-offs. This means flows in the Spring of 5,000 to 20,000 CFS. This is the only river in Calif. Where a boater can test his skills against high water flows such as those found on the Grand. The river is an excellent training ground for novice boaters.

The Preferred Alternative subdivides Segment 1 at Horseshoe Bend and establishes a wild classification. The remainder of Segment 1 and Segment 2 are established for recreation classification. Segment 3 is in the national park has been recommended to the National Park Service as Wild.

Legislation enacted in November 1987 (HR799) has designated a portion of the Kings River as a Wild and scenic River and established the Kings River Special Management Area. This action will ensure that the values described will be maintained over time.

(300)

The Kings can be run at lower flows in June and later by inexperienced boatmen Without the risk found an the Other rivers above The river is not as dangerous as the other local rivers, experienced boatmen can take inexperienced crews and have a relatively safe trip

1700 My main interest concerns the Kings River In See #100 above regard to segment 1 of the Kings River. the part the FS deferred in its recommendations due to water withdrawals When the Kings River Conservation District completes its feasibility Study I would like to see the FS conduct a Wild River study in order to evaluate the wisest use of the river I believe any less would be a disservice to the public

1800 Fish and Game has designated these portions See #1600 above (the Upper Kings River) as "Wild Trout" water and the angling public considers this area one of the best on the western slope of the Sierras for the production of native, wild trout It is Stated in the DFP that "in order to provide increased public benefit. the management of the riparian zones to maintain a natural appearance and to protect fisheries is desirable " One Of the stated Forest goals is to provide increased wildlife and fish habitat capabilities on the NF by 1995 I feel both Of these goals would be best achieved by designating sections 1 & 2 of the Kings as "Wild and Scenic "

1900 The KCRD has abused the rivers below Pine Flat We have no technical response to thebe Statements of Dam I believe, in an effort to destroy the fishery opinion so that opposition to their other plans is reduced They had previously killed off most of the aquatic insect life with insufficient and wildly varying water flows A high dam could cause nitrogen supersaturation below it as well as inundating the beautiful canyon above I believe the achievement of these goals will also help to provide a buffer zone to Kings Canyon National Park. which will then also benefit It is my understanding that the National Forest section of the canyon provides 40% of the winter habitat of the North Fork Kings River deer herd

2000 With so little natural rivers left in Calif- see #1600 above ornia. the Kings River ought to be preserved with the same foresight that gave us Yellowstone and Yosemite Conserve not find new ways to exploit the little reserves there are left San Joaquin Valley

(300)

growers sold their excess water to L.A. County at City rates. after having purchased it at agriculture rates

2200 This section is about 60 miles from the Lone Pine fault in Owens Valley Which is the source of the three great earthquakes that have ever occurred in California As a registered geologist I have grave doubts about the seismic safety of Pine Flat Dam

2300 This draft is seriously flawed in its lack of study and protection of the Kings River I am greatly disturbed by the Drafts failure to study a 14 mile stretch leading up to Rodgers Crossing The best thing is to understand all aspects of the issue and this means a full Study of the stretch's Wild & Scenic potential value I urge you to do just that.

2400 Past studies have found that Rogers Crossing Would be a grossly ineffective dam. providing Water only once every three to four years

2700 We recommended wild and scenic river classification for the South Fork of the Kern River be removed from the PRP plan Those portions of the South Fork so recommended are already in areas classified as wilderness Since the proposed W&S areas are already in wilderness (a far more restricted classification) classifying these areas as W&S would be a gross waste of taxpayers money This classification. to satisfy a minority. Would only increase the SNP administrative costs since the wilderness restrictions would prevail

2800 I am concerned about the Kings River recreational area above Pine Plat Reservoir Considering the scarcity of high quality outdoor recreational areas that are within easy, year-round reach of the densely populated South Bay and Valley regions, I don't believe the destruction Of the upper Kings River canyon to be a prudent tradeoff I find this area an ideal place to unwind after a hectic week in the Bay Area I am hopeful that when I have children I will have ample Opportunity to expose them to the pleasures of the Outdoor experience What better place to do this than the upper Kings River? I recommend that this river be protected in the Sequoia Plan

This is outside the scope of this Plan However, enactment of HR799 has resolved the issue of a dam at Rodgers Crossing.

Refer to 100 above

The feasibility of the dam has been determined in Current KRCD studies Please refer to these for Specific information Also see #100 above

It is true that designation of the segments within existing wilderness will not effect management since wilderness regulations are more restrictive The additional Costs of designation are minimal for the same reason

The area of the Kings Rivers of concern will be protected under the umbrella of HR799 and the Kings River Special Management Area and the management plan to be developed

(300)

2900 I am writing in regards to the HOBO initiative I believe the Kern River should be preserved at its present state

The PRF recognizes the importance of the Kern River by emphasizing water-oriented recreation for that stretch below Lake Isabella, even though this portion of the river is not recommended for Wild and Scenic River Status (see Chap 4) We are confident that future management under the Plan will provide for retaining existing Opportunities and conditions along the river

3000 The eligibility of the lowest Kings River Wild and Scenic River Study segment should be identified though a recommendation could be deferred

Enactment of HR799 renders this a moot point Please see #100 above

3100 2-28 Identify highest eligibility classification for Segment 1 of the Kings River. 3-123 Recommendation for Segment 1 of the Kings River for National Wild and Scenic River Status Should not be dependent upon a decision to dam or not All resource trade offs should be fully identified so informed political decisions can be made 4-115 The potential effects of W & S River listing identified on this page was confusing Are these activities prohibited. constrained. etc

See 13000 above

The referenced Information on Page 4-115 of the DEIS has been removed from the EIS as a result of the enactment of Wild and Scenic Rivers legislation

3200 None of the rivers should receive any alternatives No road construction or hydroelectric development should occur Shoreline prescriptions should be limited to 1/2 mile to fully protect the visual quality of the W&S river

Enactment of Wild and Scenic Rivers legislation has established that management will be Within Wild and scenic guidelines and fully detailed in a river management plan On undesignated river segments. the management of those sections on the Sequoia National Forest will be controlled by this plan

3300 The deferment of both an eligibility and suitability analysis by the Sequoia National Forest (SNF) personnel within the Draft Forest Plan (DFP) and Draft Environmental Impact Statement (DEIS) on the Main Fork Kings from Garlic Meadows Creek to Pine Flat reservoir (Segment 1) is puzzling in light of this directive It would appear that Segment 1 is eligible for inclusion within the system The DFP and DEIS appear to be deficient in regard to the eligibility analysis and resulting management classification The segmentation used in the DFP and DEIS ignores the fact that the river is so wild between Boyden Cave and Yucca Point that it is practically inaccessible The DFP and DEIS should be amended to reflect the highest possible classification for this segment of the So Fork

See #3000 above Also. please refer to Forest-wide Standards and Guidelines in the Forest Plan. Chapter 4, for direction regarding candidate Wild and Scenic River management

The South Fork of the Kings River between the confluence With the Middle Fork and Horseshoe Bend (near Boyden Cave) has been resegmented to recognize the different conditions. as pointed out by the respondent (see FEIS. Appendix E) Chapter 4 of the Plan establishes this river Segment as wild

3500 We find that the planning responsibilities were divided by the Forest Service between the Sierra and Sequoia National Forest. with each Forest addressing different aspects of the process on

The Sequoia National Forest was designated by the Region as the lead Forest for study of the Kings River Planning for the entire river was covered in the Sequoia Plan to reduce the fragmentation

(300)

separate planning tracts and on widely separated time schedules. We disagree with the process, we disagree with the conclusions, to the extent that there are any, and we believe that the procedures spelled out by the National Environmental Policy Act and the National Forest Management Act.

you mention. However, HR799 has established the Sierra National Forest as responsible for the Kings River Special Management Area, so we will be cooperating with them in this effort.

3600 The Kings is one of the mightiest of the Sierra rivers in regards to the amount of run-off seen in the Spring each year. We feel that the DFP is significantly erroneous in the area of identifying the socio-economic value of the whitewater recreation which occurs on Segment 1 of the Kings River. The draft does not address the impact on local economy that is produced by the thousands who come to the area for whitewater boating. If this section of the river is not protected from a dam at Rodgers Crossing, all the whitewater recreation described above will be ended. Any legitimate EIS for this section of the Kings River must include a description of the full range of opportunities it represents for kayakers. The Upper Kings River canyon, especially in Section 1, provides excellent habitat for various game and non-game species. The Kings River Canyon along the Segment 1 represents outstandingly remarkable opportunities for the hunter. Any evaluation of the Kings River Canyon must include the outstandingly remarkable opportunities it presents for yearlong hiking and camping. A National Recreation Trail borders the river from Garnet Dike to Spring Creek. Because the Canyon is low in elevation, this hiking, viewing, and camping is available yearlong. The Sequoia NP Draft Plan should include recreation as an outstandingly remarkable value because of the unique hiking and camping opportunities available. The Upper Kings River was placed in the California Wild Trout program. The Upper Kings River is considered by many fishers as one of the finest trout streams in the state and nation. It is judged to be one of the most productive, high quality fisheries on the west slope of the Southern Sierra.

See #100 above

3601 Scenic values of segment 1 of the Kings River alone are a justifiable reason for its inclusion in the National Wild & Scenic River system. Any size dam on this section would greatly impact the visual quality of the river and canyon. Visual impacts of management activities are seen thereby promoting the duration of viewing beyond a quick glance. Diversity of landscape character is important and those with the greatest variety or diversity have the greatest potential for high scenic value. The Kings

See #100 above



(300)

River is highly diversified in this area. A structure such as a dam would have a massive visual impact and the landscape of the Kings River Canyon could not absorb this type of alteration without losing its visual character. Each distance zone within the segment 1 area offers a distinctive natural aesthetic visual effect. Dominance elements of visual recognition are form, line, color, and texture. Considering that the landscape in this area has a maximum amount of diversity and therefore the greatest potential for high scenic value, it should be placed in the Variety Class, A-distinctive. The landform, rockform, vegetation, and waterforms (streams and waterfalls) all are equivalent to or surpass the standards of the Forest Service for Class A-distinctive. This segment 1 area of the Kings River is of great concern to the public for its scenic value. The corridors in to the River Canyon (both road and trail) are of primary importance to those who perceive this visual environment. The area is of a high sensitivity level and any dam and accompanying reservoir would completely destroy these access corridors and produce a maximum amount of modification to the view and vista with no natural transition of the seen area and thereby cause a reduction of the visual quality. Using the Visual Quality Objectives described in the National Forest Visual Management System, the segment 1 of the Kings River should without question be recommended for inclusion in the National Wild and Scenic River System.

Historic and Cultural Values - The cultural and historical resources of the Kings River and Canyon are well identified within the Draft Plan. It should also be noted that early work papers on the Main Fork Kings River listed cultural and historical resources as an outstandingly remarkable value of the segment from Garnet Dike Campground to Pine Flat reservoir. In light of this, we will comment no further than to indicate that we agree that segment 1 is outstandingly remarkable for these values. The Committee also questions whether sufficient information is on hand to make a determination on the value of the river and corridor from the standpoint of botanic and wildlife resources. The deferred segment may also qualify for the outstanding value presented by the grand geological features of the area.

(300)

3700 Kings River should be left as an area of concentrated recreation use with primary emphasis on hiking, fishing, boating, rafting, and camping. I support the need for small hydro projects such as proposed by Louis Evans at Barton Flat. These facilities should be constructed with a minimum of adverse environmental and esthetic impacts. They should also minimize adverse stream flows and retain the fishery.

The Kings River will be managed in accordance with direction contained in Legislation. However, with Wild and Scenic River status, and specifically the Special Management Area, small hydro projects will not be allowed.

3800 (DFP) failed to identify Segment 2 Of the Kings River in the evaluation process. We call for an immediate reversal of the decision and a beginning of the evaluation process. See #1400 above

3900 The Kings River (Segments 1 and 2) should be given the ORV for fisheries. In 1972, the Kings was one of 8 rivers in the State to be placed in the California Wild Trout program. The Kings River is considered by many to be the finest trout stream on the West slope of the Sierras and is thought to be one of the great wild trout streams in the nation. See #1600 above

4000 The issue of wildlife needs serious reevaluation. The North Kings River deer herd is a highly impacted animal. The Kings River is home for the bald eagle and peregrine falcon, species whose presence has faded. We respectfully request a complete and detail analysis of our comments. See #1600 above

4200 I would like to go on record as supporting the Current Alternative (CUR). With a few exceptions, current management of the Forest has been satisfactory and it is a known system. Management concerns that I have follow. There do not appear to be any significant effects of designating rivers wild and scenic within existing Wilderness. However, rivers are important for meeting energy needs and should not be encumbered with Special designations that may exclude energy development. I oppose any any classification that precludes energy development. Legislation (HR799 and S-247) has been enacted that designate all or portions of all study rivers on the Sequoia National Forest as Wild and Scenic. This action would preclude energy development. In our judgment, most river segments Outside of Wilderness which were recommended for designation in our DEIS have a low potential for additional power facilities.

4500 I Support a plan that would not restrict the use of our public lands by private citizens specifically. I support the following. The South Fork Kern River be designated "Recreational." With vehicle access to the Rock House Basin portion, so that all citizens, not just hikers and backpackers, may enjoy the area. This point holds special meaning for the elderly and the handicapped. Vehicle use should be restricted only west of the river.

The area discussed is within Dome Land Wilderness created in 1984. Designation of this Wild and Scenic River segment as recreational will not allow vehicle access since the wilderness regulations are more restrictive and prohibit all mechanized use. Since it is within wilderness, a wild designation is considered appropriate and is recommended.

**WILDERNESS, GENERAL (320)**

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 Part or all of the Rockhouse WSA is suitable for wilderness and should be so designated. The WSA is a suitable addition to the Domeland Wilderness that would provide a visual buffer, make a good biotic entry for the preservation category, and provide a buffer between the more intensive forest uses adjacent to the Rockhouse Basin. This is an area of immense scenic value with no commercial timber present, therefore no economic value. The wilderness designation would give added protection to a portion of the PCT, preserve part of the watershed of the South Fork Kern River and protect sensitive plants in the area, i.e., needles buckwheat, and yosemite bitterroot, yucca molina. The WSA is within the Spring and summer range of the Monache deer herd and the portion near Long Valley has historically provided critical winter range for the herd. The wilderness boundary, as it currently exists, follows a Forest Service/BLM boundary and should be relocated to better fit the terrain. Two-thirds of the WSA is north of Long Valley Campground and should be designated as wilderness. The Conservation Alternative strongly recommends all of the WSA be incorporated as wilderness.

The Preferred Alternative recommends that 12,500 acres in the Southern portion of the Rockhouse WSA be designated as Wilderness. This addition will compliment the adjacent Dome Land Wilderness. The boundary as indicated should mitigate impacts on mining activities. The management prescription for the remainder of the study area will be the responsibility of the BLM, the agency responsible for management of these public lands. Forest Service involvement in this area is limited to providing a recommendation in the Sequoia Plan for Wilderness. If wilderness is designated, we will work cooperatively with the BLM in developing a management plan.

102 1 Support wilderness status for the Rockhouse WSA on BLM lands. The northern part of the Rockhouse WSA should be added to the Domelands Wilderness.

See 100 above

200 We do not recommend wilderness designation for the 12,700 acre BLM Rockhouse WSA because 1) we have gone far enough in the establishment of wilderness areas in the Southern Sierra. 2) within Rockhouse Basin, there are roads, mines, and cabins. 3) landowners will be locked out of their private property along with hunters, miners, and people who don't want to hike into areas of interest. The same applies to the Kennedy and Summit Meadows areas. Another concern near the Rockhouse Basin area is the Chimney Peak and South Fork of the Kern. These areas should remain recreational and for motor vehicle use. OHV use would be restricted if wilderness. The elderly and disabled would have difficulty walking into these areas. CORVA recommends "on-wilderness, general dispersed recreation (PS1 prescription)

See 100 above

(320)

201 We do not recommend wilderness designation for the 12,700 acre BLM Rockhouse WSA because further study should be made on the south end of the Kennedy Meadows along with the Federal lands north and east of Kennedy Meadows. and the South Sierra Wilderness and Domeland Wilderness west of Kennedy Meadows.

See 100 above. The respondent must understand that the modification of existing wilderness area boundaries requires Congressional action This is not within the scope of this Plan

POTENTIAL WILDERNESS, GERERAL (340)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 I would like to see more wilderness areas and should be so designated because 1) When back-packing or just visiting wilderness areas you can enjoy the quiet and natural character 2) We support preservation of roadless areas (wildlands). 3) Preserve wilderness designations for children 4) 100 feet of streamside zones need to be protected 5) Consideration must be given to the ecology end species diversity 6) To protect wildlife and visual impacts there should be a buffer zone of undisturbed forest around all wilderness areas 7) Native plants and wildlife need these large areas to maintain viable populations and genetic diversity 8) More trails are needed 9) Without more wilderness many animal habitats are being lost 10) Roadless areas should be designated wilderness 11) Emphasis made on wanting wilderness preserved and protected 12) More equestrian and foot trails and maintenance needed 13) Wilderness designation will keep out ORVs

I suggest that the adopted plan place the formerly roaded areas of Summit Meadows, Rockhouse Basin, Dark Canyon, Wildrose etc, into a "on-wilderness study classification

Throughout the planning process the suitability for and the consequences of wilderness designation was evaluated for all identified Further Planning Areas The Preferred Alternative is designed to produce a balanced level of goods and services from Forest land The existing 264,071 acres of National Forest Wilderness (24% of the entire Sequoia National Forest) will be sufficient to supply a complete range of opportunities No additional wilderness will be recommended for National Forest land However, the Preferred Alternative does identify 12,500 acres of the BLM Rockhouse Wilderness Study Area which will be recommended to the BLM for wilderness

Each of the areas mentioned were studied for their wilderness/non-wilderness values The Summit Meadow area was made available to non-wilderness uses by the California Wilderness Act of 1984 Rockhouse Basin and Dark Canyon were added to the Dome Land Wilderness, while the Wildrose Area (a RARE I area name) was included in the South Sierra Wilderness by the same Act

131 I Support wilderness designation for Moses FPA as described in the AMN alternative On examining the LBU alternative, the entire northern section of Moses is recommended for wilderness, indicating that Proposed Alternatives' use of this area for saw-timber is overly-subsidized, hence uneconomical Moses's adjacency to the Golden Trout Wilderness further enhances its appeal as a wilderness area True multiple use for this area would at the least, designate the northern and northeastern parts of Moses as wilderness The designation of Moses Mountain RNA gives further reason to designate the northern portion of Moses FPA as wilderness

Refer to 1300 which follows

(340)

132 Consider all parts of the plan very carefully to be sure that the maximum amount of natural space remains and a minimum amount of clearance and damage is done. Don't let them ruin what cannot be replaced and make changes that cannot be undone.

133 Analysis of the Management Situation. Chap 3 I agree that "the future demand for wilderness is difficult to estimate", however, based upon the past 20 years history, the demand is expected to continue increasing (page 3-22)

134 In favor of keeping Sequoia NF wild, minimizing road construction and timber harvesting. How can you imply that environmentalists are in control of the Forest when only 25% of it is wild?

150 There is still exhibited the current misconception that timber harvesting should be encouraged wherever it is capable of being produced. All resources should be given consideration in all areas where they are capable of being produced. Decisions must be reached on the basis of the best mix of multiple-uses on each land Unit for the greatest public good.

200 No new wilderness additions should be made. There are more than enough Wilderness areas because:  
1) California has enough wilderness areas--an unbroken string from the Mexican border to Canada of wilderness lie on or adjacent to the Sierra (sic) Crest Trail.  
2) Too much wilderness will cost too much loss of harvest on existing areas.  
3) The wilderness program is restricting too much of the forest for just one purpose.  
4) Expansion of wilderness areas would be at the expense of the multiple-use concept.  
5) It will hurt the local and government economy because of lack of commercial

Thank you for your interest in the management of the Sequoia National Forest. We feel the PRF Alternative provides a good balance of use of the Forest.

Thank YOU for your comment. Our assessment of demand indicates the 264,071+ acres of the Forest (approximately 24%) will be sufficient to meet demand during this planning period.

We appreciate your desire to maintain the Forest in a "wild" State. You are correct--approximately 24% of the total land area is designated wilderness and will remain in a natural state. Recognizing the mandate of the Forest Service is to provide a range of goods and services, our Preferred Alternative does not include additional Wilderness on the National Forest. However, because we propose not to include new wilderness does not mean the entire Forest will be impacted by management actions. Large areas of the Forest will remain much as they are today. Hopefully, our documents do not give the impression that "environmentalists are in control."

The modeling process described in Appendix B of the EIS allows all lands to be available for all uses, within constraints imposed by the theme of each alternative. The computer model, FORPLAN, then solves for the particular allocation of resource uses that produces the maximum present net value. In this process nonfinancial values, such as wilderness experience, are evaluated and chosen to the extent that they contribute more to public benefits than do values with a financial return. It is our opinion that the Preferred Alternative does, in fact, provide a balance of uses.

See 100 above

(340)

timber sales More unemployment 6) The handi-  
capped and disabled cannot see and enjoy it 7)  
Fire prevention is nil in these areas 8) Forest  
land will be denied to all motorized vehicles 9)  
More roads are needed for access for the continued  
growth in population

201 Our forest land base allows positive taxpayers  
to make a living and pay taxes At a time when  
there is a strong demand for tax reduction, we  
should be trying to maximize the revenue generated  
off our federal lands instead of retiring the lands  
to wilderness where they are economically sterile

300 Wilderness is mainly for wildlife. to provide  
habitat for animals

340 (For Moses FPU) Alternative PRF proposes roading  
during the second decade. Appendix C. however,  
Schedules 9 6 miles of road construction in the  
first decade This should be clarified. especially  
in view of the uncertainties surrounding the use of  
herbicides and the potential need for earlier  
scheduling of timber management on the 8.152 acres  
of suitable land

350 Roads should be built at a slow steady pace over  
the duration of the plan, and should not be built at  
all where they might preclude future wilderness

370 The current realities of the Federal budget  
dictate that the Plan Which can be actually imple-  
mented must be one involving far lower expenditures  
than those required by the Preferred Alternative.  
Indeed. the Low Budget Alternative calls for an  
increase of over 64,000 acres of wilderness. while

The Forest Plan, in accordance with the Multiple-Use  
Sustained-Yield Act, is meant to provide the  
optimum mix of market and nonmarket outputs. not  
necessarily the mix yielding the greatest economic  
return It is worth mentioning that we recognize  
the value of wilderness in our economic evaluations  
by assigning a dollar value to a visitor day

Wilderness does in fact provide natural habitat for  
wildlife. but it serves other purposes as well  
These include watershed and recreation values  
Since it is to be maintained in its natural state.  
there are restrictions that severely limit the  
ability to manipulate vegetation to benefit wildlife  
species

Thank you for bringing this inconsistency to our  
attention The information has been reviewed and  
several changes made in Appendix C of the FEIS  
Certainly. the availability of herbicides could  
affect timber harvest Schedules The number of  
variables involved makes scheduling difficult

Each management activity requiring road construction  
is analyzed thoroughly by a team of resource  
specialists during the Project Environmental  
Analysis process Planning and analysis of road  
construction generally begins 5 years in advance of  
each management activity Please note that the RARE  
II process evaluated all lands potentially suitable  
for wilderness within the National Forest System  
That process received extensive public review and a  
Final EIS was published in 1979 This FEIS  
addresses all areas that were considered potentially  
available for wilderness as well as describes the  
allocation by management emphasis for released  
roadless areas (see Appendix C of the EIS)

Please see Appendix L of the EIS for an explanation  
of the relationship between Plan Objectives and  
outputs and the annual budget process Note that the  
Forest Plan is not budget-driven Hence, recommending  
land for wilderness classification purely on the basis  
of short-term budget considerations is inappropriate

(340)

the Preferred Alternative would not increase wilderness area at all. This indicates that wilderness designation of significant amounts of additional land is the most economically feasible use of Forest land. Therefore, we recommend that a wilderness management approach providing for all possible additional wilderness designation be adopted into the Plan.

400 Oat Mountain contains many features that would make it highly suitable for wilderness designation. 1. There is no wilderness in California with Sierra Nevada ecosystems of foothill woodlands, Chaparral, and blue/black oak woodlands. 2. The bald eagle and endangered species winter in the area. 3. The area is important to wildlife, and would best be managed from that standpoint as wilderness. 4. Two metropolitan areas, Fresno and Visalia, are within one hour drive of Oat Mountain, and wilderness designation would provide additional recreational opportunities for these communities.

500 If the AMN has additional Wilderness and approximately 40% of the remainder of the Forest is managed for semi-primitive, non-motorized recreation, then it does not seem necessary to have such a high road construction and reconstruction program.

600 DEIS p 4-2 and 4-3. Inferring that designation of Wilderness is in conflict with the conservation ethic is indicative of very strong biases. DEIS p 4-14. For CED and PRF it says: No new wilderness is designated thereby redeeming conservation values. That is another highly biased and inaccurate statement.

700 Also in regard to wilderness, there must be a better way to respond to OHV trespass than mere anticipation.

800 I feel that a cut back on our wilderness areas is needed to give our forestry service personnel a chance to use their education that they trained so hard for.

The Preferred Alternative does not recommend Oat Mountain for wilderness. Rather, it designates the area to be managed under two prescriptions - Range and Wildlife, and Dispersed Recreation. No additional roading of the area is planned during the planning period. Therefore, the naturalness of the area will be generally maintained. Some use of prescribed fire for vegetative treatment to improve wildlife end range habitat could also occur (see PEIS, Chapter 4 under Wilderness, Further Planning Areas, and Plan, Chapter 4, Under Management Area Prescriptions).

Road construction in the AMN Alternative is lower than any other Alternative. As described in Chapter 4 of the FEIS, reconstruction is higher due to an emphasis on upgrading the transportation network to provide access for developed and, particularly, dispersed recreational opportunities.

The inference that creation of additional wilderness is at odds with a conservation ethic is based on the definition of "conservation" as "the wise use of natural resources." In contrast, creation of additional wilderness would not be at odds with a preservation ethic which seeks to preserve rather than manage or use natural resources.

OHV intrusions into designated wilderness will be reduced or eliminated by planning and development of an appropriate OHV trail system. A comprehensive trail system planning effort is required in the Preferred Alternative (see Plan, Chapter 4, Standards and Guidelines).

Two points warrant mention. First, wilderness areas are established by Federal Law and can only be changed that way. Therein, any reduction of existing wilderness areas is outside the scope of this Plan. Secondly, wilderness requires management. Many professional Forest Service managers received their training in recreation management and work hard in applying the principles to wilderness.

(340)

900 It is stated that the Scodies, Oat Mountain, and the BLM Rockhouse WSA will retain their wilderness characteristics under all alternatives. Since in many of the alternatives (including the preferred) most of the land in these roadless areas would be classified as either semi-primitive roaded or roaded natural this does not seem likely. How will these areas retain wilderness characteristics when the uses and developments proposed for these areas destroy wilderness values?

1000 I do not approve of your current fencing of the South Fork of the Kern River in the Kennedy Meadows area. It would be better to control and reroute the traffic rather than deny the river to all. If the road had been routed about 100 to 300 yards away from the river in a controlled manner all of us could still get to the water and it would not have been polluted.

1100 The failure of the Sequoia National Forest to protect the integrity of important roadless areas is particularly glaring in the Scodies area. The 48,000 acre area was included in the California Wilderness Bill until its waning hours. However, Congress continued to recognize that public interest in the area was substantial, and therefore placed the Scodies in further planning. The PCT passes through the Scodies, and the area contains numerous opportunities for solitude and primitive recreation. Ecological representation in the area is diverse. Mojave desert, Joshua Tree woodland, desert chapparal, sagebrush, oak woodlands, and one of the finest pinyon pine forests in the state are all found in the Scodies. Pinyon pine woodlands are currently not represented in the National Wilderness Preservation System. Additional wilderness attributes of the area arise if the area is considered along with the CA Desert Conservation Area (CDCA) Frog Creek WSA. Frog Creek has been proposed for wilderness designation in the recently introduced California Desert Protection Act of 1986. Wilderness designation of these two Units would provide the unique opportunity of traversing from the extreme of true desert to a pinyon pine forest. By recommending the Scodies for wilderness, the Sequoia National Forest has the opportunity to recommend the protection of a unique and diverse area. The Scodies wilderness, rising out of the desert, would provide for an equally unique recreation experience.

Current plans for the areas mentioned will not result in any significant changes in the existing conditions. Much of the area is currently open to vehicle use and contains primitive road systems. These will remain but will not be improved. One activity that has been limited in the past but may occur in the future is controlled burning. This may change the vegetative composition of the area but will not significantly affect the long-term wilderness character.

The fencing you mention along the South Fork of the Kern River in the Kennedy Meadows area was constructed to identify the boundary of wilderness additions created by the 1984 California Wilderness Act. The area was then closed to vehicles. The area along the east bank of the South Fork of the Kern River south of Kennedy Meadows Campground will remain open for dispersed camping.

Throughout the planning process, the suitability and consequences of wilderness designation for the Scodies FPA was evaluated. In the end, it was not recommended. Under the Preferred Alternative, the area will be managed with emphasis on wildlife and dispersed recreation and not wilderness. In general, wilderness attributes will be little affected by the application of this prescription. Project-specific EA's will address protection/mitigation for cultural, visual, botanical, wildlife and watershed values, existing improvements, etc. OHV use will be limited to designated trails only. No larger resource trade-offs requiring mitigation will occur. (Refer to Plan, Chapter 4, Management Area Prescriptions.)



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1300 I'd like to see Moses roadless area above Camp Wishon designated as wilderness. If not possible, due to timber, maintain 1/4 mile strip existing wilderness from Maggie Mountain to Alder Creek. This would protect the wilderness character of major trails into the Golden Trout Wilderness.

Throughout the planning process, the suitability and consequences of wilderness designation for the Moses FPA was evaluated. In the end, it was not recommended. Under the Preferred Alternative, 16% of the area will be managed with emphasis on General Dispersed Recreation, 20% Range, and 64% Sawtimber. Project-specific EA's will address protection/mitigation for cultural, visual, botanical, wildlife and watershed values, existing improvements, etc. (Refer to Plan, Chapter 4, Management Area Prescriptions.) This includes trails providing access into the Golden Trout Wilderness.

1400 Please no more wilderness. I'm especially interested in the Kennedy Meadows area. Also Jordan Hot Springs should be left as it is, it's been there so long it could be a national landmark.

See 100 above. Jordan Hot Springs is within the Inyo National Forest. The land management prescription for that area will be determined in the Inyo Plan. The areas near Kennedy Meadows have already been designated wilderness in the 1984 California Wilderness Act (e.g., Dome Land Addition and South Sierra Wildernesses). Alteration of an existing wilderness requires Congressional legislation and is not within the scope of this Plan.

1500 I support wilderness designation for Dennison Peak. Wilderness protection would aid in the protection of California.

The Preferred Alternative designates the Dennison Peak FPA to be managed under two non-wilderness prescriptions - Range and Wildlife, and Dispersed Recreation. No additional roading of the area is planned within the planning period. Therefore, the naturalness of the area will generally be maintained. Some use of prescribed fire for vegetative treatment to improve wildlife and range habitat will occur. Project-specific EA9 will address protection/mitigation for cultural, visual, botanical, wildlife and watershed values, existing improvements, etc. (Refer to Plan, Chapter 4 Management Prescriptions.)

1600 Concerning the Kennedy Meadows-Black Rock, Rock House Basin Area. I used to hike a considerable amount in that area. In the past years, I have had a deterioration in my lower back which has eliminated hiking but I still enjoy the beauty of this area as often as possible in my 4-wheel drive. If areas like this are continued to be shut down to off road vehicles, people like me will be deprived of viewing such natural beauty. If the present trend of closing down public land to vehicular traffic keeps up, only the young and healthy will be able to enjoy such lands.

The South Fork Kern River area mentioned was included as part of the additions to the Dome Land Wilderness in the California Wilderness Act of 1984. As such, the Sequoia N F cannot reopen roads into this area--wilderness prohibits mechanized use. Further, changing wilderness boundaries is beyond the scope of this Plan and requires Congressional legislative action.

We appreciate the fact that some folks require mechanized equipment to visit and enjoy the Forest. This is just one of the factors that entered into the decision process as we developed the Preferred Alternative. Our Preferred Alternative is designed to result in a balanced level of goods and services. The existing 264,071 acres of wilderness

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(24% of the total Forest land) is judged to be sufficient to supply a complete range of opportunities therein. no additional National Forest wilderness is recommended in the Plan, although a small (12,500 acres) area of the BLM Rockhouse Wilderness Study Area has been This will provide a logical extension to the Dome Land Wilderness

1800 The Sequoia National Forest should be preserved in its wilderness or natural state

In accordance with the Multiple-Use Sustained-Yield Act, the Sequoia National Forest must be managed for a variety of uses and users Wilderness is just one of the valuable resources the Sequoia National Forest has to offer Forest products, recreation, range, forage, water and wildlife are other resources of the National Forest which are directly or indirectly enjoyed by all Through proper planning and management, we will be able to provide the continuous uses of all the resources the Sequoia National Forest has to offer.

1900 Roadless areas in Sequoia National Forest should be preserved to provide quality living space for the common, endangered, rare, and sensitive species of plants and animals which have inhabited this forest for millennia Conservationists believe that wild lands are such a precious resource that the maximum acreage should be preserved Therefore, conservationists are recommending that the further planning areas and the WSA should be preserved as wilderness while the "released" roadless areas should have their wild land values protected through administrative designations The following areas, 151,316 acres, should be recommended for wilderness designations Rockhouse WSA, Dennison Peak, Kings River, Moses, Oat Mountain, and Scodies

Throughout the planning process the suitability for and the consequences of wilderness designation were evaluated for all the identified Further Planning Areas The Preferred Alternative is designed to provide a balance of multiple use and resource protection Project-specific EA's will address protection/mitigation for wildlife, botanical, cultural, visual and watershed values, existing improvements, etc The existing 264,071 acres of wilderness (24% of the total Forest land base) has been deemed sufficient to supply a complete range of opportunities No additional wilderness has been recommended on National Forest land, although 12,500 acres of the BLM Rockhouse WSA has been recommended

2000 Roadless areas are a popular and controversial resource on our National Forests For years the public has expressed vigorous interest in the management of roadless areas Yet in draft plans being released for public comment, very little tangible information on roadless areas is provided The National Forest Management Act (NFMA) provides for public involvement in the planning process However, without the most basic information on roadless areas, the public is being invited into a process in which they are unable to participate in an informed and responsible manner.

Both the FEIS and the DEIS discuss those areas designated as Further Planning Areas under the 1984 California Wilderness Act We have invited public comments under this LMP process and addressed those comments in some detail Finally, Appendix C of this EIS includes an assessment of how released roadless areas are allocated for various management emphasis under each alternative We feel that public participation in this matter has been widespread, particularly if one considers the involvement which occurred during the RARE II process

2200 I have witnessed first hand the dwindling of available recreational areas and the compression of more users into less space as the result of recent

Except for the southern portion of the BLM Rockhouse WSA, no additional wilderness areas are being designated under the Preferred Alternative Areas

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and past wilderness addition6 I submit for your that have already been designated wilderness cannot  
Consideration the following comments to the Plan I be altered without Congressional action and this  
support the adoption of the PRP Alternative or as an action is not within the scope of this plan.  
alternative the High Market Emphasis (MKT) plan with  
the following exceptions no new wilderness be  
added. recommended or considered for study in the  
final adopted plan The current Sequoia National  
Forest wilderness size is disproportionate to the  
Current and planned usage

2300 Purposely leave a buffer area between wilder-  
ness areas -- wild and scenic rivers -- and human  
development

Buffers are not deemed necessary from a management  
standpoint. nor do we recognize them adjacent to  
designated wilderness and/or wild and scenic rivers  
Considerations for human development are taken into  
account via the Recreation Opportunity Spectrum  
(ROS) and built into management plans for the area

2400 The public needs to be explained to that a  
wilderness area and Yosemite National Park are not  
synonymous

We agree, and will attempt to educate people as we  
work together and through our information media It  
is difficult for many people to understand that  
there are different agencies of the government with  
different managerial philosophies for similar lands.  
especially if they border each other.

2500 Further (wilderness) planning areas - new  
wilderness areas should be considered when proposed  
The review team should be composed of the standard  
interdisciplinary team plus representatives from  
conservation groups

The Interdisciplinary Team and the Planning Team  
coordinate with a variety of agencies and groups  
in the Issues. Concerns. and Opportunities  
identification part of the NEPA process Public  
input is a critical aspect of our work

2600 I agree that "the future demand for wilderness  
is difficult to estimate ", however. based upon  
the past 20 years history. the demand is expected to  
continue increasing

Thank you for your comment We feel we have  
sufficiently assessed demand and that the 241 of  
the Forest currently designated wilderness will meet  
this demand

2700 Wilderness lands are unique in that they alone  
are permanently protected from human exploitation  
and change It is in these areas alone that the  
original state of our natural heritage is maintained  
and preserved It is quite reasonable to assume  
that when the 50 years of management covered by the  
Plan have passed. no additional areas will exist in  
their original state for designation as wilderness  
Wilderness everywhere is shrinking as human popula-  
tions increase and demands on natural resources  
increase in response Wilderness gives us a base  
from which to monitor our environment Any modifi-  
cations to the Forest need statistical controls with  
which to compare the effects of human intervention  
Wilderness is also highly valuable as watershed and  
as wildlife habitat As the population of the  
Central Valley grows, the need for increased wilder-  
ness will also grow The economic base of the local

Twenty-four percent (264,071 acres) of the Sequoia  
National Forest has been designated wilderness  
This will be sufficient to supply a complete range  
of opportunities for wilderness users The PRP  
Alternative is designed to produce a balanced  
level of goods and services from Forest lands which  
will help sustain the economic base of regional  
communities as well as the local situation

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communities of the Hume Lake Ranger District will increasingly depend on the recreational opportunities of the Forest, including the availability of wilderness areas

2800 If our forests are managed conscientiously, and wildlife protected, we would not have to have more wilderness. Wilderness is mainly for wildlife, to provide habitat for animals who are slowly being pushed out of their present areas. When man enters the wilderness, he should remember he is there only as a guest

2900 Site specific analysis of the ecological qualities of the release areas under the California Wilderness Act. These areas are distinctive in their roadless quality, sufficient originally to warrant consideration as wilderness. The DEIS needs to indicate the location, characteristics and alternative disposition of these areas. The California Wilderness Act does not preclude the Forest from designating the areas as wilderness

3000 Roadless area classification for appropriate areas possibly created by Forest road obliteration plan

3100 As a citizen that enjoys the Kern Plateau, may I suggest the following for your 50 year plan: no "wilderness" next to private land

3200 The wilderness portion of the plan should be revised. Adequate coverage should be made on an objective basis of all potential wilderness areas and no alteration of such lands should be permitted until a final decision is reached. Forest Service bias on this subject is clearly evident. Areas should not be postponed for "further study" but should be assessed under this plan. Wilderness designation is recommended in those remaining areas that meet the required standards.

Thank you for your comment

Through the RARE II process and subsequent California Wilderness Act of 1984, all but six areas were released to "on-wilderness status." These released areas were adequately analyzed as to ecological qualities during that process (refer to PEIS, Chapter 3 - Further Planning and Wilderness Study Areas). Four of the remaining Further Planning Areas and the BLM Rockhouse WSA are considered in the Sequoia planning process and recommendations provided. The Cypress Further Planning Area has been considered by the BLM in their planning efforts. The Kings River area was dealt with when HR799 was enacted in November 1987 and established the Kings River Special Management Area.

The RARE II process evaluated all lands within the National Forest system. Through this process all roads existing at that time were evaluated. When an area contained "on-engineered roads" it was considered roadless. This process received extensive public review and a Final EIS was published in 1979. The FEIS established all areas that were considered potentially available for wilderness.

The Preferred Alternative recommends that the southern portion of the Rockhouse WSA be designated wilderness. The boundaries should have a minimal impact on private lands.

The Forest Service believes the decision on wilderness is adequate. The Further Planning Areas have been managed to maintain their wilderness characteristics until a final decision is made through the LMP process. The Preferred Alternative does not recommend any additional wilderness within the Sequoia National Forest. However, 12,500 acres of the BLM Rockhouse WSA are being recommended for wilderness. No Further Study Areas remain as a result of the decision on this plan.

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3300 I am against the encroachment upon our roadless areas. We have not made adequate studies into how small an area can support a healthy and diverse ecosystem. My conception of the National Forest is for multiple use by all the people. As population pressure continued to degrade our wilderness areas, we are steadily reducing the areas that are suitable for recreational use.

Twenty-four percent (264,071 acres) of the Sequoia National Forest has been designated wilderness. This will be sufficient to supply a complete range of opportunities for the wilderness user. We will be monitoring the use in each wilderness to prevent their degradation.

3600 I oppose allowing motorized vehicles in the RARE II areas.

RARE II resulted in some roadless areas that have not been designated as wilderness and which are managed for non-wilderness uses which could include OHV use. However, OHV will not be allowed in those non-wilderness areas where the ROS objective is semi-primitive non-motorized. Where OHV use is permitted, they will be restricted to designated OHV trails only. Our comprehensive trail planning effort will establish the OHV network on the Forest.

9000 Will Nitrogen Oxides emissions impact wilderness areas? The EPA was supposed to publish new NOx standards in 1979, they have not done so yet. If and when they ever do, will new emission levels have an effect on which potential wildernesses are most susceptible?

The effect of substances formed from nitrogen oxides on wilderness areas and forest resources has been, and will continue to be, the subject of much research. The chemistry of nitrogen oxides in the atmosphere is very complex. The net result of the various reactions, however, is conversion to many potentially reactive and toxic substances such as nitrous and nitric acid which can have serious effects on soil and water chemistry having little or no buffering capability. The susceptibility of Sierra soils, water, flora, and fauna are currently being researched and Sequoia National Forest will continue to monitor the results of such research.

PLAN IMPLEMENT (400)

---PUBLIC COMMENT (QUOTATION/PARAPHRASE)---

---FOREST SERVICE RESOLUTION---

100 I wish to note that the DEIS omits from its list of social groups affected by the forest in Section 3-D, the so-called regional recreationalists. I wish to remind the FS that a National Forest is not just a thing of local concern, but one of national concern.

Generally, a National Forest's immediate sphere of influence is defined as those counties within which the forest lies. The residents of these counties are most affected by forest management activities in their daily lives. In contrast, the effect of the Plan on all recreationists is primarily in terms of recreational opportunities provided. Please see Chapter 3 of the Plan for a discussion of recreation opportunities.

101 I support the designation of all the Special Interest Areas.

Please note under the Standard and Guidelines section of Chapter 4, Final Plan, that we have classified the five Special Interest Areas that were listed in the Draft Plan.

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200 This is a very lengthy and technical plan that requires a great deal of study and this coupled with the inaccessibility of much of the area are the reasons for requesting that the deadline be extended for sufficient time for study and investigation I do want to compliment you and your staff for the thought and effort that went into this plan

300 I strongly recommend that we save this NP. and to do so by establishing this Sequoia NF as a permanent dedicated preserve

350 It is mainly the long-term residents that have pushed for responsible land use policies This Statement needs clarification Profit making dominates most land use policies both public and private Only by prevailing on our public agencies to exert their utmost effort towards conservation - will there be any public resources for the future

400 Our review indicates that the FS is not properly considering a full range of management alternatives for released roadless areas as intended by Congress

Except for brief summaries found in the DEIS appendices for the various land management plans, the FS is failing to provide adequate information concerning the proposed management of all roadless areas on each forest Lack of maps and area specific information is making it impossible for the public to determine how various roadless areas are to be managed under each plan alternative

500 We feel that none of the FS alternatives adequately addresses the protection of sensitive plant and wildlife species nor do they call for sufficient monitoring to address the effect of clearcutting, increased grazing, and increased OHV use on wildlife We call for the actual establishment of all 5 proposed Botanical Areas and all 4 proposed Research Natural Areas. We propose also that individual management plans be written for sensitive plant and animal species

501 Insufficient data exists as to the environmental effects of timber harvesting A draft EIS is, by definition, supposed to contain data describing the environmental risks associated with a given undertaking. Yet, the FS lists the following areas that need further research (the parentheses denote pages in the FS's Draft Forest Plan where these research

We realize the Plan and DEIS are lengthy However, we believe that five months was sufficient for review of even these lengthy documents. Since they are not site-specific in allocation to management emphases, no purpose was to be served by waiting for spring snow melt and access to higher elevations

We have no substantive response to this expression of opinion other than to note that National Forests are not instituted as preserves, but rather as lands to be managed for multiple uses This is mandated by Federal Legislation

It is Forest Service policy to develop responsible management actions within the context of multiple-use and the long-term management of the Forest As such, both commodity and non-commodity activities will result. We feel the PRP Alternative provides a balance of uses over time that will benefit the American public

Congress made Consideration of continued roadless management of "on-wilderness RARE ll areas optional It is not required that we do so To assist the public, we have added roadless area information as part of Appendix C of this FEIS By reviewing this information, readers can determine what management emphasis is placed in each roadless area under each alternative

Please see Chapter 5 of the Plan for the revised monitoring plan This contains actions for protection of sensitive species of plants and wildlife Regarding Special Interest Areas, all proposed Botanical Areas are established by this plan, and three out of four proposed Research Natural Areas (RNA) are recommended to the Chief of the Forest Service for establishment. The fourth must be evaluated before it can be recommended Individual management plans will be written for sensitive plant and animal species as the need arises

We are not undertaking projects on the Forest which we feel will cause irreversible or irretrievable damage to the land Site-specific information is gathered and presented in project Environmental Assessments. The research needs listed in Plan, Appendix B, will give us limits to which we can manage We feel that we are presently managing in a

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needs are stated) (Research Needs - Earth Resources Page - Appendix B-1) -Determine the soil loss tolerance values for Sierra Nevada granitic soils. -Determine the relationship of water yield to vegetational management in the southern Sierra Nevada, -Determine the relationship of management practices to water quality, meadow gullyng, and Cumulative watershed impacts in the southern Sierra Nevada (Research Needs - Vegetation Timber, Page-Appendix B-2) -Define in specific terms those site characteristics that make forest land unsuitable for timber management Any future timber production should be based on complete and comprehensive research. (Research Needs - Fish and Wildlife, Page - Appendix B-2) -Test the accuracy of the Wildlife Habitat Relationships Program and associated Habitat Capability Models -Develop an inexpensive, reliable and efficient technique to sample populations (Research Needs - Vegetation Meadows, Page - Appendix B-2) -Determine the sensitivity of the ecological and hydrological properties of meadows to management activities (e.g., grazing, road & trail construction, timber harvesting) (Research Needs - Visual Resources, Page - Appendix B-2) - Investigate changes in the public's visual expectations -Determine user needs and expectations regarding recreational opportunities on the Forest

conservative "solution space " The listed research will extend our present knowledge and, thus, the "solution space " Please refer to Plan, Appendix B, for research details

502 The following unacceptable production practices in which the FS currently engages or proposes to implement should be halted 1) Opening Further Planning Areas, wildlands, and roadless areas to timber production. 2) Below-cost and deficit timber sales. 3) Determining rates of sustained yield (non-declining yield) of timber for SQF on non-existent, inadequate or inaccurate site-specific data, proposing that timber be harvested in excess of the sustainable yield and including unsuitable land as being economically suitable for timber harvest The FS possesses completely inadequate, simplistic or inaccurate data regarding the Site productivity of most of its SQF timberlands

National Forest Land is managed using multiple-use principles Further Planning Areas that are most suitable for other-than-wilderness uses will be managed for those uses, including timber Under the PRF Alternative, approximately 334,000 acres (49% of the total productive Forest land base (679,000 acres) is either withdrawn or deferred from production via classification as wilderness, as spotted owl habitat, as uneconomic operable land, or for other resource values This leaves about 51% of the productive land to be managed for timber (this amounts to about 31% of the total Sequoia National Forest land area) (Refer to FEIS Table 2 26 for specific figures for all alternatives ) Only a small percentage of our timber sales are below Cost They are often below Cost because of non-timber, multiple-use benefits that are provided by the project Deficit sales are those that we estimate, by our appraisal methods, that cannot be lagged at a reasonable profit The fact that a large majority of our deficit sales sell show that

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they. in fact. are viable sales The purchaser is still required to build roads. reforest stands, and provide all the site Protection as with non-deficit sales

The Sequoia NF Plan is not based on erroneous growth and yield information. The respondents' yield projections and their other statements have not been supported by scientifically sound evidence and are currently being reviewed We are currently managing the Sequoia NF using the most up-to-date information and technology that is at our disposal Professional foresters and specialists plan and execute timber sales using an interdisciplinary process which meets the requirements of NEPA.

503 Additionally. all non-contracted current timber sales Should cease Until more complete and accurate data can be obtained. analyzed and scientifically-supported decisions can be made on the actual productivity of the forest

A8 described in 502 above, we Judge that existing information is adequate Hence. there is no need to cancel or postpone Planned timber sales

505 The DEIS & plan are replete with references made in a misleading manner or in bureaucratese This is unnecessary and makes the DEIS a poor presentation of the environmental Consequences involved A specific example is Integrated Pest Management Your treatment of this subject seems deliberately designed to mislead the public When all of the verbiage clouding the description is eliminated. the reader learns that the FS idea of integrated pest management is Simply "TIMBER HARVEST " Integrated Pest Management might permit a certain amount of timber harvest. but that alone cannot be all

We hope the FEIS and Plan have been written with more understandable language Regarding integrated pest management. timber management is ONE component of this program Without timber harvest, trees would weaken with age Pathogens would invade and kill the trees Insects may build up to epidemic proportions. killing more trees Fires would eventually level the stands and succession would be set back to seedlings. brush, hardwoods. and/or grass Congress determined that the Forest Service will harvest timber and plant new forests for the future Integrated pest management is an attempt to minimize mortality in the managed lands by working with natural systems and processes where it will benefit the Forest

506 I do not support any of the alternatives offered by the US Forest Service I would like to see the following ideas incorporated into the final Forest plan The concept of "Multiple Use" was Structured to be used in a manner which insured that the quality and diversity of the forest was in no way diminished Timber harvest levels must be reduced They were based on false assumptions in the computer FORPLAN The Forest Service is not maintaining a sustained yield now, and the problem will become worse if management direction is not changed Timber must be harvested only in areas where it is economically feasible and where growing conditions are truly suitable for the methods of harvesting and

The timber harvest levels were established by professional foresters based on the most accurate records and scientific backing available In fact. the models used have been Shown to be conservative The timber sales on the Sequoia NF are usually economically feasible Only sales that do not sell might be labeled economically infeasible. and this happens infrequently This is not to say that all the units within a sale are economical Often we are able to manage a decadent timber Stand only if we can harvest It in conjunction with higher-quality timber The same is true for lower valued species In the past. many stands were converted to low value timber when we used sanitation harvests as a general



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regeneration being implemented This is presently not the case The Forest Service should stop using cross-subsidization of tree species in making appraisals and advertising timber sales This method of pricing is creating havoc with fair market values and is used solely to induce buyers to take timber from the forest which they neither need nor desire

practice Only the lower valued species were able to reproduce in the shade of the residual stand One solution is to clearcut the stands so that the higher valued pines can be planted in the full sunlight that they require for good growth Without "cross-subsidization" we would have to pay a contractor to harvest low valued stands that required treatment. in order to realize larger receipts on the higher quality stands In the end. "cross-subsidization" is allowing us to provide a healthy and vigorous Forest for our posterity

600 The design of the current AMN Alternative could have been made more viable with a few changes in emphasis PROPOSAL FOR IMPROVED ALTERNATIVE This could be done by providing developed recreation at the Standard service level. reducing the road program to the level of PRF. and Increasing timber harvest by utilizing some of the Systems employed in WFV Some of the timber lands might be dropped to M VQO -- especially MM in the PRF

Thank you for your suggestion However, as stated in the Record of Decision, the harvest level presented in PRF is required to strike an appropriate balance between commodity and non-commodity uses Both the AMN and WFV Alternatives fall considerably short of this The level of roading is that required to serve this timber program and other resource values Note. however. that PRF calls for a portion of those lands managed for timber to be managed under Uneven-aged prescriptions This raises visual quality, but also somewhat increases the miles of road built A low standard service level for developed recreation was adopted in the AMN Alternative because of its consistency with the theme of this alternative end to Show the effects of varying combinations of management

700 In our opinion most of the alternatives were only confusing to the primary issue of developing a sound management plan for Sequoia National Forest In consideration of the political and financial constraint that the forest must operate under---only some modified version of the "Preferred Plan" is likely to be adopted

The selected PRF Alternative is indeed a variation of the PRF alternative as published in the DEIS There have been numerous changes which we believe provide for a better alternative

800 As a severe consequence to massive perpetual industrialization and commercialization. man's selfishness (pertaining to the Sequoia NF) will eventually plague nature's lithosphere ultimately deleting the biosphere in its entirety Due to the malbenevolence and malbeneficence of the capitalists and mongrels alike. I urge preservationists. conservationists, ecologists, grandmas & grandpas to coalesce and counter their complete disregard for nature's right to exist

We have no substantive response to this expression of opinion

900 It is becoming more and more evident that the several Federal agencies cannot continue to prepare their own long range management plans independently of each other Consider the situation in the Southern Sierra The Sequoia NF DEIS and Management Plan.

We appreciate the confusion often faced by the public In fact. the Forest Service and others do coordinate their planning efforts In this FEIS, for example, we evaluate the wilderness potential of one contiguous BLM roadless area and recommend

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the plans of the BLM. the Forest Service-BLM land swap, Sen Cranston's California Desert Protection Act

wilderness classification for a portion of it Similarly, the BLM has evaluated a NF Further Planning Area. While agencies can and do coordinate their planning efforts. to date there has been only sporadic coordination between federal agency planning and proposed legislation

1000 This problem of bureaucratise exists on virtually every page of the draft EIS The entire plan and DEIS violates virtually every rule of writing. The plan seems deliberately written to mislead the public. or has been written by persons incompetent in the skill of writing . The poor writing mandates a complete revision of the document

Please bear in mind that this planning process is an inherently complex one We have honestly tried to explain it in straightforward prose style We recognize that some members of the public will have difficulty understanding the complexity, but there is little we can do about that

1100 I do Support the WFV Alternative. The main reasons I support this alternative are 1) Visual resources are emphasized. yet timber is produced at an acceptably high level 2) The use of the Forest for dispersed recreational uses (especially uses related to fish & wilflife) is emphasized and desirable 3) I favor the longer rotation of timber which is used in this alternative

We have no substantive response to this expression of opinion

1200 The WPV Alternative Should *be* changed to 1) Allow the construction of 1 OR more ski areas Other than Peppermint. 2) The timber harvest level should be held at the projected level in decades 1 & 2, but not be allowed to exceed 100 MMBF/yr in periods 3-5 3) The BLM wilderness boundary addition to the Dome Land Wilderness Should be changed to that in the WLI Alternative to follow more logical topographic features Incorporate the W&S River proposals described in the PRF Alternative The Kern River below Lake Isabella should not be classified W&S and the Specific management of this area determined by following the N E P A process, consistent with the direction in the WFV Alternative

We considered these changes to WFV. but concluded that the present set of proposals is truer to the overall concept of the alternative. Otherwise. management of the lower Kern. just as management anywhere on the Forest, is determined through the NEPA process.

1300 I approve of the Preferred Alternative plan Water is one of my keen interests. and I'd like to see the future of the water developed for this area and especially Fresno, Kings, Tulare and Kern County . Water in my Opinion is the most -- and I mean most -- priceless resource we have in the mountains

We agree With the importance of Water Indeed. in the PRF. we feel we have provided for the protection and management of water yields

1400 I would urge your Support for a sealed-down version of the Amenity Plan. This revised plan would increase the "primitive" and "on-use" to include those areas now designated ab conifer forest. mixed chaparral. and oak Woodland I do not

Thank you for this comment However. as long as national forests are instituted to provide commodities to the public as well as such nonmarket goods as recreation, it is inappropriate to simply put significant acreages in a non-use status Note that

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see the logic in trying to keep up with a growing local, national and international population by expanding facilities and building roads. I think that this type of thinking will lead to further reduction of the wildlife, flora, and general tranquility of the Forest.

commodity production is limited by the ability of the land base to sustain such production without detriment. We feel the PRF Alternative provides a balance of uses over time that will benefit the American public.

1500 The Sequoia National Forest must undertake a thorough, on-the-ground survey of all aspects of the forest before going hellbent for development. Forest personnel know next to nothing about wildlife. The amount of money and qualified personnel who gather data beyond timber and grazing is pathetic. Before a piece of ground is developed, find out what is there first.

In our judgment, the type and level of detail of information in this Forest Plan is appropriate for this general level of decision making. (Note that the Forest Plan makes the basic allocation.) Project-specific and site-specific EA's will deal with on-the-ground effects. These will be prepared by interdisciplinary teams, including wildlife specialists.

1600 I realize the USFS is under political and time constraints, but that is no excuse when public land is at stake. Forest personnel must step forward and risk careers and livelihood to point out how facts and figures are manipulated to justify a pre-determined course of action.

We have no response to this expression of opinion.

1700 The plan should include the hiring of specialists in various facets of wildlife, recreation and non-timber, non-grazing fields on a coequal basis with timber and grazing.

The Forest Plan is a land allocation and management plan. The hiring of personnel is beyond its scope.

1800 Monitoring must be very strict and activities such as timber harvesting and grazing must be curtailed or stopped if monitoring reveals damage taking place.

Please see the monitoring plan in Chapter 5 of the Forest Plan. We believe this will provide the information required for sound decisions.

1810 "Monitoring and Evaluation", Of the Draft Forest Plan (Alternative PRF) Sect A Purpose Add (as an additional purpose of monitoring) "-ascertain whether appropriate criteria are being used to evaluate environmental impacts." Add (following "-predicting actual costs and personnel requirements") "-mitigation measures implemented to restore environmental quality." Sect B Monitoring System Add "Regular Management Review presentations shall be open to the public, and shall be published for distribution to interested individuals, groups or agencies." Add (as two additional monitoring programs) "-annual habitat capability inventories and wildlife species diversity summaries." Add (following last paragraph) "-Provision for citizen involvement." "A Sequoia Forest Management Advisory Council representing the interests of all forest user groups will

The monitoring and evaluation section (Chapter 5) of the Final Forest Plan is the result of a revision in response to public comments to the Draft Plan.

Monitoring and evaluation criteria included in the Plan are not intended to be all-inclusive, nor can they stand alone as a measurement and/or monitoring scheme. Complexities, inter-relationships, user demands, political realities, legal requirements, and budget fluctuations require that Forest management and monitoring be flexible enough to respond to changing conditions, additional information, and new technology.

The monitoring plan is designed to measure key indicators in several areas of management or activity over a period of time. In addition to the

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be appointed by the Forest Supervisor " .. Figure 5 1 "Monitoring Evaluation Process" Note that the adequacy of sample size is brought into question only if objectives are not being met (if objectives are met with too few samples is it proper to proceed?) . Table 5 1 "Monitoring Plan" Add a column labeled "Adverse Impact Monitoring Criteria" Following are some recommended entries in this category Facilities. MIH L02 and L15 - (Effectiveness of road practices) Add Impact of roads and road construction, habitat loss, watershed disturbance. noise. dust. user conflicts, etc. Forest Pests MIH P34 - Add Pesticides and herbicide residue analysis On-site. water sources and streams. disposal sites. wherever large quantities are used or large areas are treated Range. (grazing) MIH D02 - Add Evaluate range quality before and after seasonal use Report impact on other resources riparian damage. meadow-fouling, introduction of pests and pathogenic organisms, plant losses Recreation - (Note that adverse impact of OHV activity is included in Table 5 1) Timber MIH E06 - Add Short-term impacts effect of logging activity on other users. streams and riparian zones. wildlife. visual resources. soil stability, etc Long-term impacts wildlife habitat capability. species diversity, recreation values, soil productivity, etc Wildlife MIH C01 - Add: Effects of habitat alteration cowbird parasitism. starling occupation of nest sites. range and distribution changes

1900 We need productive lands We need to worry about semi-wilderness areas Such as has been mentioned, Where we would have no motorized traffic We need to worry about areas such as the Moses Mountain are being put into wilderness, the Rock House Basin area and so on We need those areas to be kept in a multiple use-basis along with the rest of the land, but particularly let's worry about the forest-productive land that will provide multiple uses not only for timber but for recreation I Want to point out that timber. like mining and power interests and developments over the past many years. has provided the access needed for all of us to enjoy the forest and to use the forest. and that includes the wilderness users I would like to support specifically the alternative Called the High Productivity I believe this will help maintain the productivity of the land and the land base Thanks

actions identified in Chapter 5, there are innumerable reviews. studies. and reports that evaluate the effectiveness of Forest management

Rarely can any single monitoring activity stand alone. they must be evaluated in the context of the effects on both the human environment and natural ecosystems While far from perfect. and in constant need of revision, this complex system helps to make the choices necessary to best meet the purpose for which the National Forests were established

Current laws and policies provide for public involvement. review and monitoring of National Forest Management activities Cooperative programs with user groups. individuals. universities, and other public agencies Provide a constant source of interaction with the public Inclusion of these or additional redundant public review/monitoring/involvement programs in the Forest Plan would be of little value

We believe that the monitoring and evaluation actions identified in Chapter 5 of the Final Forest Plan. combined with other reviews. measurements, and reports are adequate to assure proper Plan implementation

We have no response to this expression of opinion other than to note that We have considered these things and feel that PRF provides the best mix of market and nonmarket goods

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2000 In summary, adopting the National Forest recommended alternative would result in significant degradation of the Forest's scenic and wilderness values. The only realistic alternative which would preserve our valuable future wilderness and wildlife heritage is a modified RPA Alternative

We have no response to this expression of opinion Other than to note that in our judgment PRF protects the scenic and wilderness values important to the correspondent Absent greater detail. we cannot elaborate further on this proposal

2100 The Market Alternative provides an acceptable balance of forest products and services, while protecting, to a reasonable degree. the special interests of the more vocal members of the public The importance of maintaining high Output levels of market resources cannot be Stressed enough People Could not get their campers to the campground and backpackers could not get to the wilderness without the roads that timber harvesting paid for The FS needs to be educating the public about deficit campgrounds and wilderness areas. not just deficit timber haies I urge the SQP to choose the Market Alternative

We have no reponse to this expression of opinion

2200 In general. we find the DEIS extremely difficult to follow The plan deals in such broad terms that it is very difficult to know exactly how the proposed actions will effect our interests at any point in time These generalities are especially difficult to deal with for VRM. range and timber Without a clear definition of the proposed action. it is impossible to assess the impacts

The Forest Plan is a broad land allocation and management plan. it is not a site-specific document Site-specific impacts will be dealt With in project EA's tiered to the Forest Plan Hopefully. our efforts in preparing the Final Plan and EIS have resulted In a more understandable document

2300 In the Amenities alternative, we have leeway. (in the level of timber harvest) which protects us from Murphy's Law or ourselves

PRF also offers plenty of leeway Note that the Sequoia is technically capable of producing 186 MMBP per year The 97 MMBF recommended in PRF in about half of what could be produced if the Forest were dedicated to commercial wood production alone

2400 I wish to mention the physically handicapped. Who number about eighteen percent of our population The Amenities Alternative I favor should reach out and provide opportunitites for all of them

Please see the Forest Plan. Chapter 4, Section F "Recreation" Under the Preferred Alternative. construction standards appropriate to elderly and handicapped persons are to be considered during the rehabilitation and reconstruction of existing facilities For any new facilities we are already required to provide access for the handicapped. regardless of the alternative Selected

2500 We found it extremely difficult to analyze the various alternatives with the maps provided. The lack of a map Showing all roadless areas made it impossible to determine the impacts various alternatives could have on these wild places

We have added a section to Appendix C of the EIS to facilitate comparison of management emphases in roadless areas We have also added the roadless area boundaries to the vegetation maps

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2600 Additional alternatives featuring realistic scenarios are needed

This Statement is so general that no substantive response is possible other than to say we believe we have presented a full range of viable alternatives

2700 I express my concern and alarm regarding the Sequoia NP Proposed Land Management Plan and DEIS I believe that the 90 days allowed for public consumption & rebuttal is not an adequate time. I request a one year moratorium for the following reasons: A one year moratorium is a realistic request evidenced by the Tulare County Visalia Delta Editorial dated 9/12/1889 In view of this evidence of the past, and the visual present day damaging practices, a knowledgeable citizenry cannot help but be aware of the fact that we are inadvertently being lulled into self destruction We need an honest re-evaluation period My opinion is that this is a crisis

We feel, based on previous experience with other complex EIS's, that a total of five months is ample time for public review Ordinarily, a DEIS is published for review for three months. Since our DEIS was published in November of 1985, we added a month to the review period, recognizing that many people would not have time to review the document over the holidays. In response to public request, we added another month to the review period, bringing the total to five months. BY the end of April 1986, we had received about 3,000 letters from the public and public agencies, many of whom gave detailed suggestions and/or criticism of the DEIS and Draft Plan We feel that such large response vindicates our judgement that the review period was sufficient

2800 Inventory management should receive more attention in the Plan The FS has the knowledge that there are large acres of overcrowded stands of merchantable size More attention should be given to evaluating timber inventory management to determine whether changes in present practices would yield greater net benefits to the nation To do this, I repeat the plan must have a goal of having competent administrators who are determined to reduce waste and increase production of our renewable resources I respectfully submit that YOU adopt the alternative that has the least social impact on all the people concerned

Chapter 5 of the Plan describes the monitoring needed to assure compliance with the intent and objectives of the PRP Alternative Periodic forest inventories and growth projections are a part of this monitoring job

Regarding minimizing social impacts, note that by definition, the greater the change from the baseline condition, the greater the impact Hence, both the AMN and PRO Alternatives would yield the greatest impacts while Selection of CUR would by definition yield the least PRF represents little change with respect to CUR. Please see Chapter 4 B 1 of the FEIS for full analysis.

2900 I support the Conservation Alternative

The Conservation Alternative is addressed in Chapter 2, Section D of the PEIS Individual comments made within the Alternative are dealt with by subject in this Public Response Appendix.

2950 I request that another comparable meeting be scheduled at least 2 times more and closer to Los Angeles to allow many persons who have this interest to attend and return safely within a reasonable time.

The Forest specifically scheduled a meeting in Lancaster to facilitate participation by Los Angeles residents. This meeting was attended by folks from as far away as Manhattan Beach Overall, the Forest allowed a total of five months for public comment Untold hours were spent discussing/explaining the documents to people, both in person, and over the phone. Overall, we feel the efforts put into public meetings, hearings, and other involvement was sufficient to allow adequate opportunity for input

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3000 I am Opposed to the Preferred Alternative/  
Proposed Plan.

Changes were made in the PRP Alternative and Plan as a result of further analysis and the more than 3,000 letters received in response to the DEIS and Draft Plan. Refer to the Record of Decision document for the primary reasons for our decision.

4000 Support Low Budget Alternative

We have no substantive response to this expression of opinion

5000 I support the RPA Alternative.

We have no substantive response other than to say that the Preferred Alternative and the RPA Alternative have much in common. Targets for both market and nonmarket resources are relatively close

5010 I would like to go on record as supporting the Current Alternative (CUR). With a few exceptions, current management of the Forest has been satisfactory and it is a well known system

We hope the Preferred Alternative has improved upon the Current Alternative by adopting a more balanced multiple-use program and offering a better response to public issues

6000 We are particularly interested in your response to the suggestion for the appointment of a citizen's advisory council to participate in the continuing monitoring of the forest plan and in the formulation of any modification steps that are needed

Current Forest Service policy requires that formal citizen's advisory committees be established by the Secretary of Agriculture, and only if specifically authorized by law or in the public interest in connection with the performance of duties imposed by law. We view this as unnecessary on the Sequoia NF as it pertains to Forest Plan monitoring. As discussed in the Plan, Chapter 5, monitoring of Forest activities takes many forms. The Plan contains a number of specific activities that focus on the broad aspects of implementation. Over the past several years, we have encouraged citizen involvement in various activities associated with the management of the National Forest. We will continue to invite public participation in activities such as these. As examples of some past activities, members of a motorcycle user group have assisted us in monitoring trespass by motorcycles into wilderness and volunteers have helped us monitor boating activities on the Kern River. Recently, we have been actively soliciting assistance to help establish/undertake monitoring activities in giant sequoia groves. We will continue to welcome public involvement in this aspect of our work.

6100 We would like you to consider the following objectives in evaluating the Sequoia Forest Plan. They are suggested as a test of whether the forest can yield its multiple-use goals and still be passed on in good condition to the next generation. 1) In short, will the allowable timber cut be maintained below the rate of re-growth, and will ski area developers pay a fair price for the damage they

The respondent identifies 6 factors considered to be an adequate test of whether the Forest can yield its maximum multiple-use goals and remain in good condition for future generations. Our analysis of these factors lead us to believe the monitoring of our activities, as described in the monitoring plan (Chapter 5 in the Plan), will ensure this occurs. An environmental analysis is an integral part of each

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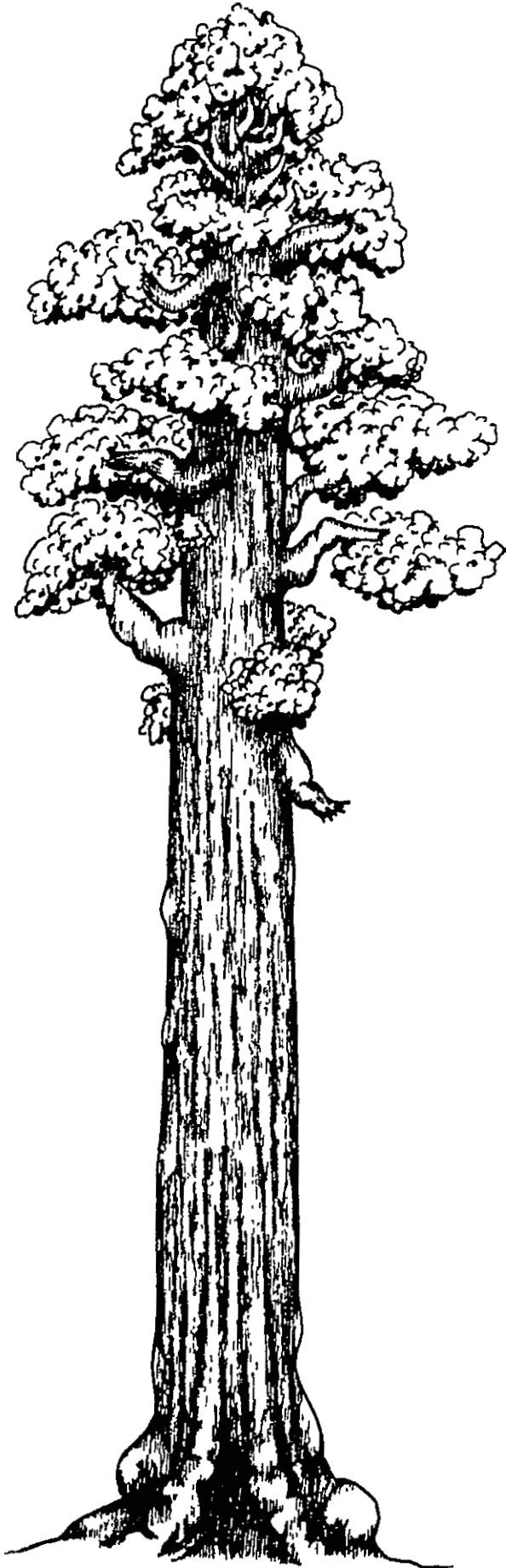
inflict on public land? 2) Can you support a comprehensive monitoring and evaluation program . . . 3) Can you institute protective management alternatives Whenever necessary to preserve native populations of plants, animals, and birds. if they are threatened by habitat loss or alteration? 4) Can you assure that no major ecological changes will be imposed on the forest unless there are scientifically predictable long-range benefits that will offset the initial disruption? 5) Can you assure everyone who is a co-owner of the National Forests an opportunity to enjoy lands that are forever wild? 6) Can you Protect the integrity of all the forest ecosystems and their wildlife populations against the adverse impacts of forest exploitation? If the answer to any of these questions is dependent upon the availability of funds, then the plan should be held in abeyance until the necessary funding is assured.

12000 Specific Minor Concerns. Classification of the small area north of the Bloomfield Ranch The Wildlife. Fish and Visual Emphasis Alternative (WV) classifies the management emphasis as number 5. All other alternatives classify this area as management emphasis number 1. Neither of these management categories seems to be appropriate Perhaps S for Special Interest Area would be a solution

project on the Forest. This interdisciplinary review looks at all resources in detail. and Provides for mitigation within acceptable limits. As established by this FEIS (Chapter 2) there are Minimum Management Requirements (MMR's), Timber Policy Constraints (TPC's), Minimum Implementation Requirements (MIR's), and Standards and Guidelines (S&G's) that must be met on all projects. How these MMR's, TPC's, MIR's and S&G's tie to the budget, actual project implementation. and priorities is discussed in more detail in Appendix L of the FEIS. The result of the analysis required. coupled with recognition of management requirements with the results monitored over time will. we feel. be a Forest future generations will appreciate.

Special Interest Area is not an appropriate designation for this small area because it is eligible for none of the special classifications included in the general category Special Interest Area. These classifications include Botanical. Scenic and Geologic areas. To our knowledge. none of these are appropriate to the area you mention Since you give no reasons for thinking the Other designations inappropriate. we cannot respond substantively to your comment.





**Section 6 A**  
**Alphabetical Listing**  
**of**  
**Respondents**

*B L A N K*

*P A G E*

NAME	ID#
A & E Bearing & Supply - Alex E. Serrano	732
A-1 Fence - J. & S. Linder, A. Collins	1294
A.P.A. Trucking - Chris Steward	199
Abraham, Hank	2545
Abraham, Mr. and <b>Mrs</b> Harry C.	1422
Acevedo, Robert	2208
Adams, Gail	1588
Adams, Grant <b>G.</b>	910
Adams, Jerry	2084
Adams, Rick	2173
Adler, <b>James</b> E.	2631
Adler, <b>Wendy</b>	2250
Adventure Travel Agency - Armida O. Cardona	2094
Agajanean, Danny	2732
Agri-Home Equipment, Inc. - Dave Hardy	504
Aguayo, Salvador	2165
Aguirre, Fernie	2088
Ahola, Kelly	350
Akawie, Richard	1749
Albrecht, Norman	1938
Albright, Albert L.	547
Alcantar, <b>Mel</b>	1964
Alexander, George	1335
Alexander, Kim	1301
Alford, Russell G.	1235
Ali, <b>Sam</b> M.	564
Allen, Carl G.	183
Allen, Ella <b>G.</b>	1038
Allen, Jay	1679
Allen, Leon	1856
Allen, Matt	594
Allen, Tim	2479
Allgood, Mark R.	1349
Alliance for Environment & Resources	2546
Alliance for Environment & Resources	2702
Allied Weed Control - Carl Ahrendes	655
Almanzar, Marshall	8028
Alonso, Lorita	418
Alston, Ronnie	1897
Alta Irrigation District - Norman B. Waldner	499
Alvarado, Raul	1889
Alvarez, Matt	8041
AMA - District 37 - Jerry Counts	2604
AMA Racers Under the Sun - Leo & Liz Lipert	315
Amack, Lewis O.	658
Amador, <b>John</b>	2005
American Colleges & Universities Studies Ed. Dept.	1454
American Forest Products - Ed Walker, General Manager	1179
American Motorcycle Association - Roy Janson	2711
American National Bank - James W. Stewart	1061
American Steel - Monte Adams	841
Americal Travel Agency - Judy Bryant	220

<u>NAME</u>	<u>ID#</u>
American Wilderness Alliance	2833
Amerigas - Kent P. Leslie	2412
Amneus, Thomas	854
Amsell, Y. Libbie	21
Amundson, Bob	1213
Anderson, Bill	2416
Anderson, Bob & Joyce	568
Anderson, Byron	2824
Anderson, Cliff	2254
Anderson, Dan	309
Anderson, David	258
Anderson, Kristi	2372
Anderson, Mark	2386
Anderson, Mark	2436
Anderson, Mark W.	793
Anderson, Scott	764
Andrews, Cindy	1343
Andrews, Richard D.	2434
Anganger, Billy	2149
Angiola Water District - Mike Steele	222
Ansfield, Janet	208
Antelope Valley Florist - Chris Spichen	579
Anthony, Jim	2082
Antonio, Roy D.	2617
Appel, Steve	848
Appel, Steve	59
Applied Technology Assoc - Cherry Miloe	585
Appling, Marc	210
Arcata Forest Products Co. - Jim Brown	1555
Archer, Carol A.	2381
Archer, Mary	455
Archer, Robert	2382
Arias, Johnny	1405
Armstrong Manufacturing Co. - Clark Williams	237
Armstrong, Janet, O.D.	1076
Arnce, Steven T.	2200
Aronson, M.	716
Arretche, Jean A.	1972
Arroyo, Rick	1803
Arroyo, Samuel, Jr.	2217
Ashbrook, Roy	2540
Ashburn, Roy, Supervisor First District	1444
Associated CA Loggers - Ed Ehlers	2647
Atwell, Janice	1358
Auberry Logs, Ltd. - Patrick Emmert	1113
Auberry Logs, Ltd. - Robert F. Krohn	334
Auel, Mr. E.	113
Aure, Doneil	1226
Austin, John R.	980
Austin, Ray	1219
Avalos, Ramon	1527
Avena, Ramon	8022

<u>NAME</u>	<u>ID#</u>
Avey, Wendall	2162
Avila, Linda	1017
Axelson, Keith & Associates	672
Ayala, Frank	2099
Ayers, Don	1390
B & B Surplus, Inc. - Ron Boylan	1157
Baack, Don & Associates - Don Baack	235
Babcock, Jennifer	2641
Backes, Karl	1553
Backes, Michael	2544
Baez, Pedro	1624
Bailey, Philip M.	1901
Bailey, Scott	32
Baker, David A.	574
Balcon, Jan S.	1154
Ball, Steven Louis	1443
Ballew, Larry, Forest Consultant	2271
Balman, D.M. (Doug)	714
Balopole, Marge	927
Bamberg, Betty	111
Bank of Yucca Valley -David Q. Vordermark	189
Banka, William J.	2699
Barber's Spreading Service - Carl Barber	1089
Barber, Charles W.	2759
Barch, Don	2256
Barga, Dave	2278
Barker, Catherine	2285
Barker, Mr. & Mrs. Neal	2817
Barkesz, Veienike E.	857
Barlow, Timmy	1621
Barnes, Robert A.	2533
Barron, Frank	2625
Barron, Pat	83
Barrones, John	1616
Barry, Lois	45
Barton, Lovell E.	1071
Basden, Suzanne	2684
Basmaji, Butrus G.	2677
Bass Fork Mini Mart - Donald J. Dierberger	592
Bates & Leslie Contractors - Merrill J. Bates	717
Bates & Leslie Contractors - Robert Leslie	1306
Bates, Dan	2786
Bates, Merril	2235
Baugh, Steven	1164
Bayless, Leonard	916
Beals & Son - Ricky Beals	525
Beam, Denton A.	1750
Beaman, Warren H.	2191
Beamsoleil, B.	344
Beard, Fred	1546
Beattie, Leah	95
Beaumont, Winston	2439

<u>NAME</u>	<u>ID#</u>
Beaver Wood Products - Ronald J. Silva	1598
Beckman Instruments - Walter J. Misko, Dir. Env. Affairs	1400
Beitt, Arthur	761
Bell, Catherine S.	101
Bell, Christopher H.M.	1231
Bell, Joseph J.	1494
Bellman, Brian	1473
Bello, Teddy	8044
Benedict, Julie	2525
Bennett, Bill	2504
Bennett, J.W.	2345
Bensen, Dennis	294
Bentrim, Ralph J., II	477
Berchen, Jeff	1035
Berchtold Equipment Company - E.G. Berchtold	127
Berg, Eric	606
Berger, Fay R.	631
Berkowitz, Walter	973
Berman, John	965
Bernhart, Barbara	886
Bernstein, Susan	100
Berrones, Amador	1551
Berrones, Augustin	1606
Berrones, Daniel	1607
Berrones, Indalecio	949
Berry, Elwood L.	65
Besharse, James T.	1867
Best Pacific Supply - Michael A. Lane	720
Best, Jeff	479
Betancourt, Henry L.	2112
Bevan, J.	8013
Beyman, Anne	19
Bibeau, Dan	1826
Bieber, Lillian, et al	2839
Bierbaum, Tuck, M.D.	1073
Billings, Robert	693
Bingaman, Bill	1877
Bird, Robert S.	1194
Birkman, Richard	323
Bishop, Michael G.	1545
Bixby, Denise A.	2753
Bixby, Bernie	2757
Bjerke, Martha K.	2065
Blaisdell, David	696
Blancas, Ted	2157
Blankenship, Carol	2470
Blatt, Milton D.	887
Blauert, Donna	913
Bliss, Gerald F. Landscaping - Gerald F. Bliss	1196
Bliss, Thomas A.	129
Blossom, John, Prof.	1303
Boag, Linda	391

<u>NAME</u>	<u>ID#</u>
Bob's Cylinder Head Service - Bobby J. Richardson	1403
Bob's Petro Products, Inc. - Bob Taylor, President	915
Bobing. John H.	1238
Bodenhofer. Bruce K.	2404
Boehmler, Ione	109
Boesel, Jeff	633
Boghosian, Jeff	164
Boghosian. Rick	166
Bohigian, Ronal	2700
Bolinger. Mr. & Mrs. Harvey	177
Bolker, Wendy	153
Bond, Thomas R.	1093
Bond, Tom	840
Bonita, Sharon E.	1673
Bonk, John A.	1165
Bonman. Arlene	2252
Bookhaven, Walter	487
Boomer, Pat	8075
Boorman, Mrs. Jack	2289
Booth, Richard M.	1536
Bossuyt, Melinda Lee-Van	516
Borden Chemical - F. Tejera	2624
Boring, Bruce A.	2670
Borkovetz, Rick	486
Borly, Joseph	2717
Borofsky, Rita	982
Bostic, Bill	1640
Boston, Susan	1182
Bott, Linda	2482
Bottoms, Jerry L. Sr.	2040
Bow, Frank E.	2315
Boudin, Andre	2290
Bowen, Alice	2575
Bowen, Ruth & James A.	1166
Bouguet, M.	1522
Bourcet. Donald T.	2697
Bradbury. Brian	834
Bradley, Susan	2127
Bralver, Peter	1840
Brammer, Rozanne	1186
Brassell. Frank W. Jr.	2651
Braun, Charlotte A.	2726
Braymer, William B.	2072
Brazil, Jim	1257
Brechbuehl, Richard	880
Brente	1189
Bressler, Mike	1384
Brewster, Joan H.	815
Brickman, Maxine	1415
Bridges, Chuck	2167
Bridges, George A.	2802
Bridges, John	2166

<u>NAME</u>	<u>ID#</u>
Bridges, Kenny	1516
Brill, Mr. & Mrs. Sol	881
Brink, David	2292
Briseno, Liz	2536
Brock, Richard E.	1754
Broland, Anne	371
Brooks, Greg	789
Brooks Logging, Paul	701
Brosnahan, Bonnie	918
Brough-Stevenson, W.G. & M.	1465
Brown, Adair & Mitchell F. Brown General Engineering - Adair Brown	1453
Brown, Albert A.	1789
Brown, Doug	2659
Brown, Henry M.	2551
Brown, Jeff	2548
Brown, Jim and Family	2389
Brown, Kathleen	1752
Brown, Larry D.	1777
Brown, Leslie	2550
Brown, Lowell E. Jr.	280
Brown, Margaret L.	1033
Brown, Mr. & Mrs. Gerald J.	1195
Brown, Rick	8030
Browne, Thomas	745
Bruce, Marty	441
Bruck, Jerry	9
Brutsche, Peggy	622
Bryan, J. Anthony	1684
Bryant	1361
Bryant, Judy	267
Bryant, Monica	593
Buch, James D.	1309
Bucham, William	552
Buchanan, John A.	1947
Buck, Ed	1461
Buckingham, Jack	2319
Buckley, Mr. & Mrs. John	1421
Buford, Randy	1205
Bugg, Charles R.	2179
Bull, David M. III	1542
Buller, Harold	2225
Bullock, Marie	1569
Burch, Craig	565
Burk, Pete & Joyce	190
Burkett, Jane	1871
Burnham, Jeremy R.	863
Burrough, Alan & Toni	175
Burrough, John L.	2155
Burrows, Gary V., Inc. - Gary V. Burrows	723
Burtenstein, Shelley, Ph.D.	963
Burtner, H.M.	1658
Burtner, Milton	2506



<u>NAME</u>	<u>ID#</u>
Burton, Sala, Congress of United States	8069
Bush, Chuck	1529
Business Service System - Jack W. Burt	270
Buslor, David	691
Bustamonte, Manuel	2134
Butcher, Justin E. & Kings River Expeditions	2676
Butler, Elizabeth	1902
Butler, George	8034
Butler, Jeff	2121
Buttingham, Betty	437
Bybee, David E.	1406
Bynum, Jefferson C.	1372
Byrd, Lyle	2189
CA All-Terrain Vehicle Association - Sharon Bishop	361
CA Assoc. of 4WD Clubs, Inc. - Jon R. Aichele	2530
CA Assoc. of 4WD Vehicles, Inc. - Margie Aikley	2725
CA Home Medical Equipment - Susie Peoples	952
CA Industrial Rubber Co. - Allen Moskowitz	583
CA Licensed Foresters Assoc. - W.E. Snyder	2766
CA Mining Prospectors Association - Andy DeMettriff	2722
CA Native Plant Society - James D. Jokerst	2693
CA Reg. Water Quality Con. Board - Sargeant J. Green	2520
CA Republic Bank - Leroy E. Harmon	1173
CA Republic Bank - Phil Lacey	1580
CA Sportfishing Pro. Alliance - Robert J. Baiocchi, Cons.	1362
CA Trout - Stuart Morse	1875
CA Wilderness Coalition - Jim Eaton, Executive Director	2781
CA Wilderness Coalition - Steve L. Evans	359
CA Women in Timber, Central Valley Chapter	2470
CA-Fresno Oil Company - Bud Rushhaupt	302
Cain, David	1593
Caldera, Mario Y.	1642
Calendar Fire Prot. - Dale Badorine	202
Camara, Tom	2820
Camargo, Daniel A.	947
Cameron, Patricia	610
Camp, George R.	2039
Campbell, Don	157
Campbell, Eleanor	2612
Campbell, James J.	2673
Cano, Ruben	2320
Canole, Debra	560
Canter, Robert	2031
Cantu, David	1887
Caplinger, Clifford R.	1330
Carabajal, Marcelino	2780
Carey, Debra	809
Carlson, Dwight A.	8009
Carlton, Alan	1543
Carlton, Paul F.	590
Carothers, Mrs. Elmer	2272
Carpadakis, Ann S.	800

<u>NAME</u>	<u>ID#</u>
Carpenter, Nom	1942
Carpenter, Patricia	1670
Carratello, Rita	1378
Carris, Jon	1237
Carson, Jean	1425
Carsrud, Allison	407
Carsrud, Michele	411
Carter, Barbara	2605
Carter, Eleanor	570
Carter, Lisa	1981
Carver, Dennis C.	2448
Casanora, Mike A.	67
Case, J.L.	1507
Castenada, Ismael	1578
Catron, C.W.	1841
Celaya, Victor J.	1767
Celayz, Ted	1929
Central Builders Supply - Harry W. Niebling	8068
Central Valley Sportsmans Club - Eddie Watkins	2475
Central Valley Sportsmen - Bill Moutter	1298
Central Valley Sportsmen - Bud Hindman	2474
Central Valley Sportsmen - Luanna Muther	2473
Cepeda, Miguel A.	2312
Chamberlain, R.H.	2692
Chandler, <b>Anne</b>	621
Chaney, Donald E.	712
Chapman Chemical Co. - Tony George	227
Charland, Douglas P. & Donna Burfitt	2383
Charlon, Bob	2503
Charlton, Chester L.	1744
Charlton, Kerry & Christine	760
Charlton, Lorna L.	1605
Chase, Margrita	107
Chastain, Dennis	1985
Chauvel, Arno	756
Chavira, Art	1927
Chavira, R.	1857
Chepo, Laumo	2190
Chickasaw Sales Co.	2207
Childers, Kelly W.	1899
Childers, Richard	2132
Childs, H., Ph.D.	898
Chimienti, Frank	2101
Chinlund, Donna	588
Chismore, William F.	2341
Christensen, Jack	1700
Christensen, Trudee C.	47
Christenson, Daniel P.	1282
Christenson, Richard, Jr.	488
Christian Family Church	2734
Christiansen, Dennis T.	1538
Christmas, Judy	733

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Christoph. Marguerite	172
Christopher, David A.	875
Chubon, A.R.	906
Church, Jim	120
Church, Michael A.	1474
Church, Tom	144
Cimino, Rich & Diane	1091
City of Dinuba - Barbara Lankford, Mayor	390
City of Mirada - Richard C. Pepin	249
Clark, James	2229
Clark, John C.	432
Clark, Katherine Marie	747
Clarke, Julie	2775
Clausen, Wayne	2661
Clay, Greg & Sue	2441
Clayton, M.	1970
Cleave, Gerald	1935
Cleland, Bonny M.	403
Clements, Mr. & Mrs. R.F.	904
Cleveland, Eric	174
Cleven. Greg	1584
Cleven, Joan	1583
Clifford, Joseph G.	2433
Clifton, Joe & Joyce	8061
Clijonda. Leonel	8084
Clijondo, Leonel	2866
Cline, Richard 3.	2148
Clinger, Brenda	877
Cloer. Bill	1860
Cloer. Carla	2745
Close, Clare	1618
Close, Hal J.	1677
Clouse, Daniel	2241
Clynes, Pat	2115
Coaksey, A.W.	1117
Cobb, Christopher	2340
Cobb, Cliff	2139
Cobb. Maurice M.	2098
Coffman, Jeanette A.	1634
Cogburn Logging, Inc. - Glen Cogburn	1448
Cogburn, Glen	2543
Cogburn, Nancy	2542
Cohen, Wendy L.	2768
Cole, Evelyn M.	2555
Cole, Leslie D.	1825
Coleman, Charles R.	1773
Coleman, Daniel	195
Coleman, Nettie	1383
Coles, K.	926
College of the Sequoias - J. Ronald Hayes	318
Collier, Claudie	1302
Collier, Roy	8065

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Collins Grading & Trucking - Jerry Collins	368
Collins Radiator Shop - Leonard Thiel	2410
Collins, Rick	2114
Columbia Helicopters, Inc. - Steve Martin, Administrative Forester	1352
Comer, Judy	1932
Committee to Save the Kings River - Donn Furman	2595
Cone, Eugene J.	2353
Conforti, <b>Mrs.</b> Paul M.	2431
Congdon, Patrick	640
Conklin, Linda	780
Connable, Katherine G.	2740
Connell, Jack P.	2704
Connell, <b>John</b>	2213
Conner, Daniel J.	954
Conrad, Chris	2584
Constantin, Ray	1903
Constantine, Robert E.	2276
Conti, Steven R.	355
Contreras, Nick	2027
Contreras, Ron	2156
Contwell, Bill	750
Conway, Billy L.	1796
Cook, Bert G.	1560
Cook, Bill	2351
Cook, Fred W.	517
Cook, Janell	387
Cook, Natalie	1708
Cooley, Bea	2618
Coons, Betty	1523
Cooper, Carolyn M.	105
Cooper, E.	99
Cooper, John	1145
Copeland Lumber Yards - Wayne Johnson	709
Cordell, Julia	1641
Cordova, Manuel	1863
Corkins, Inc. - John S. Corkins, President	1346
Cornett, J.	1854
Cortez, Miguel	2867
Cortez, Miguel	8085
Cortez, Mike R.	8029
Cortis, Jack	1135
CORVA - Mil Thornton, So. Director	131
CORVA - Mil Thornton, So. Director	2403
CORVA - Steve Kuehl	2562
Cotlon, Ariel C.	1150
Cotton, <b>Mrs.</b> Peggy B.	1191
Cottriel, Mary	1058
Coward, Eugene	482
Couey, Willard and Rose	1794
Coulson, R.E.	5
Coulter, <b>A.W.</b> Trucking - A.W. Coulter	1692
County of Fresno - Katie Bearden	8019

<u>NAME</u>	<u>ID#</u>
County of Fresno Parks Div. - Dale Tartaglia	706
Coverdale, Edie	1015
Covex, Ralph	551
Cox, Richard	1989
Cozhill, Pam	2498
Craig, Howard	995
Craig, Ora Lee	2188
Crane Mills - Harold R. Crane	2598
Crane Mills - Richard Larkin	2597
Crane, John	2603
Crane, William C.	2586
Crates, Mr.	2527
Creagh, Don W.	675
Creek, Jon	1669
Cress, Cathy	2362
Cress, Peter H.	2363
Crew, Rob A.	1881
Crimmins, Thomas M.	2620
Croker, Ken & Carolyn	1688
Crooks, Steve	24
Cröse, Ardian	2041
Cross, Thomas W.	478
Crowell, James L.	268
Crump, Michael	484
Cuban, Michael	2274
Cumbie, Ward	2400
Cunningham, Bob & Jan	556
Curtis, Larry	2691
Curtis, Wilma	1344
Custom Computer Services - John W. Dodson	645
Cutbirth, Mary	1718
D & D Transportation - Doris & Dave Wood, Owners	2199
D'Alvarez, Rita	2682
D'Anne, Denise	170
D'Antonio, Franklyn	2553
D'Armond, Carol	207
D. Stake Mill, Inc. - Bob Harris, President	2020
Daggett, Veronica	1649
Dague, Dale K.	1377
Dahl, John B.	1060
Daisa, Greg	1813
Daly, Dennis J.	18
Damaniego, Santos	2069
Dames, Mark	1707
Dancer, Norman	2159
Daniel, Alan Dale	133
Daniel, Rhoda	878
Dartt, Florence	28
Darvell, Rosalind	60
Dasbach, Susan	1065
Dawkins, Dennis	216
Dawn, Andrienne	389

<u>NAME</u>	<u>ID#</u>
Davenport, Edward L.	102
Davies, Jeanne	2302
Davis, Dan	2059
Davis, Denyse	650
Davis, F.H.	1276
Davis, H.H.	1701
Davis, R.C.	999
Davis, Tim A.	2087
Davison. A. Jane	1984
Davison, Carol L.	1983
Day, Chuck	933
Day, Dan	54
De Prosse. Jean	458
Dean, Rhonda	43
Decker, Marla & William	1751
Deep Creek Flyfishers - L. Robert Breeding	1264
Defenders of Wildlife - Richard Spotts	869
Dehart, Kathleen	1685
DeJager, Bill	186
Del Monaco, Michael	29
Del Terra, Inc. Surveying - Douglas R. Bond	584
DeLaCruz, Rick	1907
Delahuntz, Thomas F.	634
Delong. Clifford H. Sr.	1596
DeMasters, Boyd	1996
DeMasters, Derk	1059
DeMers, Douglas	2762
DeMetriff, Andy	2854
Demorest, Harry L.	538
Dempsey. Lee Richard	1647
DeNike, Bob	290
Denmark, Thomas, M.D.	2464
Dent, James E.	331
Dept. of the Air Force	1278
DeSautel, David A.	1759
DeSautel, Kim	771
Desrochers, Sylvia	785
Deutsch, Lauren W.	637
DeVries, Loureen	901
Dexter, Garth L.	929
Dhondt. Robert J.	1439
Diamond, Caryn	80
Diaz, Augustine H.	2176
Diaz, Daniel V.	2090
Dickard, Richard	1290
Dickens, Frank E.	928
Dickson, David	1510
Diebolt, S.	561
Diener, Doris E.	2399
Diernisse. C.M.	168
Dietrichson, Peter W.K.	657
Diltehits, Tim	934

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Dimmick, A.W.	2773
Dinuba Equipment & Tractor Rental - Orien Maxwell	260
DiPol, C. John	1513
Dishington, Deborah	2529
Dittmer, Harold L.	2028
Doal, William	1742
Doane, John Murray	160
Dob's Tire & Auto Center - Richard Lowe, Manager	2263
Dobbins, Rick	2288
Dodge, Matt	1874
Doerksen Building Materials - B.R. Doerksen	2572
Doerksen, Dan	2666
Doerschlag, Donald J.	317
Dolder, Art	2556
Dominick, Robert	339
Donaldson, K.A.	87
Donatz, James	2519
Doran, Carolyn	38
Doria, Debbie Pippen	1080
Dorman, Mrs. Louise	1489
Dormen, Mrs. D.C. (Louise)	410
Doscher, Luelyne B.	165
Doster, Ralph	2716
Dow, Agnes E.	856
Dougard, Elaine	464
Dowlearn, Melissa L.	1342
Dows, Wena	993
DoVaul, Frank	1798
Doyel, Ed	2656
Doyer, Ronald	680
Doyle, Michael	647
Dozier, Forrest	2182
Dranow, Jim	481
Dresher, Melvin & Martha	2571
Dubeau, Robert W.	1375
Dubell, Ana	380
DuBois, B.	76
DuBois, Julie	1833
Duckworth, Diane	1956
Dudley, Sarah & John	2606
Duff, Cindy	395
Duggins, Jim	1549
Duhme, Lenore V.	88
Duich, Mr. & Mrs. William H. Jr.	705
Duke, James	1547
Duke, Oscar Jack	1716
Duncan, Lynette	434
Dunlop, K.	1432
DuPont, Chris	1564
Dupree, Mary	8004
Duran, Danny	2109
Duran, Jimmy	1852

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Duran, Manuel	2104
Dutton, Randy	396
Duxler, Dr. William M.	1218
Duxler, Mary O.	1042
Duysen, Kent	2599
Duysen, Larry	333
Dyer, Melody L.	1021
Eanes, Robert	1815
Eans, Carol	1924
Eccles, Venny	2787
Eck, Randy	1313
Eckenburg, Buzz	601
Ecker, J.F. (Dobbs Tire & Auto Center)	2330
Ecology Center of So. CA - Elaine Stansfield	248
Ecology Center of So. CA - Project of Ed. Comm.	1477
Economy Shoes - Randy Mason	2574
Edinger, Iris	2811
Edwards, Raymond & David	2566
Efstratis, George S.	121
Eggen, Brian G.	1370
Ehmen, Heather A.	1994
Ehni, Ruth	226
Ehrlich, Eugene	688
Eichenberger, Fred	1241
Eisenberg, David F.	500
Eispamer, Edna	1712
Ekberg, Robert	1765
Elander, Ms. Eleanor	1199
Electrical Motor Shop	239
Ellberg, Steven P.	1216
Elliot, Claudia	1281
Elliott, Allison	1782
Elliott, D.L.	442
Elliott, Julianne	998
Elliott, Lee	2417
Elliott, Lisa	2286
Ellis, Emory L.	1756
Ellis, Jeffrey	94
Ellis, Judy	1055
Ellis, Marion L.	1746
Ellis, Stephen	2212
Elmore, Frederick A.. M.D.	1085
Elsing, Elizabeth	1105
Elston, Richard	1611
Ely, Dana & Carol	1814
Elyondo, Leonel	1248
Emmert, Francis	2017
Emrick, George	8
English, Neumal	2752
Equestrian Trails, Inc. Corral #56 - Russ Fielder	2785
Erickson, Larry	2062
Erickson, Shari	2488



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ERO Forest Products - Edward G. Rotticci, President	2782
Erskine, Karen	2298
Erskine, Michael R.	1795
Escalante, Hilda	920
Esch, Bruce	1921
Escola, Arthur W.	1081
Eskelsen, Kirby	1101
Espinoza, Fidel	1986
Essary, Steven	501
Estel, Dick	596
Estrada, Fred	1602
Ewell, David W.	2147
Eugene, Ralph M.	1595
Evans, Fay A.	2405
Evans, Joe	550
Evans, Mary <b>Ann</b>	2623
Evans, Vance L.	2089
Eye Medical Center - Richard H. Whitten, <b>Sr.</b> , M.D.	1367
Fabbri, Richard	1426
Fabre, Stephen	1077
Facio, Ed	1600
Facio, Geronimo	1608
Falcon, Jim	1894
Falkenberg, R.	790
Far West Forest - Ted Lewis	599
Farmeto, Robert	419
Farnsworth, Saperstein & Seligman	354
Faust, Diana	4
Fauth, Gregg D.	2038
Faybert Services - W.H. Svendsen	241
Feather River Moulding - Doug Sturman	2646
Federation of Fly Fishers - Martin M. Seldon	79
Federation of Fly Fishers - Paul Collier, Past President	1830
Ferari, Robert	150
Ferrell, Carola	942
Ferguson, Mary	786
Ferguson, Thomas S.	765
Ferguson, Tom & Denise	2465
Ferlitsch, Gordon	1836
Fernbaugh, Neil	1566
Ferrell, C.	751
Fey, R. Walter	8010
Fiduk, Stephen J.	559
Field, Judith	138
Filtenth, Kenneth D.	1722
Finch, David & Nancy	690
Fink, Walter M. "Dyk"	642
Fischer, Shirley	1475
Fish & Wildlife Service - Gail C. Kobetich	2708
Fisher, Andy R.	96
Fisher, Dave	2563
Fisher, John M.	1498

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Fitzgerald, M.E.	62
Fitzpatrick, Marion	1431
Fitzwater, H.	428
Flamate, Fernando	1115
Flanagan, Ben	1806
Flanagan, Paul	353
Flanagar, Geraldino	327
Flasher, Bob	386
Flasher, Jack	587
Fleck, Beverly	8053
Fleeman, Kenneth W.	1626
Fleischauer, Nancy	1570
Fleming, <b>James</b>	2014
Fletcher, Martin C.	2273
Flippen, Jennifer	1612
Flores, Larry	91
Flores, Pete	1940
Florio, Marguerite	936
Fluid Air Components - Andrew Nowak	247
Fly Fishermen <b>for</b> Conservation - Patrick Micek	2640
Fly Fishermen for Conservation - W.Y. Nagata	246
Fly Fishers for Conservation, Inc. - <b>John R. Cummings</b>	711
Flying Eagle Logging, Inc. - Kerry Charlton	1535
Foelsch, Richard A.	2419
Fols, Albert C.	2587
Fontaine, Joe	2856
Foppiano, Louise J. - Louise J. Foppiano Winery	849
Forbes, Bob, Shirley and Glen	797
Forbes, Cindy & Owen	1532
Ford, Henry A.	2136
Forest Industries Telecom. - Kenton E. Sturdevant	228
Fornly, Alice	41
Forster, M.A.	2409
Fortenbare. Sherry Lynn	78
Foster, Tim	1732
Fowle, Chris E.	475
Fourney, C.	352
Fourt, Ed	2835
Frank, Norman C.	1273
Frankel, Allen D.	994
Franklin, David	281
Franklin, Theodore	833
Franklin, Theodore Ph.D.	1351
Franz, R.	991
Frayne, Ken	542
Fred & James Co. of CA - Marcha J. Bodor	124
Frederickson, Jeanie	903
Freeburn. Joyce K.	1172
Freeman, Leroy	2047
Freeman, Nicholas	2102
Freeman, Phillip	2305
French, Barbara	1050

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French, Jere	615
Fresno Muzzle Loaders - Wayne and Donna Johnson	254
Fresno Wire, Rope & Rigging - Mrs. Billie Becker	219
Friends of the River - Beatrice Cooley. Ph.D.	2413
Friends of Wildlife - Beula Edmiston	855
Friesen, Hal	119
Fronk's Mtn. Drilling Co. - Richard Fronk	204
Fruits. Paul D.	2177
Fuchs, Inge	1087
Fullon, Alan C.	425
G & K Machine Shop - Lloyd E. Crabtree	669
Gabaldon, Frank	2160
Gabaldon. Tino	1845
Gabriel, Bill	1293
Gabriel, William	1270
Gahan. Christie Sue	883
Gaiger, Norm	2744
Gainer, Stephanie	813
Gallager. Corinne H.	1022
Gamble, Gary L.	819
Gamboa. Phyllis	1464
Garcia, Javier B.	8031
Garcia, Joe	2110
Garcia, Norman L.	871
Garcia, Reynaldo P.	1848
Gardner, Bill	2137
Garner, Gene L.	1557
Garrett, Valery	2119
Garris. Barbara	741
Garrison, Lee	1819
Garrison, Steve	2046
Garza. Fernando	2328
Garza, Oscar	2085
Garza. Ray	2185
Garza, Raymond	2010
Gates, Robert A.	2714
Gaudreau, Jean & Barbara	801
Gawdy, Miriam. R.D.	1045
Gault, Joy A.	2078
Gauthier, David	8086
Gaydos, Beth	2246
Gear, Jerry	1941
Geier. Walter J.	1539
Geisler, Dorothy	799
Geistlinger, Mark J.	2589
Gelenaw, Greg	2013
Geller, Alix	388
Geller, Ron	960
Gendron. David	822
Gendron, Gerard A.	2687
General Hauling - Ron Lopopolo	261
Genes, Dean M., M.D.	1314

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Genes, Jim	1350
Genes, Milton	1401
Gent, Brad	2004
Georgeon, Robert	1151
Gerber, Terry	839
Gerlinger's - Morgan Orwig, President	946
Gerton, Les	632
Gerwig, Maureen & Michael	1483
Gervais, Richard	802
Giam, Ernest	1224
Giampaoli, Bruce	2637
Gibble, Rocky	1999
Gibson, Bill	2863
Giesbrecht, Willie	1846
Giesking, Shirley Jo	440
Gilbert, Merritt	2749
Gilbert, Penny Lee	402
Gilbert, Sam	860
Gill, Cathy M.	1414
Gill, Dr. June M.	1466
Gillespie, M.	2249
Gillespie, Robert	2429
Gilliam, Scott D.	2214
Gimbrett, I.M.	2794
Gimbrett, Iris	1778
Gingell, W.E.	1097
Girard, Karen	2260
Girl Scouts of America - Mary Pagliaro	2728
Glandon, Charles L.	2052
Glanzer, Chris Mark	8036
Glaser, Stan	46
Glass, Jerry	985
Glatt, Lesley E.	8024
Gleckler, Kay	2401
Glenn, Jeff	1771
Glover, Carla	1725
Glover, Eleanor	257
Glover, George	2385
Godwin, Gary M.	1637
Golde, Paul	283
Golde, Shiela	378
Golden, Charles	422
Golden, Greg	959
Goldfarb, Ron	654
Goldsmith, Kenneth	8073
Gomes, Lowell	2611
Gomez, Lucia	1917
Gomez, Manuel	1904
Gomez, Mr. & Mrs. David	125
Gonzales, Gilbert	2222
Gonzales, Israel	1885
Gonzales, Joe M.	8050

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Gonzales, Jose	2079
Gonzales, Louie	1623
Gonzales, Rudy A.	1562
Gonzales, Sal	2092
Gonzalez. Israel	1628
Gonzalez, Mario	1271
Gonzalez. Michael A.	1646
Gonzalves. Gary	1884
Goodwick, Sandy	456
Goodykoontz, Hazel	1710
Gooser, M.L.	2422
Gordon	82
Gorman, O.F.	1005
Goshgarian, Kathleen	1155
Gottlieb. Norman A.	1046
Gottschlich. Douglas	2231
Gould, Diane	792
Gould-Martin, Katherine	1807
Graham, David M.	2812
Graham, James	830
Grant, Carole	61
Grant, David W.	917
Grant, Kimberly	35
Grau. Sarah	2143
Graves, A. John	2355
Graves, Bonnie L.	940
Graves, Kim	2568
Gray, Diana	2349
Gray, Ken	2230
Gray, Rod	1142
Graylift - John L. Waugh, President	8054
Green, Darrell L.. Inc.	8003
Greening, John	1193
Greer. Bob	2339
Greer, John	1928
Greer. Kenneth E.	2311
Gregg, Mark	1906
Gregory, A.W.	1336
Gregory, Charles & Mary Ann	2658
Gribble. Nancy	2388
Griese, Dave & Cathy	2696
Griff, Padraic	376
Griffin, Mary J.	1364
Grimes, Keith W.	791
Grinsteiner. Ron & Vi	2721
Grisedale. Grant E.	1690
Griswald, Lisa G.	1152
Grober, Muriel	1040
Grode. Jackson	215
Groh. Edith	2636
Grossman. Avram	89
Grossman, Leah	782

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Grossman, Steven, D.V.M.	2
Grote, Curt	772
Grote, Laurie	1495
Grote, Margaret & George	492
Groves, Donny W.	1246
Gruenther, Romel	143
Guenen, Linda Leon	414
Guenther, Ron	2840
Guernsey, Richard D.	1277
Guerrero, Linda Leon	589
Guil, Michael F.	2224
Gunderson, Camella M.	2685
Gura, Meryl	1032
Guros, Francis	1163
Guterrel, Jesse	2487
Guthrie, Elizabeth M.	463
Guthrie, J. Less	1768
Gutierrez, Mike	1548
Gutnick, Beryl	110
Guy, Mrs. Rohilah	8064
H & W Tractor Co. - William Hunsaker, President	1122
Haas, Ava M.	1452
Haase - G.W. Zehender	2648
Hackett, Marcia C.	816
Hackett, Rosemary	85
Haddon, Kristina	1132
Hafenfeld Ranch	139
Hagen, Mike	2650
Hagen, Robert	1995
Halcraft, Jeanne	1953
Hale, Blaine A.	2154
Hall, H.B.	2423
Hall, Robert J.	2011
Hallman, B.	1149
Hallmeyer, Joe	2511
Halstead, Hope	2559
Haltz, Suzanne	369
Hamacher, John	2509
Hamacher, John B.	2723
Hambly, Cindy R.	383
Hamilton, William H.	1121
Hammond, Felicia	1124
Hampoyan, Helen	1559
Hancock, Barbara J.	304
Hancock, Frank L.	1952
Handelman, Carol R.	1572
Hanes, R.O., Jr.	1888
Hankin, John	2859
Hannah, Lynne	770
Hanner, J.E.	34
Hanralan, Tom	759
Hansen Logging Supply - Hans L. Hansen, Owner	2076

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Hansen. Mark	604
Hansen, Robert A.	876
Hanson. H.E.	1369
Harbothe. Jerry	2060
Hard, B.R.	452
Harder, Charles J.	1148
Harding. Evelyn	151
Hardy, David A.	1678
Hardy. James	972
Hardy, Joanne	1683
Hardy, Paula G.	450
Hare, David Wayne	2218
Harper, Enid	744
Harper, Monte C.	2532
Harr. George	436
Harris, Caryl E.	727
Harris, Janet Vierra	8055
Harris, Jon	1227
Harris, Keith S.	671
Harris, Maria	661
Harris, Pam	1763
Harris, Sid	2810
Harrison & Bonini. Inc. - Robert L. Scholzen	1382
Harrison Equipment Co., Inc. - Joe E. Harrison	1234
Hart, Margaret	2117
Hart, Stanley	1388
Harter. O. Clyde	1958
Hartleb, Dorothee	68
Hasler, T.	743
Haston, L.M.	1355
Hawker, D.D.	483
Hawkes, James	2248
Hawkins, Cole	2678
Hawkins, Lee C.	1841
Hayden, Anne K.	1661
Hayes, Anita	49
Hayes, Cathy	2668
Haymond, Beth	274
Hays, Debra	2426
Headly, Jacqueline M.	81
Hearn. J.J. Logging & H & M Logging, Inc.	2460
Hearn, James J.	1944
Hearn. Oma Lucille	2459
Hedge, Judy	446
Heebner, Gordon	1770
Heels, Linda	656
Heffner, David L.	2643
Heflin, Beth & John	2293
Heflin. Elizabeth Ann	2201
Heflin, James L.	2203
Heil, Randy	1809
Heimichs. Eddie L.	2180

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Heimler, Jim	708
Heindl, Wayne M.	1476
Heinemann, Earl & Helen	2450
Heinemann, Mr. and Mrs	2449
Heirndahl, Mrs. Esther	938
Heleniak, Jim	2594
Heller, Beate, D.C.	53
Heller, Nedra	460
Helm Data Processing, Inc. - Robert R. Helm	229
Helm, Brad	2000
Helmick, Bobbie	2347
Helmick, Ken	2373
Hemingway, Clarie	485
Hemman, William	2140
Henberger, John	970
Hench, James	1190
Henderson, Barbara	406
Henderson, Pat	1811
Henry, Ronald A.	2799
Henson, Lee	2836
Henson, Roy L.	2763
Hepperle, Charles	1228
Heritier, Richard O.	2842
Herman, Jim	620
Hermann, John	2206
Hernandez, Alvin	2378
Hernandez, Anita	8049
Hernandez, Cat	2324
Hernandez, Dino	1627
Hernandez, Frank P.	1541
Hernandez, Hector E.	1918
Hernandez, Jess	1866
Hernandez, Mike	1950
Hernandez, Roman	1638
Hernandez, Sam S.	2588
Herrera, Barry	2066
Herrold, Mark	2033
Herry, Mary AM	2683
Hershberger, John	763
Hescock, Gayle A.	1561
Hickinbotham Bros. Ltd. - Ralph Hickinbotham	582
Hickman's Service - Tom Hickman, Owner	1514
Hicks, Ernest M.	1366
Hicks, Robert	817
Hicks, Roger	1215
Higgins, David	1041
High Sierra Stock Users Assn. - Charles Morgan	2476
High Sierra Stock Users Assn. - AM Lange, Comm Chairman	1868
Hightower, Bob	156
Hill, Beech Kim, Jr.	1587
Hill, Bobby G.	572
Hill, Lennie	1240



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Hill, Mark & Diane	2397
Hill, Martin & Neva	697
Hill, Ted R.	1348
Hilsson, E.	539
Hinemann, Wayne	8005
Hines, Michael	1286
Hines, Roy	2331
Hingli, Lee	420
Hiniberger, Vince	71
Hinkston, Janice R.	1098
Hinojosa, Cesarin	2727
Hinsberger, Vincent	1006
Hipe, Philip III	337
Hodnett, Mr. & Mrs. Samuel	279
Hoelck, Rosemary	1727
Hoepfner, Fred G.	8016
Hoff, Leonard	393
Hoff, Louise E.	2266
Hoffman, E.	447
Hoffman, Harold	2218
Hoffman, Herman & Dolores	1272
Hoffner, John	1180
Hogarth, William F.	1002
Hokanson, Dr. Jerrold & Dr. Carolyn	522
Holden, G.	2097
Holinbeck, Genevieve W.	1883
Holinbeck, Scott A.	1911
Hollins, Ms. Judith	278
Hollis, Bob L.	2535
Holly, James C.	1614
Holmes, Robert A.	36
Holstein, Diane	449
Hondo Chemical, Inc. - Bruce R. Baker	700
Honea, R.	981
Honig, Andrew & Sasha	1208
Hooper, Mr. & Mrs. Jack G.	2392
Hoover, Vicky	719
Hoover, Wayne	412
Hopkins, (Mrs.) Jane	505
Hopkins, Barbara	1730
Hoppas, Arvid G.	2238
Hopper - Gary Hull	1211
Hord, Stephen Y.. Jr.	531
Horn, Ted H.	66
Horn, Tricia M.	2350
Horner, K.	1424
Horsley, Harold	1517
Horsley, Wesley H.	1925
Hot Springs School District - Gurnice R. Smith	313
Howard, E.M.	1544
Howard, Mr. J.R.	2437
Howard, Patt	1702

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Howell, James W.	1719
Haupt, Suanna A.	179
Hovater, Earl D.	2425
Hovck, Kathryn	2609
Hubacek, Richard	1571
Hubbard, Robert	1632
Huber, Mike	2048
Hudson, Rex R.	953
Huebert, Scott	2323
Huettner, Beth Ann	1486
Huff, Daryl	77
Hughes, Edward F.	627
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Hughes, Nelson	2321
Hulberg, Larry W.	445
Hume Lake Cabin Owners - Jean Shewey	1653
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Hunter, John	2152
Huntington, Kim	890
Husar, A.	1236
Husband, Lynn	796
Hustand, Kathryn L. and Neal Miller	2823
Hutchens, Cecil	2024
Hutcherson, J.R.	944
Hutchings, Rodney	2054
Huth, Gary	2461
Hutton, Ray	847
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Illegible Last Name - David	384
Illegible Last Name - Gabriel	608
Illegible Last Name - Gregg E.	2348
Illegible Last Name - Jack R.	372
Illegible Last Name - Jasen	117
Illegible Last Name - Jeff	2021
Illegible Last Name - Jeff	2539
Illegible Last Name - Margaret	1499
Illegible Last Name - Michael	1900
Illegible Last Name - Mike	1930
Illegible Last Name - Peter	374
Illegible Last Name - Robert	1967
Illegible Last Name - Ron	2342
Illegible Last Name - William	1123
Illegible Name	103
Illegible Name	115
Illegible Name	409
Illegible Name	967
Illegible Name	987

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Illegible Name	990
Illegible Name	1144
Illegible Name	1800
Illegible Name	1859
Illegible Name	1955
Illegible Name	2577
Infante, Raymond	8045
Inglewood Fly Fishermen - Ben Lindner, Past President	1831
Inglewood Fly Fishermen - Milt Huber, Past President	1828
Inglewood Fly Fishermen - Steve Thompson, Past President	1829
Ingraham, Blake	1229
Ingram. James	1579
Ingram. Mrs. Andrea	2576
Inovec - Ala Al-Bazzaz	1305
Inskeep. William	320
Inyo Co. Board of Supervisors - Robert Bremner	1948
Inyokern Chamber of Commerce - LeRoy Marquardt, President	1540
Irwin, Tom	1258
Irvie. Don	2428
Irvington Moore-Gary Hogue - Forest Products Division	242
Isfeld, Callen	752
Iwafuchi. Larry	1428
Ivanerich. Kati L.	794
Iverson. Wayne D.	576
Ives. Robert T.	1126
Ivie. Dave	2183
Ivie, Kay	2424
Ivie, Larry	2329
Ivie, Tami	2335
Izett, James C.	1070
J & L Irrigation Co., Inc. - Larry Duckworth	563
J.C. Timber Co. - Don & Margie Jackson	1345
Jackson, R. Allen	1834
Jacobs, Ava	1478
Jacobson, Barbara B.	1069
Jad Canning Foundation - Bill Canning	2706
James, Don (Family)	122
James, Fred S. & Co. of CA - George Moore, Vice President	236
James, Fred S. & Co. of OR - Donald L. Stathos, Sr., V.P.	1212
Jameson. Catherine	2398
Jansky, Marlene	510
Jarosh, John P.	838
Jemetz. Irene	684
Jenkins. Keith	1705
Jenkins, Ruby Johnson	2262
Jenkins, William	2663
Jenks. Felicia	685
Jensen. Douglas B.	196
Jensen, Rex M.	2675
Jewish Federal Council of Greater L.A. - Leanne Schy	575
Jim's Auto Parts - James N. Cone	269
Johnson, M.C.	2457

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Johnson, Mary	619
Johnson, Mrs. Ray	1435
Johnson, Nancy	859
Johnson, Newell	907
Johnson, <b>Norman</b>	282
Johnson, Paula M.	462
Johnson, Ray	1056
Johnson, Rebecca	1666
Johnson, Richard L.	874
Johnson, Robert Paul	2299
Johnson, Teri	2391
Johnson, Vernor, MA, CCCSP	1284
Johnston, David J.	<b>1280</b>
Johnston, John	42
Johnston, Mark	1323
Jolin, Norma	1518
Jones, Bethany	243
Jones, Betty L.	2233
Jones, Bill	2680
Jones, Bruce & Mae	683
Jones, Deirdre	2613
Jones, Franklin P.	1023
Jones, Herbert A.	163
Jones, Larry	2590
Jones, Pamela Kay	1090
Jones, Robert	469
Jones, Ron	295
Jorgensen Batteries, Inc. - Donald F. Jorgensen	524
Juarez, Gilbert	1915
Jund, Mike	1446
K & M Industries, Inc. - Steve Morgan	1295
Kabisch, Sally	2801
Kadrlik, James T.	2531
Kahley, Mrs. Teri	2534
Kahonn, Bruce	2283
Kaiser, Robert	1116
Kalender, Brenda	2336
Kallsen, Craig	2360
Kamendrowsky, Victor	1799
Kamenski, Robin	2120
Kamisher, Gary	222%
Kamline, Dale	1185
Kamp, Dr. David A.	2279
Kann, Judy	213%
Kanne, Bob	1128
Karlan, Sheldon J.	1837
Karren, Richard K.	1447
Karrs, David	347
Kaster, Olin & Ginny Reid	649
Katzen, Herbert	1100
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Kauffman, Jerry	2357

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Kaufman, S.A.	1252
Kaufmann, Jacqueline	2387
Kauwoh, Nicolas L.	2332
Kay, Rusty and Associates, Inc.	291
Kehl, Dwayne A.	2481
Keller, Allan C.	1031
Keller, Chuck	1408
Kelley, Barbra	2253
Kelley, Robert J.	1267
Kelly, David W.	2754
Kelly, Phil	2314
Kemp, W.L.	1963
Kempf, Dale	2275
Ken's Stakes & Supply - Joe Hallmeyer. Owner-Mgr.	1633
Kendall, Harriet	1635
Kendrick, Floyd	2354
Kenney, Ed	1755
Kenngatt, Ray	686
Kenny, William	1440
Kerman Bearing & Supply - Wallace C. Thomson	132
Kern Audubon Society - Sharen A. Moon	2770
Kern County Cattleman's Association, Inc.	2205
Kern County CNPS - Diane L. Mitchell	2468
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Kern Valley Indian Council - Bob Robinson	2251
Kern Valley Wildlife Association - Marie Koonce	338
Kerncrest Ch. National Audubon Society - Donald W. Moore	2694
Kerr, Marion	1736
Ketchum, Robert Glenn	1156
Kim, David	2239
Kincain, David J.	8018
Kinde, Robert	2729
King Bearing, Inc. - Jerry D. Brock	558
King Bearing, Inc. - Larry Stanfield	1339
King Ranch Enterprise - Janelle Guynes	2688
King, Burt	2080
King, Don	2316
King, Harold	1230
King, Harold E.	1973
King, Holly	1107
King, Jerry	2006
King, Jim	1785
King, John A.	2326
King, Margie	1312
Kings Co. Board of Supervisors - Dominic Faruzzi, Chairman	1481
Kings River Conservation District	184
Kings River Water Association - Norman B. Waldner	154
Kiper & Kiper Log. & Lbr. - Harold Kiper	1108
Kirk, Lorraine Ph.D.	1356
Kirmer, Michael M.	2517

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Kislink. Any	923
Kitchell. Kenneth	2056
Kitz, Jo	1334
Klamath Machinery Co. - N.L. "Hap" Hanson	865
Klein, Judy	629
Knauft. Charles F. III	1259
Knight, Timothy E.	1052
Knoy, Jack	2150
Koch, Bill & Marti	879
Koenig, Neil N. Ph.D.	271
Kohl, Will	293
Kohn, Nancy	598
Koivu. Elwood	266
Kolb, Miriam G.	1379
Koluvek. Linda	1485
Kopp, Audrey	969
<b>Kopp, Greg</b>	769
Koran, Bill	1202
Kordick, Jerry W.	1502
Kozuki, Mits	623
Kramer. Tom, Professor Pierce College	1747
Krase, Robert	663
Kratky, Bob	1550
Krein, Marvin	1663
Krieg, William M.	362
Krisman, Esther	630
Kritzer, Sherry	1329
Kroeger. John	286
Krohn. Jeffrey C.	1419
Krohn, Robert F.	1659
Kroniss, MS.	1458
Kruger, David	1048
Krussow. V.	251
Kubo, Robert, DDS	810
Kuekes, Tom	1808
Kuhn, Gloria F.	1680
Kuhn, Lidia Manson	730
Kunze, John	1243
Kuopat, Dale	2369
Kus, Ernest	1821
LA. Inc. - Jim Livermore	2649
Labor, James D.	943
Labrado, Rosario	1966
Ladd, Christopher	2327
Ladd, Jimmy	2101
Laden, William J.	2834
Lahay, Mr. & Mrs. R.P.	798
Lahmeyer, Philip M.	2300
Lalanne's, Inc. - Gary Lalanne	734
Lamaga. Betty	1674
Lambert, Michael Eldon	1793
Lamborn, Celia	306

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Lamborn, Jane	905
Lamborn, Lin	885
Lamborn, O.E.	828
Lamond, Robert	1127
Landesman, Dov S.	908
Lane, Linda	1310
Lane, Bob	8042
Lang, Michael	2730
Langberg, Steven	1047
Langer, Ernest S.	858
Lapp, Carl	1827
Large, John	1496
Laris, Emily and Carlos Daniel Fuster, M.D.	1198
Larsen, Darrell R.	2660
Larson, Chris	837
Latchford-Gilpin, Arra	1102
Lattin, Edward R.	415
Laughlin, Sheila	1028
Laughter, J.M.	988
Lawrence Tractor Co., Inc. - Don Nipp	1371
Lawson, Elaine S.	1171
Lawson, Stacy L.	1512
Lavers, Diedre	2537
Lazare, Michael	466
Leager, Gerald E.	8001
Leaky, Bob & Carol	2440
Lederer, Helen	503
Ledford, F.K.	2579
Ledford, Louise M.	2051
Lee's Service, Inc. - Ben R. Huebert	245
Lee, Brian	2622
LeFerer, Susan	2764
Legnis, Timothy	2438
Lehan, Beverly	453
Lehnerz, Bruce	2737
Lein, Larkette	535
Leland, James	897
Lenderking, Hollis	553
Leonard, Adair	16
Leonardi, Cora C.	1000
Letkowitz, David	613
Lewis, Cheryl	430
Lewis, Dan	866
Lewis, Don, Lynn, Jasen. and Seth	2638
Lewis, Linda C.	2564
Leveron, Louis, Ph.D.	989
Levine, Dick	1161
Licon, Eloy	2106
Lierman, Trudi	15
Ligman, Joe	1656
Lima, Clarence	831
Lincourt, Susan	892

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Lindquist. DiAnn	803
Lindsay, Bob	1471
Lingo, Charles & Angela	287
Linnett. Barry James	1380
Linney Associates - Doug Linney, President	1214
Lipman, Bernard W.	1381
Lippman. Peter I.	1053
Little, Charlene	2264
Little, Ted & Robin	2629
Llewellyn, Thomas	1772
Lloyd, E.R.	1429
Loann, E.C.	1855
Locanthi. Mrs. D,	1188
Lockwood, Marian	742
Lodge, Joan	1027
Logan, John H.	490
Lohse. Gene R.	1487
Lohstorfer, C.	1049
Long, Frank	1687
Long, John R.	423
Long, Mike	1835
Longueville, Keith	1639
Lopez. Alan	1095
Lopez, Jose	1643
Lopez, Martin	8047
Lopez, Richard	2111
Lord, Gerald	1842
Lorme, Raymon G.	2667
Lowe, Al Associates - Albert W. Lowe	1396
Lowe. Al Associates, Inc. - Albert W. Lowe	155
Lowery-Hawkins, Priscilla	2569
Louisiana-Pacific - James Badalich	308
Louisiana-Pacific Corp. - Joe Ligman	2698
Louisiana-Pacific Corp. - Richard Pland	365
Lowman, Fred	1457
Lown. Dorothy M.	864
Lovelady, Don	1787
Loya, Margee	807
Luallen, Wayne	1020
Lucas, Merwin	1255
Lumbermen's Underwriting All. - P.D. Breckenridge	1316
Lund, Kurt & Lois	136
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Lundy, Susan Richardson	544
Lyon, Lennis	1630
MacDonald, Ms. Maren	534
Machado Dusters, Inc. - I.R. Machado	725
Machen, Corinne	1711
Machida, Toru	1592
Mack, Darrin	2524
Mackintosh, Susan	1671
MacLeod, John	1397



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MacPhail, Deanna	1761
MacPherson, Rod A.	853
Macris, Alice	1720
Maddock, John	382
Maddox, W.R.	367
Madera County Board of Supervisors - Don Darnell	862
Madera District Chamber of Commerce - Val Chute	312
Madgic, Mr. & Mrs. Robert	625
Magargle, Clarence, Jr.	2522
Magarian, Linda	2215
Magee, Chris & Michael	2236
Mahoney, Carol Maureen	2578
Maida, Nino	2822
Maitia, John M.	2772
Maki, Kurt E.	25
Mandl, William	75
Manfredi, Marie	872
Mann, Bob	2130
Manning, Am	2402
Manning, John	1337
Manning, Ray	2216
Manson, Leonard	2379
Manville Service Corporation - J.D. Taniguchi	1197
Mapes, Pete & Melba	521
Marcus, Laurie	2202
Mardirussian, Karen	140
Marhenke, Ronald L.	1575
Marin Conservation League - Roger Hooper, President	1581
Marin Conservation League - Willis A. Evans	2767
Maris, C. Vic	2741
Marlee Company - Martin L. Szoke	511
Marsh, Johh T.	956
Marsh, Lisa Ellen	97
Marshall, Helen	707
Martens Chevrolet & Oldsmobile - Jerry Martens	2026
Martin & Stone Ranch - Mary E. Stone	1650
Martin, Amy Jo	93
Martin, Duke P.	775
Martin, Floyd J.	507
Martin, Gary R.	805
Martin, George P.	2284
Martin, Kay	148
Martin, Luella	710
Martin, Michele	513
Martin, Phil H.	1192
Martin, Richard	2068
Martina, John G.. M.D.	169
Martinez, Dan	2338
Martinez, Edward	1645
Martinez, Joe M.	8027
Martinez, Nick	1734
Martinez, Rosendo	961

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Martinez, Wally	1980
Marting, Felix C.	1776
Marts, David	1816
Mason, Dale	1391
Mason, John A.	167
Mason, Larry	276
Mason, R.A.	2837
Mason, Tod	2778
Mathias, Marissa L.	771
Matsinnion, Neil	1945
Matthew", S.	381
Matthews, Shawn	1441
Matthiesen, Jackie	1933
Matulavich. Peter	1896
Maury, Elizabeth H.. Ph.D.	1141
Mautz. William Johnston	14
Maxwell, Evelyn V.	891
May, N.	911
May, Richard H.	2442
Mayer, Barry S., M.D.	191
Mayer. David	2091
Mayer, Jerry	2186
Mayer. Miss Ursula	1449
Mazar, Marjorie L.	729
McAllister. Barb	1731
McAllister, Olga	1741
McBrid, Matt	1044
McBride, W.	614
McCain, Ed	1139
McCann, Rosa	1818
McCarty, Chris	2287
McClain, Karen	1788
McClintock, Scott	2175
McCloskey, Robert	895
McConnell, Vickie K.	1318
McCorhee, Dorothy	240
McCorkle, Dorothy	2291
McCormick. H.R.	1726
McCormick, Keith	2337
McCowan, Jim Jr. & Kaci	194
McCoy, JoAnne	1003
McCray, David E.	2645
McDaniel, Sandy	8063
McDonald, Calvin E.	1853
McElhiney, Paula	2125
McFarlan, James E.	1781
McFarland, Rick	459
McGregor, Robby	2163
McGuire, Charles	2480
McGuire, Todd	766
McIntire, George M.	2219
McIntosh, Cheryl	1162

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McKee, Robert & Loretta A.	740
McKendry, Liz	444
McKenzie, Doug	405
McKenzie, Mark	1823
McKeon, Timothy	2445
McKey, M.	2552
McKinney, Thomas G.	2672
McKinty, C.D.	1420
McLaughlin, Robert J.	289
McLemore, Neal	2095
McLeod, Jack	2554
McLeon, Kenneth R.	2432
McMahon, Mr. & Mrs. John	603
McMillan, <b>Am</b>	1332
McMurtry, Jeff	8039
McMurtry, Victor	2019
McNally, Pauline M.	252
McNeil, Ken	1455
McNutt, Roland	149
McParland, Robert A.	1533
McQueen, Bonnie	2560
McReynold, Dean	1913
McReynold, Steve	8046
McReynolds, Carl D.	2268
McReynolds, Leon	2045
Meade, Martin J. (Family)	1233
Mecchi, D.H.	605
Mecchi, Peter H.	1965
Medina, Brenda	1959
Medina, Mrs. Renita	2344
Meek, Stephen L.	520
Mefford, Menielee	44
Melendy, Byron L.	724
Melenurez, John	1576
Melvan, Brian	2547
Mendoza, Frank	1908
Meng, Noraine	2352
Mericle, Kathy	826
Merrill, Barbara	438
Messer Logging, Inc. - Winifred Messer	218
Messick, G.A.	2751
Messick, Leroy W.	2733
Messick, Steve	2719
Metzler, Mat	894
Mewning, Kurt	1497
Meyers, Stephen	182
Meza, Raymond	2049
Mid-Cal Ford Trucks - Mike J. Deis	244
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Middlemiss, Terri & Edward	2421
Milberger, Arthur	612
Miles, <b>A.D.</b>	976

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Miller Logging - Lawrence Miller	1490
Miller, Canae	2686
Miller, Chris	2044
Miller, E.L.	2022
Miller, Jeff	1094
Miller, Jim	1960
Miller, John	197
Miller, Jon	2689
Miller, Larry W.	1740
Miller, Louise M.	1574
Miller, Marianne	962
Miller, Martha	2396
Miller, Roy	1088
Miller, Susan D.	1253
Millon, Martin H.	2070
Mills, Larry E.	1287
Milnken, David	787
Miranida Family	1016
Mireles, Larry	1784
Miropol, Noma	1136
Miska, V.	1037
Mitchell, Rick	123
Mize, Donny	1247
Mize, Gary	8043
Moc, Marnie	1043
Moeller, Glenn	914
Molle, Bud	1456
Moncsko, George E.	1715
Monson, Cara & Robert	1137
Montecito - Sequoia - Virginia C. Barnes	2497
Moore, Janice	836
Moore, Roy	2406
Morales, Israel	8026
Morea, Rodney M.	1594
Morehead, Iva J.	1279
Moreno, A., Jr.	1508
Morey, Kathleen M.	1169
Morgan, George L.	1990
Morgan, James	1505
Morgan, Jerry	1909
Morgan, Rob	2333
Morgan, Warren	1898
Morgenson, Randy	804
Moritsch, Barbara	233
Morris & Knudson Co. -Tom McKee, Prof. Eng.	2513
Morris Saw Works - Marlin Morris	263
Morris, William	1890
Morrish, Kendric Bradford	1133
Morrow, Mike	213
Mosher, Mike	2204
Moss, Esther	713
Mottola, Phyllis	2748

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Mount, Robert B.	868
Moy, Mary	2690
Moya, Joe T.	2129
Mt. Whitney Guide Service	2831
Mueller, Mrs. M.	2122
Mullane, Pat	951
Mullane, Sharon	1324
Mullen, Philip G.	1160
Mullenbach, Robert J.	1769
Muller Irrigation, Inc. - Paul J. Cochran	193
Muller, Raymond	2500
Munnell & Sherrill, Inc.	665
Murphy, Bob	2296
Murray, B.A.	2523
Murry, Jack	232
Muschuer, Ed & Dorothy	2581
Musgrave, Mr. & Mrs.	348
Music & Sound Design - Leonora Schildkraut	225
Mussman, Marc	975
Myers, Janice L.	319
Myton, Marc	299
Nadaier, David	2116
Nagle, Lloyd W.	451
Nakashioya, Howard, M.D.	1062
Nanez, Gilbert N.	1552
Nash, Bert	1412
Nash, C. Scudder	1978
Nash, Susan	704
National Audubon Society - Glen Olson, Western Reg. Office	2774
National Parks Cons. Assoc. - Russell D. Butcher	808
National Timber Faller's Association - Bill Bailey	326
Native American Heritage Commission - John D. Smith	360
Nauobilski, Bea	1153
Navarro, Daniel E.	2073
Navarro, Donald Gene	1957
Navarro, Victor	1629
NE CA for Wilderness - Greg Emerson	2771
Neace, David	945
Neely, Richard H.	1563
Neely, Thomas K.	1482
Nelson, Don	2178
Nelson, Erma	2633
Nemeth, Marilyn	72
Nesmith, David	8059
Newland, Thomas	2374
Newman, Jerry	2394
Neumans, Carol	514
Newsom, William A.	1492
Newton & Sons Real Estate - Karl L. Newton	1374
Newton Bros. - Patrick W. Newton	821
Newton, Brian	1556
Newveer, H.	1187

<u>NAME</u>	<u>ID#</u>
Nicely, Maxine M.	1010
Nicholls. Sabrina	448
Nickell. John	2860
Nickell, Roger	2862
Nickerson Lumber & Plywood Corp. - Robert Lopez, President	1181
Nicoll, John W.	2616
Nilsson, Ms. E.	1308
Nipp, Gordon & Eva	2467
No Name	882
No Name	983
No Name	984
No Name	1625
No Name	1912
No Name	1936
No Name	1988
No Name	2313
No Name	2485
No Name	2538
No. CA Council Federation of Fly Fishers - Richard Izmirian	1468
No. CA Log Scaling & Grading Bureau - K.L. Stayton	2435
No. Fork Chamber of Commerce - Don Dierberger, Director	1291
No. Kern Property Owners Association - Lorna Charlton	349
Noftel, C.	884
Noli, Bill	768
Norby Lumber Co., Inc. - John Norby	2472
Norcal Electric Supply - Roger W. Higgins	955
Norco Windows, Inc. - Stewart Lemke	8021
Noren. Edward, M.D.	2414
Noren, Mary E.	2415
Norris, Frank	2796
Norris. Larry L.	211
Northridge Auto Body, Inc. - Frank Ayola	130
Nourian. Gaizak	1389
Nuban, Carolyn	932
O'Brien, Chris	431
O'Brien. Gene	1519
O'Brien, Gerald E.	2447
O'Brien, Michael M.	22
O'Connell, Daniel	371
O'Connell, Robert	2492
O'Neill, Edwin R.	2030
O.B. Zuzum Tire Service - Dirk Nuzum	206
Oakeshott, Jeanne	161
Obeso, Mateo	1810
Ockershauser, Kris	648
Office of Student Affairs - Steven Coutre	523
Office Overload & Printing - Ellie Ruppender. Owner	1404
Ohland, Andre	835
Oldham, Charles	2057
Olivares, Patricia	2023
Oliver, Earl D.	2282
Oliver, Jimmy Joe	58

<u>NAME</u>	<u>ID#</u>
Olmos. Domingo	2071
Olsen. Bruce M.	1977
Olson, Butch	234
Olson, Mrs. Angela L.	262
Orio. John D.	1014
Orr, Brian & Doreen	2489
Orr. Jeff & Linda	375
Orthman Sales & Service - Charles E. Peters	533
Ortiz. Elizateh T.	37
Ortiz, Octavio	2478
Orton's Equipment Co. - David Orton	1296
Orty. David A.	1791
Orvis San Francisco - Emil Gercke	1738
Orvis. Marian B.	137
Osa, Matt	2713
Ose. Max	1220
Ostergard, Jeff	1530
Otleman's Packaging - Kenneth E. Otleman	1321
Owens, Gene H.	600
Owens, Suzanne	433
Outdoor Adventures - Robert J. Volpert	345
Paananen, Naida	1146
Pace, Robert L.	1880
Pacific Fluid Systems - Stan Nelsen	715
Pacific SE <b>Forest</b> Products - Donald Crane	2521
Pacific/Hoe Saw & Knife - William R. McKillip	1084
Pack, Sue	1577
Padilla. James	1537
Page Equipment Sales, Inc. - Louis A. Wilson	494
Paige, Victor	2471
Palm, James A.	2516
Palmer, Daisy W.	1717
Palmer, Dean	518
Palmer; Robert N.	852
Palmer, Ron	2358
Palmieri, John	566
Paloma, Stephanie	2244
Paolini, Mario	265
Paradis, Kathleen	56
Paramont Supply Co. - Craig Erickson, Manager	1347
Paris, Lois L.	776
Park, Irene M.	8011
Parke. Jeanette F.	253
Parker Trucking - Donald & Janet Parker	2720
Parker, Paul	2393
Parks, Martin W.	1993
Parmenter, Derek C.	660
Paro, Julie M.	1130
Parr, Richard E.	646
Parrott. Dianne	145
Parsell, Mary	1158
Parson, Mary	454

<u>NAME</u>	<u>ID#</u>
Parsons, Tracy	1331
Pasadena Casting Club, Inc. - Jim Edmondson	824
Pashayan, Charles, Jr., Congress of United States	8057
Pasillar, Ernie	1997
Pasillas, Steve	2865
Pasillas, Steve	8083
Pasterski, Robin & Trent	1668
Patalano, Louis	1315
Patterson, Nellie D.	2195
Patts, Carole	1029
Patwell, Steven W., M.D.	1285
Paul, P.	1261
Pawley, Kevin	964
Pawlick, Catherine	939
Pawlick, Gene F.	677
Pawlick, Margaret	678
Pawlick, Mrs. Beth	689
Paulsen, Mr. & Mrs.	2739
Payette, Marilyn	426
RM Service Center - Connie Mc McNeal	259
Pearce, Sally	609
Pearl, Alfred M.	2495
Pease, Charles E.	2029
Peasley, Victoria A.	1493
Peck, Anthony S.	2446
Peck, Arthur F., M.D.	1373
Peck, Phillip B.	1622
Peckner, Lloyd	635
Peltier, Larry	30
Pender, June	935
Penner, Tamara	2458
Pennington Enterprises - Stanley R. Pennington	256
Peralta, Alfredo	2384
Pereneuige, Paul A.	543
Peressenyi, Paul A.	1
Perez Trucking - Miguel Perez	303
Perez, Hector	2141
Perez, Inocencio	2193
Perez, Joaquin	1865
Performance Management Co. - Scott J. Simmerman	351
Perham, Dennis & Darleen	2451
Perisic, Catherine M.	2614
Peters, Charles F.	997
Peters, Paula	2317
Petersitge, Bruce	580
Peterson, Floyd	2209
Peterson, James E.	2494
Peterson, Rick	2760
Peterson, Ron	1106
Petitjean, L.A.	1667
Pettis, Claude M. III	1451
Pfeiffer, George R.	845



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PG&E - Bruce H. Nebit	2765
PG&E - P. Bruce Benzler, Director Land Planning	2297
Phillips, Connie & Robert	1589
Phillips, Donald D.	2012
Phillips, George H.	2454
Phillips, John	1506
Phillips, Ralph L., Ph.D.	1520
Picker Parts - Benjamin F. Anderson, Chairman & CEO	1697
Pickering. C.R.	2427
Piener, Philip	846
Pierce, Pat	23
Piet, Ruth San	2709
Pigott, C. Phillip, ChFC	1064
Pino, Mary	159
Pinsky, David	968
Pinsloy, Jim	795
Pinto, John	2194
Pizano, Richard	1939
Placer Co. Conservation Task Force - Helen Wauters	1221
Pland. Richard H.	2615
Plocher, Dennis	1459
Ploneis, David L.	851
Plumb, Steve	2058
Plumlee, Carol	1733
Plumley, J.W.C.	2644
Plummer, Marlene	1311
Plummer, Robert	1943
Pohorsky, Andrew T.	1463
Poitra. Steve & Michelle	2270
Polcuch, Eric	2573
Poole, Kenneth L., Inc. - Kenneth L. Poole, President	1353
Pooser Lumber Co. - Robert C. Pooser	2750
Pope Tire Company - George Pope	1004
Pope, Jim	74
Porterville Chamber of Commerce - James Stewart	1326
Porterville High School District - Jacob Rankin	2628
Porterville Area Environmental Council - Donald Zuckswert	2621
Porterville Aviation - Ed Wood, President	2368
Porterville Elementary School District - Jacob Rankin, Ed.D.	2627
Porterville Equipment Rental - Daryl Nicholson	128
Porterville Pallet Co. - George P. Stieb	238
Porterville Ready Mix, Inc.	512
Posey's Welding - Don Posey	668
Poston, Paul W.	1244
Powell, Arthur G.	1206
Powell, Janet	427
Powell, Roger	1926
Powell, Steve	1072
Powers, Marvin	324
Poulin, Cecile J.	896
Pratt's Transportation Service - Richard Pratt	537
Presley. Robert, State Senator	8067

<u>NAME</u>	<u>ID#</u>
Pressnall, Dolores	1585
Preuss. F.A.	818
Preyer, Bernard G.	870
Prezelski, Pat	1263
Price & Paige - CPA's - William H. Stewart	674
Price, John	2223
Price, Mark O.	778
Price, Sarah C.	651
Prince Associates, Inc.	1652
Profit, Michael Ray	2755
Protective Coatings, Inc. - Gene Noble	628
Provost, James R.	812
Provus, E.	1480
Provus, Edward	1979
Pruneda, Rene	2032
Pruneda, Rogelio	2128
Public Land Users Alliance - V.E. Johnny Johnson	8078
Pulido, Gloria	1962
Pulido, Richard	2108
Pumarejo, Ben	2221
Punkin, Timothy C.	1895
Purl's Sheet Metal - Michael Purl	1322
Quedow Ranch - Cowen Bowen	2582
Qugley, Kenneth J.	1802
Quigley, Joan	2196
Quigley, John	1869
Quinn Company - D.N. Cunningham	250
Quirarte, Laura	2469
Qulrarte, Louis A.	1174
R.D.N.	1891
Rabin. Syd	1991
Radalj, John	1232
Raddatz, Lorraine	224
Raddatz, Warren E.	264
Rader, Mrs. Ward T.	2583
Raffacle. G.	1167
Raffaele, Scott	1203
Raffle, Michele	1260
Rahl, John	2151
Raiklen, David	1292
Raines. Roy	104
Raisner, William M.	909
Ralph, Marty	498
Ramez, Dan	2144
Ramirez, Miguel B.	2015
Ramirez, Ronnie	2181
Rand, Deidre & Randy	2798
Rangel, Jose M.	1934
Ransdell. Robert R.	540
Rask, Irene E,	578
Rasmussen, V.L.	2093
Ratcliff. Charles H.	2055

<u>NAME</u>	<u>ID#</u>
Ratner, Marc	1168
Rauch, Martin	2662
Rawl, June	1007
Rawson, Robert	1850
Ray, George P.	1357
Ray, Norma	2490
Ray, Robert	1009
Raymond, Elinor E.	1724
Raymone, Jatner John	1723
Rector & Sons Trucking - Larry Rector, Owner	1590
Redd, John	1338
Redding Lumber Transport - Al Shufelburger, President	8056
Redding, David & Susan	643
Redondo, Jose Luis R.	567
Reed Equipment Co. - Don Booker	1204
Reed, Dolores W.	530
Reed, Gary	2512
Reed, Sandy	1147
Reedley Chamber of Commerce - Lisa Bergthold	2411
Reese, Steven	2016
Reeves, Barry	2301
Reff, Deborah	1479
Regan, Catherine	652
Reid, L.	843
Reid, Les & Sally	737
Reilly, Leo	2232
Reimer, Bud	1591
Reimers, Am	2816
Reliance Metalcenter - Milton D. Alley	473
Rempel, Robbin W.	1655
Rempel, Tamia	307
Rensen, Greg	2671
Remy, L.E.	a4
Rendon, Ernest	1916
Rennie, Ron	2390
Renwick, Leetha T.	554
Requeto, Thomas V.	2192
Requijo, Gilbert	8033
Resbitt, Helen	40
Resources Agency of CA - Gordon F. Snow	2491
Retech, Inc. - John N. Pringle	721
Retting, Comdr. V. Beauregard	55
Retting, N.B.	1013
Reyes, Jessie	2187
Reyes, Tony R.	8023
Reyna, Arthur	8037
Reynaga, Rudy	2043
Reynolds, Chris	1036
Reynolds, Kathryn G.	597
Reynolds, Winifred & Brewster C.	2777
Reznick, Mr. & Mrs. Emanuel	1063
Ricci, Manuel	2322

<u>NAME</u>	<u>ID#</u>
Rice, Bonnie	2211
Richardsn. Gary L.	1436
Richardson, Barney	2508
Ricks, Marilyn J.	2366
Ridgecrest Chamber of Commerce - Nellavan Leckey, President	1376
Riee, Don	92
Rieland, <b>Andrew</b> L.	474
Ries. Shelley	2036
Riggs, Karen	343
Riley, Betty	1721
Rincon, Albert	2456
Rinde, Felix	1030
Ring, L.	1268
Ripley, Donna	1951
Ripley. John & Donna	2380
Rippee, James	1987
Rippetoe, Ernest	1801
Riippi, George	636
Risner. Donna	2455
Rivas, F. Pierre	1470
Riveil, Tom	2247
River Runner Magazine - Mark C. Larson	757
Rivera, David	2107
Rivera, Jesse	8038
Rivera, Mark A.	8048
Riverdale Irrigation District - Kimberley Mayfield	555
Rivers, Walter	736
Road, Georgina	86
Roat, Bob	2240
Roberts, George F.	1858
Roberts, Jack	844
Roberts, Janice E.	1757
Roberts, John H.. Jr.	10
Roberts, Kathy	1664
Roberts, Luther	1969
Roberts, Terri	106
Roberts, William	a20
Robertson, James	1254
Robertson, Robin	925
Robinson, John	773
Robinson, Melissa L.	509
Robinson, Ralla	2377
Robinson. Rodney	2756
Robison, Scott M.	11
Rocco, R.	255
Rocke, Janet C.	73
Rodin, Melin	1019
Rodriguez, Chris	2309
Rodriguez, Elias	2281
Rodriguez. Fred	2220
Rodriguez, Javier	2376
Rodriguez, Jessie	8051

NAME	<u>ID#</u>
Rodriguez, Juan A.	2100
Rodriguez, Martin C.	1847
Rodriguez, Peter	1511
Rogers Machinery Co., Inc. - Jerry Chappelle, Manager	1359
Rogers, Brian	1870
Rogers, Dee	2325
Rogers, Don. Assemblyman	1201
Rogers, Doug	1025
Rogers, Gary	1920
Rogers, Jack	2776
Rogers, James B.	284
Rogers, Michelle	921
Rogers, Mr. & Mrs. Roy R.	546
Rogers, Ray	2364
Rohrer. Fred & Dee	146
Rola. John & Sandra	2343
Romero, Cristine	2035
Romero, Jesus	1931
Romley. Phillip	1554
Roogard, Larry M.	2477
Rooney. Peter	370
Roope, Gerald L.	2002
Rose, Paul B.	1442
Rose, Robert W.	2197
Rosedale, Ralph	1307
Rosezyk, Mary Lou	1681
Ross Equipment Co. - Randal Wells	1407
Roth. Edith	902
Roth. Mrs. Samuel I.	1423
Rowan, R.A. & Co. - Robert E. Wilson	577
Rowe's Electric - Phillip A. Williams	731
Rowe, Lisa M.	346
Rowe. R.M.	1001
Rowles, Mrs. Beverly	1675
Rouse, Michael W., O.D.	1075
Roush. Maggie	13
Rouverol. Teresa	1500
Royster. Karen L.	1779
Rubin, David M.	2258
Rubio, Fred M.. Jr.	1601
Rudobas, Ron	2356
Rudolph, Dale	692
Rueger, Brian A.	2642
Ruhland, Gary E.	2257
Rummelsburg, Jean	581
Runnels, <b>Andy</b>	8035
Ruschhaupt. Bud	2499
Ruseo. Gordon B.	2025
Russell, Julia	2665
Russell, Mary	51
Russell, William T.	2518
Ruszak, John	439

NAME	ID#
Rutledge, Rod	1467
Rutschmann, Dr. Jacques	1413
Ryan, Catherine	70
Ryan, Patricia	624
Ryan, Tim & Barbara	2600
Sadler, Judy	1114
SAF S. San Joaquin Chapter - Robert Iwamoto, Chairman	2009
Sagebiel, John C.	176
Sager, Lee	811
Salazar, Inez	1651
Salem Equipment - Phil Judson	1398
Salfen, D.	1949
Salkow, Steven	1217
Sallarez, Joane	1225
Salvage Logging, Inc. - James W. Lundy	2496
Sambor, Helen	937
Samples, James	1974
San Gabriel Valley Fly Fishers - Bill Gerlach	1320
Sanborn, Alan	931
Sanchez, Francisco B.	2318
Sandberg, Craig	528
Santoyo, Manuel	1615
Saroyan, Robert	1256
Satterlee, Scott	1509
Sattler, Alfred	1387
Sawtelle Machine Shop - Terry Kwast	682
Sawyer, Silvia	2198
Save-The-Redwoods League	8076
Scenic Shoreline Preservation Conf. - Fred Eissler	2712
Schaefer, William P.	2841
Schafer Pumps & Motors - L. Ostrom	1445
Schalscha, Kate	889
Scheer, LeRoy	1110
Scheiber, Dana	2226
Scheurich, Nancy Wahl	529
Schiller, Ron	2855
Schlaich, Kasper Jr.	2632
Schlichting, Bob, Mr. and Mrs.	1125
Schmaeo, Cathy	114
Schmer, D.	112
Schmidt, Jay W.	2113
Schmidt, Rudi	2549
Schnaar, Betty L.	1131
Schneider, David L. Dr.	1283
Schneider, Mary F.	1586
Schonest, Gary D.	2736
Schouest, Gary	2501
Schrier, Ted	1501
Schroeder, Kenneth	2295
Schwartz, B.	8052
Schwartz, Mary R.	2259
Schwartz, Wayne S. Dr.	341

<u>NAME</u>	<u>ID#</u>
Schwayer. <b>J.S.</b>	1976
Schullery, E.D.	1183
Schultz. Alan E. Dr.	173
Schultz, Pat	1488
Schumacher. Eric	1011
Schumake, Carol	63
Schy, Leanne	1416
Scott, <b>Fred J.</b>	135
Scott, Joyce M.	842
Scott, <b>Walter R.</b> Inc.	557
Scow, <b>Jan C.</b>	2237
Seaman, Tammy	2075
Searls, R.T. Mr. & Mrs.	957
Seducca. Emanuel	784
Seeley, David	1207
Segal Ronald S.	832
Seitz, Robert M.	118
Self, Tomny Gene Ms.	1872
Selya, Manuel	17
Sequoia Forest Ind. - <b>James Anthony</b> , Executive VP	2359
Sequoia Forest Industries - Gene Brannan	1086
Sequoia Saw & Supply Co. - <b>Gary Schurb</b>	681
Sequoia Wood Products - Michael D. Kenney	8025
Serles, Edgar M.	1876
Serna, Amadeo	1631
Seward, Clifton	2610
Sewart, C.M.	142
Sexton. John	1438
Shafer, Ted D.	1599
Shaffer, Richard A.	758
Shannon Ranch - Jack R. Shannon	2746
Shannon, Gary W. MD	297
Shapiro, Howard H.	400
Shapley, Christopher	1430
Shapley. Lloyd	1112
Shapley. Peter	1526
Sharp, Robin	2310
Sharpe, Bonnie	31
Shaw, Roy	2294
Shave, B.	1849
Sheidenberger, C.	1159
Shekell, Margaret D.	468
Sheldon Oil Company - Jeffery B. Hopkins	8070
Sheldon, Larry	a93
Shelton, David	702
Shelton, Ray	2172
Shenanski. David E.	2731
Shepard, <b>James S.</b>	825
Shepardson & Blythe	1297
Shepherd, Samuel	2265
Sherman, D.	1223
Sherrill, Dan	1515

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Shiers, Ronald E.	1617
Shinaver, Kathleen	1039
Shoman, Judy	1417
Shorb, Keith	1609
Showalter, Holly	1129
Shrum, Leroy	2174
Shumaker, Ken	1079
Sides, J.M.	480
Siebert, Robert	1694
Sierra Club, Kern-Kaweah Chapter - Gordon L. Nipp	366
Sierra Club, Kern-Kaweah Chapter - Bill Neill	1096
Sierra Club, S. CA Water Res. - Larry Lacombe, Chairman	2277
Sierra Club, San Francisco Bay Chapter	1099
Sierra Club, Tehipite Chapter	2634
Sierra Ctr for Preservation of Biotic Diversity - Eric Beckwitt	1739
Sierra Pacific Fly Fishers - John E. Schubert	1333
Sierra Forest Products - Glen Duysen	2541
Sierra Pacific Industries - Ron Voss, Timber Manager	2077
Sierra Power Corporation - John Hamacher	2509
Sierra, Filbert	1603
Siesel, Steve	2243
Sifuentes, Jesus	1905
Sigford Logging - C.R. Sigford	221
Sigg, Jacob	1111
Signer, Roy	2743
Signer, Sara	2735
Siller Bros., Inc.	8072
Silva, Geralyn da	2242
Silva, Harold	1862
Silva, Ray	1910
Silver, Fran	12
Silverfarb, Janet	1946
Simi, Grovanm R.	497
Simington, Darlene	3
Simmons, Larry	958
Simmons, Mark	1528
Simmons, Steve	2081
Simms, Daniel L.	978
Simms, M.	746
Simms, Willis E.	1034
Simon Bros, Inc. - George Simon, Sr.	2261
Simon, Clifford	2184
Simons, John & Sue	571
Simons, Mark	541
Simpson, Larry	2061
Sims, James	2067
Singer, Ernestine	919
Sisco & Sisco Wire Rope & Rigging, Inc. - WP. Strickland	506
Siv, Suzanne E.	2626
Sjostrom, Kenneth	1893
Skasol, Inc. - Don L. Marchman	2515
Skews, Geoff	2037



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Skinner, Judy	1662
Skinner, Mark	1008
Skresuig, Harlan A.	1838
Slayton, Henry	2086
Slechta, Richard	502
Slee, Kelly	8012
Slemmon, Edith L.	699
Sloat, Michael	2557
Slomanson. David	1780
Slone, Thomas H.	212
Slye, Richard	1961
Smith Auto Parts - Ronald Cochran, President	1051
Smith, C.	1262
Smith, Chuck	2307
Smith, Eric	1450
Smith, Jean A.	549
Smith, Larry D.	1753
Smith, Margaret	735
Smith, Mary	1565
Smith, Milo G.	2133
Smith, Rachel K.	134
Smith, Randy	1604
Smith, Richard E.	1568
Smith, Stephen	2709
Smith, Susan & Michael Mauldin	342
Smith, Susan M.	332
Smith, Susan MSW, LCSW	767
Smith, Theresa K.	2652
Snapp, Gusta & Kenneth	1341
Snider, Dennis, Jr.	1648
Snider, Gordon	948
Snyder, Bill	1699
Snyder, John	1971
So. CA Edison Co. - R.J. Juliff	2601
So. Fork Timber Industries - David Suhr	277
So. Fork Union Elementary School - Gary Bray, Superintendent	1748
So. Sierra Mining Council - William F. Inskeep	653
Sobel, Claudia	2267
Solan, M.	728
Solis, Benjamin	2064
Somera, Albert	2083
Somera, Allen	2361
Sonsalla. Jayne M.	2042
Sora, Mark	2210
Sorenson, James F.	1078
Sossamon, Larry	2146
Sowinski, Broofie A.	108
Spaite, Judith A.	2234
Spang, Richard N.	1304
Sparks, Mabel	1729
Speakman, Kathy	461
Spear & Jackson, Inc. - I. Gene Burman	496

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Specialized Hard Chrome - Gordon Crabtree. President	8062
Spencer, Lonnie	2371
Spiegel, Joel	2245
Spinks, Doug	373
Spohn, Michael	1764
Spooner, Nathan	2703
Sportsmens Co. of Central CA - Homer Harrison, Chairman	2008
Sportsmens Council, Cen CA - Henry Doddridge, President	1775
Spring Water Co. - Billy Cunningham, Owner	1409
Spring, Bruce M.D.	526
St. Germain, Arthur G.	1531
St. John, Mel	2585
Stafford, Kate K.	1737
Stafford, Larry	1822
Standage, Richard W.	2593
Standish, Doris	519
Stanislaus Co. League of Conservation Voters - Brian Ferrell	178
Stanley, Charles A.	687
Starbuck, Ed Forrell	1418
Stathos, Donald L.	231
Stayton, K.L.	2435
Stedman, Preston S.	8080
Steel Supply, Inc. - Paul Southard, President	1269
Stein, Michael	1704
Steinberg, Robert & Maria	739
Steinbergs, Dr. & Mrs. Dan	1411
Steinke, Doug	1178
Steinward, Margaret	1923
Stekel, Peter	718
Stella, Ed	1709
Steller, David D.	562
Stephen, J.M.	57
Stephens, Karen	435
Stephens, Stanley J.	1878
Stephenson, Thomas	1745
Stewart, Joan G.	8015
Stevenson, D.	1491
Stiber, Michael	607
Stillwell, George & Jeanie	314
Stilson, April	749
Stinson, Elizabeth	618
Stirling, Warren M. DDS	2567
Stivers, Donald C.	1706
Stock, Bert	922
Stockinger, Charles	52
Stockton, Laura	2738
Stocltng, Mark	569
Stohl, Kay	2158
Stoker, Carol	2255
Stone, Alice	8066
Stone, E.B. & Son, Inc. - Bradford G. Crandall	8074
Stone, Jeff	1644

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Stoner, Timothy R.	2608
Strachan, Don	2635
Strauss & Roberts	200
Strikny, Jerry A.	2153
Stringari, Tim & Kay	1175
Strong, Lynnda	417
Stroup, Richard	754
Stuart, Charles Mr. & Mrs.	992
Stubblefield, MS. MD	667
Stuhr-Wood, Janet	2444
Stump, Theresa	2443
Styles, Robert	2561
Swanberg, Lee	1170
Swanbon, Jim	310
Swanda, W.H.	98
Swanson, John R.	305
Swearingen, Bill	1602
Swearinger, Jerry D.	1427
Sweeney, David	1524
Sweger, Alan	1472
Sugihara, Tommy Y.	1460
Swiriduk, Lynn C.	385
Suits, Elizabeth	1992
Suk, Tom	2821
Sukumar, N. Dr.	2418
Sullivan, Tim	1504
Summerville, Muriel	1713
Sunset Sanitation Service - Karen A. Lambert	126
Superior Filter Service - John A. Kangles	1325
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**Section 7**

**RESOLUTION OF LETTERS  
FROM ELECTED OFFICIALS  
AND PUBLIC AGENCIES**

*B L A N K*

*P A G E*

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CHARLES PASHAYAN, JR.  
17TH DISTRICT CALIFORNIA

129 CANNON BUILDING  
WASHINGTON, D.C. 20513  
(202) 225-3341



5057  
COMMITTEE ON  
INTERIOR AND INSULAR  
AFFAIRS  
  
COMMITTEE ON  
POST OFFICE AND CIVIL  
SERVICE

CONGRESS OF THE UNITED STATES  
HOUSE OF REPRESENTATIVES

April 29, 1986

Mr. Jim Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, California 93257

Dear Mr. Crates:

I appreciate this opportunity to share with you my observations on the Sequoia National Forest Draft Land and Resource Management Plan.

I share in the concerns that have been expressed in both the draft plan and the draft environmental impact statement, and generally concur with the resource elements that are discussed and the management direction that is proposed as the preferred alternative (PRF).

I do feel that the PRF, as well as other alternatives, meets the requirement of Section 3(d)(1) of the Forest and Rangeland Renewable Resources Planning Act of 1914, which states in part that "It is the policy of the Congress that all forested lands in the National Forest System be maintained in appropriate forest cover with species of trees, degree of stocking, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans." as well as other provisions of that Act and the National Forest Management Act of 1976.

I have noted that for the past 25 years the Forest has provided an average 90.87 million board-feet of timber and one decade--from 1969 to 1979--the Forest provided an average of 120.8 million board-feet. This range of offering must be returned, in my view, to meet the requirement of Section 14(e)(1)(C), which states in part that in the sale of trees from the National Forest System the Secretary [of Agriculture] shall "...consider the economic stability of communities whose economies are dependent on such national forest materials...."

1

The ability of the sequoia National Forest to maintain a positive net cash flow from timber--as it has throughout the 1980s--should be recognized and retained with sufficient flexibility to address short-term obstacles.

2

I also noted that in the fish and wildlife habitat and rangeland management section that an effort will be made to treat 13,000 acres of chaparral to benefit wildlife. While identification of the chaparral conversion is a step forward in winter range management for deer and other wildlife species, it has been suggested to me that the plan also identify some summer range habitat improvement.

PLEASE REPLY TO

- WASHINGTON OFFICE
- HOME OFFICE FRESNO COUNTY  
1702 EAST BULLARD AVE SUITE 103  
FRESNO CALIFORNIA 93710  
(408) 487 8300
- HOME OFFICE KINGS COUNTY  
804 NORTH IRWIN  
HANFORD CALIFORNIA 93230  
(408) 822 2898
- HOME OFFICE TULARE COUNTY  
231 WEST CENTER STREET  
VISALIA CALIFORNIA 93281  
(408) 627 2700
- HOME OFFICE KERN COUNTY  
331 HIGH STREET  
DELANO CALIFORNIA 93218  
(408) 728 7371

Mr. Jim Crates  
PAGE 2  
April 29, 1986

3 During a recent meeting with Forest **Service** personnel in Washington it was pointed out to me that a December 1985 Forest **Service** Instruction requires an inventory of off-highway vehicle (OHV) ways. According to that policy the inventory **is** to include O W ways for **4x45**, and two and three-wheeled vehicles. I trust that such an inventory **is** included in the final report.

I concur with the comments you have made relative to wilderness and wild and scenic **river** designations. The recommendation relative to the North **Fork Kern River**, with the addition of that portion of the river from the Johnsondale Bridge to the Kern-Tulare County line, is included in H.R. **4350**, a bill passed earlier **this** month by the House of Representatives. The draft recommendation regarding the South **Fork Kern River** also is incorporated into H.R. 4350 as passed by the House. This legislation now is pending in the U.S. Senate where passage by that body and concurrence by the President will add both to the wild and scenic river system.

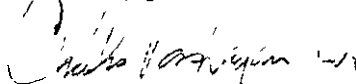
4 As for the Kings **River**. I support your decision to segment the main stem and I agree with your recommendation to defer any decision until such time as the study of the Rodger's Crossing Dam Project is completed. In the interim, the **area** will be managed for its highest potential.

5 The decision to develop the potential of the Peppermint ski site and expansion of the Shirley Meadows facility and to defer decisions on the potential sites at Sherman Peak and Mitchell-Maddox **is** prudent and has been endorsed by ski enthusiasts and others.

6 One of the biggest challenges you and the Staff of the Sequoia National Forest face in bringing a Forest Management Plan to fruition is the uncertainty of decisions not subject to the planning process itself. Budgetary constraints can and do affect any of a multitude of missions, **as** do the restraints of legal actions in the courts. In order to meet the mission charged to you by the Congress the plans must of necessity be lenient on the one hand **so** that these financial and legal obligations do not thwart the purposes for which the Forest was established.

Sincerely yours. /

cc: Mr. Zane Smith





Congressman Charles Pashayan, Jr.

Resolution:

1. We believe that the Final Plan is the result of a thorough analysis of alternatives that included environmental as well as social and economic factors. Your concern for the economic stability of communities whose economics are dependent on national forest materials is equally shared by the Forest administrators. The planned harvest level is 101.6 MMF (97 MMF Green Timber and 4.6 MMF Salvage). This approximates historical levels. We anticipate no economic changes to the local timber industry and related businesses.
2. Regarding your wildlife concerns, summer range habitat improvement is coordinated through the cooperative deer herd management plans developed by the California Department of Fish and Game. Also, many of the completed chaparral treatment projects or those proposed are located in areas utilized by deer during the summer and winter. The Rincon, Lloyd Meadow and Bull Run Basin burns are located in the 4,000 to 5,000 foot elevational ranges which encompass portions of both winter and summer deer ranges.
3. The Plan includes overall direction for the management of OHV's, identifying that they will be restricted to designated roads and trails. However, it does not contain the inventory referenced. The Plan directs that the Forest undertake study of and develop a trail management plan. This effort will identify, in detail, the trail system for hikers, equestrians, and OHV's on the Forest. As such, it will deal with wheeled vehicles. This will include use of parts of the Forest road system to link trails together and/or provide riding opportunities.
4. Enactment of HR-799 in November 1987 resolved the matter of Wild and Scenic River status for the controversial Segment 1 of the Kings River. As a principal involved in this matter, you clearly understand the issues and the details of the resolution do not warrant repetition here.
5. Study of potential ski sites at Sherman Pass and/or Mitchell-Maddox is included as a part of the Preferred Alternative. It is difficult to say when this might occur, but our best projection is during the second decade. Unmet demand will be a key factor in triggering any study. With Peppermint and other major proposals in the southern Sierra Nevada (outside of the Sequoia NF) demand may not exist in the time envisioned. In the meantime, we will manage these areas with consideration for possible development at some future time.

-

6. The complexity of the budget issue has been a matter of concern to many. Hopefully, we have helped foster a better understanding of the matter by including a special Appendix on the subject (see FEIS, Appendix L).

SALA BURTON  
5TH DISTRICT CALIFORNIA

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COMMITTEE ON RULES  
SELECT COMMITTEE ON HUNGER  
DELEGATE  
NORTH ATLANTIC ASSEMBLY

Congress of the United States  
House of Representatives  
Washington, DC 20515

May 2, 1986

Mr. James A. Crates  
Forest Supervisor  
Sequoia National Forest  
400 W. Grand Avenue  
Porterville, California 93257

Dear Mr. Crates:

I am writing to express my concerns about the direction of management of the Sequoia National Forest as expressed in the Proposed Forest Plan.

1 My constituents use the Sequoia National Forest, as they do the other forest areas of California, and I have grave fears that current management directions will result in the destruction of what we have all come to expect from our forests.

2 The attraction of recreation is drawing more people to our national forest lands. Most of the proposed Forest Plan seems aimed at the extraction of resources from forest lands at the expense of the many attractions for the recreationist who looks at National Forest lands as belonging to and benefiting all of us in providing a unique and valuable range of outdoor activities. You must, therefore, recognize that increased demand and re-balance the multiple-use theory of management, even planning for future protection of the resources from destruction by the recreationists themselves. Any management plan must take into consideration this increased demand and attempt to balance multiple use with proper management for the future.

3 Another concern relates to continued intensive management of our timber resources -- a practice for which there appears to be insufficient supporting evidence and which will apparently continue to produce less than an optimal income to the forest. In fact, I understand that over 50% of timber sales are actually uneconomical when all costs are factored in. The effect of inappropriate timber management results in degrading other values of the forest which are becoming increasingly important to the inhabitants of the earth.

THIS STATIONERY PRINTED ON PAPER MADE WITH RECYCLED FIBERS

I am a cosponsor of legislation in Congress to protect the Kings River, which is among the most magnificent of the Sierra rivers and preservation of which could rank among the most significant accomplishment of the Sequoia National Forest. Acquiescence to developers of the Rodgers Crossing project would severely limit the sustainability of the forest to attract recreationists, protect fisheries and other wildlife habitat and truly maintain the interests of the public.

4 I am very pleased, however, with the progress of the North and South Forks of the Kern River through the Wild and Scenic Rivers designation process in Congress. Inclusion of those river segments will represent a particularly valuable addition to the protected rivers accessible to southern Californians.

5 My continuing commitment to wilderness issues leads me to comment on the deletion of so many precious areas from protective status. Congress did not intend for "released" lands to be rendered ineligible for wilderness status by the building of roads. These areas, exemplified by Kings Canyon and Slate Mountain should remain preserved by administrative action and not opened for timber harvest or off-road vehicle use, or any other use that degrades their natural values. Future generations must have the option of deciding the fate of current roadless areas and unless they are preserved now, that option will not be available for those who follow us.

6 There are a number of other substantive issues which have been raised by my constituents, most of which are addressed in the "Conservation Alternative". It is my hope that you will give serious consideration to these concerns and that adjustments in the management plan will be considered to more fairly reflect the interests of the public at large.

Sincerely,

SALA BURTON  
Member of Congress

SB:jl/s

Congresswoman Sala Burton

Resolution:

1. **The** concepts and requirements of the many laws enacted by the Congress, especially since 1960, have been full incorporated into the analysis and decision-making processes of this Plan. **We** believe the Final Plan is the result of a thorough analysis of alternatives that included environmental as well as social and economic factors. **We** have utilized the ideas and knowledge of many individuals from both within governmental agencies and throughout the private sector.

**The** Multiple-Use Sustained-yield Act of 1960 requires that we "develop and administer the renewable surface resources of the national forest for multiple-use and sustained yield of the several products and services obtained therefrom." Yet, other Acts (e.g., Wilderness Act, National Environmental Policy Act, National Forest Management Act, and the Forest and Rangeland Renewable Resources Planning Act contain specific requirements to look at all values and to develop a balanced program that will benefit the American people. This includes the wise use of resources, as well as provisions for recreation and/or preservation. **The** Preferred Alternative (RCM) will provide a balanced program over the long term.

2. The Plan fully recognizes the increased recreation demand and has dealt with **it** in many ways. A few are reiterated here. All are discussed in the Plan. Twenty-four percent (about 264,000 acres) are set aside for wilderness, 20 percent of the area to be harvested will be accomplished by uneven-aged silvicultural methods, five new botanical areas will be established, while four other areas will undergo action leading to their establishment as Research Natural Areas. In addition, recently enacted legislation established 118 miles of Wild and Scenic River on the Sequoia and Inyo NF's, and in Sequoia and Kings Canyon National Parks. These rivers were all being studied by the Forest Service for possible inclusion within the Wild and Scenic River System.

Increased recreation demands often result in user conflicts and/or the need for resource protection. **The** Plan assures management to protect resources. In addition, there are major changes in use. For example, OHV use will be limited to designated roads and trails. Wilderness management plans will be developed for new wildernesses with a recognition that a permit system may someday be necessary when these fragile environments become overcrowded to the point where resource protection is needed. A comprehensive trail plan will be developed after examining the needs of all **users**. Ski area development will be studied, thus considering a use of only minor importance heretofore.

3. The Record of Decision explains the below-cost timber sale question. Please refer to that part of the document.
4. Enactment of legislation in November 1987 resolved the issues associated with Wild and Scenic Rivers on the Sequoia NF. This included establishment of the Kings River Special Management Area which addressed the matter of **dam** construction on the Kings River, and the

designation of both the North and South Fork Kern Rivers as components of the national system.

5. Relative to your wilderness concerns, the Sequoia portion of the Kings River RARE II Area was being analyzed within the Sierra National Forest's Land and Resource Management Plan. Their proposed plan recommended a non-wilderness designation. However, Kings River Wild and Scenic River Legislation (HR-799, November 1987) designated this area as a Special Management Area, thus resolving this issue.

Concerning Slate Mountain and the other RARE II Roadless Areas that were released to multiple-use, the Forest has no intentions of building roads merely to reduce their wilderness potential. Roads are built as a service to other resources. They provide the access needed for land management activities. As is shown in Appendix C of the FEIS, it will be some years before access and timber harvest are undertaken in many areas.

6. The "Conservation Alternative" has been studied in considerable detail. Specific Forest Service resolutions to the various parts of this compendium of management proposals have been incorporated into Chapter 2 and Appendix N of the Final Environmental Impact Statement.

\* Please note that the Special Management Area contained in the Kings Wild and Scenic River Legislation contains the Kings River Further Planning Area.

TO: [unclear]  
FROM: [unclear]  
DATE: 3/3/86  
BY: [unclear]

# California State Senate



ROSE ANN VUICH  
STATE SENATOR  
FIFTEENTH SENATORIAL DISTRICT  
FRESNO AND TULARE COUNTIES

March 7, 1986

1402  
COMMITTEES  
BANKING AND  
COMMERCE  
AGRICULTURE AND WATER  
TRANSPORTATION  
LOCAL GOVERNMENT  
NATIONAL AFFAIRS  
VICE PRESIDENTS  
FAIRS AND ALLOCATIONS  
THE ARTS  
TOXIC AND HAZARDOUS  
WASTE  
PUBLIC UTILITIES  
LEGAL MATTERS  
GENERAL

Mr. James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 W. Grand Avenue  
Porterville, Calif. 93257

Dear Mr. Crates:

I am writing in reference to the proposed Sequoia National Forest Land and Resource Management Plan.

My staff has been studying the EIR, and the Draft Forest Plan for the Sequoia Forest, and we are of the opinion that the preferred alternative best fits the multi-use concept, and the perpetuation of the natural resources of the forest.

We feel that although it would be possible to harvest a greater yield of timber under some of the other alternatives, there are many unknowns that can happen if the optimum is used.

While the three nulls that utilize the Sequoia, have the capability of more footage, they can draw from other forests, and will not be subject to a shortage. This plan also calls for recreational development, and wilderness allotment. It is felt that it is a balanced plan. We must continue to remember that the present management is only a temporary custodian for the future, and we should leave our natural resources in as good a shape or better than when we found them.

Thank you for the opportunity to comment.

Sincerely,

*Rose Ann Vuich*  
ROSE ANN VUICH

RAV:et

State Senator Rose **Am** Vuich

Resolution :

1. **W**e believe that the Final Forest Plan is the result of a thorough analysis of alternatives that included environmental as well as social and economic factors. This Plan has incorporated the ideas and knowledge of many individuals from both within governmental agencies and throughout the private sector. **I**t is, in **our** opinion, a balanced Plan.





COMMITTEES  
 Agriculture & Long Term Care  
 Agriculture  
 Labor & Employment  
 Public Investments  
 Science & Bonded  
 Industry  
 Judiciary  
 Health  
 Office Reform  
 Government and  
 Administration

# Assembly California Legislature

**BILL JONES**  
 ASSEMBLYMAN, THIRTY SECOND DISTRICT  
 CHAIRMAN  
 ASSEMBLY RURAL COUNCIL  
 VICE CHAIRMAN  
 ASSEMBLY LABOR & EMPLOYMENT COMMITTEE

2680  
 SACRAMENTO ADDRESS  
 State Capitol  
 Sacramento, CA 95814  
 TELEPHONE (916) 445-2911  
 DISTRICT OFFICE  
 1441 So. Mooney Blvd.  
 Suite D  
 Visalia, CA 93277  
 TELEPHONE (209) 734-1162  
 DISTRICT OFFICE  
 1285 W. Shaw, Suite 104  
 Fresno, CA 93711  
 TELEPHONE (209) 224-7873  
 FROM Porterville, Dinuba, Exeter,  
 Three Rivers and Springville  
 ENTERPRISE 15463

April 25, 1986

Mr James A. Crates, Forest Supervisor  
 Sequoia National Forest  
 900 West Grand Avenue  
 Porterville, California 93257

SUBJECT. Sequoia National Forest Land and Resource Management Plan

Dear Mr Crates:

We have been reviewing the Draft Forest Plan and EIR for Sequoia Forest, and are of the opinion that the preferred plan, with some minor revisions, best addresses the issues of economic return, recreational uses and environmental protection for the Forest. You and your colleagues are to be commended for the thorough way in which you addressed the complex issues in the two documents, and the exhaustive efforts at Obtaining public input throughout the process.

1 The principal revision of the preferred plan we would recommend is in the area of fisheries. We note there is no direct habitat improvement Work done for fisheries and would ask you review the reasons why this is so and urge this work be done Where possible

Thank you for the opportunity to Comment on this most important effort

Sincerely,

BILL SONES  
 BJ bw  
 cc Mr Kent Duysen  
 Mr John Corkins  
 Mr Dick Keefe

Assemblyman Bill Jones

Resolution:

1. We share your concerns relative to the fisheries management discussion in the Draft EIS and Plan. The Final Plan and EIS have been modified to include fish habitat improvement work. Please refer to Chapter 3 of the Plan under Fisheries.



# Assembly California Legislature

PLEASE RESPOND TO  
LEGISLATIVE ADDRESS  
STATE CAPITOL  
SACRAMENTO, CA 95814  
TELEPHONE 916/445-6000

LEGISLATIVE OFFICES  
1000 STREET  
SACRAMENTO, CA 95833  
TELEPHONE 916/445-2927  
1000 M STREET  
SACRAMENTO, CA 95824  
TELEPHONE 916/445-2604

DON ROGERS  
ASSEMBLYMAN THIRTY THIRD DISTRICT

COMMITTEES 1985-86  
Vice Chairman  
Natural Resources  
Local Government  
Public Safety  
Member Rural Caucus

March 26, 1986

Mr. James A. Crates, Forest Supervisor  
Sequoia National Forest  
900 W. Grand Avenue  
Porterville, CA 93257

Dear Mr. Crates:

As a State Assemblyman, I represent parts of Tulare and Kern Counties. I also operate a small company in the Bakersfield area. I am writing to **you** regarding the proposed management alternatives for the Sequoia National Forest.

In my opinion, current use of Forest Service lands serve the many and varied demands of people in our state. The utilization of the renewable timber resource has many benefits for Tulare and Kern Counties. The timber industry utilizes the same suppliers and Services as many of the oil companies in my district and now more than ever, they play a part in the economic well being of the community.

As you know, oil production and its associated employment have already been reduced because of lower world oil prices. The direct payments to the counties of my district from National Forest receipts represent dollars of increasing significance in view of this uncertain oil future.

In 1985, Tulare County received over \$611,000 and Kern County over **\$250,000**. If Federal budget cuts are on the way, increased receipts from the National Forest could provide the counties a measure of relief.

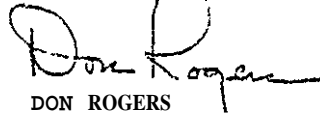
1 The people of Tulare and Kern County will benefit from timber harvest levels at or above the level shown in your preferred alternative and I urge that you adopt a management plan to do **so**.

Mr. James A. Crates  
March 26, 1986  
Page 2

1 Thank you for giving me an opportunity to voice my support for a continuation of the harvest of this renewable resource at present or slightly increased levels.

Also I appreciate the cooperation and service that your organization provides for many of my constituents.

Yours truly,



DON ROGERS

DR/sc

Assemblyman Don Rogers

Resolution:

1. The economic well-being of those communities who are dependent on national forest materials is a concern shared by Forest administrators. As shown in the Record of Decision, local economic effects were one of several factors considered in determining the Forest's allowable **sale** quantity (ASQ). The average annual volume harvested for the last 27 years (1960-1986) was 92 MMBF. This ranged from 57 MMBF in 1982 to 125 MMBF in 1977. The projected harvest level is 101.6 MMBF (ASQ is 97 MMBF and 4.6 MMBF Salvage), well within the historical levels sold by the Forest. We believe this volume of harvest will allow the continued balance of multiple uses that have existed while maintaining a viable forest industry in the local counties.

- State Capitol
- Sacramento CA 95814
- 917-443-269
- District Offices
- 4435 St. Jadaik Highway
- Suite 112
- Livermore CA 94550
- 925-452-673
- 100 W. Lancaster Blvd. No. 1
- Livermore CA 94551
- 925-452-344
- 26 N. China Lake Blvd.
- Suite 101
- Porterville CA 93255
- 805-325-816

# Assembly California Legislature

- THURMAN
- Assembly Committee on
- Government Administration
- COMMITTEES
- Transportation
- Industry
- Labor and Employment
- Water Parks and Wildlife
- MEMBER
- Legislative Commission
- on Legislative Budget
- Control

**PHILLIP D WYMAN**  
ASSEMBLYMAN THIRTY FOURTH DISTRICT

April 4, 1986

Mr James A Crates  
Forest Supervisor  
SEQUOIA NATIONAL FOREST  
900 W Grand Avenue  
Porterville, CA 93257

Dear Mr Crates,

This letter is in response to your request for public comment concerning the proposed management plan for the Sequoia National Forest

1 First, I wish to express my support for the reasonable request of the Timber Industry concerning the annual amount of timber to be harvested. Second, I believe that it is essential that social and economic considerations be given as much weight in forest plan decisions as are environmental concerns. Lastly, because California is the second largest lumber and timber producer in the nation, and provides over 100,000 jobs to Californians it is imperative that the industry be allowed to flourish for the economic well-being of the state.

Thank you for your thoughtful consideration on this very important subject

Sincerely,  
  
Phillip D Wyman

PDW rkh

Assemblyman Phillip D. Wyman

Resolution:

1. We believe the reasonable requests of the Timber Industry have been met in the Preferred Alternative, which includes an annual harvest level of 101.6 MMBF (97 MMBF Green Timber and 4.6 MMBF Salvage). The average annual volume harvested for the past 27 years was 92 MMBF with a range from 57 MMBF during 1982 to 125 MMBF in 1977.

Concerning social and economic considerations, the Record of Decision shows that local economic effects were one of several factors considered in determining the allowable sale quantity. Since the proposed level of harvest will approximate historical levels, we anticipate no economic changes, to the local timber industry and related businesses.

1444

FIRST SUPERVISORIAL DISTRICT  
COUNTY OF KERN

ROY ASHBURN  
SUPERVISOR

March 27, 1986

121 Main Street  
Delano, CA 93215  
1-800-221-3625  
HON. CHINA L. BO...  
...  
...  
...  
Toll Free 1 800 221 3625

Mr. Jim Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

Dear Jim:

I have had numerous meetings and received many comments from residents of my Supervisorial District regarding the Draft Management Plan for the Sequoia Forest. I'd like to pass along to you my thoughts regarding this issue.


1 During my many years of dealing with Forest Service issues, I have certainly dealt with many that are controversial. However, the public reaction to this Draft Plan is stronger and more vocal than any I can remember. Almost universally, the comments express deep concern that the interests of all parties involved were not taken into consideration. From the initial presentation of the Plan, the communities affected have felt as if their comments were not being adequately addressed, nor were their concerns really being taken into account. In fact, many feel that they have not really had the opportunity to have their questions answered at all.

2 Of course, the presentation of a 50 year management plan will be greeted with a wide divergence of opinion, but my goal is to ensure that those opinions are not discounted, but rather used to help re-define and focus the future of our forest.

3 I appreciate the extension of the public comment period on the Plan, and the additional hearings which have been scheduled. Both timber industry representatives and recreationists have expressed to me their concerns over limits on harvesting and on the practice of clear cutting, and I hope that, in review of the Draft Plan, these issues will be carefully considered

I hope that these comments are helpful to you. I would be glad to discuss any of these issues further with you.

Best regards,

  
Roy Ashburn  
supervisor  
First District

RA/scb



Resolution:

1. Throughout the land management planning process, the Forest has been committed to providing broad opportunities for public involvement. Initial scoping in 1979-1980 included meetings in several locations with the public, government agencies, and employees. Public comments were analyzed, resulting in 14 issues now identified in Chapter 2 of the Final Plan.

At several points during the preparation of the Draft, informational news letters were sent to all those who had expressed an interest in the Forest Plan.

2. After the Draft Environmental Impact Statement and Draft Forest Plan were issued, public meetings were held in six cities. At each meeting the organization of the documents was explained and a question/answer period followed. Public hearings were held in Visalia and Kernville to allow verbal comment. Announcement of these meetings and hearings received widespread media coverage. Each of these meetings, hearings, and various media contacts encouraged public comment. The Forest received about 3,000 responses to the Draft documents from a broad range of interests, including organized groups, individuals, and public agencies.

The Preferred (PRF) Alternative responds to public concerns surfaced since the Draft was published. A comparison of the difference between the Preferred Alternative (PRF) in the Draft and the Preferred Alternative in the Final will show the results of public input.

3. You asked specifically about "limitson harvesting and on the practice of clear cutting." The average annual volume harvested for the last 27 years (1960 - 1986) for the Sequoia National Forest was 92 MMF. The Plan recommends an annual Timber Harvest of 101.6 MMF (97 MMF Green Timber and 4.6 MMF Salvage) through the planning period--a volume that our analyses suggest can be sustained over time. Concerning clearcutting, we recognize this silvicultural regeneration system has been highly controversial. Current professional land management practices and public law enacted over the last 15-18 years have reduced much of this controversy. The Sequoia, in the Preferred Alternative, proposes to manage 20 percent of the suitable land by uneven-aged silvicultural methods. In addition, young growth and clumps of mature trees will be saved on tractor loggable ground whenever feasible for regeneration, wildlife, and visual purposes.



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
REGION NINE  
211 Main Street, Room 1100  
San Francisco, California 94105

288  
ARIZONA  
CALIFORNIA  
NEVADA  
HAWAII  
GUAM  
AMERICAN SAMOA

January 17, 1986  
IN REPLY REFER TO  
HPP-09

Mr. James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, California 93251

Dear Mr. Crates:

We have reviewed the draft environmental impact statement and proposed forest plan for the Sequoia National Forest Land and Resource Management Plan in Tulare, Kern, and Fresno Counties, California, and provide the following comment.

At the present time, there are no known projects within the California Department of Transportation's Federal-aid highway program that will impact or be impacted by the proposed management plan. If and when a future Federal-aid highway project affecting Sequoia National Forest is proposed, it will be coordinated with the U.S. Forest Service.

We appreciate this opportunity to review the subject draft EIS and forest Plan.

Sincerely yours.

*Willis Kisselburg, Jr.*  
Willis Kisselburg, Jr.  
Director, Office of Planning and  
Program Development

U.S. Department of Transportation

No Forest Service resolution required.



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFSC)  
EDWARDS AIR FORCE BASE CALIFORNIA 93523

REPLY TO  
ATTN OF

DE, Stop 210

20 MAR 1986

SUBJECT

Sequoia National Forest Land and Resource Management Plan  
(Draft Forest Plan) November 1985

TO

James A. Crates, Forest Supervisor  
sequoia National Forest  
900 West Grand Avenue  
Porterville, California 93257

1 Headquarters Air Force Flight Test Center at Edwards AFB appreciates the recent opportunity to review your Draft Environmental Impact Statement (DEIS) and Draft Forest Plan (DFP). We also wish to thank you and your staff for taking the time to discuss portions of this important plan with Department of Defense personnel. The following comments are offered.

- 1 a. Noise. A large portion of the Sequoia National Forest lies within the military R-2508 Restricted Area Complex (see Atch 1). The R-2508 Complex runs from just south of Edwards AFB north to Big Pine and from approximately 10 miles east of the Kern River Canyon to Death Valley. This complex is the site of extensive military aircraft testing and operational flights. In FY 85, an average of 373 aircraft flew in the Complex each duty day for a total annual sortie count approaching 88,000. These numbers are expected to increase significantly over the next few years. Speeds are subsonic except in the Panamint Valley and the southern part of the Complex; however, except in the Death Valley area, there are no restrictions to supersonic flight. Although a floor of 3,000 feet above the surface is voluntarily imposed in the national parks and monuments located within the area, flight altitudes go down to as low as 100 feet above the surface on specified low altitude routes. As a result, military overflights may occasionally be a source of annoyance to visitors seeking solitude and, while overflights may detract some from total solitude, they will not eliminate the overall opportunities for solitude in the designated wilderness areas.

- 2 h. Fire Fighting Operation. US Department of Agriculture Forest Service conducts air operations for detection and control of forest and wilderness fires. When these air operations are conducted in areas used by military aircraft, the potential for mid-air collision exists. Request USDA Forest Service advise air traffic control facilities at the earliest possible time when Forest Service aircraft are operating in areas specifically used by military aircraft. An example of potential conflict would be a fire in wilderness and forest areas within R-2508. If Forest Service aircraft are deployed to fly in the R-2508 Complex, Edwards AFB Approach Control and Edwards AFB Central Coordinating Facility need to be advised as soon as possible. In areas outside R-2508, the FAA air traffic control facility with

responsibility for the area needs to be notified of Forest Service aircraft flying within their airspace. Air traffic nonessential to combating the fire can then be cautioned about the area, thus reducing the potential for mid-air collisions.


3 c Visibility: We wish to draw your attention to the AFFTC's unique requirements for exceptional visibility. The California Air Resources Board Resolution 82-51 (see Atch 2), dated 22 September 1982, recognizes DoD's need for exceptional visibility. Reductions in visibility have a direct adverse effect on the flight test and evaluation mission of the Center. Particulate matter emitted in wood smoke from prescribed forest fires could have a direct impact on visibility reduction in our region. AFFTC staff attended the recent California Smoke Management Workshop in order to present our visibility concerns and become actively involved in the smoke management planning process. We were informed that approximately 70 percent of the particulate matter given off from prescribed fires lies in the 2.5 micron range and below. Particulate matter in this size range is very effective at reducing visibility due primarily to scattering and adsorption. In addition, these fine particulates have long residence time in the atmosphere. Thus a potential exists for short and long term impacts to visibility reduction if burns are conducted under unfavorable meteorological conditions for our downwind air basin. AFFTC staff met with Sequoia National Forest and Region 5 Air Quality staff at the smoke Workshop. We will continue working with your staff to improve compatible smoke management efforts. We will also be reviewing the draft smoke management policy document in the near future. Hopefully, we can cooperate on monitoring future upwind prescribed burning in order to better define the impacts to visibility reduction from such sources. With such data in hand, we can then work effectively towards formulating mitigations. Due to our unique situation, in which visibility requirements exceed the state standard of 10 miles over half the horizon, we suggest visibility and the impacts from prescribed burning be fully addressed in the final EIS as a separate component of air quality, as well as in future project specific burn environmental assessments.

In addition to visibility impacts in our air basin, we are concerned about weekday visibility impacts over the National Forest. Weekday military flying missions are conducted in portions of R-2508 airspace which could overlie National Forest areas where prescribed burns are conducted. Weekday burning and its smoke plumes could temporarily reduce visibility along our flying routes. This may present a safety hazard to both our operations and your aerial ignition and observation aircraft. Request your burning operations coordinate the times and locations of burns with Edwards AFB Central Coordinating Facility ((805)277-2508) when weekday burns will be conducted under R-2508. In this manner, our pilots will be aware of burning operations in your area.

2 It is the AFFTC's intention to continue to work together with Sequoia National Forest personnel on future plans. Hopefully, we can preserve our unique capability for conducting aircraft research and development, while maintaining a "good neighbor" relationship with other federal agencies. We

are willing to provide your forestry Staff with a comprehensive briefing on our activities that will allow us to maintain our mission capability while encouraging compatible use for the area

3. Point of contact at *the* AFFTC is Mr Javad Hada at (805) 277-4730

  
FRED ROCHEZ, Col. USAF  
FRED ROCHEZ, Co  
Director of Civil Engineering

- 2 Atch
- 1 History
- 2. CARB Res 82-51

Department of the Air Force

Resolution:

1. We recognize your concern about noise and the potential to be a source of annoyance and loss of solitude for Forest visitors. Current regulations relative to the allocation of air space over the Forest, however, seems appropriate for the planning period. Future decisions involving priorities between wilderness solitude and National Defense training missions more appropriately belong in the political/legislative arena for resolution. Recent enactment of PL-100-91 will result in the Forest Service undertaking an assessment to determine any adverse impacts to wilderness resources. No details on how this assessment will be done are available now.
2. The potential mid-air collisions between military and Forest Service aircraft is certainly a problem with potentially significant consequences. Procedures exist for notifying Edwards AFB approach control and the FAA when sustained firefighting air operations that involve several aircraft are operational. Procedures are needed, however, to notify the proper air-traffic controllers for other flights within the R-2508 complex. This is beyond the scope of this Plan and will be pursued for resolution.
3. Relative to visibility concerns, the Forest is aware of the Air Force requirement for exceptional visibility and will continue to work closely with Air Force staff. Sequoia National Forest and the Air Force share a common concern for continued air quality vigor in the Southern Sierra. We hope to develop some cooperative projects that will establish baseline pollutant concentrations and transport patterns in the Walker Pass area.

The effect of prescribed fire on air quality and specifically visibility along with proposed smoke arrangement strategies will be addressed in greater detail as future project level environmental assessments and burn plans are developed.

Air Force notification of prescribed burns conducted under R-2508 has been implemented into our current procedure and incorporated into the Standards and Guidelines of the Final Plan.

2708



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
OFFICE OF THE SECRETARY  
PACIFIC SOUTHWEST REGION  
BOX 36098 • 450 GOLDEN GATE AVENUE  
SAN FRANCISCO, CALIFORNIA 94102  
(415) 556-8200

APR 25 1986

ER 85/1699

James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257-2035

Dear Mr. Crates:

The Department of the Interior has reviewed the draft EIS and proposed management plan for the Sequoia National Forest and has the following comments. For ease of review, the specific comments are referenced in the appearance of the documents with a tab set for the plan of the EIS, followed by specific reference to the comments.

Plan Specific Comments

- Page 1-1, section A
  - 1- We suggest that, associated with the monitoring there should be some more definite provision for updating the Plan as legislative directives, Forest Service policy or local, regional, or national needs change. Updating should include opportunity for public and other agency review and comment. A 50-year plan with no opportunity for change may become a liability rather than an asset.
- Section 8
  - 2- If the intent is to increase public benefits as stated, and since there are provisions in the Plan for timber harvest, grazing, hunting, water production, etc., it seems these things should be part of the vision statement. The vision statement mostly includes recreation/aesthetic concerns.
- Page 1-2, Section E
  - 3- When can an appeal be taken?



- Pages 2-1  
thru 2-11
- 4- Neither the Forest Plan (pages 2-1 thru 2-11) nor the EIS (pages 1-3 to 1-10) identifies minerals exploration and development as an issue or concern associated with the management of the Sequoia National Forest, yet the Bureau of Land Management has frequently voiced their concerns regarding the development of mineral resources on the forest. Geothermal Leasing in Monache Meadows being the most recent example.
- 4- Minerals exploration and development including impacts of implementing renewable resource standards, guidelines and related decisions on mineral resources should be treated as an issue in the Sequoia NE planning process.
- Page 2-9
- 5- "No new energy production is anticipated in the next 10 years."; however, on 3-14 it is stated, "Preliminary proposals for additional generation capacity of 23 \_\_\_\_\_ have been made" and "Potential energy development will most likely be an expansion of existing or construction of new hydroelectric plants. Also this does not reflect the geothermal potential in Monache for, at least, exploration.
- Page 2-11
- 6- Tradeoffs between stream and wetland protection, and the production of goods and services. This could also eliminate or severely reduce mined exploration and development in the zone. This impact should be identified and discussed.
- Page 3-3  
1st paragraph
- 7- Is the in lieu of taxes payment of \$500,000 to \$1,000,000 a per year amount, or that much for the five-year period?
- Page 3-3
- 8- Lifestyle. The last line should be expanded to read, "by providing forage for livestock."
- Page 3-6
- 9- Social Groups in Foothill Communities. Valid mining claims impart real property rights on National Forest public land. To exclude the major property right holders from this "Social Group" section seems misleading, especially in light of the fact that historically, most of the foothill communities began as mining communities.
- Page 3-8
- 10- 6.a. Native American Populations.  
  
This section refers to Native American populations within the Forest but does not identify the Kawaiisu Indian group. Since the Kawaiisu traditionally occupied the southern portion of the Forest Plan area

and some descendants of the Kawaiisu still live in the region perhaps this group should be identified in the plan.

Page 3-8

6.a.2) Tubatulabal Indian Group.

- 11- The statement concerning commercial pinyon nut gathering suggests that the Forest is currently issuing commercial permits. It is our understanding that commercial pinyon nuts harvesting within the Forest has not occurred in the past nor at the present time. If this sentence relates to the 1982 contract on BLM in the Chimney Peak area, "complete with commercial gatherers" is probably not an accurate description of the situation. There have been only a few commercial permits issued by the BLM during the past 10 years and these were not within Rockhouse WSA. The permits were issued only after evaluating the crop to determine that there was not significant reduction in the availability of nuts for the general public (noncommercial use) and for wildlife.

Page 3-9

- 12- C Resource Elements, a. Air Quality. The oil and gas industry in the south end of the San Joaquin Valley may contribute significantly to air pollution on the Sequoia National Forest.

Page 3-10

2. Cultural Resources.

- 13- Paragraph 2. This paragraph refers to food processing sites and bedrock mortars as though they were different types of cultural features. To clarify the sentence, perhaps it should read as follows: "The most common archaeological site types include lithic quarries."
- 14- Paragraph 7. The paragraph refers to 36 CFR 60.6 as containing the criteria for evaluation of site significance. The reference number is incorrect. It should be 36 CFR 60.4.
- 15- Paragraph 7. The last sentence refers to ethic which is incorrect. The ethic should be deleted and replaced with ethnic.
- 16- 4. Earth Resources. There should be some mention of flood hazard and floodplain management--perhaps in this section. We were unable to locate any discussion of this issue elsewhere in the document.

page 3-12

- Page 3-19 17- b. Wildlife. Little Kern golden trout is a threatened species and should be listed under part 6.,6) along with California Condor, Peregrine Falcon and Bald Eagle.
- page 3-24 18- 11. Pest Management. No mention is made of bubonic plague, but it *must* exist in Forest campgrounds as it is found over the southern Sierra region.
- Page 3-26 19- Paragraph 6 "...five mines in operation." Do these mines possess valid existing rights? If so, it should be *specified* so the public is not confused with the segregative effective effects of wilderness designation.
- Page 3-27 20- The 3rd paragraph, 2nd sentence, last clause states "...the Forest is open to mineral development subject to the mitigation of impacts to *surface resources*." Yet the impacts of implementing this standard on mineral exploration and development are not addressed in the DEIS.
- 21- Assessment of the impacts on mineral exploration and development of the implementation of renewable resource standards, guidelines and decisions that tend to limit, restrict or inhibit development of the mineral resources would clarify. This assessment should be not only for the proposed action, but all alternatives.
- Page 3-28 22- 16. Office of Information and Interpretive Services. The San Francisco Bay area, also a significant population center, is within a four-hour drive of the north end of the Forest. Bay area visitors comprise a significant portion of the visitors to the National Parks and, we suspect, to Sequoia National Forest.
- Faga 3-31 23- Table 3.4. The last RQS Class is shown as RU and the previous definitions do not include an RU Class. Should this be R/U?
- Page 3-33 24- f. Winter Recreation opportunities and Page 4-5, I Economic Condition. We have significant concerns about the effects of the proposed Mitchell-Haddox ski area. That ski area, which according to the draft Plan will contribute most of the increase in economic growth, will undoubtedly have significant effects on Kings Canyon and some effect on Sequoia National Parks. Mitchell Peak is actually within Kings Canyon National Park. A major ski area next to the park designated wilderness, will certainly compromise the

- quality of the wilderness experience there and undoubtedly increase winter use significantly.
- 24- Increase in cross-country skiing, while compatible with wilderness, could easily reach a volume that would compromise solitude. Encroachment of snowmobiles (which are routinely associated with ski areas) on the wilderness is also a real and significant threat. Further, the sights and sounds of a major ski development from the park wilderness could be deleterious.
- 24- Another significant potential effect could be the dramatic increase in traffic through Grant Grove to access the ski area. There would also be potential pressure for improving (widening, straightening) or rerouting the road through the park to improve traffic flow. The ski area would also have a detrimental effect on the quiet winter beauty of Grant Grove by an increased number of skiers using the concession facilities. Although increased clientele would benefit the concessioner financially,
- 25- 2nd paragraph of the line - "Pacific Crest National Recreation Trail" should read **Pacific Crest Scenic Trail.**
- Pages 4-2, 4-3, 4-4 26- Forest Goals have elements which are potentially negatively impacting to mineral resource exploration and development, yet these potential impacts are not addressed in the EIS or identified in the EIS summary or Environmental Consequences section. Typical examples are found in Recreation items 9 and 10 on page 4-2, wildlife and Fish item 1 on page 4-3, and Water, Soil and Air item 3 on page 4-4.
- Page 4-7 Fisheries, Wildlife, and Sensitive Plants. Our primary concerns are relative to wildlife, as follows:
- 27- The proposal calls for habitat maintenance for only one pair of nesting condors. From our review of historic records of just the Dennison Ridge area of the Park, there have been at least several nesting pairs in that area over time. We believe that the Forest Plan should have limits on other uses that would retain condor habitat suitable for at least a half-dozen nesting pairs. The habitat should be managed so that they could be reintroduced at any time.
- We support plans, as proposed, to provide habitat for peregrine falcons.

- 28- Recognizing that the same spotted owls and northern goshawks use portions of the Forest and National Parks, we believe it is important that sufficient habitat be perpetuated for their support. We also recommend a management plan for the pileated woodpecker, another sensitive species. Consideration of this species should be made in timber harvest plans because, even though it prefers old growth timber, it will use second growth areas.
- 29- We recommend an inventory be made of the willow flycatcher (sensitive species) and an analysis of the effects of the encroachment into its habitat by the exotic brownheaded cowbird.
- 30- Two sensitive species of mammals found in the southern Sierra, but not addressed in the Plan, are the red fox and fisher. Since both inhabit old growth timber and older second growth, plans for habitat management should include these species.
- Page 4-8.j 31- 2) Fire Management We recommend continuation of coordinated fire management planning on areas of contiguous boundaries between the Forest and the Parks. This is not mentioned in the plan.
- Page 4-8.k Minerals 32- The statement, "The Sequoia National Forest contains few large reserves of highly valuable minerals" is contradictory to the EIS summary (page 12) which indicates that the forest contains 670,000 acres of medium and 335,000 acres of very high/high mineral potential for gold, uranium, and tungsten.
- Page 4-10n 33- Vegetation, 5) Timber. Our major concerns regarding several timber plans involve those areas that either adjoin the Park boundaries or are located upstream or upslope from proposed timber harvest sites (i.e., Chimney Rock/Stony Creek, Redwood Mountain, Grant Grove and Dennison Ridge). Timber sales should be managed so that erosional effects from sale areas do not adversely affect Park resources and values. Esthetic effects to vistas from Park areas and along the Generals Highway also should be considered in timber management plans. Further, provisions to minimize the effects of timber harvest traffic through the Grant Grove area should be included in the timber management plan.
- Page 4-18 and 4-79 34- The management direction for Off Highway vehicles and its implication in relation to mineral exploration 2nd development on the Forest is very confusing. tbw does

the designation "limited to designated routes" affect mineral exploration? On page 4-19 (Zone C) what does the statement "...over 40% slope, or with vegetation which generally precludes travel;..." imply in relation to mineral exploration?

Page 4-21 35- Wild and Scenic River " South Fork of the Kern (Segment 1): A small portion of the river crosses public lands administered by the BLM in the vicinity of Pilots Knob. Prescribed management actions for this section should be coordinated with the Caliente Resource Area (Page 4-21 and 4-22 were I twice in the Forest Plan).

Page 4-23 36- Trails and Wilderness. There is no mention of the close coordination of wilderness management policies between the NPS and USFS nor of the fact that the Forest issues permits for many of the trailheads that eventually feed or provide access to the Parks. The Forest issues permits for trips that eventually enter the Park and we are dependent upon them to do so and appreciate very much their assistance and cooperation in this effort. Some mention ought to be made of this cooperation.

Page 4-32 37- Energy. We would be interested in any energy development proposal that could in any way affect the resources or values within the Parks.

Page 4-34 38- Management Prescriptions. No standards, goals and objectives, or restrictions are identified for mined activities under any Prescription.

Page 4-37 39- Table 4.3 - Management & Prescription Summary. Note a significant concern is that the Prescription summary section cannot be readily related to a specific geographic portion of the Forest. This table lists a prescription code, 801 for Blue Oak savanna for example, but it is impossible to determine from the map which portion of the General Dispersed Recreation area is represented by that code.

Pages 4-38 thru 4-100 39- Management Area Prescriptions. We have no additional comments on the specific area prescriptions as described other than the comments made above. One exception is to reiterate the previous comment as it relates to these descriptions, there is no way to relate which portions of the various vegetative zones are represented by the imposed management prescription. We recommend that the map show the area covered by each area prescription so that the reader can readily see what geographic portion of the Forest is covered by each proposed Prescription.

Page 5-1

40- Monitoring and Evaluation standards. We encourage a monitoring and evaluation program as part of the process for its implementation. We also note that there is a provision for evaluation of the plan if it is updated or modified. There is no provision for any update or for any of the agency's of general or the agency's. We encourage such a review process is in the best interest of the agency and the public being served. A window for period of implementation who manage adjoining land is important.

Page App. A-1

41- The importance of keeping informed of activities in the waters adjacent to the park. We appreciate the opportunity to review many of the issues identified in this section. Those we are interested in are:

- Dome Land Wilderness
- Gold Triangle Wilderness
- Sierra Wilderness
- Boundary Marking and pasting
- Pacific Crest Trail Management Plan
- North Fork Kern River Boating Management plan
- Kings River White Water Boating Management Plan
- Fire Management Implementation Plan Corridor
- Viewshed Plans
- Jennie Lakes Wilderness
- Monarch Wilderness
- North Fork Kern River
- Deer Herd Plans

DEIS Specific Comments

Page 38 Summary

38 - Alternatives: Minerals is not identified as a separate, specific market resource along with timber and recreation. As a result:

- a. The preferred and current alternatives, which are based on 1980 and 1985 use levels, do not recognize, nor address opportunities for mineral development (since none was occurring).
- b. The other alternatives (especially the High Market Emphasis Alternative) do not recognize the market "potential" of future mineral development which could be significant (rentals and/or royalties from geothermal).

- 42- Minerals and Geology (Forest-wide standards and guidelines). (These comments also apply to page 4-31 of the Forest Plan.)

This section indicates that surface resources are planned without considering mineral potential or possible restriction on mineral development. The tone conveyed is that proposed mineral projects would be authorized only when conflicts with previously planned surface resources could be resolved. If mineral resource development is considered only on a "case-by-case basis," it cannot be planned. Since the use of surface resources is being planned, any subsequent proposed mineral development will inevitably conflict with this predetermined use.

- 43- Federal agencies are directed to foster and encourage orderly development of mineral resource by private industry. This direction is documented in the Mining and Minerals Policy Act of 1970, and the National Materials and Minerals Policy, Research and Development Act of 1980. The Bureau of Land Management's minerals responsibilities and authority include lands in the National Forest System. BLM is directed to make public land available for orderly and efficient mineral development under the principles of multiple-use management. This responsibility can only be accomplished if mineral resource development is given consideration equal to that of surface resources when formulating management objectives.

It is recommended that basic minerals guidelines refrain from emphasizing the impacts to surface resources caused by mineral development. Instead guidelines and standards should reference and briefly describe the following:

- 1) Minerals management policy - responsibility and authority of BLM on National Forest Land.
- 2) Surface Management Regulations pertaining to mineral development under the 1872 Mining Law (36 CFR 228).
- 3) Regulations and policy pertaining to mined material development (36 CFR 228.43).
- 4) Construction and maintenance standards for access roads, building sites, etc. (standard stipulations).
- 5) Since there are no leasable hardrock mineral resources on the Forest, this section would be an appropriate place to state this fact and explain the geologic conditions which make it true.



- 6) Policy and standards applied to geothermal leasing Reference 43 CFR 3201.1-3: leasing by USDI with USFS consent.
- Page 2-36      **me** purpose, **method and use** of the **geologic** resource inventory is not stated either **in** the plan or the **EIS**. There is also no definition for "Order 3 standards." It is **not** clear whether or rat the inventory includes mineral resources.
- 44-      It is recommended that an appendix be added which describes the **geologic resources** inventory, its purpose, and its effects on planning. "**Order 3 standards**" could be defined in the **glossary**, included in general guidelines under "minerals," or described in an appendix. **me** purpose and effect of the **inventory should be fully addressed**. Of primary concern is the effect of the inventory on management objectives and possible plan amendments it may generate. **Making minerals an issue** would increase the flexibility of the plan and allow full use of the **inventory**. Also applies to page 431, Appendix 8-3 of the Forest Plan.
- Pages 2-124 and 2-146      38-      High Market Emphasis and High Production Emphasis. **These** alternatives, at least, should address the lifting of **withdrawals from/closure** to mineral development to be consistent with the definition of each alternative.
- Page 3-22.6.a      10-      Native American Populations. **Same** comments as noted under Forest Plan (3-8.6.a.).
- Page 3-23.6.a.2      11-      Tubatulabal Indian Group. **Same** comments as mted under Forest Plan (3-8.6.a.2.).
- Page 3-28.2 Paragraph 3      13-      Cultural Resources. **Same** comments as noted under Forest Plan (3-10.2. Paragraph 2).
- Page 3-29 Paragraph 5      14-      Cultural Resources. **Same** comments as noted under Forest Plan (3-10.2. Paragraph 7).
- Page 3-71      38-      Mineral potential ratings are not defined or supported by any referenced analysis. **Without some background information forming the basis for these ratings**, the reader has no way of judging their accuracy or applicability. Including a description of the rating process in "modeling and analysis" section of Appendix B would be most helpful. It may also be appropriate to reference available resource-inventory records maintained in a particular office.

- Page 4-14 45- Summary of Socio-Economic Effects, Alternatives CED and PAF. Since the preferred alternative includes a proposal for major ski areas, we recommend there should be some indication of effects on the socio-economic situation of the area.
- Page 4-17 46- Wildfires and Rescribed Burning. Where possible, prescribed fire and prescribed natural fire should be coordinated between the Forest Service and Parks to avoid temporary periods of cumulatively heavy buildup of smoke in local areas.
- Page 4-29 47- 1) Soil Resource. The document predicts overall positive effects on soil productivity for the preferred alternative; however, it does not address the potential offsite effects to the park from timber harvest, especially in the Stony Creek area where the park lies downstream from the proposed timber harvest area.
- Page 0-37.e 48- Energy Production and Conservation. No mention of the majority of the Forest is valuable by the USGS.
- Page 0-39 49- Facilities. The preferred alternative includes a proposal for development of a major ski area in the Mitchell-Waddox area yet the facilities Section here, which describes roads, does not include a description of the potential effects of the construction of a major road to access the ski area. While we recognize that a detailed analysis would be made in a future assessment, the fact that a road would be needed for the proposed ski area and that there would be significant effects should be mentioned here. We have the same concerns regarding the proposed development as outlined above for the Plan.
- page 4-45 27- 2) Wildlife. The statement does not adequately address the potential effects of the proposed action, whether positive or negative, at least for those species that depend on both the Park and the Forest. There is no description of what potential effects managing for only one pair of California condors will have on the potential recovery or demise of the species. The same may be said for the other species that we addressed above in the section dealing with the Plan; spotted owl, willow flycatcher, pileated woodpecker, etc.

- Page 4-55.j  
50- Lands, Alternatives PRF and CED. There should be some comment on the coordination of land line locations between the Forest and Park, where appropriate, and the potential effects of an accurate, as opposed to an inaccurate, boundary.
- Page 4-57  
38- Contains the following statement: "Based on minimal mining activity... supply of minerals locally or regionally would not be substantially affected by actions proposed in the alternative."

This statement is only true for present supply and does not consider undiscovered or subeconomic resources. This statement is also unsupported by facts or analysis given in the document. A major adverse effect of the alternatives may be the removal of lands from availability to mineral exploration or development, or, severe operating restrictions. It is recommended that mineral resources be included as an issue so that the EIS may fully address the impacts of surface protection/development to mineral resource exploration and development. A map showing the proposed withdrawals overlaid on a geologic map containing mines, prospects, mineral occurrences and known trends would be a useful tool. Par such an analysis. This information is usually considered to be too detailed for a general land use plan; therefore, it is recommended that the plan merely show a map depicting the proposed withdrawals (overlaid on mineral potential) and include a statement that the implementation of a withdrawal will depend upon a site specific environmental assessment and mineral report to evaluate impacts to mineral resources.

#### Environmental Consequences.

This section evaluates the impacts to mineral resources in terms of acres to be withdrawn from mineral entry under each alternative. No information on the location of the withdrawals is provided; no mineral re-e data or analysis is present in the document. Without this information, the reader is unable to relate the action to its impacts on-the-ground. A map, depicting proposed withdrawals and mineral potential areas, would correct this deficiency. The method used to determine the mineral potential of an area should be presented in an appendix.

It should also be noted that a site specific land report and mineral report is required, in most cases, before a locatable or leasable mineral withdrawal will be considered by the Secretary of the Interior (Federal Land Policy and Management Act of 1976, Sec. 204(c)(2)(12); 90 STAT 2752).

Page 4-57

51- Using table 4.24 the range of alternatives proposing mineral withdrawals in areas of very high, high and medium mineral potential aggregating varies from 19% to 22% of the Sequoia National Forest. This is an increase of 4% to 9% over the base year 1982. Roughly 1/5 of the Sequoia National Forest is, or is proposed, to be withdrawn from mineral entry. It is recommended that alternatives be considered which reduce the amount of mineral lands, of a ratio less than 1:1. The reasons to why this option is considered. In addition, the increase in the mineral withdrawn should be included on page 16, as a key table.

Page 4-57

52- The proposed blanket administrative withdrawals from the area are primarily for purposes of timber production. Even low temperature geothermal resources are available for space heating buildings, including roads and power. Similar applications which are for recreation purposes.

Page 4-65.0

24- Recreation, Alternative PRF. For the proposed Mitchell-Maddox downhill ski area, the statement fails to address the potential effects of such a development on the overall pattern and numbers of forest recreation users.

Pages 4-97 and 4-108

33- Timber and Visual Resources (respectively). Between these two sections there is only superficial treatment of the effects of the timber harvest as proposed in the preferred alternative. While there are goals in the draft management plan to retain high quality visual resources from Highway 180 and the Generals Highway, there is no specific mention of the effects of timber harvest on these highways. Yet it is clear that timber harvest areas as depicted in the maps will be visible from portions of these highways.

Page 4-138

53- Paragraph 6. The purpose of this EIS is to address impacts to and from other resource decisions (since Minerals is not identified as an issue). Management has the flexibility to limit and prohibit mineral development in any area by limiting access (withdrawal classifications, etc.) when impacts are addressed through the EIS process. To say the irreversible actions are outside the scope of this EIS is incorrect.

Page 5-1

List of Preparers

54- Neither of the mining geologists are credited with input to the "Environmental Consequences" section. Input is limited to descriptive information for the "Affected Environmental" section.

It is recommended that a minerals specialist be a member of the team preparing the plan, since this field requires unusual technical expertise, industry and economic familiarity, and application of mining law and mineral policy. This is especially important when mineral resources is an issue.

Maps

55- We recommend that maps should reflect BLM management designations for that particular resource activity or mt delineate BLM land at all. The problem exists where USFS lands are designated for ORV activities and BLM lands around Chimney Peak stand out from all other lands as white in color which could be interpreted as "undesignated." They would then be vulnerable to Increased unauthorized ORV activities.

56- After reviewing the Environmental Consequences section, we have the general impression that description of the effects of the various proposals appears superficial. Much of what should be description of effects is actually more discussion of the proposal alternatives.

57- Specific Resource Program Comments

Wild and Scenic Rivers

We support the Plan's proposed designation, under the National Wild and Scenic Rivers Act of the South Fork and Middle Fork of the Kings River which are also located within Sequoia and Kings Canyon National Park. also we compliment the Forest on its efforts to evaluate the Nationwide Rivers Inventory segments contained an the Forest. However, with respect to the Kings River, we note that evaluation has been deferred on Segment I because it muld be inundated if the proposed Rodgers Crossing Dam is constructed. Since a decision on whether or not to construct this project has not been made, the eligibility of Segment I should be evaluated in order that this

factor can be considered in determining the impacts and environmental tradeoffs of the project. It would be more proper to defer on the suitability question for this river segment rather than eligibility, which addresses the current condition of the river regardless of future proposed uses.

### Cultural Resources

- 58- the accompanying Forest Plan does not satisfactory address cultural resources (i.e., only 1 or 2 pages total count contain any information on prehistoric or historic resources compared with well-developed section on Other resources and activities the Forest must deal with).

It is stated that the Forest has a completed cultural resources overview which is a positive initial step now that 20% of the Forest has been inventoried and approximately 1,100 sites are known, many of them significant. This is an excellent base for the Forest to develop a real management plan which might provide — in addition to the legislative mandates and the compliance process — a series of projected (5-year) management directives/objectives/alternatives with a discussion of how each directive will be implemented. Clearly the Forest has a known series of projected actions (i.e., mad construction, reforestation, perhaps mineral leasing, etc.) that will affect cultural resources. Schedules for survey should be presented then revised on an annual basis. For known sites -- which ones are scheduled for fencing/signing or other interpretation? Are any sites scheduled for research through data recovery? What about public education prefects Mat my be scheduled? Is there a monitoring program and how is it conducted?

The development of the recommended management plan should be coordinated with the State Historic Reservation Office to insure compatibility of goals with the State's Comprehensive Reservation Planning Process. .

The OERIS satisfactorily addresses cultural resources, although several minor problems should be noted:

1. the document contains no Table of Contents which makes location of pertinent cultural resources data and alternative actions being discussed difficult.
2. The range of known site types is not discussed in the archaeological overview.
3. Pertinent legislative mandates regarding cultural resources are listed, however, not discussed. The laws are listed in the Glossary Appendix of the MIS, but there is no reference with the text that the information may be found there.
4. No definition of an archaeological site is presented in the Glossary; in fact, except for several pieces of legislation, the Glossary is deficient in cultural resources definitions.

5. One discrepancy appears on page 3-29; it is stated that about 1,100 sites have been recorded and that 235 have been evaluated for significance (paragraph 2). In the succeeding paragraph (3) then goes on to state that "roughly 15% of recorded properties have been evaluated for significance." These two figures should be reconciled.

#### Mineral Resources

- 59- As the preceding comments strongly indicate, my concerns revolve around the issue of minerals and the scope of minerals average in both the plan and the DEIS. For example, there is insufficient discussion of the probable effects of renewable resource prescriptions on mineral exploration and development, with the exception of the impacts of wilderness and other types of withdrawals on mineral access. Yet Forest Service planning regulations, 36 CFR subpart 219.22(f) calls for the forest planners to determine the probable effect of renewable resource prescriptions and management direction on mineral resources and activities, including exploration and development. Our review has shown that, with regard to minerals and mineral development, these documents are deficient. The data that is present on mine? is vague, inconclusive, and difficult to understand.

To rectify these deficiencies, we suggest the following be added to the report:

1. A map which shows all available mined land within the forest and its corresponding potential for minerals.
2. Maps which show the availability of mineral land with respect to management restrictions and mineral potential under each alternative.
3. A table under each alternative which correlates the total number of acres of each category of mineral potential which are to be withdrawn with the total number of acres of each category of mineral potential which exist in the forest.
4. A table under each alternative which correlates the total number of acres of each category of mineral potential which will be restricted through management policies with the total number of acres of each category of mineral potential which exist in the forest.
5. Discussion of all of the above.
6. Discussion of how each of the alternatives will affect minerals and mineral development.

of the Forest plans and DEISs reviewed this year. those from Region I were clearly the best with regard to minerals. We recommend the EISs and Forest Plans from the Helena and Beavertail National Forests as examples of excellent format and content. We are enclosing tables from each as specific examples.

43- One change in the Plan and EIS would go a long way in presenting a clearer picture of the **role of minerals** in overall Forest Service planning, and would do much to alleviate the impression of a negative, reactionary approach to dealing with minerals. That change is the inclusion of a detailed **minerals policy statement** under "Forest Goals" in the Plan, and under "Direction Common to all alternatives" in the OEIS. The Pacific SW Region of the Forest Service is currently working on such a policy which will resemble the minerals policy of **the BLM**. Whether the policy is officially complete or not, there is available broad objectives with respect to mineral policy which can be stated or paraphrased in these documents. If the Forest Service is not prepared to make a specific or general minerals policy statement, then the minerals policy of the BLM, which currently has minerals responsibilities on the Forest, should be used. This is critical if the public and future managers seeking direction from this Plan are to know what the **planning objectives** are.

Such planning objectives are clearly laid out for virtually all major forest resources except minerals, Chapter I, Section 8 of the Plan. This is the Vision Statement, which spells out the goals of the Forest with respect to all broad objectives having public benefit. The need to include mineral objectives in the Vision Statement is all the more critical as a result of the anticipated shift of full mineral responsibility and authority from BLM to the Forest Service under the interchange.

We appreciate the opportunity to comment on these documents.

Sincerely,

  
Patricia Sanderson Port  
Regional Environmental Officer

Enclosures  
Examples of Mineral Tables

cc:  
Director, DEPR w/incoming  
State Director, BLM  
Regional Director, NPS  
Regional Director, S  
Regional Director, BR  
Chief, EM



Category A Withdrawn or proposed for withdrawal from mineral entry.  
1. Wilderness areas.  
2. Wild and scenic rivers  
3. Sites for facilities  
4. Historic and cultural sites  
5. Developed recreation sites.

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Category B Statutes or executive orders require specific protection or mitigation measures.  
1. Proposed wilderness areas.  
2. Congressionally mandated wilderness study areas.  
3. RARE II Further Planning areas.  
4. TSE Species  
5. Roadless (Type I) dispersed recreation areas.  
6. Culturally significant areas.

Category C Special conditions exist in lands which require special lease stipulations or plan of operation conditions.  
1. Big game winter range.  
2. Elk calving area.  
3. Riparian area.

Category D Standard lease stipulations and plan of operation conditions apply.  
1. Timber production areas.  
2. Existing mineral processing areas.

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Table II-11

Mineral Evaluation Report

Alternative A									
Energy					Non-Energy				
Access Category	Low	Mod	High	Very High	Access Category	Low	Mod	High	Very High
A	101,081	230,311	0	0	A	0	193,812	66,858	70,612
B	12,765	172,068	16,648	2,395	B	0	42,167	6,927	154,782
C	972	104,542	1,858	722	C	0	50,639	10,238	47,217
D	58,218	875,119	357,782	213,140	D	0	856,082	340,999	307,178

Alternative B									
Energy					Non-Energy				
Access Category	Low	Mod	High	Very High	Access Category	Low	Mod	High	Very High
A	101,081	76,532	0	0	A	0	177,613	0	0
B	2,471	116,094	19,317	3,369	B	0	35,877	10,914	94,460
C	29,666	467,929	220,241	115,770	C	0	474,729	191,967	166,910
D	39,818	721,428	136,762	97,043	D	0	455,906	221,941	317,204

Alternative C									
Energy					Non-Energy				
Access Category	Low	Mod	High	Very High	Access Category	Low	Mod	High	Very High
A	128,066	481,154	329,998	165,242	A	0	704,850	267,623	131,987
B	3,835	105,873	223	110,690	B	0	27,091	7,832	75,767
C	10,889	169,777	8,569	11,263	C	0	95,162	29,873	75,463
D	30,246	625,104	37,530	38,993	D	0	315,597	119,704	296,572

Alternative D									
Energy					Non-Energy				
Access Category	Low	Mod	High	Very High	Access Category	Low	Mod	High	Very High
A	127,970	402,124	201,920	125,976	A	0	564,337	193,234	100,399
B	4,072	207,232	44,843	14,872	B	0	83,296	49,076	138,657
C	22,309	302,479	50,680	24,115	C	0	190,031	68,515	141,037
D	18,685	470,073	78,877	51,294	D	0	305,026	114,207	199,696

-Table II - 11 cont.

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Alternative F

Access Category	Energy				Access Category	Non-Energy			
	Low	Mod	High	Very High		Low	Mod	High	Very High
A	112,520	326,993	40,857	125,976	A	0	433,889	98,997	73,460
B	5,277	112,218	29,458	12,822	B	0	46,025	23,517	90,233
C	38,575	560,449	151,230	36,396	C	0	370,867	180,352	235,431
D	16,654	405,538	123,090	49,458	D	0	291,919	122,166	180,665

Alternative G

Access Category	Energy				Access Category	Non-Energy			
	Low	Mod	High	Very High		Low	Mod	High	Very High
A	101,081	85,511	40,857	0	A	0	225,309	2,140	0
B	3,004	139,404	0	0	B	0	18,517	12,730	111,161
C	33,572	459,851	188,380	97,431	C	0	446,052	178,642	154,740
D	35,379	697,507	147,083	118,461	D	0	454,037	231,720	312,673

Alternative H

Access Category	Energy				Access Category	Non-Energy			
	Low	Mod	High	Very High		Low	Mod	High	Very High
A	101,081	152,261	12,907	0	A	0	125,769	68,868	70,612
B	95	185,669	13,068	0	B	0	42,368	63,272	93,192
C	27,092	466,101	226,368	132,792	C	0	503,529	197,358	151,466
D	44,768	566,754	135,220	83,345	D	0	397,530	154,971	277,586

Alternative I

Access Category	Energy				Access Category	Non-Energy			
	Low	Mod	High	Very High		Low	Mod	High	Very High
A	128,405	809,421	330,757	168,615	A	0	848,419	329,759	259,020
B	1,750	66,933	636	943	B	0	6,136	1,462	62,564
C	9,885	116,556	3,679	9,090	C	0	80,952	11,709	46,549
D	32,996	388,998	41,248	37,609	D	0	207,193	82,102	211,556

Alternative W

Access Category	Energy				Access Category	Non-Energy			
	Low	Mod	High	Very High		Low	Mod	High	Very High
A	118,629	355,544	32,039	0	A	0	304,971	106,567	94,674
B	1,561	91,450	1,966	3,225	B	0	21,094	8,748	68,360
C	38,655	506,842	170,956	119,536	C	0	437,432	176,320	222,237
D	14,131	428,072	171,359	93,496	D	0	379,203	133,397	194,518

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The amount of elm high and vary high potential oil and gas lands available for development, with only standard Forest wide surface protection requirements varies from a low of 28% in the Wilderness Alternative J to a high of 7X in the 2PA Alternative B. The Preferred Alternative E has 64% of the high and vary high potential oil and gas lands completely available for development with only standard restrictions.

The amount of high potential lands that are completely unavailable for oil and gas development because of existing and proposed mineral withdrawal varies from a low of 10% in the Commodity Alternative C to a high of 67% in the Wilderness Alternative J. The Preferred Alternative E would result in 13% of the high potential oil and gas lands being unavailable for development. This includes portions of the existing Scapegoot Wilderness and the proposed Big Log addition to the Gates of the Mountains Wilderness that would be withdrawn from mineral entry.

TABLE II-13

Non-Energy Minerals  
(Percent of high and vary high potential lands going to various management categories)

Alternative	Management Category			
	A-totally restricted	B-highly restricted	C-moderately restricted	D-standard restrictions
A-current direction	0%	9%	9%	83%
B-RFA	at	6%	14%	80%
C-high commodity	0%	6%	20%	74%
D-economic efficiency	0%	9%	18%	73%
E preferred	0%	U	34%	62%
E-departure	0%	4%	34%	62%
F-wilderness/commodity	10%	2%	16%	67%
G-high amenity	1%	1%	11%	61%
H-wildlife	0%	9%	40%	51%
J-wilderness	32%	7%	10%	51%

Helena N.F.

U.S. Department of Interior

Resolution:

1. Please note that the Forest Plan is to be thoroughly revised in 10-15 years. Please see Chapter 5 of the Forest Plan for the Monitoring Plan.
2. Please see the revised Vision Statement (Chapter 1, Section B of the Plan) for a more comprehensive look at the future of the Sequoia National Forest.
3. The Forest Plan may be appealed within 45 days of the date of the Record of Decision.
4. Neither the public nor the Forest Service identified minerals as important enough to qualify for either a public issue or a management concern. The Sequoia National Forest is not a highly mineralized area. It has been heavily prospected in years past and is currently under scrutiny by many prospectors. There is only one operating mine on the Forest and it employs only one person. For over a million acres of land, this speaks volumes on the importance of minerals on this Forest.

Within the planning period, prospecting will continue; however, few, if any, mines are expected to materialize. If, for some reason, the minerals picture reverses itself, changes to the Plan can be recommended.

5. There is a great difference between proposal and actualities. Pages 2-9 of the Draft Forest Plan say no actuality is anticipated, pages 3-14 of the Draft say several proposals have been made. There is no conflict in these two statements. Also, the Monache proposal has been turned down since publication of the DEIS.
6. Restrictions on stream and wetland protection will not eliminate or even severely restrict mineral exploration. Very few mining operations on the Sequoia are in or near streams or wetlands.
7. This is an annual amount.
8. Thank you.
9. While miners have an interest in the Forest, they are not considered a separate social group. Most miners would be considered part of the "Working Family" group.
10. Thank you for pointing out this omission. A reference to the Kawaiisu has been added.
11. This section has been corrected to reflect your comment by dropping the last sentence.

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12. Recent information indicates that there ~~may~~ be more opportunity for pollutant transport into the Forest from the Kern oilfields than previously thought. In light of this information, Sequoia National Forest plans to monitor in the Kern River drainage near the southend of the ~~Dome~~ Land Wilderness as funding becomes available. Sequoia National Forest is currently communicating concerns to the California Energy Commission and EPA.
13. The text has been corrected to clarify the discussion.
14. The correction has been made -- Thank you for pointing out this error.
15. This typing error has been corrected.
16. A discussion of flood hazard and floodplain management is in Chapter 3, Section C.22.d. of the Plan.
17. Changes in the EIS and Plan reflect the Forest's legal requirement for management of sensitive, rare, and threatened and endangered species. The Little Kern golden trout is a federally listed, threatened species for which a recovery plan has been prepared. The Forest will follow that recovery plan in an effort to increase numbers of Little Kern golden trout. See also Chapter 3 of the FEIS.
18. A short paragraph expanding this discussion pertaining to pest impacts other than timber management has been added to this section.
19. ~~We~~ currently have only one operating mine on the Forest and ~~it~~ has not yet been through a validity hearing.
20. To date, prospectors, and the miner, have been willing to do those things that reasonably mitigate potential damage to the environment that would occur through their operations. This is not a large enough issue to fully deserve an examination. On-the-ground, the present low-profile system is working.
21. Such an assessment is not needed for this planning period.
22. By far the greatest proportion of visitors to the Sequoia National Forest come from the Los Angeles Basin. About 90 percent of all visitors originate from there.
23. The deficiency noted in this table has been corrected.
24. ~~We~~ appreciate the concerns expressed about the effects of a ski area developed at Mitchell-Maddox. As is pointed out in this section of the Plan, Mitchell-Maddox is just one of the sites on the Sequoia NF which appears to be most promising for development. The computer modeling used for the Plan picked up development of these sites because of their apparent positive economic values.

It is important to understand that computer modeling merely provided an indication to consider development in the future (versus not considering any additional developments). Before any decision is made

on any future ski area development, it will be necessary to follow NEFA requirements--that is, prepare a Project Level Environmental Impact Statement. As part of this effort, issue identification/scoping will occur. Full public participation (including coordination with the National Park Service) is an integral part of the process. Concerns such as those identified would most certainly be identified and dealt with in detail during this study. As in all evaluations of this nature, a no-action scenario (continuation of current management activities) would be an alternative. Finally, demand for additional facilities of this type will trigger the NEFA process. If there is little or no demand, there will be no need to pursue a study.

25. We have corrected the reference to the PCT on this page.
26. Analyzing potential impacts to a very small program is not cost-effective and has not been identified as an issue or a management concern.
27. **The** Plan has been revised to follow the California Condor Recovery Plan.
28. Please see changes to the EIS and Plan that show the Forest is following Regional Guidelines. Spotted owl population surveys have been conducted on Sequoia NF since the 1970's. Beginning in 1982 work began, using Region 5 Guidelines, to establish a network of spotted owl habitat areas across Sequoia NF. In 1987, with the completion of field surveys a network of 40 habitat areas totalling 66,000 acres was established. *The* only harvest of timber that has taken place in any of the habitat areas since their establishment was the harvest of timber already under contract in those areas. In many cases even this timber was substituted for timber volume located outside of the habitat areas. For more details on current spotted owl management on Sequoia NF, please see Chapter 3 of the FEIS *or* Plan. Also see Appendix B of the Plan for identified research needs for the spotted owl.

Space is considered as a habitat element in Chapter 3 of the FEIS. The pileated woodpecker is classified as a Special Interest Species by the Forest Service, not a sensitive species and consequently there is no special management considerations. Its habitat needs will be met by the Plan's provisions for the retention of five percent old growth and special management of riparian and meadow influence zones. Please see expanded portions of the FEIS and Plan for details of the management of the spotted owl and goshawk.

29. Phacelia nashiana and Carex tompkinsii are listed in the revision in Chapter 3. Calochortus straitus and Mimulus pictus are no longer listed as sensitive.
30. Changes in the EIS and Plan reflect the Forest's legal requirement for management of sensitive, rare, and threatened and endangered species. Welfare of the flora and fauna is a high priority. However, we are mandated to manage for a variety of uses which limits the

concentration on a single resource such as wildlife. See also Table 3.15, Chapter 3 of the FEIS.

31. Chapter 3, Section C.7 of the Forest Plan shows revised text.
32. Reserves are normally expressed in tonnages and there are very, very few mineralized areas that have large reserves. The acreages cited reflect only the broadest type of geologic data. Scrutiny by prospectors and development of mines is by far a better measure of mineral value.
33. There is not a specific discussion of effects of timber harvest along highways on the Forest, nor is one deemed necessary. By definition, the sensitivity levels assigned to roads lead to Visual Quality Objectives (VQO's). The VQO's set limits for visual treatments and, thereby, relate to the effects on highway views. Specifics are discussed in project level environmental analyses.
34. The OHV Management Direction for the Sequoia NF has been modified considerably from the Draft Plan. The final direction does not include any limited (open) areas where OHV travel of designated routes is permitted.

Specifically relating to mining activities, incidental access of designated routes can be permitted (see item b under Zone B under the revised write-up in the Plan, Chapter 4). Those involved in varying phases of mineral prospecting, exploration or development would be included under this heading. The reference to "...over 40% slope, or with vegetation which generally precludes travel..." was meant to give readers an understanding that much of the National Forest is not conducive to OHV travel--most folks could not or would not be able to ride in these areas. Again, mineral related activities will be covered under operating plans and, therein, are different than the rules which apply to general recreationists.

35. Since no recommendation for W&SR is proposed, management involvement by the F.S. on river segments outside the N.F. boundary is not envisioned. If, per chance, a change in our recommendation occurs, and this segment of the river is included in W&SR legislation and is so designated, F.S. involvement in planning will be necessary. In this case, coordination with the Caliente Resource Area would be appropriate.
36. A Standard and Guideline to our Recreation section has been added which prescribes our continuing working relationship with the NPS in coordinating management activities (see FEIS Chapter 2, Forest-wide S&G's and Plan, Chapter 4). Further, some wording has been added to Chapter 3 of the FEIS and Chapter 2 of the Plan to highlight this coordination.
37. See 36 above. Again, coordination with the NPS will be a part of our Plans.



38. In our judgement, the program is not large enough or of general public concern to warrant this level of detail in the Plan. NEPA requirements will result in appropriate levels of public involvement.
39. In determining which prescription attaches to which area, the reader must determine the vegetation type from the Vegetation Map and the management emphasis from the Management Emphasis Map. The prescriptions listed on Table 4.3 of the Plan are specific to the combinations of these found on the Sequoia NF. The page number of each prescription is then indicated on the table.
40. As a matter of course, the Forest Plan will be revised within 10-15 years. It is also possible that an inability to meet the standards set out in the **Plan** will trigger an earlier revision.
41. **The** National Park Service is welcome to review any of these.
42. Conflicts between legal planned and legal unplanned activities are resolved through vegetation, mitigation and possible revision. **There** have been no unresolvable conflicts to date.
43. **As** to a Minerals Policy, this item is being formulated at the Regional Level and would be incorporated into this Plan.
44. Order 3 Geologic Resource Inventory has been added to the glossary. **The** purpose of this inventory is to describe regional geologic factors and designation of these factors as well as geologic resources. **It** would also address how these affect land allocations, general facility locations and management alternatives. Additional information is available in Exhibit 1 of **ISM** 2881.
45. All ski areas will be the subject of separate project EIS's in which socioeconomic effects will be analyzed at length.
46. Prescribed fire and smoke management coordination between Sequoia National Forest and Sequoia and Kings Canyon National Parks is addressed in Chapter 2, Section E, Direction **Common** to All Alternatives.
47. Our goals in managing the forest are a) **to** maintain the long-term productivity of the Forest's soils, and b) to prevent any significant reductions in water quality. **We** are committed legally, morally, and professionally to meeting these goals. Consequently, we designed each of the alternatives **to** meet these goals. **Some** of the alternatives would result in **less** soil **erosion**, but all **meet** our goals of protecting soil productivity and water quality.
48. Geothermal resources are considered to be of minor importance on the Sequoia NF at this time. Little interest has been shown in this area and there has been no development for heating or power.
49. **The** proposed road will also be included in the site-specific EIS for the Mitchell-Maddox area. **We** prefer to deal with all of the effects

of the proposed project in that document rather than splitting the analysis between trio documents.

50. The location of land lines between National Forest Systems land and other Federal land will be done eventually, but it is of low priority. Generally, conflicts between Federal agencies are either minor (and solved on the local level) or major (and solved at the National level). Neither has a place in this Plan.
51. It should be noted that the area withdrawn from mineral entry in base year 1982 consists of 98 percent wilderness and 2 percent other. Wilderness is created by Congress and would only be deleted by Congress. The 2 percent that is not in wilderness is not a significant management concern. On a case-by-case basis, it could be important for one project, but for planning purposes, probably not.
52. The withdrawals are not "blanket" withdrawals because they address very specific areas. In addition, the withdrawal process includes an environmental assessment. Preclusion of use of geothermal or other mineral resources would, by necessity, be carefully weighed.
53. We maintain that such (irreversible) actions are outside the scope of this EIS. The decision to mine is not in our control. It is generated by outside interests and our ability to limit access is very limited. It is also not something that can be accomplished in a short time, nor is it something we should do. Our aim would be to encourage the extraction of valuable minerals and to insure that environmental concerns are addressed and mitigated as needed.
54. Our minerals specialists were consulted constantly in the preparation of the Plan.
55. A good point has been raised. In order not to create a wrong impression with readers, maps have been modified to include a tone so that BLM lands do not show as totally white in color.
56. We hope that Chapter 4 is more substantive in the FEIS than in the DEIS.
57. The final EIS has been modified to include eligibility information on Segment 1 of the Kings River, as requested. Suitability information is not included, and a recommendation on Wild & Scenic River designation will continue to be deferred. Enactment of current legislation could resolve all of the questions about this portion of the Kings River.
58. A) As stated on 1-10 "planning is an issue driven process." Cultural Resource Management was not identified as an issue during the initial scoping process. Consequently, cultural resources are not discussed in the ~~same~~ detail as some other programs and resources which were identified as issues for this plan.  
  
B) The purpose of the IMP is to set goals for overall Forest management. Most of the detailed information which is suggested

here for inclusion in the EIS is **more** appropriately developed and presented in activity plans. This will be done as an outcome of the Forest Planning Process. One must also keep **in** mind that the Forest CRM Overview (Cultural Resources Overview of the Southern Sierra Nevada (1984)) is incorporated by reference in the Plan and provides considerable information relative to this program. Coordination with the State Historic Preservation Office is ongoing and will occur as part of our detailed planning efforts.

- C) 1) This level of detail in the table of contents is not deemed necessary--if added, it would throw cultural resources out of balance with other resources.
- 2) Please review the Cultural Resources section of Chapter 3. A technical discussion of each site type is not necessary to an understanding of cultural resources as an affected environment. For a more scholarly exposition, please consult the Cultural Resources Overview for the Sequoia NF, incorporated by reference as part of the Forest Plan.
- 3) The legislative mandates for cultural resources are not discussed; this is not deemed necessary in this type of document. However, a general overview of the compliance process is presented for information under Cultural Resources, Chapter 3.
- 4) We have reviewed the glossary in light of your comment. In our opinion, no additional definitions are necessary for the general public to read and interpret the cultural resource narratives.
- 5) You are correct. This discrepancy has been corrected.
59. Much of what you suggest is available in working papers. Comparing the Sequoia with Region 1 is fraught with **error**, since they are a highly mineralized area and numeral concerns and issues are at much higher levels.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
CALIFORNIA STATE OFFICE
2800 Cottage Way
Sacramento, California 95825

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BY AGENCY REFER TO:

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CA-930.12

RECEIVED stamp with date 4/3 and various initials and numbers.

ER 85/1499

APR 29 1986

Mr. Zane Smith
Regional Forester
U.S. Forest Service
630 Sansome Street
San Francisco, CA 94111

Dear Mr. Smith:

We have reviewed the Sequoia National Forest Proposed Plan and DEIS and have the following comments:

COMMENTS AND OBSERVATIONS SPECIFIC TO THE PROPOSED FOREST PLAN:

- Pages 2-1 thru 2-11 4- Neither the Forest Plan (pages 2-1 thru 2-11) nor the EIS (pages 1-3 to 1-10) identifies mined exploration and development as an issue or concern associated with the management of the Sequoia National Forest, yet the Bureau of Land Management has frequently voiced their concerns regarding the development of mineral resources on the forest, Geothermal Leasing in Monache Meadows being the most recent example.
Solution 4- Minerals exploration and development including impacts of implementing renewable resource standards, guidelines and related decisions on mineral resources should be treated as an issue in the Sequoia NF planning process.
Pages 2-9 5- "No new energy production is anticipated in the next 10 years."; however, on 3-14 it is stated, "Preliminary proposals for additional generation capacity of 23 Megawatts have been made." and "Potential energy development will most likely be an expansion of existing or construction of new hydroelectric facilities." Also this does not reflect the geothermal potential in Monache for, at least, exploration.

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- Page 2-11 6- Tradeoffs between stream and wetland protection, and the production of goods and services. This could also eliminate or severely reduce mineral exploration and development in the zone. This impact should be identified and discussed.
- Page 3-5 9- Social Groups in Foothill Communities. Valid mining claims impart real property rights on National Forest public land. To exclude the major property right holders from this "Social Group" section seems misleading, especially in light of the fact that historically, most of the foothill communities began as mining communities.
- Page 3-8 6.a. Native American Populations,  
10- This section refers to Native American populations within the Forest but does not identify the Kawaiisu Indian group. Since the Kawaiisu traditionally occupied the southern portion of the Forest Plan area and some descendants of the Kawaiisu still live in the region perhaps this group should be identified in the plan.
- Page 3-8 6.a.2) Tubatulabal Indian Group,  
11- The statement concerning commercial pinyon nut gathering suggest that the Forest is currently issuing commercial permits. It is our understanding that commercial pinyon nut harvesting within the Forest has not occurred in the past nor at the present time. If this sentence relates to the 1982 contact on ELM in the Chimney Peak area, "complete with commercial gatherers" is probably not an accurate description of the situation. There have been only a few commercial permits issued by the ELM during the past 10 years and these were not within Rockhouse WSA. The permits were issued only after evaluating the crop to determine that there was not significant reduction in the availability of nuts for the general public (noncommercial use) and for wildlife.
- Page 3-10 2 Cultural Resources,  
13- Paragraph 2. This paragraph refers to food processing sites and bedrock mortars as though they were different types of cultural features. To clarify the sentence, perhaps it should read as follows: the most common archaeological site types include lithic scatters, bedrock milling features, middens, rock art, and lithic quarries.

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- 14- Paragraph 7. ~~me~~ paragraph refers to 35 CFR 50.5 as containing the criteria for evaluation of site significance. ~~me~~ reference number is incorrect, it should be 36 CFR 60.4.
- 15- Paragraph 7. The last sentence refers to ethic which is incorrect. ~~me~~ ethic should be deleted and replaced with etnuc.
- Page 3-26 19- Paragraph 6 "...five mines in operation." " Do these mines process valid existing rights? If so, it should be specified so the public is not Confused with the segregative effects of wilderness designation.
- Page 5-27 20- The 3rd paragraph, 2nd sentence, last clause states "...the Forest is open to mineral development subject to the mitigation of impacts to surface resources." Yet the impacts of implementing this standard on mineral exploration and development are not addressed in the DEIS.
- Solution 21- Assess the impacts on mineral exploration and development of the implementation of renewable resource standards, guidelines and decisions that tend to limit, restrict or inhibit development of the mineral resources. This assessment should be not only for the proposed action, but all alternatives.
- Page 3-33 25- 2nd paragraph 8th line - "Pacific Crest National Recreation Trail" should read Pacific Crest National Scenic Trail.
- Page 4-2, 4-3  
4-4 26- Forest Goals have elements which are potentially negatively impacting to mineral resource exploration and development, yet these potential impacts are not addressed in the EIS or identified in the EIS summary or Environmental Consequences section. Typical examples are found in Recreation items 9 and 10 on page 4-2, Wildlife and Fish item 1 on page 4-3, and Water, Soil and Air item 3 on page 4-4.
- Page 4-3  
k Minerals 32- ~~me~~ statement. "The Sequoia National Forest contain few large reserves of highly valuable minerals" is contradictory to EIS summary (page 12) which indicates that the forest contains 670,000 acres of medium and 335,000 acres of very high/high mineral potential for gold, uranium, and tungsten.

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- Pages 4-18 and 4-19 34- The management direction for Off Highway vehicles and its implication in relation to mineral exploration and development on the forest is very confusing. How does the designation "limited to designated routes" affect mineral exploration? On page 4-19 (Zone C) what does the statement "...over 40% slope, or with vegetation which generally precludes travel.. ." imply in relation to mineral exploration?
- Page 4-21 35- Wild and Scenic River " South Fork of the Kern (Segment 1): a small portion of the river crosses public lands in the vicinity of Pilots Nab. Prescribed management actions for this section should be coordinated with the Caliente Resource Area (Pages 4-21 and 4-22 were printed twice in the Forest Plan).
- Page 4-3b 38- Management Prescriptions. No standards, goals and objectives, or restrictions are identified for mineral activities under any Prescription.

**COMMENTS AND OBSERVATIONS SPECIFIC TO THE DRAFT ENVIRONMENTAL IMPACT STATEMENT**

- Page 3.8. Summary . 38- alternatives: Minerals is not identified as a separate, specific market resource along with timber and recreation. As a result:
- a) The preferred and current alternatives, which are based on 1980 and 1985 use levels, do not recognize, nor address opportunities for mined development (since none was occurring).
  - b) The other alternatives (especially the High Market Emphasis Alternative) do not recognize the market "potential" of future mineral development which could be significant (rentals and/or royalties from geothermal).
- Page 2-36 42- Minerals and Geology (Forest-wide standards and guidelines). (These comments also apply to page 4-31 of the Forest Plan.)
- This section indicates that surface resources are planned without considering mineral potential or possible restriction on mineral development. The tone conveyed is that proposed mineral projects would be authorized only when conflicts with surface resources could be resolved. If mineral resource development is considered on a "case-by-case basis," it cannot be planned. Since the use of

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surface resources *is* being planned, any subsequent proposed mineral development will inevitably conflict with this predetermined use.

- 43- Federal agencies are directed to foster and encourage orderly development of mineral resource by private industry. This direction *is* documented in the Mining and Minerals Policy Act of 1970, and the National Materials and Minerals Policy, Research and Development Act of 1980. The Bureau of Land Management's minerals responsibilities and authority include lands in the National Forest System. BLM *is directed* to make public land available for orderly and efficient mineral development under the principles of multiple-use management. This responsibility can only be accomplished if mineral resource development *is given* consideration equal to that of surface resources when "daring" management objectives.

It *is* recommended that basic minerals guidelines refrain from emphasizing the impacts to surface resources caused by mineral development. Instead guidelines and standards should reference and briefly describe the following:

- 1) Minerals management policy "responsibility and authority of BLM on National Forest Land.
- 2) Surface Management Regulations pertaining to mineral development under the 1872 Mining Law (36 CFR 228).
- 3) Regulations and policy pertaining to mineral material development (36 CFR 228.43).
- 4) Construction and maintenance standards for access roads, building sites, etc. (standard stipulations).
- 5) Since there are *no* leasable hardrock mineral resources on the Forest, this section would be an appropriate place to state this fact and explain the geologic conditions which make it true.
- 6) Policy and standards applied to geothermal leasing Reference 43 CFR 3201.1-3: leasing by USDI with USFS consent.

Pages 2-25 thru 2-28 of the "Draft Coast/Valley Resource Management Plan and EIS" (Attachment 1) are included as one example of the "standard operating procedures" for mineral resources.

Page 2-36 44-

The purpose, method and use of the geologic resource inventory *is* not stated either in the plan nor the EIS. there *is* also *no* definition for "Order 3 standards." It *is* not clear whether or not the inventory includes mineral resources.



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It is recommended that an appendix be added which describes the geologic resources inventory, its purpose, and its effects on planning. "Order 3 standards" must be defined in the glossary, included in general guidelines under "minerals," or described in an appendix. The purpose and effect of the Inventory should be fully addressed. Of primary concern is the effect of the inventory on management objectives and possible plan amendments it may generate. Making minerals an issue would increase the flexibility of the plan and allow full use of the Inventory. Also applies to page 431, Appendix 8-3 of the Forest Plan.

- Pages 2-134 and 2-146 38- High Market Emphasis and High Production Emphasis. These alternatives, at least, should address the lifting of withdrawals from/closure to mineral development to be consistent with the definition of each alternative.
- page 3-22 6.a. 10- Native American populations. Sam comments as noted under Forest Plan (3-3 6.a.).
- Page 3-23 6.a.2 11- Tubatulabal Indian Group. Same comments as noted under Forest Plan (3-3 6.a.2).
- page 3-28 2 Paragraph 3 13- Cultural Resources. Same comments as noted Under Forest Plan (3-10 2 Paragraph 2).
- Page 3-29 Paragraph 5 14- cultural Resources. Same comments as noted under Forest Plan (3-10 2 Paragraph 7).
- Page 3-71 38- Mineral potential ratings are not defined or supported by any referenced analysis. Without some background information forming the basis for these ratings, the reader has no way of judging their accuracy or applicability. Including a description of the rating process in "modeling and analysis" section of Appendix B would be most helpful. It may also be appropriate to reference available resource inventory records maintained in a particular office.
- page 4-37 e. 48- Energy Production and Conservation. No mention of geothermal resources. The majority of the Forest is classified as prospectively valuable by the USGS (1976).
- page 4-57 38- Contains the following statement: "Based on minimal mining activity...supply of minerals locally or regionally would not be substantially affected by actions proposed in the alternative."

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38-

This statement is only true for present supply and does not consider undiscovered or subeconomic resources. This statement is also unsupported by facts or analysis given in the document. A major part of the bill is the removal of lands from exploration or development or severe operating restrictions. It is recommended that mineral resources be included as an issue so that the EIS may fully address the impacts of surface protection/development to mineral resource exploration and development. A map showing the proposed withdrawals overlaid on a geologic map containing mines, prospects, mineral occurrences and known trends would be a useful tool for such an analysis. This information is usually considered to be too detailed for a general land use plan; therefore, it is recommended that the plan merely show a map depicting the proposed withdrawals (overlaid on mineral potential) and include a statement that the implementation of a withdrawal will depend upon a site specific environmental assessment and mineral report to evaluate impacts to mineral resources.

#### Environmental Consequences

This section evaluates the impacts to mineral resources in terms of acres to be withdrawn from mineral entry under each alternative. No information on the location of the withdrawals is provided; no mineral resource data or analysis is present in the document. Without this information, the reader is unable to relate the action to its impacts on-the-ground. A map, depicting proposed withdrawals and mineral potential areas, would correct this deficiency. The method used to determine the mineral potential of an area should be presented in an appendix.

It should also be noted that a site specific land report and mineral report is required, in most cases, before a locatable or leasable mineral withdrawal will be considered by the Secretary of the Interior (Federal Land Policy and Management Act of 1976, Sec. 204(c)(2)(12); 90 STAT 2752).

Page 4-57

51-

Using table 4.24 the range of alternatives proposing mineral withdrawals in areas of very high, high and medium mineral potential aggregating varies from 1% to 22% of the Sequoia National Forest. M1S is an increase of 4% to 8% over the base year 1982. Roughly 1/3 of the Sequoia National Forest is, or is proposed, to be withdrawn from mineral entry. It is recommended that alternatives be considered which reduce the amount

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of withdrawn lands, or, that a rationale is provided as to why this option was not considered. In addition, the increase in the acreage withdrawn should be included on page 16, as a key environmental consequence.

Page 4-57 52- Last Paragraph. Finn decisions at this point on blanket administrative withdrawals from mineral entry are premature. Stated purpose is to protect capital investments within recreation site (primarily ski areas). Even low temperature geothermal resources are ideal for space heating buildings, de-icing mats and parking facilities and similar applications which serve recreation purposes.

Page 4-139 53- Paragraph 6. The purpose of this EIS is to address impacts to and from other resource decisions (since Minerals is not identified as an issue). Management has the flexibility to limit and prohibit mineral development in any area by limiting access (withdrawal classifications, etc.) when impacts are addressed through the EIS process. To say the irreversible actions are outside the scope of this EIS is incorrect.

Page 5-1 List of Preparers

54- Neither of the mining geologists are credited with input to the "Environmental Consequences" section. Input is limited to descriptive information for the "Affected Environmental" section.

It is recommended that a minerals specialist be a member of the team preparing the plan, since this field requires unusual technical expertise, industry and economic familiarity, and application of mining law and mineral policy. This is especially important when mineral resources is an issue.

Maps 55- Recommend that maps should reflect our management designations for that particular resource activity or not delineate ELM land at all. The problem exists where USFS lands are designated for ORV activities and BLM lands around Chimney Peak stand out from all other lands as white in color which could be interpreted as "undesignated." They would then be vulnerable to increased unauthorized ORV activities.

Wilderness Rockhouse Basin CA-010-029

The Draft AS addresses the Bureau's wilderness review

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or nonsuitability of this area for wilderness will be forwarded to the Forest Service for consideration along with the official public hearing transcript - held in Bakersfield on January 9, 1986.

#### MANAGEMENT CONCERNS APPLICABLE TO THE PROPOSED PLAN AND DRAFT E IMPACT STATEMENT

As the preceding comments strongly indicate, many concerns revolve around the issue of minerals and the scope of minerals coverage in both the plan and the OEIS. For example, there is insufficient discussion of the probable effects of renewable resource prescriptions on mineral exploration and development, with the exception of the impacts of wilderness and other types of withdrawals on mineral access. Yet Forest Service planning regulations, 36 CFR Subpart 219.22(f) calls for the forest planners to determine the probable effect of renewable resource prescriptions and management direction on mineral resources and activities, including exploration and development.

One change in the Plan and EIS would go a long way in presenting a clearer picture of the role of minerals in overall Forest Service planning, and would do much to alleviate the impression of a negative, reactionary approach to dealing with minerals. That change is the inclusion of a detailed minerals policy statement under "Forest Goals" in the Plan, and wider "Direction Common to all Alternatives" in the OEIS. The Pacific SW Region of the Forest Service is currently working on such a policy which will resemble the minerals policy of the BLM. Whether the policy is officially complete or not, the W.O. and R.O. of the R.S. do have broad objectives with respect to mineral policy which can be stated or paraphrased in these documents. If the Forest Service is not prepared to make a specific or general minerals policy statement, then the minerals policy of the BLM (attached), which currently has mineral responsibilities on the Forest, should be used. This is critical if the public and future managers seeking direction from this plan are to know what the planning objectives are.

Such planning objectives are clearly laid out for virtually all major forest resources except minerals, Chapter 1, Section 3 of the Plan. This is the Vision Statement, which spells out the goals of the Forest with respect to broad objectives having public benefit. The need to include mineral Objectives in the Vision Statement is all the more critical as a result of the anticipated shift of full mineral responsibility and authority from BLM to the Forest Service under the interchange.

To summarize, specific recommended changes are:

#### PLAN

43-

1. Under forest Goals, page 4-4, Mineral and Geology, the one sentence statement should be replaced with a complete Forest Service or BLM minerals policy statement, making this section comparable in scope to the detailed goals outlined for other resources.

## STANDARD OPERATING PROCEDURES 5-8-81

2708

### Fuelwood

It is the general intent to refrain from disposal of fuelwood. There are small areas where trees may appear to be abundant enough to support limited fuelwood disposal, but limited public access, the declining of native hardwood vegetation types, and the uneconomical management that would result from such an activity, eliminates fuelwood disposal from further consideration.

### Hazardous Waste

Management of the planning area will follow all procedures outlined in the Hazardous Materials Management Program Paper which includes all pertinent federal, state, and local laws, regulations, and orders (BLM - Draft 01/16/84). All new mandates will be incorporated as they become final.

### Livestock Grazing

A. Encourage livestock industry participation in grazing management by developing cooperative management agreements on leases which meet the criteria of: 1) an operators good stewardship; 2) joint agreement on objectives for the allotment; 3) having the ability to allow flexibility; 4) recognition by the operators that they have no authority to manage or exclude other uses.

B. Land treatment areas and seedings will be rested until seedlings are sufficiently established to resist pull-up from grazing.

C. Livestock watering developments will be constructed for and safe for wildlife use, as identified.

D. Wherever feasible, livestock watering and handling facilities will be located a minimum of 1,200 feet from riparian zones, water sources susceptible to trampling, meadows and sensitive species habitat, in order to minimize impacts to other resources.

E. Removal of vegetation and surface disturbances will be minimized when developing rangeland improvements, and surface rehabilitation measures will be applied.

F. Water sources that are susceptible to livestock trampling will be protected.

### Minerals

*Reference to comments on DEIS p 2-36*

Management of mineral resources on public land open to mineral entry, leasing, and disposal (mineral material sales) will be conducted in keeping with the Bureau's Mineral Resources Policy (Appendix 1).

The criteria outlined below governs the management of the mineral resources on public land within the planning area. These criteria are broken out for each mineral resource operant (i.e., exploration, pre, and post-lease/plan approval/permit) for each group of mineral disposal types (i.e., oil and gas, locatable, and other leaseable and saleable minerals) as addressed in the alternatives.

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### General

The National Environmental Policy Act places a requirement on each management decision regarding mineral development or disposal, to address each impact at that decision level using the criteria developed through Title 40 CFR guidelines. In addition, other federal, state, and local laws, regulations, and orders govern our responsibilities for decision making on mineral related actions as well as placing a responsibility on the mineral operators to comply with these laws, regulations, and orders.

#### A. Oil and Gas

1. Exploration. Exploration activities are authorized under the Mineral Leasing Act of 1920 (MLA; 41 Stat. 437) and the regulations at 43 CFR 3040. Oil and gas exploration activities are allowed on federal surface managed by the Bureau after notification on an approved form by the operator. The Bureau does not permit or approve operations, but will assure that operations are conducted to avoid or minimize adverse impacts to other resource values.

2. Pre-lease. The issuance of an oil and gas lease is authorized under the MLA. Guidance and requirements are outlined in the regulations at 43 CFR 3100. All oil and gas lease offers will be evaluated for impacts that may be caused from issuance of the lease and the attendant development and production activities associated with the lease, prior to issuance. Stipulations to ensure orderly and sound development of the mineral resource and reclamation practices will be made a condition of approval of an oil and gas lease.

3. Post-Lease. All post lease construction and production activities are authorized under the MLA, the regulations at 43 CFR 3100, and the terms and conditions of the lease. Each discrete activity is submitted on an approved form for approval by the Bureau. At the time of application or notice, each discrete activity will be analyzed for its impact on other resource values as a requirement of NEPA. In addition to the terms and conditions placed on post-lease activities as a condition of approval, all activities must be conducted in compliance with Part 3100 of the regulations and the attendant oil and gas orders and notice to lessees (NTLs).

#### B. Locatable Minerals

All actions (exploration, location, development, and patenting) regarding the locatable mineral resources on the public land are authorized under the General Mining Law of 1872 (GML; 17 Stat 91). Other laws allow for exploration, location, development, and patenting within areas of special designations or ownership, such as: land patented under the Stockraising Homestead Act, 39 Stat. 364; development of locatable and leasable minerals of the same tract, PL 585 (68 Stat 708); location of uranium claims on land classified or known to be valuable for coal, 69 Stat. 679; location and patent of non-mineral land associated with a placer mining claim, 74 Stat 7; and location and development of locatable minerals in land withdrawn for powersite purposes, PL 359 (69 Stat 681). In addition, the regulations at 43 CFR 3700 and 3800 govern the operation of activities.

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Exploration, development, and production activities conducted on mining claims will be evaluated for known or inferred impacts to other resource values in order to determine whether they will cause undue or unnecessary degradation to the public land (43 CFR 3809). Activities conducted under a notice (3809) will be evaluated to determine if completed activities are in compliance with the required reclamation standards as defined in the regulations. Activities conducted under a plan of operations (3809/3802) will be analyzed by the environmental process prior to approval to determine if the activities as proposed will cause undue or unnecessary degradation to the public land, and the reclamation as proposed follows standard practices to ensure complete rehabilitation of the disturbed area to a condition as near as practical to what existed prior to approved activities.

For activities on mining claims in which mineral activities will substantially impact other resource values worthy of protection, for mining claim locations in areas of high public interest for other resource values, or in areas where minerals not subject to location are being extracted and removed under the premise of the GML, a determination as to the right of the mineral claimant to locate his claim based on a discovery of a valuable mineral deposit will be investigated.

Mining claims will be investigated in order to determine the validity of the discovery of a valuable mineral deposit an application for mineral patent.

C. Other Leasable and Saleable Minerals

1. Exploration for solid leasable minerals is authorized pursuant to the MIA and by the regulations at 43 CFR 3500 for geothermal resources pursuant to the Geothermal Steam Act of 1970 (GSA; 84 Stat. 1566) and the regulations at 43 CFR 3200; and mineral material disposals (sales) pursuant to the Materials Act of 1947 (MSA; 61 Stat 681) and the regulations at 43 CFR 3600. All activities under this section require approved permits prior to conduct of exploration operations. These permits will be reviewed through the environmental process to determine impacts from exploration activities and develop stipulations to approval of the permit to ensure that there will be no or minimal adverse impacts to other resource values.

2. Pre-leasing. Leasing of geothermal resources is authorized under the GSA and Part 3200 of the regulations; issuance of preference right leases and competitive mineral (solid) leases is authorized under the MIA and Part 3500; and disposal of mineral materials by sales contract or free use permit (FUP) is authorized under the MSA and Part 3600 of the regulations. Prior to approval of any lease or permit in the planning area, an environmental analysis of the proposed lease or permit issuance will be made in order to determine the impacts to other resource values.

Areas of special resource values or high public interest for other resource values may be determined unsuitable for leasing or permitting. These areas will be assessed for their impacts to the mineral resource, and alternatives to no leasing will be addressed in the environmental analysis of lease or permit issuance. Stipulations on post-lease

End 1-3

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activities and/or standards of reclamation will be made a condition for approval of the lease or permit.

3. Post-Lease. All post-lease construction, mining, development, and/or production activities are authorized under the MLA, the regulations at 43 CFR 23, 3200 or 3500, the terms and conditions of the lease, and/or Geothermal Resource Orders. At the development stage for mineral material activities, authorization is pursuant to the terms of the contract or Permit. All leasable mineral (geothermal and solid) development requires an approved plan of development. Prior to approval of the plan, each discrete activity proposed will be analyzed for its impact on other resource values as a requirement of NEPA. In addition to the terms and conditions placed on post-lease activities as a condition of approval, all activities must be conducted in compliance with Part 23, 3200, or 3500 of the regulations and attendant Notices and Orders.

#### Oil and Gas Leases - Extraneous Roads

All oil and gas leases on public land within the planning area will be managed to eliminate extraneous roads, wherever feasible, following review of necessity by leasehold operators.

#### Noxious Weeds

Plants designated as noxious weeds will be managed according to the Federal Noxious Weed Act of 1974.

The California Department of Food and Agriculture is responsible for the designation and eradication of noxious weeds for the state. Procedures developed by the California Department of Food and Agriculture and the Bureau of Land Management are listed in the Memorandum of Understanding between the two agencies.

#### Paleontology

A. Paleontological resources will be preserved and protected in accordance with 36 CFR 2, Section 2.1 (iii), 36 CFR 2, Section 2.5 (a) and (b) and 43 CFR 8000.0-6 (c)(2).

B. Paleontological resources are protected under the Antiquities Act of 1906 and collecting, in general, has been identified as a resource use within the planning area; however, no information on significant sites has been collected. Therefore, all "type" locations and significant vertebrate fossil sites will be managed for protection when identified.

#### Realty

A. Consistency with County General Plans and zoning will be maintained with Department regulations and Bureau policy for all realty actions.

B. Federal, state, county, and local agencies desiring access to their land across public land will be encouraged to sign a cooperative agreement with BLM for management of the access, rather than applying for a right-of-way.



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## BUREAU OF LAND MANAGEMENT MINERAL RESOURCES POLICY

This statement sets forth BLM policy for management of mineral and energy resources on public lands. It reflects the provisions of three important acts of Congress, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act (FLPMA) of 1976, and the National Materials and Minerals Policy, Research and Development Act of 1980. This policy statement represents a commitment by BLM to implement the provisions of these acts consistent with BLM's mission and policy objectives.

The Mining and Minerals Policy Act of 1970 declares that it is the continuing policy of the Federal Government to encourage and encourage the development of a stable domestic minerals industry and to ensure that the economic interests of the Nation are protected.

The Federal Land Policy and Management Act of 1976 states that the 1970 Mining and Minerals Policy Act be implemented and directs that public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other resources. FLPMA also provides for improved inventory, planning, and decision processes.

The 1980 National Materials and Minerals Policy, Research and Development Act restates the need to improve the quality of minerals data and use. In 1982, the President delivered to Congress the first annual report required by this act, which provided the guidance to implement these acts.

The BLM recognizes a public's interest in the development of mineral resources on public lands, some of which are critical and strategic. BLM is responsible for making public lands available for orderly and efficient development of mineral resources in a balanced multiple management system.

The following principles will guide BLM in managing mineral resources on public lands.

1. Except for Congressional withdrawals, public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is clearly justified in the national interest.
2. BLM shall manage public lands in a manner that is consistent with the national interest and the economic and social well-being of the Nation and its citizens.
3. BLM will process mineral patent applications, permits, operating plans, leases, and other use authorizations for public lands in a timely and efficient manner.
4. BLM's land use plans and multiple-use management decisions will recognize that mineral exploration and development can occur concurrently or sequentially with other resource uses. The Bureau further recognizes that land use planning is a dynamic process and decisions will be updated as new data are evaluated.
5. Land use plans will encourage the development of mineral resources on public lands through more effective geology and energy and mineral resource data assessment.
6. BLM will monitor salable and leasable mineral operations to ensure proper resource recovery and evaluation, production verification, diligence and inspection and enforcement of the lease, sale or permit terms. BLM will ensure receipt of fair market value for mineral rights and will provide for the protection of the public interest.
7. The Bureau will maintain effective professional, technical, and managerial personnel knowledgeable in mineral exploration and development.

These principles will be interpreted and further clarified where necessary through specific guidance to the field.



Director, Bureau of Land Management

MAY 29 1984

Date: \_\_\_\_\_

End 2-1

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43- 2. The one sentence statement presently included under Forest Goals (referred to above, should be placed in Chapter 1, page 1, under "8. Vision Statement" as one of the bulletized intentions of the Plan.

DEIS

43- 1. The complete Forest Service or BLM minerals policy statement, as if above, should be in part 2, page 2-23, if Common to All

38- 2. Under each separate alternative, Management Prescriptions need to address the affect of that alternative on mineral resource exploration and development (i.e., opportunities, exclusions, restrictions).

We appreciate the opportunity to comment on these documents.

Sincerely,

  
Ed Hastey  
State Director

Enclosures:  
Encl. 1 - Standard Operating Procedures  
Encl. 2 - BLM minerals Policy

cc:  
DSO, Mineral Resources  
CM, Eakersfield

U.S. Department of Interior (BLM)

Resolution:

1. Neither the public nor the Forest Service identified minerals as important enough to qualify for either a public issue or a management concern. The Sequoia Forest is not a highly mineralized area, it has been heavily prospected in years past and is currently under scrutiny by many prospectors. There is only one operating mine on the Forest and it employs only one person. For over a million acres of land, this speaks volumes on the importance of minerals on this Forest.

Within the planning period, prospecting will continue; however, few, if any, mines are expected to materialize. If, for some presently unknown reason, the minerals picture reverses itself, changes to the Plan can be recommended.

2. There is a great difference between proposal and actualities. Page 2-9 says no actuality is anticipated, page 3-14 says several proposals have been made. There is no conflict in these two statements. Also, the Monache proposal has (since the DEIS) been turned down.
3. Restrictions on stream and wetland protection will not eliminate or even severely restrict mineral exploration. Very few mining operations on the Sequoia are in or near streams or wetlands.
4. While miners have an interest in the Forest, they are not considered a separate social group. Most miners would be considered part of the "Working Family" group.
5. Thank you for pointing out this omission. A reference to the Kawaiisu has been added.
6. This section has been corrected to reflect your comment by dropping the last sentence.
7. The text has been corrected to clarify the discussion.
8. The correction has been made -- Thank you for pointing out this error.
9. This typing error has been corrected.
10. We currently have only one operating mine on the Forest and it has not yet been through a validity hearing.
11. To date, prospectors, and the miner, have been willing to do those things that reasonably mitigate potential damage to the environment that would occur through their operations. This is not a large enough issue to fully deserve an examination. On the ground, the present low-profile system is working.
12. Such an assessment is not needed for this planning period.

13. ~~We~~ have corrected the reference to the PCT on this page.
14. Analyzing potential impacts to a very small program is not cost-effective and has not been identified as an issue or a management concern.
15. Reserves are normally expressed in tonnages and there are very, very few mineralized areas that have large reserves. The acreages cited reflect only the broadest type of geologic data. Scrutiny by prospectors and development of mines is by far a better measure of mineral value.
16. The OHV Management Direction for the Sequoia NF has been modified considerably from the Draft Plan. **The** final direction does not include any limited (open) areas where OHV travel of designated routes is permitted.

Specifically relating to mining activities, incidental access of designated routes can be permitted (**see** item b under Zone B under the revised write-up in the Plan, Chapter 4). Those involved in varying phases of mineral prospecting, exploration or development would be included under this heading. **The** reference to "...over 40 percent slope, or with vegetation which generally precludes travel..." was meant to give readers an understanding that much of the NF is not conducive to OHV travel -- most folks couldn't or wouldn't be able to ride in these areas. Again, mineral related activities will be covered under operating plans and therein are different than the rules which apply to general recreationists.

17. Since no recommendation **for** W&SR is proposed, management involvement by the F.S. on river segments outside the NF boundary is not envisioned. **If**, per chance, a change in our recommendation occurs, and this segment of the river is included in W&SR legislation and is so designated, F.S. involvement in planning will be necessary. In this case, coordination with the Caliente Resource Area would be appropriate.
18. In our judgement, the program is not large enough or of general public concern to warrant this level of detail in the Plan. NEPA requirements will result in appropriate levels of public involvement.
19. Conflicts between legal planned and legal un-planned activities are resolved through vegetation, mitigation and possible revision. There have been no unresolvable conflicts to date.
20. **As** to a Minerals Policy, this item is being formulated at the Regional Level and would be incorporated into this Plan.
21. Order **3** Geologic Resource Inventory has been added to the glossary. The purpose of this inventory is to describe regional geologic factors and designation of these factors as well as geologic resources. **It** would also address **how** these affect land allocations, general facility locations and management alternatives. Additional information is available in Exhibit 1 of **ISM** 2881.

22. Geothermal resources are considered to be of minor importance on the Sequoia NF at this time. Little interest has been shown in this area and there has been no development for heating or power.
23. It should be noted that the area withdrawn from mineral entry in base year 1982 consists of 98 percent wilderness and 2 percent other. Wilderness is created by Congress and would only be deleted by Congress. The 2 percent that is not in wilderness is not a significant management concern. On a case-by-case basis, it could be important for one project, but for planning purposes, probably not.
24. The withdrawals are not "blanket" withdrawals because they address very specific areas. In addition, the withdrawal process includes an environmental assessment. Preclusion of use of geothermal or other mineral resources would, by necessity, be carefully weighed.
25. We maintain that such (irreversible) actions are outside the scope of this EIS. The decision to mine is not in our control; it is generated by outside interests and our ability to limit access is very limited. It is also not something that can be accomplished in a short time, nor is it something we should do. Our aim would be to encourage the extraction of valuable minerals and insure that environmental concerns are addressed and mitigated as needed.
26. Our minerals specialists were consulted constantly in the preparation of the Plan.
27. A good point has been raised. In order not to create a wrong impression with readers, maps have been modified to include a tone so as BLM lands do not show as totally white in color.



## United States Department of the Interior

**FISH AND WILDLIFE SERVICE**  
**SACRAMENTO ENDANGERED SPECIES OFFICE**  
 2800 Cottage Way, Room E-1823  
 Sacramento, California 95825  
 April 25, 1986

Mr. James A. Crates  
 Forest Supervisor  
 Sequoia National Forest  
 9110 West Grand Avenue  
 Porterville, California 93721

**Subject:** Proposed Land and Resource Management Plan and Craft  
 Environmental Impact Statement for the Sequoia National  
 Forest (#1-1-86-I-74)

Dear Mr. Crates:

This letter contains our comments on selected aspects of the Sequoia Forest Plan relating to threatened and endangered species. Our comments are restricted to those elements of the plan that have the greatest potential to conflict with the survival of candidate, proposed, or listed species. We do not have sufficient staff resources to critically review other elements in the plan to determine if they are consistent with your assumptions and projections for threatened and endangered species. Other divisions of our agency may submit comments separately concerning other fish and wildlife issues.

1 Generally, we believe that the resolution of issues involving listed species is best achieved through the normal Section 7 consultation process on a project-by-project basis when more specific information is available concerning potential project impacts. Therefore, we recommend that you initiate formal consultation on those components of the selected alternative that may affect listed species at the time such projects appear on your planning horizon.

The listed species that occur on the Sequoia Forest include the Little Kern golden trout (*Salmo gairdneri whitei*), American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), and California condor (*Gymnogyps californianus*). Of these, only the Little Kern golden trout is restricted in distribution to the Sequoia National Forest. The management direction for the preferred alternative states that the Little Kern Golden Trout Management Plan will continue to be implemented; that two pairs of falcons will be established on the Forest; and that habitat will be maintained on the Forest at least one pair of condors.

2 With respect to the California condor, the proposed plan makes a commitment to protect only 2,000 acres and one nest site. This falls short of what would be required to fully implement recovery goals of the California Condor Recovery Plan (1984). The Starvation Grove Nest Site Management Plan alone appears to contain about 2,000 acres of habitat.

2

Thus, the stated acreage output will not provide habitat to meet management goals for nesting and roosting sites recommended in the California Condor Recovery Plan (USFWS 1984) and Forest Service Habitat Management Plan for the California Condor (Carrier 1971). These documents call for protection of nesting and roosting sites. There is one additional nesting site of record and numerous roosting sites for the Sequoia. The Recovery Plan specifically recommends preservation actions for the Basket Peak and Breckenridge Mountain roosts. The proposed plan does not reflect protection of these areas. In addition, we have worked with your staff in the past to set aside acreage to protect the Lion Ridge roost area (see informal consultation #1-1-83-I-184). Thus, we advise that the goals be revised to include an estimate of additional acreage needing management as condor habitat, and that the preferred alternative include protection of condor nesting and roosting sites.

In addition to listed species, several candidate plant and animal species occur on the Sequoia Forest. Included among these candidates is the Shirley Meadow mariposa (Calochortus coemleus var. westonii). This plant is the subject of a conservation agreement and management guide developed in 1984. Candidate species assigned to Category I are taxa for which the Fish and Wildlife Service has substantial information on hand to support listing. We anticipate the eventual development and publication of a proposed rule to list such species as threatened or endangered. The level of threats facing taxa in Category I determines the priority order for listing package development. Candidate species assigned to Category 2 are taxa for which the Fish and Wildlife Service has some information to indicate that listing may be appropriate. However, substantial additional biological data will be required to support a listing proposal, and it is likely that some taxa in Category 2 will not warrant listing. Candidate species are not afforded legal protection under the Endangered Species Act.

The candidate plants on the Sequoia National Forest include:

Common Name	Scientific Name	Category
Shirley Meadow mariposa	<u>Calochortus coemleus var. westonii</u>	I
Plute navarretia	<u>Navarretia setiloba</u>	1
Kernville poppy	<u>Gnyscholzia craccera</u>	2
Springville clarkia	<u>Clarkia sarinowillensis</u>	2
Kern River daisy	<u>Ericaron multiceps</u>	2
Plute buckwheat	<u>Ericogonum breedlovei var. breedlovei</u>	2
Twisselman buckwheat	<u>Ericogonum twisselmannii</u>	2
Greenhorn adobe lily	<u>Trillium striata</u>	2
Bald Mountain potentilla	<u>Potentilla tularensis</u>	2
Shevock's monkeyflower	<u>Mimulus shevockii</u> sp. nov. ined.	2
Twisselmann's nemacladus	<u>Nemacladus twisselmannii</u>	2
Nine Mile Canyon phacelia	<u>Phacelia novemtilianensis</u>	2
Plute jewelflower	<u>Streptanthus cordatus var. niutansis</u>	2

The management director for the preferred alternative states that sensitive plants will be treated as if they are listed as

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The candidate animal species that occur on the Sequoia Forest include the Kern River rainbow trout (Salmo gairdneri gilberti), Kern Canyon slender salamander (Ambystoma simonsi), Tehachapi slender salamander (Ambystoma stebbinsi), California wolverine (Gulo gulo luteus), and Sierra Nevada fox (Vulpes vulpes necator). All of these candidate animals are assigned to Category 2

The wolverine and Sierra Nevada fox were widely distributed in the Sierra Nevada historically. Because only sketchy information is available concerning their present distribution, we have no specific recommendations on how habitats in the Forest should be managed for these two species. The Tehachapi slender salamander is known from the vicinity of Paris Lorraine and the Caliente Creek drainage south of the Sequoia Forest. However, populations could also occur in those areas of the Forest that encompass the Piute Mountains. A significant portion of the geographic range of the Kern Canyon slender salamander is within the Sequoia National Forest. This species has been exclusively found distributed on north-facing canyon wall slopes in Kern Canyon and tributary drainages above the Kern River flood line, from about 1500 to possibly 3000 feet in elevation. The small size and apparently disjunct distribution of known colony sites makes them extremely vulnerable to extirpation from single catastrophic events. Management planning for this area should emphasize protection and maintenance of the extant salamander habitats.

The Kern River rainbow trout was thought to be extinct until recent electrophoretic studies by Dr. Graham Galt of the University of California, Davis, confirmed that a genetically distinct trout still exists in the historic range of S. g. gilberti. Its current distribution includes a stretch of the upper Kern River and a small number of its tributaries in the Sequoia Forest. It is not known how many populations still exist or how large these populations are. How this fish has maintained its genetic integrity in the face of repeated hatchery trout introduction is not known. There are no known physical barriers to isolate the stream populations from introduced hatchery trout. Potential threats to this fish include: (1) logging and the road building associated with timber harvest activities, (2) small hydroelectric development, (3) mineral development, (4) unauthorized transplants of nonnative fishes, (5) habitat modifications that would break down existing isolating mechanisms, (6) excessive angling harvest, and (7) acid precipitation.

4

The proposed plan contains no specific management prescriptions for protecting the Kern River rainbow trout. Any protection that is afforded this species would be coincidental with other management prescriptions, such as wilderness designation or riparian habitat management. The proposed plan specifically notes that "Other than continued implementation of the Little Kern Golden Trout Management Plan, no other direct fisheries habitat improvement is planned."



In view of the activities that will be undertaken in the plan for management of the area, it is anticipated that there will be potential impacts on fishery resources from livestock grazing, and mineral development, we question how fish-habitat conditions in most streams will be maintained in their current condition.\* Just to maintain habitat conditions will require increasing levels of monitoring and management to counter these potential threats. We see no evidence in the proposed plan to insure that such monitoring and management will be forthcoming. The Sequoia National Forest currently does not have a professional fishery biologist on its staff to evaluate and monitor the impacts of conflicting activities on fish habitat conditions. The position formerly held by Richard Standage has been vacant for over one year, and there is no indication in the plan that this position will ever be filled. Without such fishery expertise, we believe that the fishery problems associated with conflicting land uses may not be recognized, let alone corrected. Similarly, unless such technical expertise is available, we question how the Forest will be able to monitor habitat conditions, even to the limited extent specified in Chapter 5 of the proposed plan. We also question how adequate monitoring can be performed to ascertain that all populations of fish and wildlife in the Forest are maintained at viable levels for only \$6,000 annually.

5

Even if the Forest does commit the resources needed to maintain habitat conditions for the Kern River rainbow trout in their present state, there is no assurance that this fish will survive. Only 31% of the stream habitat occupied by fish in the Sequoia National Forest is rated as good or better (Standage 1983). Most of the habitat occupied by Kern River rainbow trout in the smaller tributaries is in poor condition (Standage 1983). The remaining habitat in the mainstem of the Kern River is not isolated by physical barriers and this population may be displaced if other trout species become established in this reach of river. Few data are available concerning the total population size and distribution of this fish and virtually no information is available concerning population trends. Surveys are needed to document baseline conditions and to evaluate the vulnerability of this fish to land use changes proposed in the plan.

6


The system proposed in the plan for monitoring the status of fish and wildlife utilizes a habitat capability model. Yet the existence of available physical habitat provides no assurance that a species will be able to use it. The principal factor in the decline of the Little Kern golden trout to threatened status was introgressive hybridization with an introduced species. The Kern River rainbow trout is vulnerable to this same threat. Several of the activities that would be authorized in the proposed plan would increase the likelihood of unauthorized fish transplants by improving human access into the upper Kern River basin. A monitoring program that relies solely on habitat capability would not detect such a threat. Given the long reporting interval specified in the plan relative to such monitoring, it is possible that the Kern River rainbow trout could be displaced by an unauthorized fish transplant before the problem is even detected and reported.

In view of the foregoing discussion, we believe the proposed plan is deficient in the manner it treats candidate animal species. With respect to the Kern River rainbow trout, we recommend that the plan address the potential problems associated with this fish by (1) conducting baseline surveys to document the size of the population and its distribution on the Forest, (2) assessing current habitat conditions and the management actions needed to maintain the genetic integrity of this fish, (3) assessing the threats that would be posed by conflicting activities, (4) making a commitment to maintain adequate professional fishery support staff to respond to conflicts that may adversely affect fish populations, and (5) modifying and expanding the proposed monitoring system.

- 4 Problems similar to those described above for the Kern River rainbow trout also exist with respect to the two distinct 'golden' trouts that are native to the South Fork Kern River drainage. We suggest that an approach similar to that recommended above for the Kern River rainbow trout also be taken for these two fishes.

Thank you for the opportunity to review the subject documents. We would appreciate receiving notice of future activities that relate to the revision and implementation of the proposed plan. Please contact Dave Harlow or Ed Lorentzen at FTS 460-4866 (916/973-4866) if you have any questions.

Sincerely,

  
for Gail C. Kobetich  
Project Leader

CC:  
Chief, Endangered Species, Portland, OR (AFA-SE; Attn: Ralph Swanson)  
Pacific-Southwest Regional Office, U.S. Forest Service, 630 Sansome  
Street, San Francisco, CA 94111 (Attn: Gale Avant)  
Field Supervisor, Ecological Services, Sacramento, CA (ES-S)

REFERENCES

- Carrier, W. D. 3371. Habitat management plan for the California condor. U.S. Forest Service. 51 pp.
- Standage, R. W. 1983. Analysis of the Management Situation: Sequoia National Forest Fisheries. Tule River Ranger District, U.S. Forest Service, 55 pp.
- U.S. Fish and Wildlife Service. 1984. California condor recovery plan. Portland, OR. 110 pp + appendices.

U.S. Department of Interior (Fish and Wildlife Service)

1. Normal consultation on a project-by-project basis will continue and remain the Forest's main link to the Fish and Wildlife Service regarding threatened, rare, or endangered species.
2. The Plan has been revised to follow the California Condor Recovery Plan.
3. We agree that surveys are needed. The Kern River rainbow is not currently listed in a protected status and not enough information is available at this time to determine the need for protection. As this information is gathered, the Forest will develop management direction and guidelines as needed.
4. Our current and proposed management of resources in and around fish habitat is to emphasize riparian-dependent resources over non-dependent resource activities such as timber harvesting. Our use of Best Management Practices and prescriptions, developed through our Forest Riparian Standards and Guidelines, will maintain fisheries habitat. Improvement of fishery habitat will occur through erosion control projects, removal of fish barriers, planting of willows and other plants to stabilize banks and provide shade, and installing structures such as boulder clusters to increase the number and size of pools. All these improvement measures are currently, and will continue to be, implemented as opportunities are identified.
5. The Forest has taken positive steps toward obtaining fisheries expertise. A Fisheries Biologist now works on the Sequoia and Sierra National Forests to provide technical expertise. She is assisted by many field personnel, such as wildlife biologists, range conservationists, and timber planners, in basic inventory monitoring of fish habitat resources and identification of problem areas needing restoration project work.

Through implementation of Best Management Practices (BMP's) and the Forest Riparian Standards and Guidelines, the Forest will maintain current fish habitat resources.

6. Fish habitat monitoring is a component of overall monitoring of streamside management zones and riparian management as addressed in the monitoring section of the Plan. Monitoring of habitat capability will be related to fish population studies.

Introduced species management is the responsibility of the State.

8060

1 MAY 1986

Mr. James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

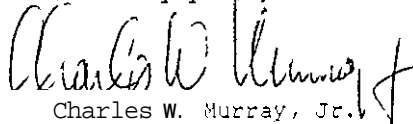
Dear Mr. Crates:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) titled SEQUOIA NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN: TULARE, KERN AND FRESNO COUNTIES, CALIFORNIA. We have the enclosed comments regarding this DEIS.

We have classified this DEIS as Category EC-2, Environmental Concerns - Insufficient Information (see attached "Summary of Rating Definitions and Follow-Up Action"). This DEIS is rated EC-2 because we are concerned about potential impacts to forest resources such as watersheds, water quality, riparian and meadow areas, beneficial uses and soils. The classification and date of EPA's comments will be published in the Federal Register in accordance with our public disclosure responsibilities under Section 309 of the Clean Air Act.

We appreciate the opportunity to review this DEIS. Please send three copies of the Final Environmental Impact Statement (FEIS) to this office at the same time it is officially filed with our Washington, D.C. office. If you have any questions, please contact Roberta Blank, Federal Activities Branch, at (415) 974-8187 or FTS 454-8187.

Sincerely yours,



Charles W. Murray, Jr.  
Assistant Regional Administrator  
for Policy and Management

Enclosure (4 pages)

Surface Water Resource

1. On page 3-38, the DEIS States that "Water quality is protected by applying Best Management Practices (BMPs) in accordance with a cooperative agreement with the California State Water Resources Control Board." The 1981 Management Agency Agreement between the State Water Resources Control Board and the Forest Service certified that BMPs developed in the §208 Plan would constitute sound water quality management and that implementation of these practices would constitute compliance with substantive and procedural requirements of state water pollution control law as mandated by 5313 of P. L. 95-217. It should be noted, however, that implementation of BMPs does not constitute compliance with Water quality standards per se. In the event that a Sequoia National Forest project, undertaken with or without appropriate BMPs, creates a water quality problem or causes a standards violation, the state and Regional Water Quality Control Boards retain the authority to carry out their responsibilities for management of environmental quality. In addition, the DEIS indicates on page 3-31 that "Currently, the Sequoia National Forest does not have a water quality monitoring program." Water quality monitoring would be important to assess compliance with water quality standards and the success of BMPs.
2. The FEIS should address compliance with the California Antidegradation Policy. This policy states "where the existing quality of the water is better than the Standards set, that such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial uses of such water and will not result in water quality less than that prescribed in the policies." This policy is reiterated in Federal regulations (40 CFR 131.13(a.2)). The FEIS should evaluate the projected degradation of water quality due to cumulative watershed impacts from timber harvesting, reforestation ground preparation, prescribed burning, mechanical vegetative treatment, ski area development and new road construction. in terms of the Antidegradation Policy.
3. The discussion of cumulative watershed impacts on pages 4-30 to 4-35 indicates that for alternatives PRF, CUR, CED, MKT, PRO and WLI, "the potential cumulative watershed impact index remains below 300 until the fourth and fifth decade when it nearly doubles at which time increased mitigation will be needed." The FEIS should address the relationship between the watershed index and water quality degradation, in terms of impacts to beneficial uses and discuss what additional mitigation measures would be required and how successful these would be.

Standards and Guidelines

1. With regard to dispersed recreation management, we encourage efforts to prevent damage to sensitive meadow areas from recreation use. Also of concern is the potential for Giardia infestations in backcountry streams that receive dispersed recreation Use. The FEIS should discuss known or suspected Giardia problems. If there is monitoring or a plan of action for this problem, it should be included in the Final Forest Plan.
2. The Standards and Guidelines for riparian and meadow areas are inadequate. However, the discussion indicates (Plan, p. 4-27) that in the future a Riparian Area Management Plan, including Standards and guidelines, will be composed. EPA suggests that interim forestwide riparian standards and guidelines that offer increased protection for sensitive riparian areas be applied until specific guidelines are established by the management plan. The FEIS should address when the Riparian Area Management Plan will be completed and discuss whether funds have been budgeted for such a plan. The management plan should include wet meadow areas.
3. The Standards and Guidelines for Soil and Water do not specifically address the use of herbicides. The FEIS should present guidelines used to protect surface and ground water from herbicide runoff and drift. Provisions to monitor these constituents in municipal watersheds should be included in this discussion.

Vegetative Competition

1. The FEIS should discuss the relationship between the method of timber harvesting used (i.e., even age management) and the need for herbicide use to achieve regeneration.  
  
Is it possible, in this southernmost extent of the Sierra Nevada, that clearcut or seed tree harvest regimes change the microclimate (due to removal of shade and moisture) in cutover areas? Would this make reestablishment of seedlings difficult, while concurrently improving the Site for brush species, thereby requiring herbicide use?
2. The FEIS should discuss whether there is a reforestation backlog on the Forest. If so, what is the extent of this backlog and how does it affect modeling assumptions for growth and yield used to predict outputs? Impacts of such a reforestation backlog on sediment levels and water quality should be discussed.

### Soils

1. Page 3-36 indicates that quantitative information about soils Properties and forest management practices is scarce and that little is known about the tolerance of forest soils to withstand impacts without seriously impairing productivity. The table on page 3-35 indicates that the Forest has a large proportion of highly erodible soils. Page 2-207 states that under the Preferred Alternative there is only a moderate likelihood of maintaining soil productivity. Page 3-35 states that productivity can best be maintained if the soil surface layer is maintained and there is a continued supply of forest humus. The above statements are of concern because most of the alternatives proposed use primarily clearcut and seed tree methods of harvest, which cause the maximum amount of disturbance to the soil surface. The FEIS should indicate what a moderate likelihood of maintaining soil productivity means with regard to sustained yield, and impacts to other resources such as watershed, water quality, beneficial uses and riparian and meadow areas.
2. Page 2-211 states that the "quality of the fishing experience will decrease" under the Preferred Alternative. The FEIS should explain this statement. The DEIS also states that trout levels will remain constant throughout the planning period for alternatives where the cumulative watershed impact index nearly doubles in the fourth and fifth decades. The FEIS should discuss the cumulative watershed impact index values with regard to fishery levels.

### Monitoring and Needs

It appears that additional study is needed in the areas of riparian and soils management to ensure that the Forest can establish output goals that also protect Forest resources and productivity. We recommend that the Forest make study of these issues a priority, and gather more baseline information on soil tolerance and water quality before proposing increases in outputs. It appears that these factors may influence the assumptions upon which this Forest Plan is based.



SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION\*

8560

Environmental Impact of the Action

LO--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

\*From: EPA Manual 1640 Policy and Procedures for the Review of  
Federal Actions Impacting the Environment

Environmental Protection Agency

Resolution: (Note: The numbers of the topic responses key to those in the incoming letter.)

Surface Water Resource

1. The Forest Service realizes the State's authority to carry out its responsibilities for management of environmental quality. As part of the "Water Quality Management For National Forest System Lands In California," the Forest will be monitoring riparian areas following "Riparian Standards and Guidelines for the Sequoia National Forest" (January 1986).
2. The FEIS indirectly addresses compliance with the California Antidegradation Policy. By implementing Best Management Practices (BMP's), improving watershed conditions with restoration projects, and obliterating unneeded roads, the FEIS projects only water quality increases.
3. The Potential Cumulative Watershed Impact Index is only a barometer for all soil disturbing activities by alternative per decade. It does not project water quality degradation. With BMP's, beneficial uses will not be significantly impacted. Additional mitigation measures will be addressed within the "Water Quality Management For National Forest System Lands In California" process for new BMP's.

Standards and Guidelines

1. To minimize recreation use impacts in meadows and riparian areas, camping within 100 feet of a stream or lake is discouraged. The use of untreated stream or lake water is also discouraged. The Forest Service information services emphasizes both of these areas and recently published "Is The Water Safe?" (a pamphlet on giardia).
2. The Forest composed a document "Riparian Standards and Guidelines for the Sequoia National Forest", January 1986, and is in the process of implementing it. The Forest Plan calls for \$30,000 per year for implementation. The riparian area includes meadows.
3. The analysis of pesticide environmental impacts will be fully documented in a separate environmental analysis or an environmental impact statement. Provisions to monitor these water quality constituents in municipal watersheds will be addressed in those documents.

Vegetative Competition

1. Appendix G of the EIS discloses the state-of-the-art knowledge, in condensed form, on timber management and the relationship between the method of timber harvesting used and the need for herbicide use to achieve regeneration.

2. The reforestation backlog identified as a result of NMA (1976) has been completely eliminated on the Sequoia National Forest.

#### Soils

1. Our goal in managing the Forest is to maintain the long-term productivity of the Forest's soils and to prevent any significant reduction in water quality. Consequently, we designed each of the alternatives to meet these goals.
2. As stated before. Potential Cumulative Watershed Impact Index is only a barometer for all soil-disturbing activities by alternative on the Forest. It does not project actual soil movement or sediment delivery to streams, much less the impact on fisheries. With BMP's, sedimentation from these activities will have an insignificant effect on fisheries.

#### Monitoring and Needs

1. The Monitoring Plan identifies two methods for evaluating impacts on earth resources. Soil productivity and water quality will be monitored utilizing cumulative watershed impact analysis. Meadow, riparian area, and associated values will be monitored by validating the application of BMP's through systematic sampling as described in the Forest riparian standards and guidelines.

2401

Resources Building  
1415 Ninth Street  
55814  
(916) 445-5858  
TDD (916) 324-0804

GEORGE DEUKMEJIAN  
GOVERNOR OF  
CALIFORNIA



Air Resources Board  
California Coastal Commission  
California Tule Conservancy  
California Waste Management Board  
Colorado River Board  
Energy Resources Conservation and Development Commission  
San Francisco Bay Conservation and Development Commission  
State Coastal Conservancy  
State Lands Division  
State Reclamation Board  
State Water Resources Control Board  
Regional Water Quality Control Boards

California Conservation Corps  
Department of Boating and Waterways  
Department of Conservation  
Department of Fish and Game  
Department of Forestry  
Department of Parks and Recreation  
Department of Water Resources

THE RESOURCES AGENCY OF CALIFORNIA  
SACRAMENTO CALIFORNIA

Mr. Chuck Pickering  
U.S. Forest Service  
900 West Grand Avenue  
Porterville, CA 93257-2035

April 24, 1986

Pear Mr. Pickering:

The State has reviewed the Sequoia National Forest Plan, submitted through the Office of Planning and Research. Review was coordinated with the State Lands Commission, Regional Water Board, and Departments of Conservation, Fish and Game, Forestry, Parks and Recreation, Water Resources, Health Services, and Transportation.

Attached are extensive comments received from the Departments of Conservation, Fish and Game, and Transportation.

- 1- The Department of Parks and Recreation comments that the Forest Plan should identify specific sites that could be recommended for formal designation as Sno-Park sites. If needed, consideration should be given to a financial plan for providing the necessary grading and paving to support the weight of snow removal equipment. Contact for the Department is Ken Martin, Box 942896, Sacramento 94296-0001.
- 2- The Department of Water Resources (DWR) comments that implementation of alternatives other than the Resources Planning Act or the Low Budget Alternative would result in increased sedimentation of reservoirs and a consequent reduction in water supply and hydroelectric energy. The cost of replacing such lost water supply and energy would be high, and these potential losses should be considered in the economic analysis.

Firm supplies have a much higher value than intermittent supplies with regard to the reliability of potential water supplies and related power. Although intermittent supplies can be "firmed up" by regulatory storage, the bulk of new runoff expected would occur in wet years when extra capacity on existing reservoirs would be unavailable. DWR, therefore, believes that reduction of runoff variation is desirable.

Questions regarding these comments should be directed to Ken Turner at 445-7525.

Sincerely,

Gordon F. Snow, Ph.D.

Assistant Secretary for Resources

Attachments (3)  
(SCH 85111813)

---

*The Resources Agency of California*

▪ Parks and Recreation

Resolution:

1. **The** Forest Plan does not include the level of specifics on Sno-Park sites on the Forest requested. **We** see a long-term need to undertake a planning effort to identify the specifics of winter recreation activities, including both motorized and nonmotorized uses. Therefore, this addition has been made to management direction in chapter 4 of the Plan. This study effort will result in the identification of additional Sno-Park sites. Currently, the Forest has two sites, both located along the Western Divide Highway on the Tule River R.D. **This** has been noted in the discussion in the Affected Environment section of the FEIS (Chapter 3) and the AMS summary of the Plan (Chapter 3).

▪ Water Resources

Resolution:

2. **The** Department of Water Resources (DWR) concern about sedimentation comes from the Potential Cumulative Watershed Impact Index. **This** index is only a barometer for all soil disturbing activities by alternative on the Forest. **It** does not project actual soil movement much less sediment delivery to streams or reservoirs. With Best Management Practices (BMP's) sedimentation from these activities will have an insignificant effect on reservoir capacity.

## Memorandum

To : Dr. Gordon F. Snow  
Assistant Secretary for Resources

Date : FEB 21 1986

Subject: Draft EIS and Management  
Plan for Sequoia National  
Forest, SCH No. 8511181

From : Department of Conservation—Office of the Director

The Department of Conservation's Division of Mines and Geology has reviewed pertinent sections of the subject document regarding mineral resources and has the following comments:

- (1) The EIS mentions gold, hematite, uranium, rock aggregate and decomposed granite, and geothermal resources as resources present in the National Forest. In addition, Smith and others (1971a, 1971b, 1, 2), reported occurrences of the following mineral commodities in the Forest:

Antimony  
Barite  
copper  
Fluorite  
Lead  
Limestone  
Molybdenum  
silver  
zinc

- 1- We recommend that these be mentioned in the Final EIS to provide a more comprehensive picture of the Forest's mineral resources. The Final EIS should also emphasize that a detailed inventory of mines, minerals, and mineral potential has not been conducted on the Forest; therefore, the present and future importance of the Forest's mineral resources is still largely unknown.
- (2) On page 1-3, several issues related to management of the forest are discussed. Mineral resources are not discussed in this section. Furthermore, on page 3-70, the OEIS cites the following:

"... use and production is not a Forest issue or concern because of low mineral potential."

The above quotation seriously contradicts a subsequent statement on page 3-71 that the Forest contains "... 670,000

Dr. Gordon F. Snow  
Page 2

acres of medium; and 335,000 acres of very high/high potential." These figures were assigned by personnel of the Forest Service, yet evidently have not been given much attention relative to other issues.

- 2- We recommend that mining and mineral resources be formally included as one of the issues discussed on page 1-3. The emphasis today of mining high-volume, low-grade ore seriously affects other uses of land and is particularly important if management of the Forest during the next 50 years is going to emphasize and encourage mineral development as stated in the Management Plan (p. 4-4).
- (3) Each of the management alternatives lists numbers of operating plans to be approved per year over the next 50 years. It is not clear how these numbers were derived and whether they represent plans projected for approval or represent an annual numerical restriction on approvals of plans. We note that the year 1982 (41 plans) was evidently a base for the alternative plans' numbers, but this is not clearly stated in any of the sections of the report that discuss minerals. If this year was used as a base, how representative is it and why weren't years prior to 1982 considered?
- 3- (4) On page 3-71, it is concluded that development of geothermal resources is unlikely during the planning period. If this period covers 50 years, then this conclusion is unwarranted.
- 4- 'Current information' cannot reliably be used to project potential discoveries, uses, and technological advancements regarding geothermal resources over the next 50 years. Geothermal resources are known to occur in the planning area now.
- (5) The Geologic Resource Inventory (p. 2-36) is essential for proper management of the Forest. A definition of "Order 3 standards", which the USFS intends to use as its guideline for the inventory, is needed. A discussion of the components of this inventory is also needed.
- 1-

If you have questions regarding these comments call Zoe McCrea, Division of Mines and Geology Environmental Review Officer, at (916) 322-3202.

  
Dennis J. O'Bryant  
Environmental Program Coordinator

cc: Zoe McCrea, DMG  
Chris T. Higgins, DMG  
Lynn Jones, DMG

**REFERENCES**

1. Smith, M.B., and others, 1971a, Reported occurrences of selected minerals in the central third of California: U.S. Geological Survey, Mineral Investigations Resource Map MR-48, scale 1:500,000.
2. Smith, M.B., and others, 1971b, Reported occurrences of selected minerals in the southern third of California: U.S. Geological Survey, Mineral Investigations Resource Map MR-49, scale 1:500,000.



The Resources Agency of California

- Conservation

Resolution:

1. Order 3 Geologic Resource Inventory has been added to the glossary. *The* purpose of this inventory is to describe regional geologic factors and designation of these factors as well as geologic resources. It would also address how these affect land allocations, general facility locations and management alternatives. Additional information is available in Exhibit 1 of ~~SM~~ 2881.
2. Neither the public nor the Forest Service identified minerals as important enough to qualify for either a public issue ~~or~~ a management concern. *The* Sequoia National Forest is not a highly mineralized area, it has been heavily prospected in years past and is currently under scrutiny by many prospectors. There is only one operating mine on the Forest and it employs only one person. For over a million acres of land, this speaks volumes on the importance of minerals on this Forest.

Analyzing potential impacts to a very small program is not cost-effective and has not been identified as an issue or a management concern.

Within the planning period, prospecting will continue; however, few, ~~if~~ any, mines are expected to materialize. If, for some presently unknown reason, the minerals picture reverses itself, changes to the Plan can be recommended.

3. The year 1982 was the year we were instructed to use - for reason of consistency. The 1982 figures may be fractionally higher than average, because this was just a couple of years after a sharp rise in the price of gold. Things have since tapered off somewhat, thus over a period, cyclical changes will occur due to the rise and fall of the mineral market.
4. Geothermal resources are considered to be of minor importance on the Sequoia National Forest at this time. Little interest has been shown in this area and there has been no development for heating or power.

**DEPARTMENT OF FISH AND GAME**

REGION 4  
1234 E Shaw Avenue  
Fresno, CA 93710  
(209) 222-3761



April 11, 1986

James Crates, Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

Subject: Sequoia National Forest Land and Resource Management  
Plan and Draft EIS, Department of Fish and Game Comments

Dear Jim:

The attached represents our comments regarding the Sequoia National Forest LRMP which the Department of Fish and Game forwarded to the Resources Agency. You may already have received them as part of the Agency's comprehensive (multi-departmental) comment letter.

Please regard the attached materials as our official Department comments in the event either (1) the Agency letter is not received prior to your closing deadline for the comment period, or (2) the attached Department of Fish and Game comments are not included within that letter. (Because we were late in furnishing our comments to the Resources Agency, it is possible that our comments may not have been included.)

If you have any specific questions about the comments, or would like to discuss them in general, please do not hesitate to give me a call. I feel it would be in the best public interest for our staffs to meet and discuss the issues, and possible remedies, as early as possible during development of the FEIS and Final Plan.

Sincerely,

A handwritten signature in cursive script that reads "George D. Nokes".

George D. Nokes  
Regional Manager

2491  
-1

- 1. Gordon K. van Vleck  
secretary For Resources
- 2. Gordon F. snow  
Projects Coordinator

April 22, 1986

Sequoia National Forest Land and Resource Management Plan and Draft EIS

The Department of Fish and Game has reviewed the Sequoia National Forest Draft Land and Resource Management Plan (LRMP) and Draft Environmental Impact statement (DEIS). our comments are submitted in four parts: (1) this letter comprising our general comments on both documents, (2) Addendum 1, containing comments focusing on natural diveesity. (3) Addendum 2. addressing syecific concerns on the Draft Forest plan, and (4) Addendum 3, containing specific comments on the Draft EIS.

Comments in Addendum 1, while addressing specific natural diversity issues, also identify problems inherent in the planning process. For the purpose of this review, we have confined our detailed comments (those in Addendum 2 and 3) to the statements actually made in the two planning documents. We recognize that they are critical in nature, and in some cases, the comments may not provide supplemental, technical information. Much of that information has been furnished to the Sequoia National Forest (SNF) staff in the past through rather lengthy consultation during the Plan's development.

1

Earlier consultation included our direct input to the Plan through; (1) direct assignment of a DFC wildlife biologist to the Forest's full-time planning staff for a period of 2 1/2 years, (2) numerous staff-level discussions regarding resource concerns and problems on the SNF, (3) comments on their preliminary draf: LRMP in 1985, and (4) direct participation on the Forest service Regional Interdisciplinary Team over the pas: two years. We are disappointed that this consultation is not evident in the Draft Plan and its accompanying DEIS, as published.

2

Despite our lack of success in affecting their LRMP and DEIS so far, ne intend to continue to provide cocstructive input to the Forest's planning process by offering technical information and consultation to the Forest staff. This will be directed toward assisting them in development of an adequate Final LRMP and EIS. we consider that consultation process essential because the SNF has no fisheries or wildlife biologist on its existing staff.

This Plan, if adopted, will have far reaching implications regarding the future status and management of fish, wildlife and native plants on all public lands within its scope.

Commensurate with the importance we attach to this and future plans submitted by the SNF and by the other National Forests, we have made every effort to provide a thorough analysis of the content of these documents and to develop an objective evaluation regarding the degree to which we feel fish and wildlife needs have been met. Based on our analysis, and supported by the comments that follow, we conclude that both the proposed Plan and the accompanying DEIS are substantially deficient in their treatment of fish, wildlife, and native plant resources. We believe that the adoption of this plan as it is written would result in significant adverse impacts to these resources.

2 we believe that a commitment must be made that monitoring will, in fact, occur. That commitment should guarantee that qualified personnel will conduct the required monitoring.

we intend to provide the information very soon to enable the Forest's staff to use it in guiding development of the Final Plan and EIS. It will not, however, be completed prior to the closing deadline for acceptance of Comments. The Forest's use of the supplemental material will, therefore, be at its own discretion, although we encourage the Forest to take it into consideration.

we invite any general or specific questions, and will be available upon request for further consultation. Please do not hesitate to contact us. Inquiries should be directed to George Nokes, Regional Manager, 1234 E. Shaw Avenue, Fresno, CA 93710, Telephone (209) 222-3761.

Original signed by  
Peter Bontadelli for  
Jack C. Parnell  
Director

By George D. Nokes

Attachments (3)

REFERENCES

1. Smith, M.B., and others, 1971a, Reported occurrences of selected minerals in the central third of California: U.S. Geological Survey, Mineral Investigations Resource Map MR-48, scale 1:500,000.
2. Smith, M.B. and others, 1971b, Reported occurrences of selected minerals in the central third of California: U.S. Geological Survey, Mineral Investigations Resource Map MR-49, scale 1:500,000.

ADDENDUM !

GENERAL COMMENTS ON THE  
SEQUOIA NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN  
AND DRAFT ENVIRONMENTAL IMPACT STATEMENT -  
NATURAL DIVERSITY ISSUES

3 We have concluded from extensive review of the documents that commodity outputs, principally timber and livestock grazing, are treated as overriding forces in allocating land uses. This concerns us since National Forest Policy clearly states that fish and wildlife resources will be given co-equal consideration and the protection of natural diversity may not be possible otherwise. To achieve co-equal status will require a degree of plan specificity and land allocation for fish and wildlife commensurate to that afforded commodity production.

4 A major flaw in the Plan is the assumption that all fish and wildlife resources can be protected and enhanced as a by-product of other dominating land uses. This problem is illustrated by the absence of specific land or habitat allocations for fish and wildlife. The majority of forest lands not protected by wilderness status have been allocated to various levels of timber range management or recreation. Specific treatment measures call for extensive pest control, conversion to even-age management, and the reduction of hardwoods. The concomitant loss of important wildlife habitat and diversity will result in significant impacts which are not recognized in the Plan or DEIS.

The maintenance of natural diversity, especially where it concerns species most in danger of extirpation, is an important mission of the Department; we have therefore devoted a considerable amount of effort analyzing the treatment of this subject in these comments.

5 Before discussing the substance of these comments, we want to emphasize three important points. First, the Natural Diversity Data Base (NDDB), which the Department has assembled over the past 5 years, contains much of the scientific information upon which we are basing our comments regarding natural diversity. It appears that those who prepared the Plan did not consult this information. We urge the Forest to make use of it in preparing the final documents. The staff of the NDDB would appreciate receiving copies of rare plant and animal survey reports, forms and appropriate documentation by the Forest.

6 Second, the Department has devoted a considerable portion of staff time to reviewing and coordinating our recommendations and comments on this and all of the preceding stages of planning.

Our regional personnel, as well as a specially assigned Regional Planning Team Member, have been at the Forest's disposal for this entire period. Unfortunately, the Plan does not reflect this effort, or the expertise we have to offer.

7 Third, the Department believes that for the Forest to comply adequately with the letter and intent of the National Forest Management Act of 1976, and in particular Section 1604 (g)(3)(b), the Forest Plan must demonstrate the ability and intention of the Forest Service to manage and preserve all of the rare species presently found in the Forest. Absent proper management, these species are the most likely to be adversely affected by human activities.

The treatment of botanical diversity in the Plan and DEIS is of particular interest to the Department. It is especially important on the SNF since over 1/4 of the plant species that occur in the State can be found on this Forest.

8 In Chapter 2 of the DEIS, the planning alternatives are discussed, but the treatment of rare plants (especially if, where and how they are protected in designated areas) is not compared between the alternatives. These issues should be addressed, especially since on Page 4-50 of the DEIS it is asserted that the amount of sensitive plant habitat found in designated areas was compared between alternatives.

9 The goal of the LRMF, as stated on Page 1-1 of the Draft Forest Plan is to "provide a management program reflecting a mix of activities which allows use and protection of Forest resources". We believe the Preferred Alternative selected by SNF fails to meet this goal in regard to protecting and maintaining the fish and wildlife resources on the Forest.

10 On Page 2-8 of the LRMF under the chapter, Management Concerns, the Plan states that "Other than implementation of the Little Kern Golden Trout Management Plan, no other direct fisheries habitat improvement is planned ...". No effort is planned or obligated directly for fishery habitat work.

An estimated 60,026 fishermen used Sequoia National Forest in 1980. Angler demand is projected by SNF to increase 125% by 1990 to between 14,735 to 82,011 anglers. The present demand on the Forest fishery resource outside of wilderness is approaching the maximum harvest rate this limited resource can support. Projected future angler demands, if they should occur, are even further out of balance with the available resource.

It is anticipated that stocking of catchable-sized rainbow trout will be unable to keep up with the projected demand. In some instances it may be necessary to decrease the number of fish stocked in a particular reach of stream to reduce angler activity and thus protect some streambanks from damage.

11 Some multiple use activities on the Forest have non-point impact on fishery resources. This is a cumulative impact which usually occurs in the form of increased water temperature or

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- 11** sedimentation. Both reduce the carrying capacity of the stream and result in fewer fish. This should be addressed in the Plan.

we recommend a shift in management direction to a more aggressive approach of restoration and/or improvement of the basic productivity of the riparian-dependent resources. This would mean a commitment of manpower and operating funds. The production of "goods" from the riparian zone should be included with Forest-wide goals along with timber and AUMs, and similar effort and funds expended in achieving those goals.

- 12** The Memorandum of Understanding between the Forest Service and our Department places the responsibility for fish and wildlife habitat on the Forest service and the management of fish and wildlife resources on the Department. Under the preferred alternative, there are no provisions for fishery habitat improvement work. It is doubtful the Forest standards and guidelines will maintain or improve aquatic habitat. There is an unrealistic assumption in the Plan about the future of the forest fishery. Approximately 77,000 pounds (1982 level) of resident fish have been estimated on the SNF. It is incorrectly assumed that this value will remain constant into the 5th decade of the LMP without fish habitat enhancement activities.

without provisions for habitat maintenance and/or improvement, the number of pounds of resident fish on the forest will decline. The increase in activities that indirectly result in a decline in fish habitat will result in a corresponding reduction in the carrying capacity of streams. New road construction and associated timber production will most likely be the primary factors in the decline of trout habitat. Under the PRF alternative, there will be 58 miles of road construction/re-construction on the forest annually. According to the PRF alternative, only "About 30% of the conifer zone will remain unroaded". Annual harvest of timber will average 104 million board feet. Cattle grazing will increase from the current level of 63,000 AUMs to 71,000 AUMs annually. Some cattle grazing will no doubt occur along streams, and without protection, streambanks will be damaged resulting in a reduced carrying capacity for fish.

- 13** The Forest and Rangeland Renewable Resources Planning Act of 1990 sets the following goals for fishery resources on forests: 1) by 1995 provide for increased habitat at 80% or more of potential, 2) by 1995 provide for increased habitat capabilities, and 3) increase RFA management indicator species (resident trout) by 20%.

Riparian dependent resources must be intensively managed if they are going to continue to meet the expectations of the public (including RPA goals). Best Management Practices (BMP) would be a big step in the right direction.



While meeting RPA goals may be difficult due to naturally occurring habitat conditions on the SNF, their attainment is also influenced by the amount of effort and funds available for habitat repair and enhancement. Equally important are the effectiveness of BMPs and riparian management prescriptions and the dedication to their implementation. None of these concerns are addressed by the preferred alternative.

14 We are very much concerned about the proposed budget under the PRF alternative. The projected budget under the current (CUR) alternative is \$15.8 million. It is our understanding the Sequoia is operating on about \$10.5 million. Under the current atmosphere of fiscal restraint, it is safe to assume that there will be reduced funds for operating, and consequently, the projected \$19 million operating budget under the PRF alternative is not realistic. If this assumption is correct, then several aspects of the PRF alternative must be reevaluated.

Under a reduced operating budget, where will the cuts in the PRF alternative be made? SNF personnel have stated in public meetings that various segments of the plan will probably be prioritized and cuts made accordingly. Since the Forest Service has timber and AUM targets to meet, it is logical to assume that these may have high priority and other areas of the Plan will receive the largest cuts. Among those that have the greatest potential for budget reduction are fish and wildlife management and monitoring.

15 The Plan states that the PRF "alternative produces market and non-market resources close to the 1980 RPA". This is not a correct statement as it pertains to the goals set in the RPA for fisheries.

16 It is not clear why some of the concerns for fishery resources on the Forest as outlined in the WFV alternative are not included in the PRF alternative. The lack of this consideration is the primary reason the PRF alternative is unacceptable from a fisheries point of view.

17 The conclusion that under alternatives "PRF, CED, CUR, MKT, PRO, WL, and LBU the physical limiting factors are unchanged and native trout production will remain constant" is incorrect. All of these alternatives involve disturbance to soil and vegetation and in association with streams there will be some impact that must be mitigated by habitat improvement (only found in the WFV, R, and RPA alternatives). There will be impacts from the public in terms of resource use which is not compensated in any alternatives, except WFV, AMN, and RPA.

The Cannell Meadow District contains the greatest share of remaining high quality fisheries in the SNF, and according to the Plan this district will receive the greatest impacts from development.

18 The remaining high quality watersheds outside wilderness areas on the SNF are located in the Kern Plateau. We believe these should be managed principally for fishery, wildlife and recreation resource values.

19 We believe some of the Forest's key wildlife habitat should have been allocated principally for wildlife purposes instead of requiring wildlife to compete with more dominant uses (e.g., timber, range, intensive recreation) over most of the forest. Even in the case of the limited areas of old growth habitat set aside for spotted owl management, a majority of the designated sites reflect other emphasis such as recreation use allocations and wilderness impacts.

20 The conservation and monitoring of "management indicator species" and other management tools employed in the development of the Plan may help to deal with rare species, but only in part. For example, indicator species do not adequately represent all rare animal species and most certainly do not represent all rare plants. All rare species must be accounted for in the Plan in a straightforward and positive manner. To do this, the Department recommends that in addition to the currently identified "indicator species", the Plan be revised to address at-least all species that are known to exist in the Forest that are (1) T & E (i.e., listed as threatened or endangered by the Federal Government and/or the State of California), (2) T & E candidate species, (3) listed as sensitive by the Regional Forester, or (4) de facto rare species. By "address" we mean that specific quantified objectives, designed to achieve viable populations of these species, should be set forth in the Plan in accordance with FS Manual 2672.31 and 2672.32.

21 In addition, specific means for attaining these objectives, including the dedication of Research Natural Areas and Special Interest Areas, should be described. It is not sufficient to address the diversity issue merely by formulating plans to retain a certain percentage of the Forest in various timber types and seral stages. Unfortunately, the Plan fails to provide specific quantified objectives or means to reach them since management direction (see Plan Page 4-29) requires maintenance of species composition only for major forest types where reforestation and thinning projects occur. The direction should refer to a minimum percentage of the total forest acreage that will be maintained in each vegetative type and seral stage (as vaguely described on Page 2-25 of the DEIS), what those types and stages are (giving special attention to uncommon types and stages), and a requirement to actively manage the forest to attain these objectives. It is not adequate to address the issue only "where reforestation and thinning projects occur".

22 Both the Multiple Use Sustained Yield Act and the National Forest Management Act provide adequate guidelines for forests to manage

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lands for uses other than those producing the greatest economic output. We, therefore, assume that a more equitable balance of land use allocations could be achieved, it is our belief that the intent of both acts was to achieve this balance.

23 The National Forest Management Act also specifically states that regeneration cutting is to be carried out only where consistent with fish and wildlife protection. Timber prescriptions in the Plan provide for regeneration cutting as the dominant management form. No significant constraints are provided for the protection of fish or wildlife, nor were any other less intensive forms of timber management discussed.

A portion of Chapter 4 of the Plan is designed to describe fish and wildlife goals and objectives, forest-wide standards and guidelines, desired future conditions of these resources, and resource outputs. A major problem with this most critical section of the Plan is its lack of specificity. This is especially true for the standards and guidelines since they will ultimately determine if the goals are achieved.

24 Item #1, under "Wildlife and Fish" on Page 4-3 of the Plan, is a goal pertaining to formally-listed threatened and endangered species. There are no species-specific objectives described. These are found on Pages 1-62 and 63 of the DEIS for peregrine falcons, condors, spotted owls and goshawks. To make any sense to those interpreting the Plan, objectives should be described in the Plan -- in juxtaposition to the goals, standards and guidelines. Moreover, it is vital that the Plan state clearly the goals and quantified objectives for all indicator species, T & E, candidate, sensitive, and de facto rare species of animals (and plants) that exist in the Forest, or describe the manner in which they will be developed. Such goals and objectives should also be integrated into the description of the "Theme" for the preferred alternative found on Page 2-56 of the DEIS.

On Pages 4-37 through 4-100, the Plan describes 26 "Management Area Prescriptions", in which certain management practices and activities will be applied. We recommend that the Plan describe: (1) a specific management prescriptions for critical habitat of indicator species, T & E, candidate, sensitive, and de facto rare species (including, for example, spotted owls, goshawks, and peregrine falcons); (2) devise particular management practices to treat such habitat; (3) assign specific portions of management areas (where the critical habitat exists) to such prescriptions as are appropriate and clearly indicate their locations in the Plan; and (4) describe additional management direction for a management area where a prescription is inappropriate but habitat of the rare or sensitive species is known or believed to exist.

25 on Page 3-55 and a portion of 3-56, the DEIS discusses "management indicators", identifies the species chosen to "determine changes

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25 in habitat', and reveals that they are grouped into six categories 'for analysis purposes'. Neither this section of the Plan nor any other section of the Plan or OEIS discusses how these species are used in planning or Forest management other than a short reference to monitoring trends in habitat capability and their relationship to represented species (Plan Page 3-3). This type of monitoring has nothing to do with whether or not the species chosen as indicators actually relate to changes in habitat or how they are "used" to determine such changes (as might be expected by the title of Table 3.16). Further, even though these indicators are "grouped into 6 areas for analysis purposes", nowhere in the Plan or DEIS is there any indication that these species or anything about them will actually be analyzed. Since the NFMA regulations specifically require that habitat for each management indicator species is maintained and enhanced, the Plan should clearly indicate how this will occur -- for each species. The incidental effect of management actions aimed at other species or resources is insufficient to meet this legal requirement; the Plan should demonstrate an affirmative approach to the maintenance and enhancement of habitat of each rare species.

In addition to the failure to use these 12 "indicator species" or "management indicators" appropriately, we question the logic of the species chosen. Throughout the very cursory treatment of management indicators, nowhere are specific species actually labeled as "management indicator species". This should be done. For example, the raccoon is listed as a species associated with riparian zones. If this is meant to imply that there is a direct relationship between the condition status of the raccoon population of the Forest and the status of the riparian zones of the Forest and its other associated species, then we disagree. If this is meant to imply that damage caused by grazing in the riparian zone will have the same effect on raccoons as it will on yellow warblers, willow flycatchers and golden trout, then we disagree. The OEIS and Plan should explain exactly why each of the species chosen as indicator species were chosen, and what the management implication will be if there is a change in an indicator.

26 CFR Section 219.19 states that fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area (emphasis added).

In order to manage habitat to maintain viable populations, the above-quoted regulation very clearly indicates that specific quantities of reproductive individuals must be distributed in a manner appropriate to insure the continued existence of each taxon. For species in which viability is a concern (i. e., all T

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6 E, candidate, sensitive, and de facto rare species), neither the Plan nor the DEIS describe exactly what a viable population is considered to be in terms of estimated number- and distribution of reproductive individuals. In no case is there a description provided of how viable population levels are actually calculated or the assumptions, probabilities, and risks associated with that level. The Plan should contain such information.

- 27** The adoption of any Plan which sets as its goal the maintenance of only minimum viable populations demonstrates a lack of understanding of the dynamic nature of ecosystems. Such a plan presupposes no unforeseen Circumstances which may influence the ultimate outcome; for example, fire, disease or other disasters could reduce populations below the critical minimum level. It also leaves no margin for error. If, in fact, the measures provided for wildlife protection prove to be insufficient to achieve objective population levels, the opportunity to reverse the damage may be lost.

- 28** All of the rare, endangered, and sensitive species found in the SNF are not addressed by the DEIS and Plan: standards and guidelines are "provided" specifically for only Little Kern golden trout, condors, and peregrine falcons. (A short discussion of goshawks and spotted owls is obscurely located on Page 8-32 of the DEIS Appendix). On Page 3-53 of the DEIS (Table 3.15), T 6 E and sensitive animal species are listed. Yet, except for the condor, goshawk, peregrine falcon, and spotted owl, none of these taxa are listed as management indicator species. There are no comparisons of the treatment of their habitats between alternatives; there are no objectives stated to maintain viable populations as required in FSM 2672.32; there are no indications that surveys will be conducted to determine population and habitat status and trend; there are no means described to improve habitat; and there are no plans for monitoring their populations and habitat. The Department recommends that these issues be addressed for each of these species, as well as for other more common species which will be directly and indirectly affected by implementation of the Plan.

- 29** Additionally, NDDB records indicate that the following species are found in the SNF and should be included with the other sensitive species mentioned in the above paragraph:

South Fork Kern golden trout (Salmo aquabonita  
aguabonita)  
Inyo Mountains salamander (Batrachoseps camp)

These species should be listed as sensitive species; but notwithstanding, the Regional Forester's action to list these species, the Forest Plan should treat them as functionally sensitive species. Table 3.15 also contains errors. Each of the species indicated as state-listed rare are now listed as "threatened".

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The Sierra Nevada red fox is also a state-listed threatened species.

30

Despite the repeated assertions throughout the Plan and DEIS that T & E and sensitive species are to be recognized and protected, there are no specific indications of the intent to inventory and survey species to determine basic information such as where certain taxa are located in the Forest. In Appendix B, Page a-2, the Plan discusses "Research Needs" for fish and wildlife; the section should provide for status surveys and inventories for all T & E, candidate, sensitive; and de facto rare species where information is inadequate. Surveys for great grey owls, willow flycatchers, golden eagles, Breckenridge Mountain salamanders, and goshawks are most important. Where such information is adequate, the Plan should contain provisions to use the data to determine strategies for maintaining viable populations of the species.

With respect to monitoring, CFR Section 219.19 (a)(5) states: Population trends of the management indicator species will be monitored and relationships to habitat changes determined ... (emphasis added)

It is difficult to monitor population trends without monitoring populations of the subject organisms. Yet, the Plan provides for monitoring of habitat capability. The Plan should indicate what is meant by monitoring habitat Capability. The monitoring plan should also contain provisions to periodically review the actual population status of all species for which viability may be a concern.

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Monitoring should be capable of reliably revealing the status and trend of population size and population distribution and relate each of these parameters to a standard which constitutes the Plan's estimation of what is needed "to insure (the species') continued existence...in the planning area". (See CFR Section 219.19 as quoted under the heading of "Viability"). In addition, we recommend that not only should all Management Indicator Species (MIS) be monitored (since monitoring is one of the primary reasons that MIS are identified), but all T & E, candidate, sensitive, and de facto species found in the Forest be monitored at least as often as MIS.

Correctly done, monitoring is an important aspect of the LMP since the results indicate how well the goals are being met. Results of the monitoring dictate what changes, if any, are needed when the LMP is reviewed in the future.

32

With the recent elimination of Forest biologist and botanist positions, it is necessary to inquire who will be available to conduct the mandatory monitoring as set forth in the LMP? Given the current circumstances, it is doubtful that the monitoring obligation can be successfully met.

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In conclusion, the Department recognizes that the SNF has expended a great deal of effort in the preparation of these draft planning documents. While this is laudable, we feel the issues of fish, wildlife and natural diversity, especially the treatment of rare plants, animals, and natural communities, require considerably more attention than they have received. This is needed before even the minimum legal requirements will be satisfied. We encourage the Forest to consider fish, wildlife and native vegetation as opportunities rather than as constraints upon utilization of other resources. To exist above bare "viability" levels, these resources should not have to become secondary by-products of the management of other resources.

We are not suggesting that a fish and wildlife alternative should be preferred at the expense of other resources and uses, and we recognize that sometimes it is impossible to maximize goals for competing products. However, we believe there is a clear public mandate that a plan be developed which manages fish and wildlife at a reasonable level of priority. Where conflicts occur, the Forest is charged to arbitrate, without unreasonably risking or deteriorating any of its "multiple use" resources.

The three attached addenda represent major comments on the natural diversity issues, as well as our detailed comments concerning specific textual citations from the LRMP and DEIS. We incorporate them here by reference. While our comments may seem unduly critical, we offer them in a constructive vein to assist the Forest's planning staff in achieving an improved balance in resource management goals. Although some of our comments appear repetitive, each is directed toward a specific statement, table or section of the Plan or DEIS and has a distinct bearing on the ultimate analysis of the feasibility and validity of these documents. Because we recognize that the Plan will shape the uses and character of the Sequoia National Forest for many years to come, we feel that they are both necessary and appropriate.

We intend to provide supplemental materials to the Forest staff in the near future. Because these materials will not pertain to the specific contents of their draft documents, as published, they were not included as a part of this comment letter. Rather, they are offered in the spirit of cooperation, in response to the Forest's request to George Nokes, Regional Manager of our Fresno office. They will (1) suggest a preferred fish and wildlife alternative; (2) suggest revisions to existing management prescriptions, definitions, standards and guidelines; (3) recommend additional prescriptions, standards and guidelines; and (4) identify specific fish and wildlife habitat enhancement opportunities.

ADDENDUM 2

COMMENTS ON THE SEQUOIA NATIONAL FOREST  
LAND AND RESOURCE MANAGEMENT PLAN  
DRAFT FOREST PLAN

- 34 1-1: Under "Vision Statement" we note the absence of management of wildlife habitat as a key action.
- 35 2-3: The statement regarding sediments should identify specific acceptable standards.
- 36 2-7:
  - A. The specific locations and sizes of areas to be managed for threatened, endangered and sensitive fish, wildlife and plant species should be disclosed.  
  
 These questions are not answered for any of the listed species, except golden trout. Because the alternative establishes specific direction which will reduce the habitat and abundance of spotted owls and most other species, the extent of the habitat to be retained must be shown in detail for each of those species.
  - B. The location and size of areas to be managed as special wildlife habitat for harvest species should be disclosed.  
  
 In the considered alternatives, conflicting recreation (ORVs) or commodity uses (grazing, timber) consistently appear to be given priority over associated wildlife management activities, with associated wildlife reductions.
  - C. None of the proposed alternatives will maintain the existing numbers of fish. The lack of management action will result in net losses of both native and non-native species.
  - D. In all of the alternatives, recreation, timber, and grazing are increased at the apparent expense of wildlife. Even at current commodity output levels, fish and wildlife resources are experiencing adverse impacts (based upon our observations). Despite planned increases in most of the other uses, no accommodation to recover the fish and wildlife losses is evident. Consequently, the "trade off" is toward one-sided benefits which, we believe, will significantly reduce the public's opportunity to enjoy fish and wildlife.
  - E. Under the stated plan objectives we strongly disagree that wildlife habitat will be improved. Specific wildlife habitat types will be lost due to planned



timber harvest activities and increased grazing use after burning. Intensified treatment of timber harvest areas will reduce wildlife use of early-mid seral habitat stages.

The plan states that black oak, snags and downed logs will be maintained at "prescribed levels". It fails to state that these 'prescribed levels' are significantly less than what now exists. This is a serious problem, considering that already the availability of these habitats appears to be restrictive to wildlife populations.

While many techniques are available for improvement of fish and wildlife habitat, few have been considered in this plan, except to analyze their possible conflict with other proposed uses.

**37** 2-8 Line 30: The plan discusses but does not display a road closure plan for the Sequoia National Forest. This should be part of the present Plan. It should state the timing and reason for specific road closures, and be made available for public evaluation.

The criteria for designating closures should be identified.

**38** 2-10: We do not consider annual increases of 8,000 AUMs in the first decade (and 26,300 AUMs by the 5th decade) to be "slight" increases, as described. The proposed increases are particularly significant considering that the baseline year grazing rate (63,000 AUMs in 1982) is already much greater than what occurred in the recent past (the 1979 rate was only 44,100 AUMs).

During the process of planning issue identification, the public expressed concerns about excessive livestock use. As a result, a specific 'Grazing Issue' was considered. Despite this public concern, the Plan proposes to increase livestock use.

**39** 2-11 Line 4: Topography, soil type, water quality, flow, recreation and adjacent land uses should also be considered in designating Stream Management Zone width. Stream class alone is inadequate as a width determinant.

While the Plan states that SMZs are not managed for timber and that roads and trails are restricted, it should also clarify that these activities will still occur in SMZs. They do occur, with associated losses to the aquatic and riparian resources.

**40** 2-11: Our general comments in Addendum 1 discuss diversity which we believe has received inadequate treatment in both the Plan and DEIS.

- 41**     3- 6, 3- 7:    The statement that the availability of firewood is the " most" important use of the National Forests by retirees ~~and working~~ families is unsupported. If this point is to be made, the Plan should display statistical evidence on the ~~numbet of~~ **number of** individuals that benefit from this cctivity compared to those who benefit from other uses, such as wildlife and fisheries (which are directly benefitted by dead ~~and~~ down woodl.
- 42**     3- 7:        It is misleading to discuss the value of commodities to those individuals who work in the timber and livestock industries on the Forest without quantifying the segment of the forest ~~owner/users~~ whom these people represent. The level at which the Forest participates in each of these industries relative to private lands is also a significant consideration.
- 43**     3-17:        Sacramento perch **is** a native species.
- 44**     3-17:        We are unaware **of** specific stream surveys on 732 miles of stream. We would like to review the survey data as ~~part~~ **part** of our review of the Plan. We also need to see which ~~sections~~ **sections** are rated as "good", "fair" and "poor", and the ~~rating~~ **rating** criteria used.
- 45**     3-17:        There are many oppourtunities for stream habitat improvement which should be considered in the Plan. Solutions should be developed to ~~water-quality/spacial-habitat~~ **water-quality/spacial-habitat** problems such as elevated temperatures. reduced flows, and sedimentation. All the above are the result of management activities (primarily logging, water diversion, ~~road~~ **road** construction, grazing, ski ~~area:development~~ **area:development**). The plan should cleaely addeess these conflicts, rather than implicate natural causes as the ~~major~~ **major** cause of the problems.
- 46**     3-18 to 19:    This section fails to describe existing conditions for spotted owls, goshawks, etc. ~~What~~ **What** are current and future trends for these animals? How is Forest land management related to existing condition and trend?

Fisheries information is inaccurate as provided. ~~Habitat~~ **Habitat** sedimentation and damage due to man's activities are much more ~~serious~~ **serious** and permanent than fish population reductions due to angling. Adverse competition with planted trout also has never been documented on the SNF as a serious problem. Heavy fishing use can damage habitat on some streams. but is not a significant problem in comparison with damage from road ~~construction, grazing, timber harvest, etc.~~ **construction, grazing, timber harvest, etc.**
- 47**     3-18    Line 10:    There is no evidence to support the statement that stocking of hatchery trout is responsible ~~for~~ **for** depleted resident trout populations through competition. Our data indicate that stocked fish "buffer" the wild fish

populations from impacts of over-harvest. Over-harvest can be controlled through regulation adoption and enforcement.

- 48 3-18 Line 17: With the exception of heavily used areas, such as trail crossings, campsites and some lakes, fish populations exceed the consumptive demand in most areas of the wilderness. Supply of fish, except in a few heavily-impacted areas, could continue to exceed user demand through the 5th decade of the LMP, given appropriate habitat protection.

We would like the opportunity to review the data basis for the statement that only 46 miles of stream on the Forest could benefit from fish habitat repair work.

- 49 3-19 Line 17: Golden trout (South Fork Kern) and Breckenridge Mountain slender salamanders should be listed here.

- 50 3-19: Consumptive use of the Forest's wildlife appears greatly under-estimated. The Plan represents the 43,000 WFUDs (1982) as "almost totally deer hunting". Our data, however, conflict. A total of 16,622 deer tags were sold and 578 deer were harvested in Zones D-8 and D-9 in 1982 (primary hunting in these 2 zones is on the Sequoia National Forest). The 1982 Annual Hunter Survey showed that the average deer hunter hunted 6.5 days. As such, the number of WFUDs based on deer alone greatly exceeds 43,000. The number of hunters taking gray squirrel, bear, quail, rabbits, band-tailed pigeons, blue grouse, and wild turkey are not recognized. Likewise, user days expended hunting and trapping bobcats, coyotes, raccoon and gray fox are not considered. Non-consumptive resource use is also ignored. Based upon the above facts, we consider the analysis of wildlife values inaccurate, as presented. The data inadequacy would impact all economic analyses in which the Plan compares wildlife values with other resources. All should be recomputed.

- 51 3-19: How can these stated facts be reconciled with the conclusion that hunting use is expected to remain about the same? The jointly signed deer herd plans for migratory herds on the Forest call for substantial additional deer hunting opportunity. The LMP also calls for increased deer numbers.

- 52 3-29: The Sequoia's analysis regarding range use fails to state that current (baseline) range use (1982 level) is already substantially elevated above recent past use levels (it was only 44,700 in 1979).

- 53 3-33: There is no mention of disturbances caused by development and operation of ski resorts. For example, vegetation removal, road construction, heavy equipment operation, traffic, sewage disposal, water consumption, winter disturbance of wildlife and watershed damage are all significant considerations.

- 54 3-38: The statement that the recreational benefits of chaparral management include " increased hunting opportunity" directly conflicts with the earlier analysis of wildlife use (Page 3-19) showing that "hunting use is expected to remain about the same".
- 55 3-40: The glossary in the DEIS adequately defines riparian area as "land situated along the bank of a stream or other body of water and directly influenced by the presence of water". The definition of "riparian", as presented here, however, is too restrictive. It is limited by a width parameter (a SMZ) based on timber interests rather than biological criteria.
- 56 3-40: The plan fails to provide a summary of the riparian management analysis as required by National Forest Land Management Planning Direction, Section 3-8 (A).
- 57 3-42: Black oak woodland is a critical area for wildlife diversity. The retention of 20-25 sq. ft. basal area per acre may maintain wildlife, but this "maintenance" would occur at reduced "minimum viable numbers". The Plan should be modified to clearly state that wildlife habitat and numbers will be reduced if 10-25 cords of black oak are harvested per acre.
- 58 3-43: The discussion fails to acknowledge blue oak woodland as valuable habitat for wildlife. As such, current levels of livestock use (in addition to the proposed future increases in range use) are detrimental to wildlife through loss of oak mast and forage competition. The "Analysis of the Management Situation" also fails to acknowledge the existing failure of blue oak stands to regenerate due to livestock Overuse. Given the proposed additional use of blue oak woodland, regeneration is a critical point which should be fully addressed in the DEIS. The Plan should include specific measures to remedy the existing overuse-associated problem.
- 59 3-43: Live oak woodland has significant value to wildlife. It provides substantial forage and cover to numerous wildlife species and should be managed as a desirable feature.
- 60 3-47: It is our opinion that deferral of the Wild and Scenic River decision for section 1 of the Kings River, pending completion of Kings River Conservation District's feasibility study for upstream river development is inappropriate based upon the stated intent of the U.S. Wild and Scenic Rivers Act. The Act requires Federal Management Agencies to evaluate the "outstandingly remarkable aesthetic and recreational values" of river corridors and where appropriate, to propose them for inclusion in the nation's Wild and Scenic River System. We believe the intent of the Act is not to wait until competing interests have developed

feasibility studies and then force the esthetic and recreational values to compete with development interests in the economic arena. If the Kings River now has outstandingly remarkable values, the Forest should proceed to make the valuation.

We believe remarkable values are definitely present. (1) The river corridor, within section 1, provides essential deer winter range for the troubled North Kings deer herd. (2) In addition to deer, the corridor provides habitat for many other wildlife species. These include sensitive species such as peregrine falcons (historically), prairie falcons, golden eagles, bald eagles, and wolverines. (3) The river itself is a high quality trout fishing resource which has been designated a "Wild Trout Stream" by the State Fish and Game Commission (due to its outstanding natural potentials). (4) The corridor provides an all-year-accessible recreational area within reasonable distance of large urban centers. Recreation includes rafting, camping, fishing, nature observation, picnicking, sightseeing, birding, swimming, hunting, hiking, etc., which is available and easily accessible to the general public. (5) The river provides these activities in a "large river atmosphere", which is uncommon regionally within the San Joaquin Valley area.

61 3-47: We believe the division between section 1 and section 2 of the South Fork Kern River should be made at the Forest boundary, rather than the wilderness boundary. Based upon the study, it appears classification for section 2 (Forest boundary, upstream) should be "wild". We see no differences in the quality or user values above versus below the wilderness boundary. We believe Section 5 (Monache Meadows) should be classified as "wild", since it lies between the two existing wilderness areas, and influences both.

62 3-48: Designation and management of wilderness areas should contain provisions for management of native fish species (chemical treatment, barrier construction, habitat improvement, etc.).

63 4- 3 Lines 7-11: Item 3 calls for "increased wildlife and fish habitat capabilities on National Forest by 1995". but the means for achieving this goal is not stated in the Plan.

Item 4 calls for providing "increased quality and quantity (emphasis added) of opportunities for enjoyment of consumptive and non-consumptive uses of the wildlife and fish resources". Under the preferred alternative however, this goal cannot be met. Improvements in the quality and quantity of the fishery resource will only occur if (1) habitat improvement is included as part of the LMP, and (2) other land management practices are appropriately conditioned.

- 64 4-3: Range goals to "optimize red meat production" and "provide optimum sustained yields of forage" will prevent attainment of wildlife goal #3 (4-3). Livestock already create substantial fish and wildlife impacts on large areas of the forest through degradation of riparian/meadow habitat and competition for available browse and mast. The proposed additional range use will aggravate this situation in the absence of positive measures to reduce or compensate damage.
- 65 4-3: The Plan has not shown satisfactory justification for managing to optimize livestock grazing and provide optimum sustained yields of forage. Unfortunately, "optimization" of grazing-as described precludes management for fish and wildlife, even at maintenance levels. This conflict should be addressed.
- 66 4-4: Increases in both total timber supply, and short-term timber offerings are proposed. It is not possible to increase these commodities without accompanying damage to already-impacted fish and wildlife resources. The projected outcome does not, in our opinion, conform to the general goal of "multiple use".
- 67 4-7: We disagree that fish populations in non-wilderness areas will maintain their current levels. Increases in land disturbance (causing aquatic habitat degradation) can result from proposed timber and livestock use increases. These, in the absence of provisions in the LMP for fishery habitat restoration/enhancement, in turn will result in an overall decline in fishery resources.
- 68 4-7: All of the considered alternatives call for a planned decrease in habitat (and populations) of old growth-dependent species. Given the identified remnant patches of habitat to be retained for such species as spotted owl, how can the owl "remain in all areas currently inhabited", as stated?
- 69 4-7: We strongly disagree that oak and snag associated wildlife will decrease only slightly. Oaks and snags will be removed entirely over tens of thousands of acres of forest land under clearcut management. The retention of oaks and snags on unharvested forestland will do nothing to reduce wildlife losses on the harvested lands. This should be clearly disclosed in the plan.
- 70 4-7: Why will riparian areas be managed only to maintain or restore habitat for late successional stage species? Riparian habitat is recognized as key wildlife habitat and should be managed to maintain or improve its status for all species. It is our interpretation that all species management actions that violate the intent of NFMA and present National Forest Management Directives.

- 71 ~~4-9~~: The forest has projected substantial benefits to early successional wildlife from increased clearcutting and chaparral management. Yet the "Summary of Future Range Resource Condition" clearly states the intent to stock the managed lands with substantially more livestock. This action would have impacts upon habitat quality for wildlifer a conflict which is inadequately addressed in the plan and/or DEIS.
- 72 ~~4-9~~: 600,000 additional visitor days per par resulting from new ski resorts could have significant impacts upon biological resources. These should be discussed in detail.
- 73 ~~4-10~~: The planned maximum consumptive use of meadow vegetation (range goal #3, Page 4-3) assumes that wildlife needs can be coincidentally provided. We disagree that meadow forage can be utalized by livestock at the levels proposed, "while meeting wildlife needs". This approach offers no benefits to wildlife habitat.
- 74 ~~4-10~~: The Plan should contain provisions to control grazing in meadows where damage is perceived.
- 75 ~~4-12~~: Grazing of 8,000 acres of coniferous zone, as proposed, could be managed to favor wildlife and recreation without significantly reducing grazing on the Forest. This would require specific guidelines and limitations on the density and extent of grazing.
- Developed recreation (CF3) could also be managed to protect Forest natural resources, thus reducing described conflicts.
- 76 ~~4-13~~: Wildlife - Other than T & E Resident fish ace predicted to maintain a biomass of 77,000 pounds on the forest. In the absence of specific measures to protect or improve aquatic habitat (see our general comments), we doubt that such maintenance levels will occur.
- 77 ~~4-13~~: Developing existing non-roaded areas precludes future opportunity to meet increasing wilderness use demand. This implication should be disclosed.
- 78 ~~4-14~~ Table 4.2: Wildlife and fish User Days: The Plan should include commitments for direct fish habitat improvements and a description of their anticipated FWUD benefits.
- 79 ~~4-14~~: Watershed: Increased water quantities could damage aquatic habitats by increasing flood flows (streambank erosion) and reducing existing dry-season flows (spatial habitat reduction and temperature elevation). These effects should be addressed.

- 80 4-15: Transportation: Standards for new road construction are not sufficiently detailed to prevent site specific sedimentation problems in stream habitats. They should be revised.
- 81 ~~4-17:~~ we support moving trails out of meadows where resource damage is occurring.
- 82 ~~4-18:~~ Opening of 677,000 acres of the sequoia National Forest to OEV use without adequate staff (to assess resource damage), site specific standards/guidelines (for resource protection) and supervision will lead to damage of wildlife habitat. Such risk should be addressed. There is a substantial body of scientific data showing that OHVs have both direct and indirect impacts to vegetation and wildlife, even with light to moderate use. OHV use should be more closely regulated than is proposed in the Draft Plan and Standards and Guidelines, as presented.
- 83 4-21: Recreation, Wild and Scenic River, Item 3: we believe Segment 1 of South Fork Kern River should extend only to the Forest boundary and should be designated scenic.  
  
Item 7 - South Fork Kern River between South Sierra and Golden Trout Wildernesses should be designated "wild".
- 84 4-23: Wilderness, Item 2: Management plans should provide for stream habitat improvement and fishery management (barriers, chemical treatment, etc.) for native species protection and reestablishment.
- 85 ~~4-23:~~ We support the allowance of planned and unplanned ignition, prescribed fire in wilderness areas as a method to help restore wildlife habitat quality. Past fire suppression activities have reduced natural diversity on the Forest.
- 86 4-26: Fish and Wildlife: This section should also address South Fork Kern golden trout, Kern Canyon slender salamander, and Breckenridge Mountain slender salamander.
- a7 4-26: We recommend that in addition to the standards for spotted owls (Strix occidentalis), bald eagles (Haliaeetus leucocephalus), northern goshawks (Accipiter gentilis), and peregrine falcons, standards and guidelines should be adopted which address habitat protection for the great gray owl (Strix nebulosa), Sierra Nevada red fox (Vulpus vulpus necator), fisher (Martes pennanti), wolverine (Gulo gulo), Kern Canyon slender salamander (Batrachoseps simatus), Inyo Mountain salamander (B. campi), and South Fork Kern golden trout (Salmo aquabonita aquabonita).

To this end, standards should as a minimum require that the Forest: (1) survey the Forest for evidence of pairing or nesting of great gray owls (territories found should be protected). (2) spotted owl territories in the particular manner prescribed by the regional guidelines (specific guidelines are needed, rather than vague references to habitat capability models). (3) Delineate an area of at least 125 acres of suitable habitat surrounding goshawk nest stands (in accordance with the results of the 1985 DFG/FS cooperative goshawk study). (4) Carefully delineate and protect habitats of the Kern Canyon slender salamander, Inyo Mountains salamander, South Fork Kern River golden trout,



and Little Kern golden trout among other species known to occur on the Forest (or discovered during surveying). (5) Incorporate provisions of the "Pacific Coast Recovery Plan for the American Peregrine Falcon" and the (draft) "Pacific Stare Bald Eagle Recovery Plan" (as they relate to the Sequoia NF).

- 88 4-26: With respect to peregrine falcons, the management direction found on page 2-62 of the DEIS states, "Five pairs of peregrine falcons will be established ...". However, on page 4-26 of the Plan, the standards and guidelines state that, "Two pairs of falcons will be established ...". This apparent conflict should be resolved.
- 89 4-27: Standards for dead-and-down log management are inadequate for maintenance of the numerous species dependent on these habitat elements. Populations of lizards, salamanders, small birds, mammals, black bears, etc., which are dependent upon dead-and-down woody material (includes logs and slash) would be diminished. A minimum of 3-4 down logs (20" x 20' or larger) per acre should be retained (100+ cubic feet). On key wildlife areas a higher number should be considered, with logs yarded to positions providing maximum effectiveness as wildlife habitat. Woody debris (slash) should also be retained on at least 10% of the timber harvest area (Please see: Ag.Handbk. 1553). Consultation with a wildlife biologist should be required on a case-by-case basis.
- 90 4-27: We believe the standard for snag management is inadequate to meet the needs of the numerous wildlife species dependent on this habitat component. Snags are used as nesting sites for primary and secondary cavity nesters, foraging habitats, singing posts, drumming sites, food caching locations, lookouts and roosting stations. Standards must be developed to address such factors as (1) hard vs. soft snag needs, (2) maintenance and management for future snags, (3) protection of snags in high use areas, and (4) distribution of retained snags (Thomas 1979). Retention of snags on a compartment basis as proposed, could lead to undesirable concentration of all snags into non-commercial areas with the majority of the commercial lands denuded of snag habitat. This intent is, in fact, stated in the proposed standard on page 2-31 of the DEIS (manage snags in "areas such as Riparian zones, Meadow Influence Zones, and Retention and Partial Retention Visual Zones, wherever possible"). It is essential that snags be retained within each harvest area in order for on-

site wildlife to be maintained in existing diversity. The following are our suggested minimum standards.

1. Retain in all forest types (within harvest units), an average of at least 2 hard snags per acre, 12" dbh or greater and 20' high or higher, plus an average of 1 hard snag per acre, 25" dbh or greater and 20' high or higher.
2. Retain all soft snags, as recommended in Ag. Eandbk. #333, page 66.
3. Plan for availability of snags **over** time through retention of future replacement trees.
4. Designate and protect snags and future snags for wildlife use (this is important in light of the current pressure from woodcutters on dead woody material).

- 91 4-27: "Key areas" for hardwood indicator species appear to be lacking in the Hardwoods Management Standard. Hardwoods need protection over their entire distributions **as a** critical habitat component. Adequate retention standards need to be developed for all oak types and should specify that oaks retained be distributed throughout harvest areas.
- 92 4-27: **The Plan is unclear who will "inventory and monitor riparian areas". The Forest Service has suffered serious reductions in those personnel qualified for such studies (fishery and wildlife biologists, and hydrologists). We recommend the riparian areas be given protection until the Forest has sufficient trained personnel to develop appropriate standards and guidelines.**
- 93 4-27: We disagree with limiting the definition of meadows to areas 2 acres or larger in size. Meadows smaller than 2 acres are critical for wildlife (e. g., deer fawning sites) and warrant protection. Examples of important habitat now excluded under the 2-ac. definition include meadows in the Pine Flat area (T24S, R34E, 531) and at Little Horse Meadow (T20S, R34, S33).
- On August 12, 1982 the Sequoia L&P Management Team approved a standard defining a meadow as 0.1 acre or larger. We recommend that this standard be retained.
- 94 4-27: Statements are made in this section that "small groups of trees" may be removed from the SMZ. The removal of groups of trees from the SMZ should include consideration of the effect on stream shade and water temperature.
- 95 4-27: Individual Species Comments. The Plan indicates that habitat for "about 90 pairs" of spotted owls will be maintained. The Plan fails to indicate where these pairs

are now found, where they will be maintained, how large an area of habitat will be maintained, how many pairs actually exist in the forest (Page B-3 of the Appendix only states that habitat for 140 pairs is estimated to exist), how the habitat will be maintained (other than in accordance with an undescribed habitat capability model), if each of the pairs will be associated with a spotted Owl Management Area (SOMA), how the minimum viable population requirement of 35 Spotted Owl Territories (SOTs) was derived (other than the statement: "... 35 pairs is based on a Forest network which insurcs sufficient habitat for viable interaction between pairs"), what the relationship is b-tween a SOT and a SCMA, what constitutes a viable interaction, and numerous other questions which need to be answered before the viability of the spotted owls can be evaluated. On Page 4-27 of the Plan, standards and guidelines refer to habitat capability models as the basis for spotted owl management. We believe the Region 5 (USFS) guidelines for spotted owls should be reaffirmed in this section as the minimum requirements for management.

- 96** 4-28: The standards for management of annual rangeland will result in severe impacts to wildlife. The blue-oak woodland and savannah habitat is used by a multitude of wildlife species and therefore should share use emphasis. The mulch management standard of 400 pounds of residual dry matter is inadequate for wildlife needs and we recommend that it be raised to a minimum of 700 lbs./acre.
- 97** 4-28: The Plan states that livestock use will increase on transitory range and forage use will be optimized to a point where "utilization may exceed normal range allowable use standards". Yet this transitory range habitat is also burdened with maintaining early successional species like deer. The proposed level of livestock use will reduce or preclude such benefits for wildlife.
- 98** 4-28: Wet mountain meadows are key habitats for numerous wildlife. Their management under livestock standards ("fair or better condition") may protect the meadow for future livestock grazing but it allows for their continued degradation from a wildlife and fisheries perspective. Given that livestock use accounts for only 1% of the Sequoia's PNW and that recreation (which would include the public's enjoyment of meadow-associated wildlife) is documented as being of much greater importance, we recommend that livestock should be reduced to densities consistent with protection of meadow habitat needed by fish and wildlife.
- 99** 4-28: If grazing is permitted on mountain meadows, cattle should not be placed on meadows until they are dry enough that animals will not cause erosion damage.

- 100 ~~4-28:~~ Tractor logging on a 40% slope is likely to have substantial risk of erosion. Such methods should be limited to slopes of no more than 20% in most soil types.
- 101 ~~4-34 to 4-100:~~ (Particularly 4-76 to 79). . No special prescription is provided to preserve SOTs or to enhance SOTs which presently do not meet regional guidelines for spotted owl management.
- 102 ~~4-38:~~ Fishing should be included in list of activities permitted (Kern River above and below Isabella Reservoir).
- 103 ~~4-39 to 4-100:~~ No significant management statements are made regarding fish. Almost all Plan and DEIS sections fail to address fishery resources.
- 104 ~~4-44:~~ The conversion of chaparral to grass on slopes less than 10% is not necessarily beneficial to wildlife. According to the USFS Coord. Guidelines, wildlife benefits will not accrue unless conversions are laid out in a manner which provides retention of 50% or more of the area within each 40-acre or larger unit as escape and thermal cover. These retention areas should be broadly distributed. In addition, (1) openings should be no wider than 10 chains, (2) perimeters should be designed with irregular edges, and (3) retention areas should be selected to favor wildlife (USFS Coordination Guidelines). Initial layout, retention and treatment areas should be designed in consultation with wildlife biologists. If the principal intent of the proposed conversions is to increase livestock, it should be addressed under "Range., rather than "Wildlife".
- 105 4-44: Because chaparral slopes less than 40% are the best wildlife habitat, we disagree with their treatment on a 40-60 year rotation cycle. Maximum rotation should be 30-40 years. A 40-60 year rotation would not allow the attainment of the desired goal of 80% of stand in 0-30 year age classes as stated on Page 4-44.
- 106 ~~4-44:~~ At least 700 pounds per acre of residual mulch should be retained on annual range.
- 107 4-46: Emphasis - Fishing recreation should also be addressed here.
- 108 ~~4-59:~~ Emphasis - Developed recreation areas need to be carefully located to avoid damage to forest resource values, especially where sensitive wildlife, plants, fish, fragile soils or streambanks, etc., are present.
- 109 ~~4-60:~~ Fish habitat protection has been omitted.  
~~4-61:~~ Timber 21 - Developed recreation areas should have an undisturbed buffer zone of adequate dimensions to afford separation of users from sensitive areas.

- 110 4-62: The 'Emphasis' statement for ?prescription WF4 indicates that prescribed fire will be used to maintain long term plant diversity in the wilderness. In apparent contradiction however, the fish and wildlife ~~standard~~ for this prescription states that no wildlife habitat improvement work will be done with prescribed fire. Suppression of natural fires has artificrally reduced wildlife habitat value in wilderness ~~and~~ non-wilderness areas. The Plan should acknowledge the value of both natural and planned prescribed fires to improve this condition.
- 111 4-63: Fish and Wildlife - Fishery resources should be included.
- 112 4-64, ~~WC4~~: Opportunities - Wilderness plans should include provisions for specific fishery management activities.
- 113 4-46: Fish and Wildlife - Fishery resources and management should be included here.
- 114 4-65: Emphasis - Fishing has been omitted.
- 115 4-55: Although Prescription 303 is included in the Plan, there appears to be NO acreage allocated under at. It gives the false impressions that wildlife will be emphasized and that blue oak will be regenerated, when in fact, most blue oak habitat will continue to be overgrazed under the 506 Range Prescription. For this prescription to effectively benefit wildlife, livestock use should be reduced. A mulch retention level of only 400 lbs./acre, as prescribed, as inadequate. It would continue to allow overuse of the habitat by livestock and prevent the regeneration of oaks (Bartolome et al, 1980).
- 116 4-66: Fish and Wildlife - Fish and amphibia are omitted here.
- 117 4-68: The Opportunities Section Ear OW5 states that livestock grazing is desirable except when in conflict with recreation. Significant wildlife impacts will also accrue with the grazing levels proposed. Little wildlife benefit would result.
- 118 4-69: The Plan does not state what would happen to snags on the remaining 90% of oak woodland habitat (with slopes less than 40%). Because this is a 'wildlife prescription', harvest of oaks or snags should be done only where wildlife would be benefited and through consultation with a wildlife biologist.
- 119 4-69: Fish and Wildlife - Fish and amphibia should also be addressed here.
- 120 4-10: Emphasis - Fishing cecreation should be addressed here.

- 121 4-71: See comment made on Page 4-68, above.
- 122 4-71: The Plan promises an increase in early successional stages of mixed chaparral which are important to wildlife (Page 4-7). In contrast, this "wildlife prescription" calls for only 60% of that habitat to be in the 20-30 year age class and an additional 20% in a 40+ years condition. This is inconsistent with wildlife needs since mixed chaparral has already lost much of its value to wildlife at 20+ year; of age.
- 123 4-71: ~~Fish~~ and Wildlife - There is no mention of fish or amphibia.
- 124 4-72: (Fish and wildlife Item #2) - See comments under Page 4-44.
- 125 4-72: Mulch retention should be a minimum of 700 lbs./acre under this "wildlife prescription".
- 126 4-73: Emphasis - There is no emphasis placed upon wilderness, primitive recreation, or fishing (South Fork Kern River).
- 127 4-14: Fish and Wildlife - There is no mention of fisheries.
- 128 4-75: The emphasis on livestock use in the pinyon-sage will reduce habitat value for wildlife. Consumption of annual grass-forb forage down to 400 lbs./acre will force livestock to use browse species important to wildlife (USFS Technical Report RM-47). Overall, the prescription will have little value for wildlife unless livestock use is reduced prior to conflicts with wildlife. As written, it should be more properly classified as a "range" rather than a "wildlife".
- 129 4-76: The first sentence under "Opportunities" should read "Timber harvesting will be made more compatible with wildlife needs than would be accomplished under a sawtimber prescription". This change is needed because the additional "Fish and Wildlife" standards (Page 4-77-78) are not adequate to fully prevent wildlife reductions. Such reductions would especially occur as a result of "Timber" standards 43 and #5 (Page 4-78).  
  
The CFS prescription is applied only to a relatively small area of the Forest (25,000 acres). Its effective protection for forest wildlife would therefore be limited.
- 130 4-76: Emphasis - Fishing should be included and discussed here.
- 131 4-77: Fish and Wildlife - There is no mention of fishery resources or amphibia.
- 132 4-78: "Timber": Items #3 and 45 appear in conflict with the intent of #4. Also, because this is a "wildlife" prescription, Item #2 appears to be inappropriate, as stated.

**133**    4-79:    Wildlife habitat will not be enhanced for harvest species under the B06 prescription. Maximum livestock use of the blue oak habitat from February to September and retention of only 400 lbs /acre of mulch will reduce wildlife habitat values ("Range" Items #1 and #2). This habitat type is important winter range for migratory deer herds as well as resident deer. Key blue oak winter range has been designated in the Greenhorn and Tule River Kerd Plans. The B06 prescription as written would lower the carrying capacity of these key areas for deer as well as other wildlife. This would be contrary to the plans, as mutually agreed to.

**134**    4-82:    The OW6 Prescription will not "enhance" habitat for harvest wildlife species. Encouraging the harvest of black oak will be to the direct detriment of wildlife. The oat retention standards (Fish and Wildlife" #2 and #4) would only partially mitigate the planned losses.

**135**    4-82:    Does Item #1 under "Fish and Wildlife" mean that oak snags will be removed from 90% of all oak woodland less than 40% slope? If so, what data is available to show that even "minimum viable populations" of species dependent on oak snags could be maintained over time?

**136**    4-85:    Pinyon-sage - Management should provide many small cleared areas mixed with natural woodland. Openings should be between 100 and 600 feet wide. Slash and woody debris should be retained in the openings. Light to moderate spring and autumn grazing of grasses by cattle is acceptable; however, no livestock grazing should occur on those lands within important deer winter ranges, as recommended in USFS Gen. Tech. Rpt. RM-47.

**137**    4-86:    Wildlife habitat will not be enhanced for harvest species under a prescription that emphasizes winter grazing in the pinyon-sage type. Conflicts between deer and livestock are occurring now on winter range in Long Valley, Rockhouse Basin and Lamont Valley. The proposed mulch retention standard (Page 4-81, Range Item #2) is inadequate to prevent these conflicts.

**138**    4-88:    What is the location of 8,000 acres allotted under the CF6 prescription? Is any of this acreage part of the 7,540 acres of mountain meadows referred to under the discussion of meadow habitat on Page 3-39 of the Plan? If so, we are seriously concerned with livestock grazing being the primary emphasis in meadows and with the fact that wildlife needs are not recognized in discussion of the emphasis and opportunities sections.

**139**    4-88:    Emphasis - Meadows are key fishery resources, which are highly susceptible to the adverse effects of overgrazing. As such, meadows should not be managed to optimize livestock grazing, unless a constraint is included which prevents damage to fishery values.

- 140 4-90: Fish and Wildlife - There is no mention of fish or amphibia. (Range, 3) Grazing emphasis in meadows will reduce stream habitat values.
- 141 4-91: The 294,000 acres included under the CF7 prescription contains much habitat that is critical to wildlife. However, wildlife is not mentioned in the discussion of opportunities within the area. The standards and guidelines are inadequate to protect wildlife under intensive silviculture. Additional standards should include:
  - L. Limitation on timber operations in key deer habitats (propagation areas, migration corridors, and holding areas). This includes such measures as limited operating seasons, restricted vehicle travel, restored road construction, etc.).
  - 2. Retention of a vegetation screen adjacent to new timber roads.
  - 3. Seeding of skid trails, landings, temporary roads, etc., with plant species utilized by wildlife.
  - 4. Modification of cutting units (size and shape) within key habitats (e. g., deer population centers).
  - 5. Development of specific release treatments within harvest units to benefit early successional wildlife species.

Without additional specific standards and guidelines for protection of these areas, wildlife will suffer significant losses under the CF7 prescription.
- 142 4-91 to 4-93: There is no mention of fishery resources or compliance.
- 143 4-94: Altered water yield would be potentially harmful to fluvial ecosystems, if it is accomplished as proposed.
- 144 4-96: Increasing water quantity will not "improve timing of stream-flow" and may, in fact, be detrimental.
- 145 4-97: Fish and Wildlife - There is no mention of fish or amphibia.
- 146 4-98: Timber - Please see comment P 4-94.
- 147 4-98: Watershed 2) - Same comment as above.
- 148 4-100: Opportunities - Provisions should be made for fishery management in all stream classifications, for restoration and maintenance of native fish species and restoration of damaged stream habitats (South Fork Kern River).



- 149 5-1: Monitoring - see general comments.
- 150 5-3: Proposed monitoring for all wildlife is non-specific. Minimum monitoring to evaluate the Forest's spotted owl management direction alone, could not be completed within the \$6,000.00 allocated for all wildlife monitoring, forest-wide.
- 151 App. A-1: Plans should be developed for restoration and protection of Kern River rainbow trout, South Fork Kern golden trout, other native trout species, Kern Canyon slender salamander, and Breckenridge Mountain slender salamander.
- 152 App. B-2: Fish and Wildlife -The following should be added:  
"Determine effects of management activities on stream habitat and fish populations."
- 153 App. 8-32: The only specific reference made to the northern goshawk is in the Appendix on Page B-32. Despite the assertion here that standards and guidelines contain necessary direction to maintain 21 nesting pairs, the Plan contains no discussion of this species. Detail is needed regarding where it may be located in the Forest, or how it will be protected. Further, due to lack of adequate surveys and nesting territory documentation, we question the validity of Forest-wide estimates of goshawk populations or the assessments of their viability. This is especially true, considering their planned reduction to 21 nesting pairs. A reliable population estimate needs to be made before such projections should be attempted. We would not concur with a planned reduction, as proposed.;

ADDENDUM 3

COMMENTS ON THE DRAFT CIS  
SEQUOIA LAND AND RESOURCE MANAGEMENT PLAN

- 154**     1- 2 Lines 14-15: Implementation of the deer herd plans is a joint venture of the Department of Fish and Game (DFG) and the sequoia National Forest (SNF). We do not believe that the herd plans could be fully implemented under any of the considered alternatives. The preferred alternative is especially incompatible with the objectives of the herd plans.
- 155**     2- 2 Lines 36-37: The EIS should state the criteria that were applied to both priced and non-priced benefits, and how they were jointly considered.
- 156**     2- 9 Lines 4, 11: The EIS is unclear how the benchmarks of 140 pairs of spotted owls and 110 pairs of goshawks were developed. There were only 46 known spotted owls sites when the plan was developed; and we estimate only about 75 territories for the forest.  
  
If the estimate of 140 pairs of spotted owls was correct, how can a reduction of 75% to 35 SOMAs be considered acceptable? How can viability be guaranteed? In addition, some SOMAs already designated may prove to be unsuitable for maintaining breeding spotted owls in the future. This uncertainty should be a consideration in selection of "viability" levels.
- 157**     2- 9 Line 34: The units for Resident Fish are omitted. We assume they are "M pounds".
- 158**     2-10 Lines 27-33: The assumption that resident fish populations will remain constant over the next 5 decades is unsupported. It will probably not occur unless some effort and money are expended on habitat restoration and/or enhancement, to offset land use changes and their effects upon watersheds.
- 159**     2-16 Lines 20-30: The conclusions of the benchmark analysis show that timber sales contribute only 19% of the Forest's total PNV, and livestock grazing only 1%. It therefore appears these activities are weighted disproportionately in the plan objectives. Livestock use, in particular, as relatively insignificant in its contribution to the PNV and therefore should receive low priority where it conflicts with other resource uses.
- 160**     2-25 Lines 1-7: The MMRs should address the regional guidelines for establishing and maintaining a SOMA matrix.

Use of the Habitat Capability Model as applied to Spotted  
owls also needs to be described in detail. (How was the  
viability limit of 35 pairs of owls derived and what  
assumptions were used?)

**161** 2-25 Lines 33-34: The document is unclear whether diversity,  
(i. e., 5% retention by timber/seral type) will be maintained  
at the forest level or at the timber compartment level.

**162** 2-28 Lines 28-32: Evaluation of segment 1 of the Kings River as a  
wild and scenic river should not be deferred. Please see  
also our comment 3-47 on the Plan (Addendum #1).

**163** 2-30 Lines 30-38: The section regarding wildlife Habitat  
Relationships is important. Along with details of  
Forest-wide Standards and Guidelines, it would be beneficial  
to include a description of what Standards and Guidelines are  
and how they will be used. Many readers do not have ready  
access to the WFKR program entitled "California Wildlife and  
Their Habits: Western Sierra Nevada". This section therefore  
fails to address the basis for management of the fish and  
wildlife resources on the Forest.

**164** 2-31 Lines 14-18: Late successional and old-growth wildlife  
habitat will be reduced from levels that now exist.

Spotted owl management areas should be established by the  
Regional guidelines and maintained under those standards as  
well as according to the habitat capability model.

**165** 2-31 Lines 19-30: Please see our comments on the Plan, Page 4-27.

**166** 2-31 Lines 31-33: Please see our comment on the Plan, Page 4-27.

**167** 2-32: At a minimum, the following standards and guidelines for  
sensitive plants should be adopted in the plan: (1)  
Sensitive plant species will receive special management to  
prevent their eventual placement on federal lists as  
discussed in FS Manual 2670.3. (2) The Forest will develop  
species management guides for sensitive plants. These guides  
will function as "recovery plans" defining activity  
constraints in essential habitat, and the need for monitoring  
land allocation and habitat manipulation. (3) The Forest  
inventory of sensitive plants will be completed before the  
next round of Forest planning.

**168** 2-32 Lines 1-4: Please see our comment on the Plan, Page 4-27.  
regarding riparian areas monitoring.

**169** 2-32 Lines 5-7: Please see our comments on the Plan. Page 4-27.

**170** 2-33 Lines 1-9: The standards for management of annual rangeland  
will result in continued excessive use of forage and mast by  
livestock. The blue-oak woodland and savannah habitat is

used by a variety of wildlife species which should share the use emphasis. The mulch management standard of 400 pounds of residual dry matter is inadequate for wildlife needs and we recommend that it be raised to a minimum of 700 lbs./acre. (Bartolome 1230)

This discussion should include a standard that will prevent damage to meadows by excluding cattle from meadows in the wet season.

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-2-33 Line?: 10-13: Please see our comments on the Plan, Page 4-28.

2-33 Lines 14-16: please see our comments on the Plan, Page 4-28.

2-33 Line 17: One of the most serious proposed changes from current forest management, is that of large scale clearcut and shelterwood harvesting. A large amount of land is scheduled to be treated under this even-aged management system (an average of 27,400 acres/decade - Table IV-16 in the DEIS). The intensity and methods that will be practiced in reforestation of the clearcut and shelterwood harvest units are critical to the resultant benefits for wildlife. The DEIS consistently describes improvement of early-successional species habitat that will result from the proposed even-aged management scheme. It falls, however, to state that intensive site preparation herbicide treatment and other maintenance activities as proposed, would significantly reduce wildlife and fishery benefits. The NFXA specifically states that regeneration cutting is to be carried out only where consistent with fish and wildlife protection. This problem should be recognized and addressed by specific standards and guidelines.

174

2-34: Forest-wide standards and guidelines permit the gathering of firewood and other forest products on all available lands. This is an example of how the preferred alternative fails to consider the specific needs of rare salamanders (i.e. the need of the Kern Canyon slender salamander for downed logs and surface litter). Minimum requirements should be identified in the plan and firewood gathering should be regulated.

With respect to the two subspecies of golden trout which occur on the Forest, the failure to provide specific management direction and prescriptions for critical habitat maintenance could result in failure to maintain viable populations. These trout are particularly vulnerable to habitat degradation. As such, activities which occur far from the actual habitat may have critically detrimental impacts. Since habitats surrounding many streams which contain golden trout (especially Monache, Soda, Snake, Fish, and Upper Trout creeks) are planned for timber management, it is vital that strict standards and enforcement be implemented to protect the watersheds. This should include standards and

guidelines to restrict tractor logging to slopes less than 30% where erodible granitic soils occur and 35% where less erodible soils occur, a quantitative limit for maximum cumulative disturbance, and a 100-foot (each side) stream management zone along Class I and II streams. The plan should make provisions to provide for at least 30 miles of stream habitat restoration for existing meadow streams within the forest which have been degraded by past bank erosion and bank sloughing.

175

2-39:

we believe that the delineation and assignment of prescriptions to entire management areas is inappropriate, based upon the NFMA requirement that they be associated with specific areas based on land capability and suitability. In the present plan there are significant habitat types which are treated simply as "inclusions" in other general vegetative categories. For example, montane chaparral brush patches are key areas for deer and other early successional wildlife. However, they are simply included in "Conifer Forest". Patches of black oak woodland that are key areas for many species of wildlife have also been included in "Conifer forest". Key habitats like these must be treated based on their specific capability and importance in providing for forest benefits and values.

A good example of an important wildlife habitats that could be being impacted by the Plan's failure to acknowledge its specific identity or value is Monache Mountain, S. W. Quad Vegetative Type Map (#306-3C). The western portion (non-wilderness) of this area, comprising about 13,500 acres, is designated "Conifer Forest-Sawtimber". However, of this 13,500 acres, approximately 2,500 acres are montane chaparral, 500 acres are sagebrush, and 160 acres are meadow, all occurring in a mosaic pattern over the land. This particular area, with its diverse wildlife habitat types, would accrue significant wildlife losses if managed under a sawtimber prescription and the proposed, associated standards and guidelines.

176

2-41 to 2-55:

There are no management prescriptions intended specifically to benefit wildlife or key wildlife habitat. All wildlife-oriented prescriptions are subordinate to other conflicting uses (such as grazing, recreation and timber production). Although wildlife prescriptions BQ5, QW5, MC5, FS5 and CF5 state that grazing is desirable except where in conflict with wildlife, the Forest in the past has not remedied such conflicts. Wildlife value is also tied to increased recreation in all of the prescriptions.

177

2-57

Lines 17-20: Two additional ski areas (along with Peppermint Mountain) will have additional effect upon wildlife, which will need to be addressed.

- 178     2-58   Lines 4-13: 677,000 (170,000 usable) acres will be open to cross country O W use, except in areas closed seasonally or permanently to prevent resource damage. This will adversely affect wildlife.
- 179     2-59   Line 25: Evaluation of Segment 1 Kings River for wild and scenic designation should not be delayed.
- 180     2-62   Lines 22-27: We support the use of prescribed fire to enhance wilderness values.
- 181     2-62   Line 30: The statement that "the current level of fish habitat capability will be maintained" is unrealistic for the reasons outlined in the general comment section.
- 182     2-63   Line 1: This section states that planned levels for spotted owls and goshawks are above the MMR level. The planned level, however, is inadequate and is, in fact, 40% below the current level. This constitutes a planned management strategy to reduce the number of these species.  
  
           We question the Forest's ability to maintain habitat for 90 pairs of spotted owls considering that only half that number have been identified on the forest at present management levels. The Forest can save the prescribed amount of habitat in a cumulative total, but without distributing it in appropriately-sized tracts, spotted owl objectives would not be realized. The same is true of the goshawk.
- 183     2-63   Line 9: A secondary impact of concern is the need for future summer livestock range capacity.. If livestock use in the future must be increased on summer ranges in proportion to the additional planned livestock use on winter range allotments, adverse impacts on fish and wildlife could occur. These should be addressed.
- 184     2-63   Line 16: Emphasis on use of logging slash and dead/down material for fuelwood will directly reduce wildlife habitat diversity. The retention standards-as presented are substantially lower than those recommended in Ag. Randbk. #553.
- 185     2-64   Lines 6-9: We recommend provision for a 100' wide buffer zone on each side of all perennial streams. We believe that this will be needed to meet the intent of NFMA regulations,
- 186     2-65   Line 27: Plant age composition will be shifted within the treated chaparral stands, however, vegetative species diversity within the conifer zone stands will likely decrease in the long term. Wildlife diversity will be coincidentally reduced through the planned reduction of old-growth stands, oaks, snags, dead and down and other key wildlife habitat components.

187 2-66 Line 14: We believe it is undesirable to eliminate small, under-utilized campsites in the water-oriented areas and expand heavily used sites. Such an action could concentrate resource damage.

188 2-66: The PRF Alternative proposes no blue oak lands within the wildlife/recreation prescription (B05). Continued allocation of blue oak habitat to maximum livestock use as proposed will cause continued degradation, poor regeneration and a reduction in population levels of the numerous dependent wildlife species (including deer, quail, woodpeckers, small mammals, etc.).

189 2-68 Line 33: We disagree that deer numbers would increase from 11,000 to 15,000 over the planning period under the preferred alternative. Greatly increased levels of recreation use, livestock grazing, intensive timber harvest and the reduction in oaks will all tend to reduce deer numbers.

190 2-68 Line-34: We believe the projection of 90 pairs of spotted owls after 50 years under this alternative is too speculative. Information is unavailable for 50% of the spotted owls that exist today. None of the alternatives appear to provide for the proper mix of habitat variables needed for this species.

191 2-68 Line 36: No substantiation is presented for the assumption that the number of pounds of resident fish will remain unchanged under the PRF alternative.

192 2-69 Line 10: Table 2-6, WFUD's, Direct Habitat Improvement for resident fish: No plans are presented for "direct habitat improvement". We are doubtful that the stated goals for fisheries could be met without such measures.

The method of estimating future use (28 MWFUD) under Indirect Habitat Improvement should be disclosed.

193 2-69 and 2-70: The output table relating to habitat improvement through burning is confusing and does not indicate which species actually benefit from manipulation efforts. Prescribed burning outputs are predicted under "Wildlife and Fish Direct Habitat Improvement", "Range Betterment" and "Range, Wildlife, and Watershed" fire treatment. Do the acreage values for these categories overlap? Will additional livestock use be allowed on all burned areas? AUMs increase from 63,000 to 71,000 in the first decade, but no "Range Betterment" is proposed. Will this additional use occur on the same 10,000 acres proposed for treatment under "Direct Habitat Improvement" for deer? These questions need to be clearly answered in order to address actual wildlife benefits.





203

2-109, 2-123, 2-134, 2-146, and 2-158: We have not provided detailed comments on the CED, LBU, NKT, PRO or WLI Alternatives as we consider them to be entirely unacceptable from a wildlife standpoint.

204

2-171: The WFW Alternative emphasizes fish and wildlife to the extent it is associated with recreation (i.e., harvest species). This alternative includes some improvements for wildlife but also has some major problems and inconsistencies.

1. The Piute Mountains and Scodies provide some of the poorer wildlife habitat on the Sequoia. Why weren't some of the more northern parts (better wildlife habitat) of the Forest designated for maintenance of maximum wildlife habitat?
2. **Developed and dispersed recreational activities are proposed to greatly increase. These activities can conflict with management for fish and wildlife.**
3. **The acreage goal of habitat to be improved for wildlife appears to be unattainable, based on the past history of the Forest's ability to treat land. Prescribed burning will have to be pursued much more aggressively if the planned objectives are to be met. Funding constraints may prevent this.**
4. The proposed snag, dead/down, and oak standards will lead to reductions of existing wildlife.
5. Old-growth indicator species face substantial planned reductions in their populations in the Plan.
6. The construction of additional roads and trails for houndsmen will not benefit fish and wildlife. As such, they should not be included as benefits under the "Program Direction" section for wildlife and fish (Page 2-178).
7. We note that some timber harvest in riparian zones is still planned. (Page 2-179).
8. While reductions in the amount of grazing use and the length of the allowed grazing season on meadows and annual grass are helpful, they are still insufficient to maintain wildlife populations at or near present levels. (For example, grazing of the annual range as early as February 15 results in wildlife/cattle competition). We also note that actual output of Forest AUMs is proposed to increase over the planning period by 13% (and over the 1979 level by 60%). It is highly unlikely that wildlife will benefit by reduction of available forage and cover.

9. Planned fuelwood (non-sawtimber) use is increased by 80% over the planning period. This production of firewood is proposed as a by-product of wildlife habitat projects. We believe the planned additional harvest of oak trees will result in overall adverse impacts to wildlife.

**205** 2-175 & 176: The WPV does not really support the full range of wildlife species. Over 90% of the bird and mammal species in California are not harvested. To direct emphasis-towards less than 103 of the species (harvest species), to the detriment of others is not an acceptable goal for the wildlife alternative.

**206** 2-209: All of the various alternatives call for decreases from 5% to 45% of the habitat for species associated with late successional stages. This is not an adequate range of alternatives.

**207** 3-50 Line 12: The conclusion that there is "... no opportunity for significant improvement in fish production" is incorrect. There are many techniques which could contribute to increase production of resident fish. They require manpower and money, however, along with a commitment to see this resource improved.

**208** 3-51: The statement that "native fishes in these areas are badly depressed due to heavy fishing pressure, competition with hatchery rainbows ..." is not adequately supported. In many cases, hatchery rainbow trout do not compete well with resident fish and have a comparatively short life expectancy. (There is a problem, however, in some areas of extremely heavy fishing pressure where the resident trout populations were reduced prior to the stocking of catchable-sized trout).

**209** We have no way of knowing whether the estimated 46 miles of stream that is categorized as "benefitting from habitat repair" is accurate. It must also be recognized that over the next 50-year period, under the activities of the Preferred alternative, the mileage of stream requiring habitat repair will increase.

**210** 3-53: The classification of the following species should be revised in Table 3.15 (and all other places where the errors appear). Kern Canyon slender salamanders are state threatened, not rare. Tehachapi slender salamanders are state threatened, not rare. Great gray owls are state endangered, not sensitive. Wolverines are state threatened, not rare. Sierra Nevada red fox are state threatened, not sensitive.

**211** 3-54 Line 6: How is the 470,000 acres of mature and overmature timber distributed? Is that distribution consistent with the habitat needs of old growth wildlife associates? There is only 3,648 acres of actual old growth timber available to

wildlife. This will not support the numbers of old-growth dependent species called for in the Plan, such as 140 pairs of spotted owls.

It is important to note that old-growth-associated wildlife tend to be obligated to that habitat type, while species found in early-successional stages tend to be more generalized in their habitat requirements.

212

3-54 Line 37: The statement that hunting use is expected to remain about the same is unsupported. The deer herd plans call for increasing deer numbers, and substantially increasing deer hunting opportunities.

213

3-55: what was the criteria used to categorize "high", "moderate" and "low" quality habitat for the species listed in Table 3.167

Impact assessment regarding indicator species requires knowledge of their population levels and distribution. This information should be disclosed to reviewers.

This is especially true regarding sensitive species. For example, 106,300 acres may not support any spotted owls if it is distributed in a disjunct configuration with no areas of adequate size.

214

3-57: The DEIS should also list Placelia nashiana, Calochortus striatus, Carex tompkinsii, and Mimulus pictus as sensitive plant species.

we could find no standards and guidelines which address the issue of the size of areas managed for rare species.

215

3-65 to 67: what is the effect of "pest" management on other species, especially those that are "indicator species"?

216

3-75: There is no discussion of resource "trade-offs" associated with the proposed additional AUM production. This should be further discussed in the EIS.

217

3-76: We question the DEIS statement that there has only been a 7% increase in AUMs since 1973. The Sequoia's 1980 "Planning Issues" document states that there were only 44,700 AUMs of use on the Forest at that time. This indicates a 41% increase in AUMs between then and the 1982 base year level of 63,000. On the Hume District alone, there has been approximately a 100% AUM increase (from 4,500 to 9,000). Given the increased AUM levels proposed in the plan, and the conflict between livestock and fish and wildlife resources, the relationship between past and present range use should be clarified for the public, along with related trends in availability and quality of wildlife habitat.

- 218** 3-92 to 3-96: We believe that placing all of the Resource Natural (~~Study~~) Areas **in** Wilderness is inappropriate. Results from such study areas will be biased by protective management and will not provide true benchmark values for broad application. RNAs should be placed within or adjacent to areas experiencing a full range of impacts associated with timber, grazing and recreation.
- 22.9** 3-94: The six botanical areas identified for significant diversity and essential habitat for sensitive and rare plant species should be established and management guidelines prepared.
- 220** 3-102 **Line 6:** Removal of "whitewoods" could reduce overhead cover such that surface evaporation will reduce growth and survival of the redwoods.
- 221** 3-102: There are many meadows on the Forest of **less** than 2 acres in size. These smaller openings and stringer-type meadows are some of the most important wildlife habitats available. If not excessively grazed by livestock, they provide excellent deer fawning sites. We believe they should be treated equally with larger meadows.
- 222** 3-106: The current plan for riparian protection appears not to conform with the intent of NFMA 136 CFR **219.13(a)**], Forest Service Manual Direction for Riparian Protection (Title 2526.03) and Land Management Planning Direction (Sec. 3-8 B and 4 G). The DEIS clearly shows that conflicts between riparian needs and other resource uses **now** occur (Page 3-106). but none of the Alternatives provide standards and guidelines, management area direction, or prescriptions that adequately emphasize riparian dependent resources.
- 223** 3-113: Clearcutting will not favor deer if (1) intensive release treatment is done to reduce shrub competition with planted conifers (as described on Pages 3-111), and (2) livestock use during early plantation stages is emphasized (as is proposed under Section F, Pages 4-28 of the Forest Plan). Standards and guidelines that effectively retain early-seral-stage vegetation must be incorporated into the plan in order for deer and other early-seral-stage dependent wildlife to be favored. The DEIS description of the wildlife values associated with the planned clearcutting is misleading.
- 224** 3-114: Harvest and thinning of black oak woodland may increase grazing opportunities, but we disagree that it would increase diversity of wildlife habitat over the life of the Forest Plan. See comments under the Plan, Page 3-42.
- 225** 3-115: The lack of blue oak regeneration is briefly mentioned in the "Affect Environment" section and is partially attributed to intensive livestock grazing; We believe grazing is the **major** influence. Despite this conflict, the PFR alternative proposes to greatly increase livestock use of the blue oak woodland by allocating the majority to the "Range"

prescription. None is planned for wildlife emphasis. Adequate Standards and Guidelines must be developed to guarantee adequate regeneration of this key wildlife habitat. This is necessary to avoid reduction in the biotic diversity of the Forest.

226 3-115: Table 2.5 on Page 2-67 lists 43,000 acres of blue oak woodland. In apparent conflict, it is stated here that only 16,539 acres of this type exist on the Forest.

227 3-115: The description of the importance of live oak woodland to wildlife diversity is in error. Live oak trees provide food and cover to numerous species of game and nongame animals. Their acorns are particularly high in fat (energy) content (3 times that found in blue or valley oak) and are therefore of significant value. Treatment of the live oak woodland in the Standards and Guidelines is inadequate to assure their availability.

228 4-44: While it may be partly true that the southern Sierra is rugged, with granitic soils, it is inaccurate to state that this "precludes any major opportunity to physically improve the fishery habitat for native fish species". It is possible to improve fishery habitat through numerous techniques.

In some instances, the fishery habitat has deteriorated due to natural causes while in others, man's activities have been the cause. Streams such as Bearskin, Woodward, and Tenmile creeks contain large quantities of sediment which adversely impacts trout habitat. Projects to improve these habitats and remedy soil erosion problems should be considered.

It is misleading to imply (in the last sentence of paragraph 2), that better truck access to more streams would enable CDFG to stock hatchery fish in more locations. DFG is now supplying hatchery trout at our maximum capacity. Consequently, it would be difficult to stock trout in additional waters without reducing the allotment at existing stocking localities.

229 4-45: The summaries of impacts on Forest fishery resources under alternatives PRF, CED, CUR, etc., are inaccurate. The "minimum management requirement" includes adequate SMZs and use of Best Management Practices, however, (while providing some protection for the riparian resources), no provisions are made for correcting problem situations. It is important to recognize that future land manipulations, no matter how well planned, will have some adverse impact on streams and associated aquatic resources and will require corrective work.

It is incorrect to assume that trout population regulation will remain unchanged under the scenarios outlined in the various alternatives. Because habitat quality will

deteriorate and angler access and pressure will increase, it is unreasonable to assume that over the next 5 decades "native trout production will remain constant".

230 4-46: We disagree with the analysis of wildlife habitat changes as presented in Table 4.20. Our major concerns are:

1. The increases in early successional stage habitat with all alternatives (except L30) will not accrue unless additional standards and guidelines are developed to specifically guide release treatments. The proposed plan provides no such guidance. Rather, it makes clear (Page 4-93 of the Plan), (1) that all methods of regeneration treatment to promote timber growth are appropriate, and (2) that control of competing vegetation will be done to promote optimum timber growing conditions. In addition, the proposed intense use of livestock to reduce competing vegetation in timber stands (Page 4-28 and 4-92 in the Plan) will further reduce herbaceous or shrub wildlife food and cover.
2. The impacts to late-successional stage wildlife are underestimated in all the alternatives. In the PRF alternative, 134,000 acres of mature forest will be turned into young stands, ranging from 1-50 years in age. These provide little or no benefit to old-growth species. The fact that other stands within designated wilderness, recreation areas and other sites not proposed for harvest will become older will not mitigate the loss of old growth on the Forest.
3. There are no firm standards or guidelines within the proposed Plan to ensure additional protection within riparian zones. The increases in riparian habitat capability are unsupported at this time.
4. Natural snag densities will be greatly reduced on 134,000 acres under the PRF alternative. The retention of snags on non-harvest areas will not mitigate this loss. Snag (and dead/down)-dependent species will suffer greater losses than those shown in Table 4.20. The projected increases seen under the RPA, AMN and WFW alternatives appear Unsupported. For example, the additional snag retention under the RPA alternative is credited with a 10% increase in snag-dependent species. We question how the retention of snags on non-harvested lands (where snags already occur) and the loss of snags on the 92,000 acres proposed for intensive clearcut management under this alternative, could cumulatively enhance snag habitat potential by 10%.
5. The level of impact to oak-associated wildlife is also understated within all the alternatives. Losses much greater than those reported in Table 4.20 will accrue

even with the oak retention standards proposed, due to:  
(a) loss of black oak under clearcutting management,  
(b) live oak and black oak harvest for fuelwood, and (c)  
continued loss of blue oak through failure to regenerate  
stands during the planning period. The PRF alternativu  
(Page 4-47) reports an expected 25% decline in habitat  
capability over 134,000 harvested acres, with yet only a  
5% reduction on the Forest, overall. We doubt that  
sufficient opportunity exists to increase oak habitat on  
non-harvested lands to the extent that it would  
compensate for the major losses anticipated.

- 231**     4-65:    There is no mention of fishing under the preferred alternative, even though there will be a projected 75,000 to 82,000 WFUDs on the Forest by 19901
- 232**     4-94:    The environmental consequences to wildlife from the proposed "optimized" livestock use of meadows is not addressed. meadows on the Forest are already severely overgrazed, with associated losses of wildlife value. To perpetuate their "close cropped appearance" (as described on Page 2-77) ignores the needs of wildlife resources.
- 233**     4-95:    There is no discussion in this section of the environmental consequences to fish and wildlife of continued high levels of livestock grazing in riparian zones. Major conflicts are already occurring which should have been addressed for public review.
- 234**     4-96:    Riparian management as proposed in the PRF alternative may maintain indigenous wildlife at "minimum viable" population objectives set by the Forest Service, however, continued timber harvest and increased livestock use will reduce the value of riparian areas to riparian-obligate.
- 235**     App. 0-7: Management areas are defined as "units of a single vegetative type" which are allocated to the same management emphasis. Yet, in the same paragraph, it is stated that the designated areas "may contain several vegetative types but all types within an area are managed with the same emphasis". As discussed in our comments under Page 2-39, we believe the inclusion of significantly different vegetative types within management areas implies inadequate management of specific and important habitat types.
- 236**     B-32:    Field surveys for spotted owls appear to be inadequate for the detailed assumptions and conclusions stated in the Plan.  
  
Where are the 35 SOTs located? The document implies that they have been located, however, the data is not provided.
- 237**     App. B-32: A clear explanation of maintaining "viable" populations should be provided. This direction appears to call for maintenance of fish and wildlife at a threshold between stable population levels and non-viable threatened status.

We disagree with this approach and believe that the maintenance of fish and wildlife populations at a level equal to or greater than present levels of abundance, diversity and composition is in the best public interest.



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The Resources Agency of California

- Fish and Game

Resolution:

1. Please refer to Chapter 5 of the Final Environmental Impact Statement where we credit Rod **Goss** with his two and a half years of participation in the early stages of the preparation of the Plan and EIS. After Mr. Goss left, the Forest has had several meetings with the California Department of Fish and Game (**CDFG or Department**) Region 4 staff to discuss and resolve comments they had formulated in respect to the Sequoia National Forest's DEIS and Draft Land Management Plan.
2. We believe the Forest has made substantial changes in the FEIS and Final Plan which address the concerns of the **CDFG** in respect to fish and wildlife habitat management. Specific changes and resolutions to the CDFG comments are addressed later in this response.
3. We agree the Forest Plan and EIS have more text devoted to timber, rangeland, and recreation management than wildlife habitat management. This is so because the impacts of these programs are greatest to all resources on the Forest and, therefore, necessitate more explanation. The Forest took into consideration all aspects of fish and wildlife resources and the potential impacts to these resources when describing and assessing the effects of **our** timber, range, and recreation management programs.
4. There are many areas on the Forest outside wilderness where wildlife and fish resources are identified as the dominant allocation of land management uses. Over 50,000 acres of land has been identified as spotted owl habitat. This acreage has been divided into areas of **1,650** acres for a total of 30 habitat areas (outside wilderness) devoted to the protection of mature timber stands for spotted owl habitat. To the extent possible, these areas have incorporated primarily old-growth habitat which may be utilized by a variety of old-growth-dependent species.

There are three Research Natural Areas recommended to the Chief for establishment, and five Special Interest Botanical Areas are established in the Final Plan.

**Our** Forest Riparian Standards and Guidelines provide for the protection and maintenance of riparian habitat resources over all other land uses. These guidelines affect thousands of acres of valuable riparian habitat on the Forest.

**Our** documents also describe the establishment of wildlife clumps or aggregations of mature timber which will be established everywhere where even-age timber management is practiced. These areas will provide protection to hardwoods, dead and down material, and soft and hard snags. Combined with the early

successional environment created in **our** harvest units, the affected areas, as a whole, will provide a range of vegetative diversity.

5. The CNDDDB has been utilized in the preparation of **our** Forest Plan. Currently, we receive an annual update of all plant taxa occurring on Sequoia **NF**. **We** have been sending data to the CNDDDB since its creation, and it is Forest Service direction to continually provide the CNDDDB with **all** occurrences of plant and animal survey reports and forms as they are generated.
6. **We** disagree with the Department's comment that their recommendations, personnel, **or** expertise is not reflected in **our** documents. Many of the **CDG** recommendations were taken into consideration and resulted in changes in the document text from the Draft to Final Plan and EIS. These changes are noted in the following pages of this response.
7. **The** Forest believes the Land Management Plan and EIS provide adequate protection to all geographically rare plant and animal species found on the Forest while providing for diversity.
8. The Department is correct in stating the treatment of rare plants is not discussed in each alternative described in the EIS. **It** was the intent of the Forest to not discuss, in each alternative, Standards and Guidelines that were **common** to all alternatives. Such is the case concerning the management **or** protection of rare plants. Chapter **4** of the Final Plan describes the Forest-wide Standards and Guidelines for all resources on the Forest. **The** management guidelines for sensitive plants are contained within this section. Regardless of the alternative discussed **or** selected, these guidelines will apply.

Also, in Chapter **3** of the Plan, direction is provided allowing for the protection of **all** sensitive plant species **known** to occur on the Forest until species management guides are written for them.

The text the Department refers to on page 4-50 of the DEIS has been revised to state "Known populations of sensitive plants and their essential habitats will be protected under all alternatives."

9. **We** do not agree with the Department that **our** Draft **or** **our** Final Plan fails to protect and maintain fish and wildlife resources on the Forest.

**Our** timber management program will maintain wildlife resources dependent on early successional vegetation in the conifer zone and assist in providing funds for fish and wildlife habitat improvement projects and road closures. **Our** chaparral prescribed burn program will maintain diversity integrity in the chaparral ecosystem. **Our** spotted owl management program, wildlife clump policies, and Riparian Standards and Guidelines will maintain and protect old-growth and riparian habitat. **Our** active meadow

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restoration program will improve fishery habitat and valuable meadow ecosystems. Our law enforcement program will assist in apprehending violators damaging fish and wildlife habitats. Following our management plans for species such as the Little Kern golden trout and peregrine falcon, we will eventually restore these species to portions of their original range. We have also strengthened our Standards and Guidelines in the Final Plan and EIS, providing for the maintenance and protection of important habitat types, including snags, hardwoods, and old-growth stands.

10. The statement the Department refers to, "Other than implementation of the Little Kern Golden Trout Management Plan, no other direct fisheries habitat improvement is planned..." was in error on the part of the Forest and has been changed in the text.

The Forest has identified several direct fisheries habitat improvement opportunities in Chapter 3 of the Plan which are ongoing or proposed projects. Some of these fisheries habitat projects include streambank stabilization and revegetation work, installation of stream structures to improve pool/riffle ratios, and creating new fishing reservoirs to provide additional fishing habitat where practical. The Forest will continue to accomplish direct fisheries projects in the future, utilizing Forest Service and State Cooperative Funds when available. Please see the expanded section describing the fisheries situation and proposed management in Chapter 3 of the Final Plan for more details.

11. The Forest has included the use of its Forest Riparian Standards and Guidelines in the Forest-wide **Goals** in Chapter 4. These Standards and Guidelines address both water temperatures and sedimentation in the prescriptions developed for determining what activities are acceptable in riparian areas.
12. Please refer to Responses 10 and 11 for an explanation to this comment.
13. The Forest believes that by adherence to Best Management Practice and the Riparian Standards and Guidelines, and continued direct fisheries habitat improvement work (funds permitting) we can achieve these goals by 1995. Also, the Forest is not increasing grazing use. Livestock numbers will remain approximately at "current 1987 levels" through the next decade.
14. See Appendix L for an explanation of the budgetary process in effect on the Forest.
15. The statement the Department refers to is correct for all resources with the exception of fish levels. The Forest plans to maintain current levels of resident fish, which is 84 percent of the 1995 projections.
16. Refer to #10 describing the changes made to the fisheries section.

17. **The Forest believes it can maintain fish production at current levels by the proper use of Best Management Practices, the Forest Riparian Standards and Guidelines, and through indirect and direct fisheries habitat programs such as the Meadow Restoration Program and streambank stabilization projects.**
18. **The National Forest Management Act requires that this Plan shall "provide for multiple use and sustained yield of goods and services from the Forest in a way that maximizes long-term net public benefits in an environmentally sound manner." This direction precludes the Department's suggestion that the Kern Plateau be managed principally for fishery, wildlife, and recreation resource values. Also, approximately 50 percent of the Kern Plateau is already in wilderness, providing mainly fishery, wildlife, and recreation resource values.**
19. Please refer to Response 4 for an explanation to this comment pertaining to the allocation of areas specifically for wildlife.
20. Please refer to our revised list of listed species in Chapter 3 of the Final Plan. Also refer to our revised Standards and Guidelines as they relate to listed species in Chapter 4 of the Final Plan. The Forest cannot ascertain whether our goals meet or exceed the recovery objectives established for many of the species listed in Chapter 3 of the Plan since recovery plans have not been written describing those objectives. **We** believe we meet the intent of FS Manual 2672.31 and 2672.32. The Forest would be willing to review any recovery plans the Department has written for those listed species found on Sequoia National Forest.
21. Please refer to the Forest-wide Standards and Guidelines in Chapter 4 as they pertain to Diversity. The second guideline states "Provide for an array of early and late successional stages over time in each Forest Ecosystem to assure that long-term viability of Forest wildlife species will be maintained."
22. **The Forest believes it has, in the Final Plan, described a balanced program providing economic outputs and non-economic outputs such as wilderness values, dispersed recreation, wildlife resources, and cultural resource protection.**
23. **The Final Plan in Chapter 4 describes many Standards and Guidelines designed specifically for the protection and maintenance of fish and wildlife habitat. In particular, the Standards and Guidelines focus on critical habitat for wildlife species that utilize riparian, hardwood, snags, and down-log habitats.**

**The Final Plan has been extensively changed to include both even- and uneven-aged timber management systems.**
24. Please refer to Response 20 which responds to this similar comment. **We** believe the Department's concern is the completion of recovery plans for all listed species which is also a desirable

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goal of the Forest Service. ~~We~~ do not believe the Plan is the format in which to write these recovery plans.

25. Please **see** revision of selected Management Indicator Species and expanded explanation of why these species were chosen in Chapter 3 of the Final Plan. In particular, notice the substitution of rainbow trout for raccoon as an MIS for riparian habitats. Also, *see* the expanded monitoring (Chapter 5 of the Final Plan), describing what standards of comparison and variability from the current situation will lead to further action.
26. For planning purposes, the Forest has no reason to assume that the majority of species present on the Forest are not of sufficient numbers and distributions to insure viability over time. Past activities have affected a relatively small proportion of the total Forest. For species in which viability is a concern, numbers of reproductive individuals have been considered and documented. These species include the California condor, peregrine falcon, Little Kern golden trout, bald eagle, and spotted owls. All of these species either have specific management plans written for them, or are given special consideration in the Final Plan and EIS. **Due** to the large amount of conifer forest over 130 years old on Sequoia NF (see Chapter 3 of the FEIS), viability of the goshawk, pileated woodpecker, and other species dependent on mature forest stands are considered at this time to be of sufficient numbers and distribution to insure viability.
27. **The** concept of minimum viable population maintenance has been dropped from the documents. ~~We~~ are managing for the maintenance of viable populations of all species.
28. **Our** standards, guidelines, and goals for fish and wildlife apply to all species present on the Forest. Please review our revised goals, standards, and guidelines addressing fish, wildlife, and their associated habitats on the Forest in Chapter 4 of the Final Plan.

The goals, standards, and guidelines provide for the protection of the species and their habitat for all the species listed in Table 3.15 under all alternatives, so a separate analysis of the effects to all listed species is not necessary. In Chapter 4 of the FEIS, an analysis is provided of the expected percent changes the Forest anticipates from management activities to specific habitat types including riparian and old growth habitats.

29. The South Fork Kern golden trout and Inyo Mountains salamander have not been listed as sensitive by the Regional Forester at this time. The Sierra red fox has been added to Table 3.15.
30. The majority of inventorying for specific species will occur at the project level when environmental assessments are developed. Please see revisions to Appendix B of the Final Plan for expanded text on Research Needs.

31. Please see Response 26 for an explanation to this comment.
32. **The Forest** has recently hired a shared-services Fisheries Biologist, a Zone Wildlife Biologist, a Hydrologist, and a Soil Scientist. These persons, and a variety of other resource specialists, will accomplish the monitoring described in the Final Plan. In addition, as the state agency responsible for wildlife in California, the Sequoia NF will be relying heavily on the monitoring, inventories, population studies, and other research **your** Department has and will continue to accomplish.
33. **The Forest** is confident the revised Final Plan and EIS captures and responds to the majority of concerns expressed by the California Department of Fish and Game in a responsive, favorable nature.

Following are the responses to specific comments brought **up** by the Department regarding the Draft Plan and EIS.

#### Addendum 2.

#### Resolution:

On August 18, 1986 a meeting was held between the California Department of Fish and ~~Game~~ and Sequoia National Forest representatives. In attendance were Rod Goss and Dale Mitchel from the ~~CDFG~~, and Ken Anderson, Steve Anderson, Warren Starnes, and Gordon Heebner from the Sequoia NF. The purpose of the meeting was to come to resolution on the comments the ~~CDG~~ had formulated in respect to Sequoia National Forest's DEIS and Draft Land Management Plan. The comments and resolutions are printed in this document. Note that although agreement or resolution could not be met on every comment, both agencies felt the meeting was very beneficial.

34. Refer to the revised Vision Statement in Chapter 1 of the Final Plan for inclusion of wildlife habitat management.
35. Refer to the revised text concerning sediments in Chapter 2 of the Final Plan.
36.
  - A. Spotted owl habitat areas have been included in the ~~map~~ package. A description for some of the T&E wildlife species ~~is~~ found in Chapter 3 of the Final Plan. Other details for T&E wildlife species management are contained in Appendix B of the FEIS, and in specific management plans for the species.
  - B. Refer to Chapter 2 of the Final Plan for reference to key habitat management for deer herds. Also see Response 3 for further explanation to this comment.
  - C. Refer to the revised fisheries section in Chapter 3 of the Final Plan for an outline of fisheries maintenance and

enhancement opportunities taking place on the Forest. The Forest believes it is actively engaged in sufficient direct and indirect fisheries habitat management to maintain existing number of fish on the Forest.

- D. The Department and Forest Service representatives agreed this comment was based on opinion and, therefore, no response was formulated. In addition, the Forest does not plan to increase grazing, at least through the first planning period.
- E. Although the ~~ODG~~ and the Sequoia NF agreed this comment was an opinion and, therefore, not substantive enough for a response, a couple of points of clarification should be made.

No entire wildlife habitat will be lost. Some habitats, such as old-growth, will decrease, while early successional conifer habitats will increase.

Grazing is not planned to increase above current levels. ~~FORPLAN~~ modeling outputs indicate there will be an increase in available forage, primarily transitory range increases, created through timber harvest activities. The Forest does not plan to increase cattle numbers to take advantage of this forage. The Forest plans to maintain current levels of grazing. The additional forage will be available for wildlife, lessen the grazing pressure on meadows and riparian areas, and provide additional forage for recreational stock which is increasing on the Forest.

The revised Standards and Guidelines provide increased protection and maintenance of oaks, snags, and downed logs from what currently exists.

- 37. Currently, a comprehensive road closure plan for the Sequoia NF does not exist. An expanded explanation of road closures and policy is found in Chapter 3 of the FEIS under Facilities.
- 38. See response to 36.E for a discussion of grazing on the Forest for an explanation to this comment.
- 39. ~~We~~ have included references to Best Management Practices and the Forest Riparian Standards and Guidelines in this section. ~~We~~ have also revised the wording to clarify the answers on ~~SMZ~~ management.
- 40. The section on diversity has been expanded in Chapter 3 of the Final Plan. Also, see responses to Addendum 1, Responses 1-33, for additional information concerning diversity.
- 41. The section on the importance of firewood has been revised in Chapter 3 of the Final Plan.
- 42. The section on the value of commodities has been revised in Chapter 3 of the Final Plan.

43. The text referring to Sacramento perch has been revised in Chapter 3 of the Final Plan.
44. Stream survey documents are available on the Forest for your review.
45. The text describing the Fisheries Resources and Opportunities on the Forest has been revised in Chapter 3 of the Final Plan. These revisions concerning opportunities for fish habitat improvement on the Forest have been changed from "no opportunity" to "many opportunities" which are described in the text.
46. The text describing existing conditions for spotted owls, goshawks, etc., that you refer to has been extensively revised and expanded, describing some of the future conditions and current and future trends for some of the animals.

Also, refer to Response 45 for further explanation.

47. See revisions to the Fisheries section in Chapter 3 of the Final Plan regarding your comments about fish and fisheries habitat.
- 4a. See Response 47 for an explanation to your comment.
49. The Forest is not aware of these species as being listed.
50. The text was not revised to reflect the Department's concern about WFD estimates. The Forest computed WFUD numbers based on a small percent of actual Forest visitor time spent hunting and fishing. Therefore, total days spent on the Forest are not an accurate measure of time spent on wildlife-related activities.
51. The Forest is of the understanding the number of deer tags sold is declining rapidly across the state.
52. The 44,700 figure quoted is Animal Months (*AM's*). If this figure is converted to Animal Unit Months (AUM's) the 1979 level was 59,000 AUM's. Current grazing level is approximately 69,000 AUM's for term permits.
53. The Peppermint Ski Area is the only formally proposed ski area development on the Sequoia NF. Please refer to the completed EIS for that project for information on the environmental effects of this proposed project.
54. The original statement on page 3-19 has been revised to state "Future wildlife demand is expected to increase based upon projected population growth."
55. Riparian areas, as described in Chapter 3 of the Final Plan, are adequate and no change was made based on this comment.
56. Reference was made to the Forest Riparian Guidelines which are available for review. These guidelines specifically outline



management prescriptions developed when activities take place in or near riparian areas.

57. The management direction prescribing the retention of 20-25 square feet basal area per acre is the result of previous negotiations between the U.S. Forest Service and the California Department of Fish and Game. Since the original standard was five square feet basal area per acre, the new standard greatly increases the retention of hardwoods. Therefore, no change was made to the text based on this comment.
58. The text was changed to indicate blue oak woodland is valuable wildlife habitat in Chapter 3 of the Final Plan.
59. The statement "Wildlife habitat is also reduced significantly as compared to blue and black oak woodlands" has been revised to read "Wildlife habitat is also slightly reduced as compared to the blue and black oak woodlands." The statement can be found in the Vegetation Management section of Chapter 3 of the Final Plan.
60. Refer to the Wild and Scenic Rivers section of Chapter 3 of the Final Plan, describing the legislative action that has taken place relating to the Kings and Kern Rivers.
61. Refer to Response 60.
62. Your recommendation that "the designation and management of wilderness areas should contain provisions for management of native fish species (chemical treatment, barrier construction, habitat improvement, etc.)" would require legislative action and is outside the scope of this document.
63. Refer to Responses 9 and 10 for an explanation to this comment.
64. The wildlife and range Forest goals in Chapter 4 of the Final Plan have been revised to provide an improved blend of these resources and their management. **Also** refer to Response 36 for further explanation.
65. The entire concept of optimization as it relates to range management has been revised. Refer to the Range Goals and Standards and Guidelines in Chapter 4 of the Final Plan.
66. Refer to Responses 4, 9, and 13 for an explanation to this comment concerning timber offerings on the Forest.
67. Refer to Responses 4, 9, 10, and 13 for an explanation to this comment concerning maintenance of fish populations.
68. The statement the Department refers to in Chapter 4 of the Draft Plan has been revised as follows "Species associated with late successional stages of vegetation will decrease but remain present throughout their range."

69. **The** statement the Department refers to in Chapter 4 of the Draft Plan has been revised as follows, "Wildlife populations associated with mast-producing trees and snags will decrease but remain present throughout their range."

Tens of thousands of acres of Forest land will not be harvested under even-aged management at one time. Land under even-aged management will always be in various stages of growth, providing some snag and oak habitats. **The** Forest has also adopted a policy of establishing wildlife clumps **or** aggregations of mature timber to provide **oak**, snag, and dead and down habitats where even-aged management is practiced.

70. **Our** Forest Riparian Guidelines provide for the protection and maintenance of riparian habitat utilized by many species, not just species dependent on late successional stages. The statement referred to in Chapter 4 has been revised to reflect this concept.
71. **We** believe you incorrectly interpreted this section on the Summary of Future Range Resource Condition in Chapter 4 of the Draft Plan. The Sequoia NF does not plan to place additional livestock on areas managed under even-aged timber management prescriptions or chaparral areas altered from prescribed burning.
72. Refer to Response 53 for an explanation to this comment on proposed ski areas.
73. Refer to Response 64 for an explanation to this comment about potential range/wildlife management conflicts.
74. **The** statement the Department refers to in Chapter 4 under the Resource Condition Section has been revised. Also, provisions to control grazing in areas where resource conflicts exist can be found in Allotment Management Plans which describe the management of range resources and grazing practices on specific areas of the Forest. These plans are updated every ten years and are available for review.
75. **The** table referred to, "Management Area Prescription Acreage" already emphasizes wildlife and dispersed recreation on 25,000 acres in B05, OW5, MC5, PS5, and CF5 areas. **The** Forest believes it has provided a balance of management emphasis across the Forest.
76. See Response 10 for an explanation to your comment regarding resident fish population levels.
77. No change was made to the text based on this comment referring to the development of non-roaded areas. The construction of roads is necessary to meet the intent of multiple use management on the Forest.
78. See Responses 10 and 50 for an explanation to your comment regarding fish habitat improvements and WFUD's.

79. The projected increases in water quantity, referenced in Chapter 4 of the Plan, have been revised downward as a result of several modifications to the Final Plan. The Forest believes the Final Plan provides a balance between satisfying demands for increased water and protection of aquatic habitats through the implementation of Riparian Guidelines and Best Management Practices.
80. The table referred to in this comment is not the appropriate place in the document to discuss the effects of road construction. See Chapter 4 of the FEIS. Site specific sedimentation problems in stream habitats will be addressed in environmental assessments for specific projects and mitigated through proper road construction and the implementation of Best Management Practices and the Forest Riparian Guidelines.
81. We concur with this comment.
82. Refer to the revised sections addressing OHV use on Sequoia NF which restrict OHV use to designated roads and trails in Chapter 4 of the Final Plan.
83. See Response 60 for an explanation to this comment.
84. See Response 62 for an explanation to this comment.
85. We concur with this comment regarding planned and unplanned ignition.
86. See the revisions made to this section of Chapter 4 of the Plan regarding listed species. Specific species are no longer mentioned in this section. Refer to table 3.5. Federal and State Listed Wildlife Species on the Sequoia NF. for the revised list of species. The Forest has no knowledge of the listing of the South Fork Kern golden trout and Breckenridge Mountain slender salamander by the state or federal government.
87. Standards and Guidelines as described in Chapter 4 of the Final Plan provide for the maintenance and protection of all plant, fish, and wildlife species to insure adequate population levels and distribution to provide for their continued existence throughout their current range. To this end, the Forest does not believe it is necessary to include standards, guidelines, and management prescriptions for those individual species mentioned in this comment. These elements pertaining to the management of these species should be addressed in recovery and/or management plans written specifically for them. As stated in the Fish, Wildlife, and Plants Standards and Guidelines in Chapter 4 of the Plan, the Forest will participate, when requested, with the Regional Office, the USDI Fish and Wildlife Service, and the California Department of Fish and Game in the development of recovery or management plans for species listed in Chapter 3 of the Plan.

88. The Final Plan and EIS has been revised throughout the documents to describe the management and protection of four superior nest sites on the Forest.
89. Refer to the revised Standards and Guidelines for Snag and Down Log Management in Chapter 4 of the Final Plan, describing increased maintenance and protection of dead and down log management and snag management.
90. See Response 89 for an explanation to this comment.
91. The revised guideline for oak management provides for the retention of some oak on a compartment basis. It will not always be possible to retain oak everywhere where it currently exists, for instance on even-aged managed timber stands where cable harvesting takes place. If oaks are not damaged during the falling of timber, they will most likely be burned when site preparation activities take place. These activities will temporarily displace oaks from the area. Since oaks are predominantly stump sprouters, they will return to the site soon after the area is prepared for planting.
92. See Response 32 for explanation to this comment. Also, the Forest has developed and is implementing Riparian Guidelines wherever appropriate.
93. The language referred to regarding limiting the definition of meadows to two acres or larger in size has been revised to read "Consider meadows smaller than two acres as part of the riparian area."
94. The Forest's Riparian Guidelines take stream shade and water temperature into consideration.
95. The sections of the Plan and EIS pertaining to spotted owls have been extensively revised from the Draft to the Final Plan. A description of estimated habitat capability on the Forest for spotted owls is provided in Appendix B of the FEIS. A description of the current management of this sensitive species is contained in Chapter 3 of the Final Plan under the section describing MIS selection. The Region 5 guidelines for spotted owl management have been referenced in several places throughout the document.
96. The Standards and Guidelines for range management in Chapter 4 of the Final Plan have been revised. The mulch management standard of 400 pounds of residual dry matter is a minimum standard. On the majority of the Forest's annual grass range, 500 to 700 pounds per acre of residual dry matter is commonly left at the end of the grazing season.
97. See Response 36.E as it pertains to increases in livestock numbers on the Forest.

98. The Forest believes livestock numbers at current 1987 levels are consistent with protection of meadow habitat. The allowed use standards developed for the Forest's wet meadows provide for leaving a percentage of forage in the meadows which provides forage for wildlife and vegetation for stabilizing meadow soils.
- Also, refer to Response 36.E for further explanation to this comment.
99. Cattle are generally not allowed on mountain meadows until after July 1 of each year. Also, we are currently developing new meadow Standards and Guidelines which will address many aspects of meadow management. There was no change made to the text based on this comment.
100. The Forest does not agree with the Department that tractor logging should take place only on slopes of 20 percent or less. We believe tractor logging can take place on slopes up to 40 percent without substantial risk of erosion on most stable soils.
101. Spotted owl habitat areas are maintained or managed according to Region 5 guidelines under all alternatives in every management area in which they exist.
102. Fishing has been included.
103. Fishing and fisheries resources have been added to the majority of management area prescriptions. Also, the fisheries section in Chapter 3 of the Final Plan has been expanded.
104. The USFS Regional Coordination Guidelines for wildlife habitat improvement has been referenced as a guideline to provide direction when completing chaparral management projects.
105. The cycle has been changed to 40 years.
106. See Response 96 for an explanation to this comment.
107. Fishing was not added to this emphasis since fishing opportunities are very limited in the pinyon-sage ecosystem.
108. We concur with this statement.
109. Fish habitat protection is covered under Forest-wide Standards and Guidelines which apply to all management prescription areas where appropriate.
110. The text has been revised to indicate wildlife habitat improvement may include prescribed burning.
111. Since the prescription emphasizes the natural role of fire in wilderness, it is inappropriate to elaborate on the fisheries resource in this portion of the text.

112. The WC4 prescription has been eliminated in the Final Plan.
113. See Response 107 for an explanation to this comment.
114. The B05 prescription has been eliminated in the Final Plan.
115. See Response 114 for an explanation to this comment.
116. See Response 114 for an explanation to this comment.
117. The text has been revised to state: Livestock management techniques will be utilized to reduce direct conflicts with dispersed recreation and wildlife.
118. The text has been revised to state: Maintain an average of 3-5 snags per acre.
119. Text has been added to this prescription to read: Consider fish and amphibians in habitat improvement projects.
120. Fishing has been added to this emphasis.
121. The statement has been revised to consider conflicts with wildlife.
122. The text has been revised to read:  
0-20 years 60%  
20-30 years 40%
123. See Response 119 for an explanation to this comment.
124. See Response 104 for an explanation to this comment.
125. See Response 96 for an explanation to this comment.
126. See Response 107 for an explanation to this comment.
127. See Response 107 for an explanation to this comment.
128. See Response 96 for an explanation to this comment.
129. The statement under the Management Area Prescription CF5 has been revised to read: Timber harvesting will be designed considering wildlife; recreation, and visual concerns. Also, the standards referred to have been revised for timber and wildlife sections.
130. Fishing has been added to this emphasis (CF5 prescription).
131. Number 2 under the Fish & Wildlife portion of the CF5 prescription now mentions fisheries.
132. These "timber" items have been revised.
133. Refer to Response 96. Also see revisions made to prescription B06 which address many of the expressed concerns.

134. **The** wording under the OW6 prescription has been revised to state that habitat will be maintained or enhanced.
135. Item 1 under "Fish and Wildlife" has been revised to state: Provide for 1.5 snags per acre.
136. There is no reference to pinyon-sage on 4-85 of the Draft Plan.
137. See Responses 134 and 96 for an explanation to this comment.
138. The acreage referred to includes meadows and transitory range created or sustained mainly through timber harvest activities. **The** emphasis section and the fish and wildlife opportunities section have been revised to provide more balance between meadow uses. Grazing seasons have been adjusted in the past to allow for the majority of the fawning season to take place before cattle arrive on the meadows. Also, allowed use standards for mountain meadows provide for wildlife needs in requirements which allow only a percentage of total available forage to be harvested by livestock.
139. **The** text has been revised to describe fisheries protection.
140. See Response 139 for an explanation to this comment.
141. The Forest believes the Forest-wide Standards and Guidelines are adequate to maintain wildlife species and associated habitats. The Forest already utilizes **Deer** Herd Management Plans, developed by the Department of Fish and Game, when assessing the impacts of and developing prescriptions for timber harvest activities. These deer herd plans clearly identify key deer habitats which are considered during the planning process.
- Roads on the Forest are often closed to vehicle travel and/or restored following timber harvest activities. This includes gate closures and seeding projects.
- Modification of cutting units for wildlife benefits takes place on a regular basis and will continue after the Final Plan is in effect. **The** Forest-wide Standards and Guidelines provide for all of the recommendations noted in the comment with the exception of #2. Retention of a vegetative screen is achievable except where cable harvesting takes place. **It** is not possible to leave adequate screening utilizing this harvest method.
142. **The** text has been revised to describe fisheries protection in #1 under Fish and Wildlife in the CF7 prescription.
143. The MC8 Management Area Prescription has been eliminated from the Final Plan.
144. The CF8 Management Area Prescription has been eliminated from the Final Plan.

145. See Response 144 for an explanation to this comment.
146. See Response 144 for an explanation to this comment.
147. See Response 144 for an explanation to this comment.
148. Fish and wildlife habitat improvements as described are adequate and, therefore, no change was made to the text based on this comment.
149. The general comments have been responded to in Responses 1-33.
150. The monitoring section has been greatly modified. The spotted owl program costs have been revised to \$40,000 per year.
151. The Forest-wide Standards and Guidelines already provide for the protection of these species. Also, the revised Appendix A has added many plans that should be completed before other species are considered. Please see Appendix A of the Final Plan for details on the plans added to the list since the Draft Plan.
152. The Forest has added "Rise to the Future; Action Plan for National Forest Fisheries Program" to the Resource Plan list.
153. There are only four pages in Appendix B of the Final Plan. We believe you have confused this appendix with Appendix B of the EIS. In the revised Appendix B of the Final Plan under Fish and Wildlife, we have added goshawk population surveys as a research need. Also, the Forest will adhere to Region 5 direction for the management of this species.

### Addendum 3.

The following responses are written in response to comments found in Addendum 3 of the California Department of Fish and Game's Comments on the Draft EIS - Sequoia Land and Resource Management Plan.

154. The Sequoia NF believes the Preferred Alternative is compatible with the objectives of the deer herd management plans. The objectives set forth in these plans will continue to be implemented in the future in cooperation with the Department of Fish and Game.
155. An explanation of benefits is provided in Appendix B of the FEIS under the section Benefits Used in the FORPLAN Analysis.
156. All text and tables where reference has been made to spotted owls have been revised. Goshawk numbers have remained approximately the same although text has been added to Chapters 3 of the Final Plan and EIS and Appendix B of the FEIS describing the habitat and management of this species.



**The** analysis process used to determine total estimated habitat capability for spotted owls on the Forest is provided in Appendix B of the FEIS. Currently, the Forest capability is approximately 75 pairs, which concurs with the Department's estimate. **The** Forest's active monitoring program for spotted owls will determine the suitability of spotted owl habitat areas (SOHA's) over time by measuring reproductive success or failure of the owls.

157. **Your** assumption is correct. **The** figures represent M pounds.
158. See Responses 10 and 13 for an explanation to this comment.
159. See Response 3 for an explanation to this comment.
160. **The** revised text under MMR's in Chapter 2 addresses the Regional Guidelines. See Appendix B for an explanation of Forest habitat capability for spotted owls.
161. Diversity will be maintained at the Forest level.
162. See Response 60 for an explanation of the Kings River legislation.
163. **The** entire section of Fish and Wildlife Standards and Guidelines has been revised to provide more concise direction.
164. **We** concur with this statement concerning old-growth habitat. Spotted owl habitat areas have been established using Regional Guidelines and will be maintained using the ~~same~~ guidelines.
165. See Response 89 for an explanation to this comment.
166. See Response 91 for an explanation to this comment.
167. **The** text in Chapter 3 of the FEIS under Sensitive Plants provides for the protection of all sensitive plants until management plans are written for them. The guideline for sensitive plants in Chapter 2 of the FEIS states "Manage sensitive plants to ensure they do not become threatened **or** endangered." Appendix A of the Final Plan provides for the preparation of Sensitive Plant Species Management Guides **as** needed.
168. See Responses 32 and 92 for an explanation to this comment concerning monitoring and riparian areas.
169. See Response 93 for an explanation to this comment.
170. See Response 96 for an explanation to this comment.
171. **The** section of text referred to in your comment has been eliminated.
172. See Response 98 for an explanation to this comment.

173. Several specific Standards and Guidelines have been described in the Final Plan and EIS providing for the protection and maintenance of wildlife habitat. Please refer to the Standards and Guidelines developed for fish, wildlife and plants (general), coordination guidelines, old-growth habitat, snag and down log management, oak management, riparian areas, meadows, and sensitive plants in Chapter 4 of the Final Plan, and Chapter 2 of the FEIS.

Also, the management direction has been modified in the final documents to include uneven-aged management as an alternative method of timber management.

174. It is difficult to regulate firewood gathering or develop other specific guidelines for species such as the Kern Canyon slender salamander when so little is currently known about their population numbers and limited distribution. If the Department of Fish and Game will provide their most recent detailed reports describing population and distribution studies on this species, the Forest Service will cooperate in the development of a management plan for the Kern Canyon slender salamander.

Forest guidelines provide for tractor harvesting of timber on slopes up to 40 percent unless erosive soils are present. Our Forest Riparian Standards and Guidelines provide optimum protection of riparian and stream habitat often with streamside management zones of greater than 100 feet. A cumulative effects methodology system is now in place and functioning on the Forest. Extensive meadow and stream rehabilitation and stabilization projects have already been accomplished and will continue to be implemented on many of the streams contributing to critical habitat for golden trout. A tremendous amount of work has been accomplished under the direction of the Little Kern Golden Trout Recovery Plan, and will continue into the future.

175. One of the main purposes of the Forest-wide Standards and Guidelines, as developed in Chapter 4 of the Final Plan and Chapter 2 of the FEIS, is to maintain and protect all critical habitats regardless of the prescription for a management area. Key habitat areas, as described in deer herd management plans and other documents, are given specific consideration when project level environmental assessments are developed.

176. See Response 4 for an explanation to this comment.

Also, projected recreation use on Sequoia NF and all other Federal lands is expected to increase substantially in the future. Many of these forest visitors will come to the Forest specifically to interact with wildlife in one way or another. Therefore it is logical to make a tie between recreation and wildlife.

177. The potential effects to wildlife from proposed ski areas will be assessed through the development of environmental impact statements specifically written for these projects.

178. See Response 82 for an explanation to this comment.
179. See Response 60 for an explanation to this comment.
180. We concur with this statement.
181. See Response 10 for an explanation to this comment.
182. See Response 95 for an explanation to this comment.
183. See Response 36.E for an explanation to this comment.
184. The retention standard for dead and down material has been substantially increased from 35 cubic feet per acre in the Draft Plan to 132 cubic feet per acre in the Final Plan.
185. The Forest Riparian Management Guidelines will be used to determine stream management zone widths. The width of these buffers will vary from 25 feet to 220 feet depending on the stream class and percent slope.
186. See Response 4 for an explanation to this comment.
187. By shifting management emphasis to larger, heavily-used sites, better overall management of the recreation resources and the resources they affect can be achieved.
188. Current and future management of blue *oak* habitat is not to maximize livestock use. The Forest believes that current management of this habitat is not causing continued degradation, poor regeneration, and a reduction in population levels of numerous wildlife species. Blue *oak* habitat is currently available and will continue to be available for many uses, including the grazing of livestock, providing wildlife habitat, and providing recreational experiences. Our Forest-wide Standards and Guidelines provide for the maintenance of all habitat types across the Forest in sufficient acreage to sustain viable populations of all species.

Also, the Forest would be interested in reviewing the Department's reports describing site specific data indicating poor regeneration of blue *oak* and declining wildlife population studies caused from livestock grazing on the Forest. These reports will assist the Forest in future management of this habitat type.

189. The revised increase in deer numbers is 14,000 animals. The Forest disagrees with the Department that deer numbers will decline. Recreation use is expected to increase on the Forest, but the management of recreation elements as described in the Final Plan will concentrate activities such as camping and OHV use on less total acres than is currently taking place. Emphasis on camping will be increased at the heavily used sites and decreased in less used areas. OHV use will be restricted to designated

roads and trails (most of the Forest is currently open to this activity). An active road closure policy will still be in effect.

See Response 36.E for a specific explanation to grazing. Timber harvesting will provide valuable transitory forage for deer in the conifer zone. Oaks will be maintained in reduced numbers in some areas and increased in other areas where conifers are harvested that are competing with oaks for space, light, and nutrients.

190. See Response 95 for an explanation to this comment.
191. See Response 10 for an explanation to this comment.
192. See Response 10 for an explanation to this comment.
193. Species, dependent on early successional vegetation, will benefit from unplanned and prescribed burning. The areage-burned figures listed under FIRE - Range, Wildlife, Watershed are combined acres from the other categories mentioned in the comment.  
  
AUM numbers are currently at 71,000. There are no plans in our Forest management to increase above this level.
194. The section of text the comment refers to has been revised.
195. See Response 10 for an explanation to this comment.
196. Our Forest goal is to maintain current fish habitat capability, which is 84 percent of the 1995 projections. To this end, the Forest is not in compliance with RPA goals.
197. A rest rotation system (in the strict sense) of cattle grazing is not appropriate on Forest allotments due to the large amount of fencing and man-hours required to effectively manage cattle this way. The Forest practices a form of rest rotation on the majority of grazing allotments in that cattle are taken off the Forest for varying periods of time, then turned back onto the Forest when the vegetation is determined to be ready for grazing use.
198. See Response 196 for an explanation to this comment.
199. The Amenity Emphasis Alternative has been revised to provide greater emphasis to non-market resources. A greater portion of the unroaded area will remain unroaded, and timber harvesting has been reduced from levels proposed in the DEIS. The amount of old-growth habitat reduction is less than all other alternatives. The proposed alternative should be taken in the context as it relates to the other proposed alternatives in the FEIS.
200. Native fish are considered and managed under the direction described in the fisheries section in Chapter 3 of the Final Plan, and in the Forest-wide Standards and Guidelines.

201. Nowhere is it stated that eliminating summer cattle use in meadows will result in a 10 percent reduction in AUM's on the Forest. This alternative implies that all the grazing would take place outside wilderness, meadows, and riparian areas, and be limited to the months of February through June. The majority of grazing would take place on the annual grasslands and mixed chaparral. The shortened season of use and adjustments in total livestock numbers would result in the 10 percent reduction in AUM production. More cattle would be grazed for a shorter period of time to meet the projections.
202. See Response 89 for an explanation to this comment.
203. Since specific details are not provided in this comment, the Forest has no response.
204. This alternative should be taken in context to the management direction described in the other alternatives. The Forest is mandated through many laws to provide for multiple use of the Forest resources so impacts to all resources will occur. It is the degree or level of impact to resources and output levels that vary from alternative to alternative. In this way the Forest has provided a broad range of alternatives in the EIS which emphasize different aspects of forest management. The WFV Alternative provides for increased recreational use as it relates to increased hunting and access on the Forest. Harvest species are emphasized. Timber harvesting will increase harvest species such as a deer, and increase access on the Forest through road construction.
205. See Response 204 for an explanation to this comment.
206. All the alternatives will result in a reduction of old-growth habitat. Only if no multiple use outputs are provided could the Forest sustain and increase the amount of old-growth habitat. NFMA regulations prevent the Forest from closing its doors to all uses except growing old-growth habitat.
207. See Response 10 for an explanation to this comment.
208. No change was made to the text based on this comment.
209. This portion of the text has been eliminated. Also, through the methods described in Chapter 3 of the FEIS (under fisheries) and through the implementation of Forest-wide Standards and Guidelines, Best Management Practices, and the Forest Riparian Standards and Guidelines, the mileage of streams requiring habitat repair will remain the same or decrease. The mileage will not increase as the comment suggests.
210. The errors pointed out in this comment have been amended.
211. The 470,000 acres of mature and overmature timber present on the Forest are well distributed across the Forest. The Forest does

- not know where the figure 3,648 acres of old growth came from, nor do we know what definition of old growth is in use in this comment. Our vegetative data base indicates 470,000 acres of mature and overmature (old-growth) timber on the Forest.
212. The statement has been revised to state: Hunting use may increase as deer numbers increase.
  213. The table has been footnoted to provide the sources of the information.
  214. Phacelia nashiana and Carex tompkinsii have been added to the Sensitive Plant List. Calochortus striatus and Mimulus pictus are not considered as sensitive plants on the Forest. Standards and Guidelines describing the size of areas to be managed for rare plant species will be defined when management plans are written for them.
  215. The Regional Environmental Impact Statement on Vegetation Management has been referenced for additional information on the effects of pest management.
  216. See Response 36.E for an explanation to this comment.
  217. See Response 52 and 36.E for an explanation to this comment.
  218. All of the potential Long Canyon RNA and a portion of the recommended Moses Mountain RNA are outside wilderness. By placing the other RNA's in wilderness, the Forest has lessened the potential for conflicts with other Forest uses.
  219. There are five proposed special interest botanical areas described in the DEIS. All five will be officially established when the Final Plan is signed.
  220. Past harvesting of whitewoods in giant sequoia groves has resulted in an abundance of successful regeneration. An inspection of the Dillonwood Grove or Mountain Home State Forest will illustrate this point.
  221. The text has been revised to include meadows of less than two acres.
  222. The Forest Riparian Standards and Guidelines, developed since the Draft Plan was issued, comply with all Federal direction mentioned in the comment and apply to all the alternatives.
  223. An inspection of any even-aged harvest unit on the Forest will reveal an abundance of early successional vegetation present except on units treated within the last six months. The vegetative release treatments described in Chapter 3 of the FEIS are utilized to reduce competition between planted seedlings and native vegetation. The treatments do not remove all vegetation from the site for prolonged periods of time. After the seedlings

are planted, release treatments often do not occur for several years. During this time, an abundance of greases, forbs, and young shrubs become established and are available for utilization by many wildlife species. After release treatments, the trees grow rapidly, while pioneering plants once again establish populations in the areas.

Livestock may be drawn to these areas, but grazing will not be emphasized nor will livestock numbers be increased to harvest this forage.

224. See response 57 for an explanation to this comment.
225. There is no intention or direction given in the Final Plan or EIS to greatly increase livestock use of the blue oak woodland. Grazing seasons of use and livestock numbers will remain at current levels for all areas on the Forest through this planning period. See Response 36.E for further explanation of grazing on the Forest.
226. The figure 16,539 has been revised to 43,000.
227. The description of the importance of live oak woodland to wildlife diversity is correct when compared to the blue and black oak stands as the text describes. Therefore no change was made to the text based on this comment.
228. See Response 10 for an explanation to this comment. **Also**, the text describing lack of access for fish-stocking trucks has been omitted in the FEIS.
229. See Response 10 for an explanation to this comment.
230. A. See Response 223 for an explanation to this comment.
- B. The figures in the table have been revised to indicate a larger impact to late successional stages from timber harvest activities.
- C. **Our** Forest Riparian Standards and Guidelines, put into effect following the issuance of our Draft Plan and DEIS, greatly increase the protection and maintenance of riparian habitat.
- D. The figures in the table have been revised to indicate a larger impact to snag-dependent species due to timber harvest.
- E. The figures in the table have been revised to indicate a larger impact to hardwood-related species from timber harvest activities.
231. **The** section of text this comment refers to describes in detail how developed and dispersed camping areas will be managed. The Forest assumes that the many visitors in the future will take advantage

of all the recreational activities available in and around the sites. Therefore, we did not feel it was necessary to list specific activities such as hiking or fishing.

232. See Response 36.E and 65 for an explanation to this comment.
233. The text has been revised to state overuse by livestock rather than livestock grazing.
234. See Responses 3, 13, and 11 for an explanation to this comment.
235. See Response 175 for an explanation to this comment.
236. See Response 95 for a partial explanation to this comment. In addition, the Forest, with the assistance of volunteers and Department of Fish and Game personnel, have surveyed intermittently for spotted owls for approximately 12 years. Beginning in 1986, surveys were greatly expanded to increase our knowledge of spotted owl populations and dynamics. This program will continue into the future. A map indicating the locations of 40 spotted owl management areas has been included in the final document map package.
237. The section referred to has been revised to provide more explanation of spotted owl management. In regard to viable populations, the National Forest Management Act requires the Forest Service to maintain viable populations of animals. We believe our Forest Plan, as written, will fully satisfy this portion of the Act.



## DEPARTMENT OF FORESTRY

1414 NINTH STREET Mailing PO Box 944266  
SACRAMENTO, CA 95834 Address: Sacramento, CA 94244-2460



RB

(916) 322-0163

April 28, 1986

Mr. James A. Crates, Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

Dear Mr. Crates:

The California Department of Forestry wishes to comment on the Draft Management Plan for the Sequoia National Forest. Governor Deukmejian recognizes that national forest plans will have a significant effect on the future of our state -- particularly rural California. The Governor is confident that by working together responsible policies can be developed that will foster a balanced approach which recognizes the need for rural economic development as well as the need for the preservation of our precious natural resources for future generations. The Governor has requested that the Department of Forestry and the Business, Transportation and Housing Agency look at each plan. We have been in contact with the Business, Transportation and Housing Agency concerning this management plan.

In our review of the draft plan we compared it with the five areas of concern raised at the Board of Forestry's Centennial Conferences. These include: 1) rural economic development; 2) protection of the biological base; 3) social pressures on the land; 4) public and private property rights; and 5) coordination and planning. We also used some of our own data to supplement that provided by the Draft EIS.

As a result of our analysis based on Centennial issues, five areas of major concern were identified for this forest plan. The major areas of concern are: 1) recreation; 2) aggregate review of national forests plans; 3) adequate log supplies for the lumber industry; 4) protection of the biological base; and 5) budget restrictions. These areas of concern were used to determine which alternative best meets the needs of this region of the state. The Department's recommendations for the Sequoia National Forest Management Plan are as follows:

CONSERVATION IS WISE USE—KEEP CALIFORNIA GREEN AND GOLDEN

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2491

Mr. James A. Crates  
Page Two

1. RPA Alternative

Based on our analysis, we would recommend adoption of the RPA alternative as being best able to meet the needs of the citizens of California. This alternative has a high level of commodity production to support rural development and still maintains a healthy biological base. Assuming proposed budgets will be available, the RPA alternative is most responsive to the future demands for increased recreation capacity, sustained timber supply and a well protected resource base.

2. Adequate Log Supply for Lumber Industry

Eighty to ninety percent of the logs manufactured in Fresno, Madera, Kern and Tulare counties are from national forest sources (Table I). About 4 to 8 percent of the total manufacturing jobs in Fresno, Kern and Tulare Counties are lumber and wood products industry jobs (Table II). Based on these facts, it is critical that the national forest continue to provide logs which will support this segment of the local economy in these counties.

3. Aggregate Review of Forest Plans

Our analysis indicates that three counties will be primarily affected by the plan: Fresno, Kern and Tulare. These counties contain other national forests which will also have an impact on them. Our inability to review these plans simultaneously is frustrating because their aggregate effects could be significant. This highlights one of the major shortcomings of the present "forest by forest-planning process. We would suggest that to resolve this concern for this round of planning, aggregates of plans by economic region be reviewed before final decisions on preferred alternatives are made for individual national forests.

When management plans are revised for the second decade plan, the plans should be released in aggregate by economic region. This would facilitate a better economic analysis of the plans and their actual impact on the rural communities of California.

4. Recreation

The Department can — that the plan must allow for the increased demand for outdoor recreation--both developed and dispersed opportunities. The RPA alternative provides an acceptable level of growth in both types of recreation.

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2491

Mr. James A. Crates  
Page Three

As demand for recreational facilities increases and if budgets decrease, there may be some need to look at a fee structure to help offset dollar deficits in the recreational facilities and operations budgets. The Department suggests that data be collected now to support the need for recreational user fees during future planning processes.

5. protection of the Biological Base

The Department is concerned about the protection of the biological base under all alternatives. The Department sees the protection of the national forest from fire, insects and the loss of critical habitat as a priority. The national forest system has always reacted strongly to protect the biological base from fire and insects and to ensure protection of habitat. Final plans should strongly support the process. We also believe that the plan should address issues related to the presence of people such as the demand for emergency services and structural fire protection and limits to insect control program.

6. Budget Cuts

There is only one alternative that provides for a reduced budget and the rationale for reductions at this lower level is not clear. We believe that the plan must consider the effects of probable reduced budgets much more thoroughly. How the forest will manage with less dollars should be spelled out clearly. The Department's priorities under fewer dollars would be to first protect the biological base; second, insure a stable flow of logs to the forest products industry; and third, provide for increased recreational opportunities. We believe the final plan should reflect these priorities at a reduced budget level.

Thank you for the opportunity to comment on your proposed plan.

Sincerely,

  
JERRY PARTAIN  
Director

st

4-27-86  
2491

Table I. Saw Mill Log Consumption (Source: FRRAP)

	Total Consumption MBF	Ownership Source Percent				
		State	National Forest	Own Wood Supply	Other Wood Supply	Other Private
Tulare & Kern 3	75,147	4.69	90.66	0	0	4.65
Fresno & Madera 4	81,004	0	82.84	12.35	4.81	1.98

Table 11. Employment Manufacturing and Lumber and Wood Products, by County, 1979-1983. (Source: County Business Patterns, US Census)

County	Year	Manufacturing	Lumber & Wood Prod	L&WP/Manuf
Ware	1979	12,251	1,495	12.20%
	1980	11,786	1,276	10.84%
	1981	11,611	1,042	8.97%
	1982	11,176	984	8.63%
	1983	10,473	852	8.14%
Kern	1979	7,760	236	3.04%
	1980	8,141	257	3.16%
	1981	8,443	215	2.56%
	1982	9,337	220	2.36%
	1983	8,009	407	5.08%
Fresno	1979	23,928	1,242	5.19%
	1980	22,569	1,015	4.50%
	1981	21,866	956	4.37%
	1982	20,081	689	3.43%
	1983	18,957	850	4.48%

California Department of Forestry (Note: **The** numbers of these responses key to those in the incoming letter.)

Resolution:

1. Thank **you** for your recommendation. However, we **feel** that PRF provides a better mix of forest **uses**. Please see Chapter III of the Record of Decision for **our** reasoning.
2. The Forest Plan proposes to make 101.6 MMBF per year available for harvest. **This** volume is comprised of 97 MMBF per year of green timber and 4.6 MMBF per year of salvage. **The** green timber harvest level is slightly above the present level of 95 MMBF. **Our** records indicate that the average annual timber harvest for the last 27 years has been 92 MMBF .
3. **We** recognize your concern. However, **it is** not practical to delay publication of the Sequoia's Plan for a year **or** more until the Sierra National Forest has completed its Forest Plan.
4. **The** topic of recreational **user** fees is beyond the scope of the Forest Plan. Congress decides whether such fees are to be imposed.
5. **The** Forest Plan provides the broad guidelines under which fire, insect, and disease protection will be provided. Program specific plans are the next step in the planning process. A fire protection plan will be prepared that will define the specific actions needed to protect the Forest resources and associated improvements from fire. **The PRF** Alternative places emphasis on fuel reduction projects in the urban interface. Structural fire protection will be provided in accordance with Forest Service policy.
6. Please see Appendix L of the FEIS for an explanation of the budgeting process and management priorities under reduced budgets.



7-29-86  
2491  
GEORGE DEUKMEJIAN  
GOVERNOR

State of California  
**Board of Forestry**  
1418 NORTH STREET  
SACRAMENTO, CALIFORNIA 95814

April 28, 1986

Mr. James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville. CA 93257

Dear Mr. Crates:

The State Board of Forestry wishes to comment on the Draft Management Plan for the Sequoia National Forest. By law, the Board is charged with representing the State's interests in federal land matters pertaining to forestry.

The Sequoia draft plan and draft environmental statement was compared with the five issue areas developed at the Board of Forestry's Centennial Conferences of March and December of 1985. The issues identified are: 1) rural economic stability and development; 2) protection and maintenance of the biological base; 3) social pressures in the rural land base; 4) rights and responsibilities of public and private ownership; and 5) coordination and planning.

The Board has approached the plan in the belief that the Sequoia National Forest should be positioned to meet the needs of the people of California in the coming decade. Our analysis indicates that demands for more recreation, a stable timber supply, a reliance on the forest for local revenue, and a well protected biological base are all part of that position.

Consequently, five areas of major concern were identified for this region of the state. These areas are: 1) the need for aggregate review of national forest plans; 2) the need for adequate lag supplies for the lumber industry; 3) the need to meet higher demand for recreational opportunities on the forest; 4) the need for protection of the biological base, and 5) concern over budget restrictions.

These five areas of concern were used by the Board of Forestry to evaluate each plan alternative and to help determine which

4-29-86  
2491

Mr. James A. Crates  
Page Two  
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alternative would best meet the needs of this region of the state. The results of this analysis and our recommendations are listed below.

1. RPA Alternative

Based on our analysis, we would recommend adoption of the RPA alternative as being best able to meet the needs of the citizens of California. This alternative has a high level of commodity production to support rural development and still maintains a healthy biological base. Assuming proposed budgets will be available, the RPA alternative is responsive to the future demands for increased recreation capacity, sustained timber supply and a well protected resource base.

2. Adequate Log Supply for Lumber Industry

Eighty to ninety percent of the logs manufactured in Fresno, Madera, Kern and Tulare counties are from national forest sources (Table I). About 4 to 8 percent of the total manufacturing jobs in Fresno, Kern and Tulare counties are related to the lumber and wood products industry (Table II). Based on these facts, it is critical that the national forest continue to provide logs which will support this segment of the local economy in these counties.

3. Aggregate Review of Forest Plans

Our analysis indicates that three counties will be primarily affected by the plan: Fresno, Kern and Tulare. These counties contain other national forests which also will have an impact on them. The inability to review these plans simultaneously is frustrating because their aggregate effects could be significant. This highlights one of the major shortcomings of the present "forest by forest" planning process. We would suggest that to resolve this concern for this round of planning, aggregates of plans by economic region be reviewed before final decisions on preferred alternatives are made for individual national forests.

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Mr. James A. Crates  
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April 28, 1986

When management plans are revised for the second decade of planning, the plans should be released in aggregates by economic region. This would facilitate a better economic analysis of the plans and their actual impact on the rural communities of California.

4. Recreation

The Board concurs that the plan must allow for increased demand for outdoor recreation -- both developed and dispersed opportunities. The RPA alternative provides an acceptable level of growth in both types of recreation.

As demand for recreational facilities increases and if budgets decrease, there may be some need to look at a fee structure to help offset dollar deficits in the recreational facilities and operations budgets. The Board suggests that data be collected now to support the need for recreational user fees during future planning processes.

5. Protection of the Biological Base

The Board is concerned about the protection of the biological base under all alternatives. The Board sees the protection of the national forest from fire, insects and the loss of critical habitat as a priority. The national forest system has always reacted strongly to protect the biological base from fire and insects and to ensure protection of habitat. Final plans should identify continuing efforts to this end in detail. We also believe that the plan should address issues related to the presence of people such as the demand for emergency services and structural fire protection and limits to insect control programs.

6. Budget Cuts

There is only one alternative that provides for a reduced budget and the rationale for reductions at this lower level is not clear. We believe that the plan must consider the effects of probable reduced budgets much more thoroughly. How the forest will manage with less dollars should be spelled out clearly. The Board's priorities under fewer dollars would be to first protect the biological base;



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Mr. James A. Crates  
Page Four  
April 28, 1986

second. insure a stable flow of loss to the forest products industry; and third, provide for increased recreational opportunities. We believe the final plan should reflect these priorities at a reduced budget level.

Thank you for the opportunity to comment on your proposed plan.

Sincerely yours,



Harold R. Walt  
chairman

4-29-86  
2491

Table I. Saw Mill Log Consumption (Source: FRRAP)

	Total Consumption MBF	Ownership Source Percent				
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	1982	20,081	689	3.43%
	1983	18,957	850	4.48%

Board of Forestry

Resolution: (Note: The numbers of these responses key to those in the incoming letter.)

1. Thank you for your recommendation. However, we feel that PRF provides a better mix of forest uses. Please see Chapter III of the Record of Decision for our reasoning.
2. The Forest Plan proposes to make 101.6 MMBF per year available for harvest. This volume is comprised of 97 MMBF per year of green timber and 4.6 MMBF per year of salvage. The green timber harvest level is slightly above the present level of 95 MMBF. Our records indicate that the average annual timber harvest for the last 27 years has been 92 MMBF.
3. We recognize your concern. However, it is not practical to delay publication of the Sequoia's Plan for a year or more until the Sierra National Forest has completed its Forest Plan.
4. The topic of recreational user fees is beyond the scope of the Forest Plan. Congress decides whether such fees are to be imposed.
5. The Forest Plan provides the broad guidelines under which fire, insect, and disease protection will be provided. Program specific plans are the next step in the planning process. A fire protection plan will be prepared that will define the specific actions needed to protect the Forest resources and associated improvements from fire. The PRF Alternative places emphasis on fuel reduction projects in the urban interface. Structural fire protection will be provided in accordance with Forest Service Policy.
6. Please see Appendix L of the FEIS for an explanation of the budgeting process and management priorities under reduced budgets.

## Memorandum

To : Office of Planning and Research  
State Clearinghouse  
1400-10th Street  
Sacramento, CA 95814

February 27, 1986

File : T-1-General  
SCH #65111813

Attention Peggy Osborn

From : DEPARTMENT OF TRANSPORTATION  
District 6 Transportation Planning

Subject :

We have reviewed the DEIR for the Sequoia National Forest Land and Resource Management Plan and offer the following comments.

It is stated in the DEIR that the forest road system provides access to the public and for the administration of resources. In essence the transportation system proposed under each alternative is developed in response to resource management demands which are primarily timber production and recreational use.

Generally speaking the plan recognizes that there will be an increase in traffic. Our concerns have been expressed in the past relative to the traffic increases which will be brought about by the development of recreational facilities. In general the traffic increases that can be estimated from Table 3-19 on page 3-79 of this EIS are only slightly less than our estimate for the period up to the year 2010. Therefore the growth in trips would not be totally unanticipated.

The development of three ski areas (including Peppermint) which would be double the trip generating estimate of Peppermint does cause us some concern. The trips generated by these areas tend to be concentrated in the same time of year and impact the same highways. As stated during the Peppermint review these highways will experience periods where demand will exceed capacity. The additional trips can only exacerbate the problem. Also as stated in the Peppermint review there are currently no major improvements planned to increase capacity other than widening the Tule River Bridge on Highway 190. For your convenience attached are copies of comments we have expressed in the past relative to development in the Peppermint Ski resort and the Foothill Growth Plan.

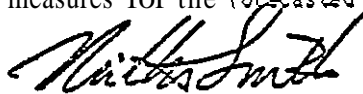
Although extensive development will not occur in the near future there are indicators that increased use of the Sequoia National Forest will present increasing problems. For example, in the Kern River Canyon State Highway 178 (from Post Mile 13.5 to Post Mile 230.5) does not have sufficient pull out areas adjacent to the travel way to accommodate roadside parking. Increased use of pullouts by lunch wagons is creating a hazard and is an illegal encroachment due to the fact that they are operating within the State right of way without an Encroachment Permit.

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Commercial and private development along State Route 130 continue to increase, thus increasing the conflict between logging trucks and all other traffic, in fact this is also the case on State Routes 168, 155 and 190. Plans should include increased turnouts for logging trucks. Logging area access routes should be planned and permanent connections made to routes instead of the haphazard temporary connections made each season. Fire roads fall in the same category thus creating the same type of problems as logging roads.

In summary although the plan recognizes the traffic increases which will be brought about by land use development the plan does not identify mitigation measures for the forecasted traffic.



NATHAN M. SMITH  
District 6 Transportation Planner

MGP:JA  
Attachment  
L: MGP

January 13, 1986

6-Tul-190  
FEIS Peppermint  
Mountain ResortMr. Jams A Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257-2C

Dear Mr. Crates:

We have reviewed the Peppermint Mountain Resort Final Environmental Impact Statement, and we are especially concerned with the elements relating to the impacts on State Highway Route 190. While the environmental document does indicate the technical levels of service that could be expected on Route 190, it does not adequately describe the impacts these levels of service have on the public nor does the document indicate any major mitigation measures on the 41-mile section of Route 190 between the junction of Route 85 and Quaking Aspen. The narrative at the top of Page 136 indicates that the only mitigation measures provided are confined to guard rail at spot locations and turnouts for chaining areas. While these two proposed mitigation measures are important, they do not address our major concern which is the expected congestion levels on Route 190.

In our letter dated November 5, 1984 to Mr. James Allan, we indicated our concerns and the probable public reaction when the expected operating conditions on Route 190 reach O and E service levels. As these levels of service occur, we foresee two potential situations emerging since these anticipated levels of service will be unacceptable to the general public.

One situation that is likely to occur is that Route 190 (without major improvement and major capital expenditure) will serve as a 'bottleneck,' and the level of usage of the planned ski facility will be lower than its planned capacity. We foresee this 'hour glass' potential for several reasons. First, level of service E is, in general, unacceptable to the travelling public; and, secondly, when long distances are involved, a certain percentage of the travelling public will consider the trip as too big a hassle and therefore not worthwhile for recreational purposes.

The second situation that is almost certain to occur as the ski facility develops, and as congestion levels increase on Route 190, is that there will be a high level of public complaint. As we have previously indicated to you.

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Mr. James A. Crates  
January 13, 1966  
Page 2

the cost of improving this mountainous section of Route 190 to a higher standard could be in the \$100 million cost range. This cost magnitude probably exceeds any reasonable capability of the developer to mitigate. While future financing for State highways is uncertain, it appears very unlikely that funds would be available to improve this route to serve a single recreational facility.

In previous correspondence, we have also conveyed our concerns for the impacts your proposed development will have on the operating conditions of Route 65. These concerns still exist; however, Route 65 serves a much broader range of interregional travel than just the ski facility, and major improvements to Route 65 can be made much more cost effectively than to Route 190. Route 65 is in flat or rolling terrain, on relatively good alignment, and lanes could be added at a 'reasonable' cost per mile. Route 190, however, is in very mountainous terrain, and the cost per mile for major improvement is virtually prohibitive. The future need for improving Route 190 to a higher standard is almost totally contingent upon the demand created by the development of the ski area.

The information contained in this letter should be carefully weighed before making a final decision on proceeding with the proposed ski resort development. It also appears essential that these impacts be fully described to the public since funding to correct these deficiencies is very unlikely.

Yew truly yours,

ORIS SIGNED JERRY B. BAXTER

JERRY B. BAXTER  
Director of Transportation  
District 6

GAH:DC  
CC: MBP  
NMS ✓  
O'Wiesan, Hdq. DOTP  
O'Wilson, Ofc. Pub. Affs.,  
Tul. Co.  
James Allen, Forest Engr.

DEPARTMENT OF TRANSPORTATION  
P.O. BOX 12016, REDDING 96078

January 25, 1985

6-Tul-190  
USFS Peppermint Mtn. ResortMr. James Allen  
forest Engineer  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257Attention Mr. Darrel Cherry,  
Special Projects Engineer

You have reviewed the Transportation Working Paper for your proposed Peppermint Project. I would like to compliment you on your attempt to present a rational analysis of an extremely complex problem.

You have used some novel approaches to estimate the operating characteristics of the anticipated travel impacts of the project. For instance, extending the 'peak hour' conditions to a two- to four-hour average condition may be appropriate for this type of facility.

Although it may be technically correct for this working paper, it should be pointed out that drivers will probably be "complaining" well before volumes reach Level E service. Some of the complaints may come from non-project traffic not being able to freely access the main routes at intersections, private drives, etc., as well as the project visitors. However, any attempt at a rational level of service analysis may be misleading due to the restrictive grade and alignment of the roadways.

You have no way of estimating at this time whether the costs for construction or reconstruction and maintenance needs are adequately presented. However, I do believe these sections present representative data regarding these aspects. As we discussed in December, we can commit only to snow removal level 3 service. (This is the minimum effort, similar to the older designation level D.)

Although other analysis techniques might be used to estimate the traffic impacts of the Peppermint proposal, I think some general conclusions can be determined with this working paper, particularly considering Alternate 3. They are:

1. There will be noticeable but not intolerable increases in traffic as a result of the project.



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Mr. James Allen  
January 25, 1985  
Page Two

2. There are several feasible route choices within the mountain portions of the access routes.
3. There may be a few (10-15 times per season) Sunday evening peaks when congestion will be fairly severe.
4. There will be some impact on Route 65 north of Bakersfield, that route being common to several mountain corridors.
5. Because of the few instances of maximum congestion impacts and overall low traffic volumes, major capital improvements to the access roads should not be assumed. As we noted in our November 5, 1984 letter, costs would be extremely high, and neither the public agencies nor the project developer could support such an expense considering the low cost/benefit.
6. There will be a need for chaining areas and other spot operational improvements as a result of winter traffic increase, and the cost should be borne by the project. However, whether this project is implemented or not, Caltrans will continue to make improvements at spot problem locations as they are identified and priorities for such projects allow.

Thank you for the opportunity to review this working paper.

Very truly yours,

  
Bill RARGIER Transportation Planner

HSP:ja  
CC: HBP

DEPARTMENT OF TRANSPORTATION  
P.O. BOX 12614, FRESNO 93778

December 28, 1984

Intergovernmental Review

Mr. Eugene E. Smith, Director  
Tulare County Building and Planning Department  
Courthouse Rooms 105-111  
Visalia, CA 93291

Dear Mr. Smith:

We have reviewed the Supplement to Final Environmental Impact Report (FEIR) prepared for the Foothill Growth Management Plan (FGMP) and offer the following:

Our comments of June 19, 1984 and June 30, 1980 regarding FEIR are still valid. In our review we noticed that the supplement fails to address our concerns. Specifically, no mention is made of the mitigation measures to combat the impacts to State Highways (190, 198) in terms of overloading existing capacities as stated by the FEIR. Developers should contribute to highway improvements.

Thank you for the opportunity to comment on this important planning document.

Very truly yours,

ORIG SIGNED MOSES G. PARLIER

for M. B. PARLIER  
District 6 Transportation Planner

MGP:DH

CC: MGP

MGP ✓

DEPARTMENT OF TRANSPORTATION  
P.O. BOX 12816, MENLO PARK 94024

November 5, 1984

6-Tul-190  
USFS Peppermint Mtn. Resort

Mr. Jams Allen  
Forest Engineer  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93297

Attention Mr. Darrel Cherry,  
Special Projects Engineer

During the Draft Environmental Impact Report review process, we commented through the State Clearinghouse on some expected transportation impacts of the proposed Peppermint Mountain Resort. Due to time constraints, the analysis leading to those comments was necessarily very limited. Subsequently, we have investigated further the potential impacts of the proposal, particularly the recommended alternative.

Referring to the transportation analysis commencing on page 79 of the draft EIS, we concur that the indicated routings 1, 2, and 5 will be the significant access corridors. However, we do not necessarily agree that Bakersfield and Los Angeles traffic will confine their choice to your route 2. When travel time on the valley floor (State Route 65) is added to your estimates, routes 1 and 2 are almost equal. And assuming that the major source of skiers will be the Southern California metropolitan area, it appears to us that both routes 1 and 2 will be utilized by those visitors. Consequently, we have analyzed the impacts on State Route 65 also.

For purposes of this analysis, although your Table 111-3 (page 42) indicates approximately thirteen years to build out, we have considered full development impacts in relation to our ten- and twenty-year (1994 and 2004) projections on the affected State highways.

The attached sketch and tabulated level-of-service chart shows the congestion levels expected with these assumptions. Although we may not have assigned the traffic between State Route 190 and County Road 56 in quite the same proportions as you are using, I think the indicated congestion impacts (level of service) is valid, particularly segments Y and Z.

2491

Mr. James Allen  
November 5, 1984  
Page Two

It is understood that the peak traffic impacts generated by Peppermint will probably occur on only a few winter Sunday evenings, the number of instances depending on snow conditions. Generally this does not conflict with the overall peak hours of travel because most highways have maximum volumes on mid-week days. In the case of State Route 65, there are several mid-winter Sunday evenings with peak travel volumes at about 85% of the mid-week peak hour, and we have used this value in our analysis.

Under some conditions, levels of service D and E might be acceptable; but given the length of the congestion (about 60 miles of D level at build out), we believe there will be considerable public complaint. Because of our priority for maintaining the present system and the very limited amount of new facility funds, we cannot encourage development projects that will undoubtedly lead to this kind of situation.

Although Caltrans will continue to make improvements at identified spot problem locations, significant improvement of level of service on State Route 65 means additional lanes virtually throughout the study area. We have not made any engineered estimates for such improvement, but a cursory observation of the route indicates costs would be in the range of \$100 million. Because of the mountainous terrain, similar improvement on State Route 190 would be even more expensive. Given the present outlook for future State (including Federal) Highway funds, such an ambitious program on State Route 65 and State Route 190 is unsupportable from Caltrans' perspective. Whether the Peppermint development could support costs of this magnitude, we don't know.

Thank you for the opportunity to add this information to your study.



M. B. PARLIER

District 6 Transportation Planner

MBP:ja  
Attachment  
CC: MBP  
D.Cherry, USFS

## Memorandum

Larry Wieman, Chief  
Division of Transportation Planning  
Attention Darrell Busum, A-95 Coordinator

Date: June 21, 1984  
File: Tulare-General  
SCH No. 80065251  
Foothill Growth  
Management Plan

From : DEPARTMENT OF TRANSPORTATION  
Department of Transportation  
Subject: Foothill Growth Management Plan

We have responded directly to Tulare County regarding Tulare County's Plan and Draft Environmental Impact Report on the Foothill Growth Management Plan.

Attached for *your* reference is a copy of the documents sent to Tulare County.

M. B. PARLIER  
District Transportation Planner

MS:DE  
Attachment  
CC: MGP ✓

**Memorandum**  
*Orig routed to D. Husum DOTP.*

To : Executive Officer  
State Clearinghouse  
1400 - 10th Street  
Sacramento, CA 95814

Date: May 29, 1984  
File : 6-Tul-190-56.6  
SCH 84043006

From : DEPARTMENT OF Planning (422-4128)  
District 6 ip

Subject: Peppermint Mountain Resort (DEIR) Draft  
Environmental Impact Report

Ye have reviewed the DEIR with a view to the impacts the project may have on State Route 190.

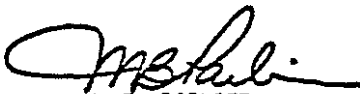
It appears that the peak hours of traffic are understated in Table Y-7 (page 139). State Highway 190 (Study Route 1) has a 1983 ADT of 3100 and a peak hour of 960 in the Springville area.

Ye feel that of the 3000 daily visitor vehicle trips 40% will use this (S.H. 190) corridor. This would produce 1200 auto trips in and 1200 auto trips out or an additional 2400 ADT on State Highway 190. Assuming a 2-1/2 hour peak period (as the study dws on page 139) an additional 480 (40% of outbound trips) could be anticipated on State Route 190.

In the Springville area this would give an ADT of 5500 and a peak hour of 1440. The current capacity of Highway 190, in the Springville area, is 1020.

Our ADT estimates and the Study ADT estimates are in the same general range. The breakdown appears to be in the development of peak hour estimates.

These comments have been aimed primarily at the Springville area. However, it should be understood that all of State Highway 190 from Springville to Quaking Aspen would have capacity problems.



M. B. PARLIER  
District Transportation Planner

RWT:ac

CC: MGP  
RMT

DEPARTMENT OF TRANSPORTATION  
P.O. BOX 12616, FRESNO 93778



December 21, 1982

06-Tul-General  
PZ 82-17  
SCH 8212028

Mr. Eugene E. Smith, Director  
Planning Department  
County of Tulare  
County Civic Center, Rooms 107-111  
Visalia, CA 93291

Attention Josfe Domingo, Project Planner

We have no comment on the third and final phase of a three part rezoning process implementing the Foothill Growth Management Plan.

Very truly yours.

~~Copy of signed by~~  
~~M. E. Parlier~~

M. E. PARLIER  
District 6 Transportation Planner

CAG:ac

CC: MAD ✓  
D. Husum, DOIP

**Memorandum**

DC M 2491

To : Ms. Anne Barkley, Chief  
Division of Transportation Planning  
Attn: Darrel Husum, A-95 Coordinator

Date: June 30, 1980

File: Tulare General  
SCH No. 80061251  
Foothill Growth  
Management Plan

From : DEPARTMENT OF TRANSPORTATION

Subject:

Following are our comments on Tulare County's Plan and Draft Environmental Impact Report on the Foothill Growth Management Plan, SCH No. 80061251.

In Section VIII of the DEIR, this plan recognizes its growth-inducing potential but the amount of growth is undetermined at this time, yet, in the plan section, Foothill Circulation Systems, it states that the resulting traffic load should not unduly tax the foothill circulation system.

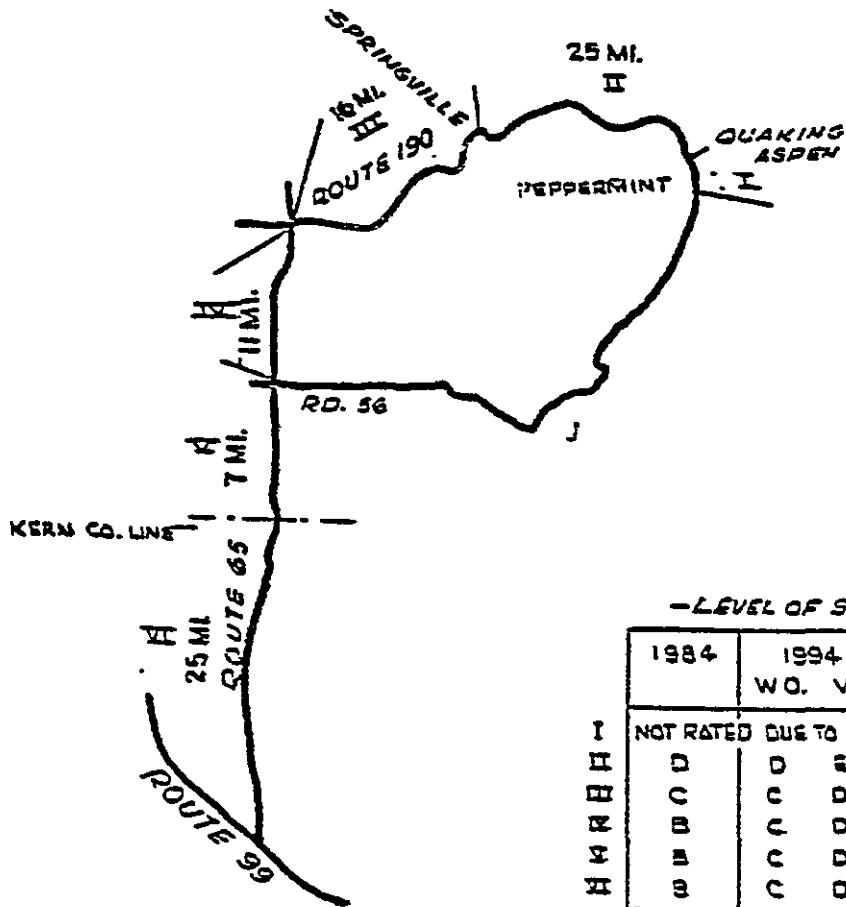
According to our most recent State Highway Inventory, the capacity of State Highways 190 (South of the Tule Indian Reservation Road) and 198 (South of Three Rivers) will be reached if traffic volumes increased by 200% and 300% respectively on these highways. So the amount of growth may be constrained by the carrying capacity of the arterial system serving the plan areas. And the statement that "... there seems to be no necessity for any major expenditures for road improvements other than the present ongoing program to widen certain road segments having substandard paving widths. seems to draw a conclusion that lacks substantive evidence.

There is no discussion in the Plan Section, Public Service Systems and Utilities, for highways and roads. These are maintained and constructed by public agencies, State and County, and are essential features of the plan itself. This section should include a realistic financial outlook for public agencies in their attempt to cope with the increased growth in outlying areas such as proposed in the foothill management areas.

M. B. Parlier  
District Transportation Planner

RMN:ac  
cc:RMN  
Attachment





- LEVEL OF SERVICE -

	1984	1994 WO. W.	2004 WO. W.
I	NOT RATED DUE TO LOW DESIGN SPEED		
H	D	D	E
H	C	C	D
H	B	C	D
H	B	C	D

- \* URBAN PORTION (APPROX. 4 MI.) WOULD BE AT "D" LEVEL.
- \* URBAN PORTION (APPROX. 4 MI.) WOULD BE AT "E" LEVEL.
- # URBAN PORTION (APPROX. 2 MI.) WOULD BE AT "D" LEVEL.
- # URBAN PORTION (APPROX. 2 MI.) WOULD BE AT "E" LEVEL.

Department of Transportation:

Resolution:

1. As in the case of Peppermint, a separate project level EIS will be developed as each planned ski area is proposed for development. Each EIS would contain a detailed traffic analysis addressing cumulative impacts and, where appropriate, propose mitigations.
2. Sequoia National Forest met with State of California District 6 transportation planners on November 21, 1986, to discuss concerns relating to logging roads intersecting State routes. At this meeting, the Forest Service agreed to improve pavement flare and drainage design at intersections. Operation of "lunch wagons" on Highway 178 is not authorized by any Forest Service permit and **so** is illegal under Forest Service regulations. We are unaware of this problem.
3. Specific mitigations will be developed for site-specific projects. This will occur as land use developments are proposed and analyzed. The Forest Plan will be revised every 10-15 years providing an opportunity to reevaluate traffic growth.

2520

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—  
CENTRAL VALLEY REGION



SAN JOAQUIN WATERSHED BRANCH OFFICE  
3614 EAST ASHLAN AVENUE  
FRESNO CALIFORNIA 93726  
PHONE 120914455115

24 April 1986

Mr. Jim Crates  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257-2035

DRAFT LAND AND RESOURCE MANAGEMENT PLAN (LRMP) AND DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS), SEQUOIA NATIONAL FOREST, FILE 1920

We have reviewed the subject documents and have developed the enclosed comments.

The draft EIS generally discusses the potential impacts to water resources from the proposed LRMP. However, we request that you address the following issues in greater detail:

- 1- 1. Cumulative impacts to water quality from increased use of the Forest.
- 2- 2. The Forest Service's proposals for surface water quality monitoring for identification and mitigation of pollution sources.
- 3- 3. Characterization of ground water resources (quantity and quality) that should be protected in the Forest.

Please address the above in your final EIS.

If you have any questions, please call Timothy G. Souther of this office at (209)445-5525.

A handwritten signature in cursive script, appearing to read "Sargeant J. Green", is written over a horizontal line.

SARGEANT J. GREEN  
Senior Land and  
Water Use Analyst

TGS:hmm

Enclosure

cc: Mr. Jerry Bruns, California Regional Water Quality Control Board,  
Sacramento

## Memorandum

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD • CENTRAL VALLEY REGION  
 3514 E Ashlan                      SAN JOAQUIN WATERSHED BRANCH                      Telephone (209) 445-5116  
 Fresno, CA 93726-6905                      Stare Lease Line 421-5116

TO Sargeant J. Green                      FROM Timothy G. Souther  
 Senior Land and                      Staff Environmental  
 Water Use Analyst

DATE 23 April 1986

SIGNATURE

SUBJECT UNITED STATES FOREST SERVICE, SEQUOIA NATIONAL FOREST, CRAFT LAND AND RESOURCE MANAGEMENT PLAN (LRMP) AND DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS). THEIR FILE 1920

I have reviewed the LRMP and DEIS and have developed the following comments.

1. The vision statement in the LRMP indicated the intent of the plan was "to provide increased public benefits by increasing recreational opportunities, development of trailhead facilities, providing increased opportunities for off-highway recreation, providing increased white water rafting opportunities, providing downhill skiing opportunities and improve access to giant sequoia groves for increased recreational opportunities." These activities will increase the burden on existing water supplies and waste management facilities (sewage, solid waste and possibly hazardous waste treatment and disposal facilities). The LRMP indicates additional such facilities will be necessary to accommodate those increased uses. Waste management practices are to be developed utilizing identified Best Management Practices (BMP's) to minimize non-point source impacts to water quality and quantity. The cumulative impacts of increased use of existing facilities and development of new point source facilities and non-point source activities could still pose a significant threat to water quality and beneficial uses of surface and ground water. Such Impacts are not adequately addressed in the LRMP.
2. The LRMP finds that, "There will be more evidence of landslides in steep terrain accessed and harvested for timber. There will be more evidence of erosion from off-highway vehicle use in some locations and there will be more areas where the soil has been bared for reforestation activities." The above could cause sedimentation of surface waters and impacts to fresh water fisheries and other downstream uses of water. Again, BMP's are proposed to be implemented to minimize impacts to water quality. However, the cumulative impacts from increased off-highway vehicle use and timber harvesting need to be fully evaluated.
3. The DEIS infdcates that "past (surface water) monitoring has shown that water on the Forest has been of good quality for the beneficial uses ... except for short term high bacteria and sediment concentrations." This statement indicates the need to address cumulative impacts to surface water

Reviewed by

*[Signature]*

U. S. FOREST SERVICE,  
SEQUOIA NATIONAL FOREST,  
DRAFT LRMP AND DEIS,  
THEIR FILE 1920

-2-

23 April 1996

from increase forest use and the need for a surface water quality monitoring program. The DEIS should address how monitoring might assist in identifying surface water quality impacts and their sources mitigated. The "Research Needs and Technical Planning Needs" (Appendix B) includes a determination of "the relationship of management practices to water quality, meadow gullying and cumulative watershed impacts in the Southern Sierra Nevada." Appendix B recognized the surface water monitoring need, however, the LRMP does not detail such a program as part of the plan.

4. The DEIS indicates "No attempt has been made to inventory or map ground water availability or quality." It also suggests that "A ground water inventory [as part of a Geologic Resources Inventory] would provide better estimates of water availability and the cost of development." Ground water quality, as well as ground water occurrence, should be addressed in the DEIS. Since ground water is a significant source of drinking water in some areas of the Forest and a potential water supply for proposed facilities, its quality should be determined and protected. However, it should be recognized that the Sequoia National Forest is a rather complex hydrogeologic system, that may not lend itself to easy characterization. In any case, the ground water resources should be identified so they can be protected.

#### CONCLUSIONS:

We should request the U. S. Forest Service to address cumulative impacts to water quality from increased use of the forest, surface water quality monitoring for identification of pollution sources and characterization of ground water measures (quantity and quality) that should be protected in the Sequoia National Forest LRMP and DEIS.

TGS:hmm

California Regional Water Quality Control Board - Central Valley Region

Resolution:

1. In the Final Forest Plan the monitoring section includes an evaluation of soil productivity and water quality against accepted standards on a watershed basis utilizing cumulative watershed impact analysis.
2. The Final Forest Plan identifies a program in its monitoring section that will assure that project activities provide for protection of meadows, riparian ecosystems and associated values through validating the application of **BMP's**. This program along with the monitoring stated in the above paragraph addresses surface water quality impacts and their mitigation.
3. Ground water resources on the Sequoia National Forest are investigated on a very site specific basis. The cost of drilling prohibits extensive inventories.



April 28, 1986

Mr James Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

RE: Proposed Sequoia National Forest Land and Resource  
Management Plan and Draft Environmental Impact Statement

Dear Mr Crates:

**BOARD of  
SUPERVISORS**

**Chairman**

CLYDE R GOULD  
District One

**Vice Chairman**

BEN E WEBB  
District Five

JOHN R CONWAY  
District Two

LORE MANGINE  
District Three

LEROY SWINEY  
District Four

**Clerk of the Board**

JOHN C McCLURE II  
County Executive/  
Clerk of the Board

GEORGIA SOUZA  
Chief Clerk

ADMINISTRATION BUILDING  
COUNTY CIVIC CENTER  
2800 WEST BUREAU  
VISALIA, CA 93291

(209) 733-6271

1-

The Tulare County Board of Supervisors has reviewed the proposed Forest Plan and after hearing from Forest Service staff and members of the general public, has taken a position supporting the High Market Alternative (HMT). We do, however, take exception to that portion of the alternative that recommends 9,710 acres of additional wilderness in the Kennedy Meadow area of Tulare County.

2-

It is this Board's position that the High Market alternative best meets the needs of Tulare County citizens in that it presents a balanced approach to forest management while emphasizing timber yield. An approach incorporating these two elements is consistent with the County's General Plan and will assure compatibility between Forest Service planning and local planning.

3-

As you know, agriculture and related industries are the primary component of the County's economic base and a substantial number of jobs are related to the harvest and processing of timber. At the same time the County recognizes the importance of recreation related development as well as the need to carry out forest management in a way that is not detrimental to the long term preservation of the environment.

1-

Tulare County opposes the designation of additional wilderness within its forest lands for the reason that approximately 25% of such lands are already designated for wilderness use. We believe this is more than Tulare County's fair share. It is also our position that limiting land to wilderness use harms the local economy and limits choice in the future. This Board has consistently opposed wilderness designations and will continue to oppose them in the future.

In summary, the High Market alternative will best serve the needs of Tulare County during the planning period and we urge its adoption. Thank you for the opportunity to participate in the review of the Forest Plan and to offer our comments.

Sincerely,

TULARE COUNTY BOARD OF SUPERVISORS

Clyde R Gould, Chairman

Tulare County Board of Supervisors

Resolution:

1. Under the Preferred Alternative (PRF), 12,500 acres of the 35,600-acre Rockhouse WSA will be proposed for wilderness. This is the only area recommended for wilderness in the Plan. This addition should help to improve the manageability of the existing Dome Land Wilderness. It also has the least impact on private land inholdings and mining activities.
2. The importance of the forest products industry to the economy of Tulare County was taken into consideration when the Allowable Sale Quantity (ASQ) was recommended. It appeared essential to set the ASQ near the current level in order to maintain this portion of the economic base.
3. The current ASQ is 95 MMBF. The actual average harvest for the past 27 years (1960-1986) has averaged 92 MMBF. The range of harvest for the decade 1977-1986 was 57 MMBF to 125 MMBF. The recommended annual harvest is 101.6 MMBF (ASQ of 97 MMBF of green timber and 4.6 MMBF salvage) is, therefore, responsive to this concern. The ASQ will allow the continued balance of multiple uses that have existed while maintaining a viable forest industry and healthy economy in Tulare County.



C. Brent Wallace  
Clerk to the Board



COUNTY OF INYO  
BOARD OF SUPERVISORS  
P O DRAWER N  
INDEPENDENCE, CALIFORNIA 93526

1948  
(619) 878-1411

2

13-2-000021-0

April 21, 1986

Mr. Zane Smith  
U.S. Forest Service  
630 Sansome Street  
San Francisco, CA 94111

Dear Mr. Smith:

Enclosed for your information is a copy of Resolution No. 86-25 which was adopted by the Inyo County Board of Supervisors on April 15, 1986 expressing support for a Forest Land Management Plan for the Sequoia National Forest.

Thank you,

*Kelli Lanshaw*  
Kelli Lanshaw,  
Deputy Clerk of the Board

KL

-25

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RESOLUTION NO. 86-25

A RESOLUTION OF THE INYO COUNTY BOARD OF SUPERVISORS  
IN SUPPORT OF A FOREST LAND MANAGEMENT PLAN FOR THE  
SEQUOIA NATIONAL FOREST

WHEREAS, the U.S. Forest Service is in the process of preparing land and resource management plans which will guide the management of the Sequoia National Forest for the next ten years; and,

WHEREAS, Inyo County will be directly affected by this Land Management Plan; and,

WHEREAS, no analysis has been made concerning the effects, detrimental or otherwise, on how this Land Management Plan will affect Inyo County; and,

WHEREAS, the harvest of Forest Service timber provides not only direct jobs for the people of Inyo County, but also results in business "payables" and "receivables"; and, -

WHEREAS, Louisiana-Pacific Corporation's sawmill operations in Inyo County provide thousands of dollars in tax income; and,

WHEREAS, the harvest of Forest Service timber produces hard cash revenues which in turn result in direct payments to county school and road programs; and,

WHEREAS, Inyo County has a keen interest in maximizing these Forest Reserve Funds to counties dependent on them; and,

WHEREAS, any reduction of timber harvest activities will adversely impact the level of these payments; and,

WHEREAS, timber harvests conducted in a scientifically sound program benefit the other resources of water, wildlife habitat, forage, and recreation and provide access for protection of the forest from fire, insects and disease.

RESOLUTION NO. 86-25

NOW, THEREFORE, BE IT RESOLVED that the Inyo County Board of Supervisors recognizing the many positive benefits that flow from balanced timber management programs, and in support of revenue enhancing federal programs, hereby Supports a Forest Land Management Plan for the Sequoia National Forest that maximizes timber harvest within sound multiple use principles.

BE IT FURTHER RESOLVED that, since timber harvest provides positive revenues and therefore supports the federal policies of balanced budgets and reduced deficits, the Inyo County Board of Supervisors supports federal budget allocations in an amount necessary to realize the planned levels of production.

PASSED AND ADOPTED this 15th day of April, 1986, by the following vote:

AYES: Supervisors Irwin, Johnson, Calkins, Bremmer 6  
NOES: None Campbell  
ABSENT: None

ATTEST: C. BRENT WALLACE,  
Clerk Of the Board

By *Kelli Ranshaw*  
Deputy

THIS RESOLUTION ALSO READ BY ROBERT BREMMER  
SUPERVISOR 5TH DISTRICT  
INYO COUNTY

AT THE KERNVILLE PUBLIC HEARING  
FOR THIS LAND MANAGEMENT PLAN



**ROBERT 'BOB' BREMMER**  
SUPERVISOR 5TH DISTRICT

RESIDENCE  
BOX 275  
LONE PINE CA 93545  
(619) 876-4365

COURTHOUSE  
DRAWER K  
INDEPENDENCE CA 93526  
(619) 878-2411

1948

Inyo County Board of Supervisors

Resolution:

1. Under the Preferred Alternative (PRF), 12,500 acres of the 35,600-acre Rockhouse WSA will be proposed for wilderness. This is the only area recommended for wilderness in the Plan. This addition should help to improve the manageability of the existing Dome Land Wilderness. It also has the least impact on private land holdings and mining activities.
2. and 3.  
The Sequoia National Forest timber sale program now has only minor economic impact on Inyo and Kern Counties east of the Kern Plateau since closure of the Louisiana-Pacific Mill at Inyokern in October 1987.



## Public Works &amp; Development Services Department

Richard O. Welton  
Director

April 30, 1986

Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

Gear Sir:

Subject: Sequoia National Forest Draft Environmental Impact Statement

The Fresno County Public Works and Development Services Department has reviewed the above referenced documents and has the following comments to offer.

These comments address the preferred alternative plan prepared by the U. S. Forest Service for the Sequoia National Forest. It does not address the other nine (9) alternatives, except by comparison with the current management plan alternative.

The major transportation effect in Fresno County will be on State Highway 180 with lesser impacts on State Highway 245. These routes are the major access to the Hume Lake District of the Sequoia National Forest. Over two-thirds of the Hume Lake District is in Fresno County, for a total of 134,285 acres or about 210 square miles. The Hume Lake District also surrounds the Grant Grove section of Sequoia National Park and contains the Fresno County communities of Hume Lake and Pinehurst.

The predominant uses of the National Forest are outdoor recreation and timber harvesting. Since the nearest sawmill to the Hume Lake District is between Reedley and Oinuba, much of the truck traffic generated by timbering will use Highway 180 as well as other County roads, such as Cove, American, and Alta Avenues. Timber production is planned to be stable at about 30 million board feet per year in the Hume Lake District. The proposed timbering activity appears to be slightly higher than is currently practiced.

One planned development that will increase the traffic is the development of a ski area called Mitchell-Maddox. This ski area is projected to support 10,335 skiers at one time, on a 3,000 acre site. Although only partially situated in Fresno County, primary access to the site is from State Highways 180 and 245 through Fresno County. Other County roads that feed into those two State Routes should also experience increased traffic volumes. Horse Corral Road is the only Forest Service road that may require widening as a consequence of the ski area development. This road begins at Highway 198 in Tulare County, south of Giant Forest/Grant Grove and terminates near the site of the proposed Mitchell-Maddox ski area in Fresno County. The development of the Mitchell-Maddox ski area is not a change from the present recreation management direction.

4499 East Kings Canyon Road/Fresno, California 93702/Phone (209) 453-5055  
Equal Employment Opportunity - Affirmative Action - Handicap Employer

8019

The draft EIS does not directly address the issue of vehicle traffic generated by its preferred plan or the alternatives. However, inference can be drawn that traffic will increase in direct proportion to the increase in recreation visitor days per year, millions of board feet of timber offered for sale and cords of firewood produced. The draft EIS should provide information on how the alternatives will affect traffic on the major highway routes serving the National Forest.

Furthermore, one has to assume that the proportion of total National Forest traffic impacting Fresno County would reflect the proportion of either the National Forest area in Fresno County (12%) or of National Forest in the Hume Lake District, which is about 20%. Increases in use over that experienced in 1982 are projected for both the preferred alternative and the current practices alternative for the traffic generating recreation, timbering, and firewood activities as follows:

Base Year (1982)

2,529,500 developed public and private, dispersed and wilderness recreation visitor days per year  
 97 million board feet of timber sales offered per year  
 20,000 cords of firewood produced per year

Preferred Alternative by Decade with Percent Increase Over Base Year

	<u>Decade 1</u>	<u>Decade 2</u>	<u>Decade 3</u>	Decade 4	<u>Decade 5</u>
Recreation	3,164,700 (25)	3,523,900 (39)	3,890,600 (54)	4,555,900 (80)	5,230,300 (107)
Timber	104 (7)	120 (24)	136 (40)	136 (40)	136 (40)
Firewood	21,500 (7.5)	24,800 (24)	28,300 (41.5)	28,300 (41.5)	28,300 (41.5)

Current Practices Alternative

Recreation	2,954,700 (17)	2,998,900 (19)	3,215,000 (27)	3,416,500 (35)	3,568,700 (41)
Timber	97 (0)	97 (0)	97 (0)	101 (4)	101 (4)
Firewood	20,000 (0)	20,000 (0)	20,000 (0)	21,000 (5)	21,000 (5)

Thus, recreation traffic under the preferred alternative during the first decade will be 25% higher per year than was experienced in 1982, and over twice as much each year in the fifth decade of the Plan. Correspondingly, timber and firewood traffic will increase 7% and 7.5% respectively in the first decade and 40% and 41.5% in the fifth decade.

To the extent that Highway 180 is a major route to the Hume Lake District of the Sequoia National Forest, the provisions of the County's General Plan Scenic Highway Policy should be supported. This appears to be the case from statements about the preferred alternative, that a near natural appearance with in the foreground views of the more heavily traveled routes should be maintained, and that the visual quality objective for Highway 180 is retention of current quality in the foreground and partial retention in the middle ground. Also, the preferred alternative proposes that a new corridor viewshed plan for Highway 180 will be prepared. The decline in visual quality is 1% greater under the preferred alternative than would occur under the current management practices alternative.

8019

If you have any questions relating to our comments, please direct them to Richard Braun, at (209) 453-5010. Thank you for the opportunity to review your Plan and EIS.

Very truly yours,

Jerry K. Boren  
Development Services Manager

*Katie Bearden*

Katie Bearden  
Staff Analyst III

KB:mar  
41238

cc: Council of Fresno County Governments



Fresno County - Public **Works** and Development Services Department

Resolution:

1. The Final EIS does include a discussion of traffic growth for each alternative in Chapter 4, Section B, Facilities. **The** data for this discussion was generated utilizing traffic growth as related to recreation and timber management along with new roads constructed and amount of road closures. Sequoia National Forest recognizes that Highway 180 is an eligible Scenic Highway in the California Scenic Highway Master Plan and will be managed in support of that classification.



**Parks Division**

March 4, 1986

**RE:** Sequoia National Forest  
Land & Resource Mgt Plan  
OEIS

United States Department of  
Agriculture, Forest Service  
900 West Grand Avenue  
Porterville, CA 93257-2035

Dear Mr. Crates:

Enclosed you will find comments from the Fresno County Recreation and Wildlife Commission on the Sequoia National Forest Land and Resource Management Plan.

We thank you *for* the opportunity to review and make comments on the plan.

Sincerely,



Dale Tartaglia  
Chairman

DT:KT:lc

Enclosure

4300a

MARCH 4, 1986

U.S.D.A. Forest Service  
900 West Grand Avenue  
Porterville, CA 93257

Sequoia Forest, Draft Land Management Plan

1- We have studied the documents and find them very confusing. The 112 acronyms that are used to describe, refer to, compare with and relate to, seemed to be carrying the use of acronyms a little beyond the extreme. It seemed that there were enough contradictions, over-lapping of management goals, inaccurate statements and vague statements so that future management decisions could probably be made to satisfy most management desires.

1- We had hoped that a sound management plan would encompass the multiple use management and benefits that we have heard referred to in recent years. However, as we read the document it became increasingly evident that the primary emphasis is still on timber and range. You state: (page 2-16) that water yield and recreation contribute 80% of the total present net value (PNV), with timber adding 19% and livestock forage only 1%. Our primary concern is with the fish and wildlife resources of the Sequoia forest. Again and again in all of the alternatives we find plans that will be damaging to wildlife and only minor benefits.

2- Some of the proposals that were particularly disturbing to us were:  
(1) Increased cattle A. U. M. 's

We feel that there is already heavy cattle use in much of the Sequoia Forest. That wet meadows are not being properly protected. That allowing cattle to reduce the grass to 400 lbs. per acre is not advisable. Especially when most cattle will lose weight when the available forage is down to 500 lbs per acre. We feel that the price (per A. U. M. ) for cattle to graze the National Forest should be set at the fair market value. Since only 2% of the nation's beef is partially produced on Forest Service lands, the current low price is an unfair subsidy granted to less than 2% of the nation's cattle producers. We feel that the figures used and the 1982 base year are very misleading when applied to the proposed A. U. M. increase to 90,000 A. U. M. 's. In 1979 the A. U. M. 's were 44,000 an increase from the 1979 use to the proposed 90,000 is over 100% increase. We feel that there should be no proposed increase and that cattle use of the National Forest lands should reflect a gradual decrease.

(2) Timber production

3- We feel that as custodians of our National Forests, that you should be seeking ways to conserve this very valuable resource. But your alternatives are all designed to exploit our forests to the maximum possible. We do not feel that the maximizing of timber production is in the best interests of

(Sequoia Forest, Draft Land Management Plan - continued)

the people of the United States. The conversion of 300,000 acres to clear cut plots over the period of the proposed plan will have a very detrimental effect on most wildlife species. We are aware that there will be short periods in the production stages of each plot when there will be wildlife benefits, however the wildlife losses from the proposed plan will vastly outweigh the benefits and reduced numbers of wildlife will result from such action.

The removal of thousands of tons of forest products - plus the proposed removal of limbs, snags and underbrush for conversion by biomass processing will constitute a heavy drain on the soil nutrients of the forests. Farmers can't continue to deplete their soil without putting some nutrients back and we don't feel that the Sequoia Forest can either. This aspect is given no consideration in any of the alternatives.

The heavy use of lumber in construction is not essential to the nation's progress. Most other developed nations use far less lumber than is used by the U.S. construction industry. There are other construction materials.

4- (3) Wildlife

In the past 100 years almost 90% of our prime wildlife habitat has been destroyed to meet the need for farm land, urban development, industry, roads and other people-related-projects. The federal lands of the United States now constitute the most valuable remaining areas of wildlife habitat. The people of the United States have mandated that forest management shall preserve and enhance wildlife habitat - however, in reading your DEIS we note:

- (a) No consideration for meadows less than 2 acres in size.
- (b) The conifer prescription calls for maximizing of conifer production regardless of wildlife habitat requirements.
- (c) You propose the use of livestock to reduce vegetation in new timber stands. This is the same deer habit that you proudly proclaim will result from clear-cuts.
- (d) There is no retention standards for quercus areas. All acorns are vital to the wildlife community.
- (e) Black oak stands are scheduled for drastic reduction. The method of determining basal area of black oaks remaining in a tract, will not provide a satisfactory distribution of oaks.
- (f) Under present grazing practices - blue oaks cannot produce any young trees. The blue oaks on the Sequoia Forest should be listed as endangered.
- (g) The proposed large increases in cattle on the lower elevation blue oak savannah areas will cause increased loss of grass, forbs and herbaceous forage in these areas of critical winter deer range.

5- (4) Fishery Resource

- (a) Under the preferred alternative - there is no provision for enhancement of fish habitat.
- (b) Increased road construction, logging, chaparral conversion and increased cattle number will contribute to a decline in the current fishery habitat.
- (c) With a projected 125% increase in the number of people seeking a satisfying fishing experience - how can your preferred plan not include

(Sequoia Forest, Draft Land Management Plan - continued)

provisions for the enhancement of the fishery?

(d) Vague statements calling for "increased wildlife and fish habitat capabilities on the National Forest by 1995" - Don't mean anything without a definite plan for achieving such goals. No plan is presented.

(e) Page 2-69 table 2.6 you list your proposed direct habitat improvement for fish as zero. This seems to closely reflect your concern for the fishery.

(f) Pages 4-65 and 4-66 reference is to: meeting the basic demands for recreation use on the Sequoia Forest. Needs of campers, skiers, OHV needs and other recreational pursuits are detailed but fishing as a form of recreation is not even mentioned.

Summary:

In our opinion most of the alternatives were only confusing to the primary issue of developing a sound management plan for the Sequoia National Forest. In consideration of the political and financial constraint that the forest must operate under - only some modified version of the "Preferred Plan" is likely to be adopted.

From a wildlife standpoint - none of the plans are acceptable. On page 18 of your summary section - under wildlife - you have predicted the potential losses or gains in the three types of habitat needed by wildlife. Eight of the alternatives would result in a net habitat loss varying from a 10% loss to a 46% loss. Only two, Alt. WVF showed a possible 1% gain and Alt. AMN indicated a possible 11% increase in available habitat. Adoption of either Alt. WVF or Alt. AMN have about as much chance of adoption as the proverbial snowball in \_\_\_\_\_.

For 100 years the people of the United States have viewed with dismay the increased losses of our wildlife habitat. To have a Federal Agency - plan for increased losses is completely unacceptable. We sincerely urge that your staff closely examine the many comments relative to your proposed plans and that the "Preferred Plan" be revised to more closely meet the needs and desires of the real owners of the Sequoia Forest - The American People.

## Fresno County Parks Division

### Resolution:

1. Thank you for your comments on the Sequoia National Forest's Draft Land Management Plan (LMP) and Draft Environmental Impact Statement (DEIS). We apologize if your agency found the Plan and DEIS confusing. The complexity of the documents reflect the enormous job of planning the management of resources on over 1 million acres of public lands. This management includes providing goods and services, meeting public demands, protecting Forest resources, and complying with legislative and political requirements over an extended period of time. The Table of Contents, Glossary (Appendix J) and Acronym Definitions (Appendix I) have all been included in the DEIS to hopefully clear up some of this confusion and complexity for the reader.

In general, it may seem an inordinate amount of text was devoted to timber; and to a lesser degree, range management elements of the documents. Since these two programs (and Recreation Management) have the greatest potential for affecting Forest resources, the planners felt describing the affects and details of these programs was essential.

In the Final Plan, you will find increased explanation of fish and wildlife management. Also, with the implementation of the Plan, the Forest will have stronger, more effective Standards and Guidelines providing for the protection and enhancement of fish and wildlife habitat.

2. Range

The increases in livestock numbers proposed in the DEIS and Draft Land Management Plan were based on the 1982 RPA study. This study indicated beef consumption was expected to increase throughout the planning period. The President's statement of policy (3/30/81) directed National Forests to meet their proportionate share of increased demand for range grazing (46% increase by 2030). This increase in demand did not materialize. Beef consumption has declined since that time. Present information indicates this decline may be leveling off. The Preferred Alternative for the Final Land Management Plan holds livestock numbers constant with the 1986 levels for the Forest (66,000 AUM's of term grazing permits plus 5,000 AUM's for recreation stock and temporary grazing permits based on favorable forage conditions). Local adjustments will be made based on fluctuations in forage conditions. Management emphasis will be based on ecological principles aimed at reducing conflicts with other resources and uses. Conflicts will be addressed on a case-by-case basis using applicable research as it becomes available.

3. Timber

- A. The alternatives described in the Draft LMP and EIS provide for a range of goods and services (including timber) to be harvested from the Forest. No alternatives, with the possible exceptions of

the High Market Emphasis Alternative and the High Production Emphasis Alternative, maximize timber production on Sequoia N.F. No alternative described in the documents maximize timber production at the cost of forsaking all other resources. The Forest has attempted, in the LMP, to balance timber production with other uses on the Forest including wildlife habitat management. Productive timberland is being managed emphasizing **uses** other than timber management on over 50 percent of the 656,000 acres capable of producing timber. This includes timber in wilderness, along travel influence zones, along streams, on erosive soils, around recreational areas, and in important viewsheds. **Also**, although the Draft LMP proposes the harvesting of overmature (old growth) stands on the Forest, there are provisions to protect a portion of this valuable wildlife habitat type. Old growth located in the wilderness will be protected. Five percent of the old growth in each timber compartment will be retained. Approximately 40 spotted owl habitat areas, each 1,650 acres in size, will be protected providing another 50,500 acres of old growth distributed across the Forest. The old growth found in the four Research Natural Areas and six Botanical Areas will be preserved. Finally, many acres of old growth will be left in areas that are not economical to harvest timber because of road construction costs or other limiting factors.

- B. **Where** harvesting occurs, trees will **be** removed, representing a loss of biomass on the site. Limbs and branches of the trees, underbrush, residual trees, and Forest ground cover/litter will be left on site. These components of the site will either remain as is to decompose naturally or will be burned to prepare the site for planting. Either way, nutrient recycling is occurring on site.
- C. **The** Sequoia National Forest has little or no control over what types of materials, **or** the amount of materials, are used by the U.S. construction industry.

#### 4. Wildlife

The National Forest Management Act requires that this plan shall "provide for multiple use and sustained yield of goods and services from the Forest in a way that maximizes long-term net public benefits in an environmentally sound manner." This direction precludes the possibility of preserving the entire Forest for wildlife habitat regardless of what the people of the United States have done to the rest of the wildlife habitat in the country.

Also, the Final Land Management Plan actually provides for increased protection and management of several important habitat types including old growth, riparian, dead and down trees, snags and hardwood, habitats. Please refer to the revised Forest-wide Standards and Guidelines in Chapter 4 of the Plan.

- A. The minimum size limit of meadows (two acres in the Draft Plan) requiring protection or management considerations has been revised to include all meadows, regardless of size.
- B. The Management Area Prescription (CF7) emphasizing the production of saw timber volume in the conifer zone is subject to the same, or more stringent, Wildlife Standards and Guidelines established for every management area prescription. Also, please see the revisions to this Management Area Prescription in Chapter 4 of the Plan for the additional Fish and Wildlife Standards and Guidelines that have been added.
- C. Both cattle and deer utilize the forage created by even-aged harvesting of timber. Currently, the permitted cattle and the deer found on the Forest, combined, utilize all the vegetation found in plantations. Forage on ~~summer~~ range does not appear to be limiting.
- D. The Management Direction in Chapter 4 of the Final Plan prescribes maintaining mast producing *oaks* on Capable, Available, and Suitable timberland in numbers proportional to the current inventory. Where hardwoods and conifers coexist, the goal is to increase conifers subject to leaving at least a minimum of 20 square feet per acre basal area of *oak* hardwoods dispersed over each timber compartment. This includes live *oak*.
- E. Please see response to D above.
- F. Blue *oak* habitat surrounds the Central Valley and occupies lands throughout most of California. Many studies have focused on factors relating to the non-regeneration of blue *oak*. Fungus in the north part of the state, persistent drought years in the south, and cattle grazing in general have been blamed for the lack of regeneration of blue *oak* stands. There is no unanimous agreement in the scientific community supporting the argument that cattle grazing is endangering blue *oak* stands. Locally, studies conducted on the Sequoia National Forest and Sequoia National Park have shown that in some cases blue *oak* stands under grazed situations (on the Forest) are regenerating while stands not being grazed were not regenerating. It is apparent more studies need to be conducted to establish the true causes of non-regeneration of blue *oak* in specific locations. Only then can management direction be formulated to provide for regeneration of this species.
- G. The Final LMP prescribes minor increases in grazing over time on the annual grass ranges found in the foothills. Little or no expansion of cattle numbers or season of use are expected on the Forest in the near future due to the depressed condition of the cattle industry and lower market demand.

5. Fishery Resource



- A. Please see the revisions in Chapter 3 in the Final Plan discussing the types of activities proposed to provide for the enhancement and/or protection of fish habitat.
- B. The use of Best Management Practices, Riparian Management Guidelines, and limited improvement projects should maintain current fishery habitat. Also, mitigation measures identified in the Environmental Assessment for individual projects will insure protection of fish habitat.
- C. See response to 5A.
- D. The Land Management Plan clearly outlines our commitment and describes the planned management direction in providing for the maintenance or improvement of fish and wildlife habitat over time. The vague statements alluded to in your comment come directly from the Resource Planning Act, formulated by the U.S. Congress, calling for increased wildlife and fish habitat on the National Forests by 1995.
- E. Funding for direct fisheries habitat improvement is severely limited. The return in increased production per unit of investment in fisheries habitat improvement is very low. Generally, this kind of major investment is channeled towards coastal anadromous fisheries where a higher return and greater public benefit can be realized. Through the use of Best Management Practices, Riparian Guidelines, and mitigation measures, the Forest can protect the existing fisheries. Some localized improvements will be seen through KV funds (timber sale area improvement money), fines money, cooperative work with the California Department of Fish and Game, local volunteer projects, and watershed restoration programs primarily directed towards meadow stabilization.
- F. A detailed explanation of the fisheries resources and public demand implications on Sequoia NF is provided in Chapter 3 of the Plan.

#### SUMMARY RESPONSE

The Final LMP has undergone extensive revisions, particularly to the wildlife and recreation portions of the plan. These revisions are in response to the approximate 3000 comments received from the public and other agencies.

1-

The Kern County Board of Supervisors would like to take this opportunity to comment on the draft "Sequoia National Forest Land and Resource Management Plan." In addition, this Board appreciates the coordination the Forest Service has provided with Kern County during the preparation of this plan.

The Forest Service is to be commended on drafting a plan that provides for future development of additional recreational opportunities. As you are aware, Kern County is experiencing quite rapid growth at this time, and it is this Board's opinion that the draft plan will help to satisfy the future demands for recreation in Kern County.

The largest part of Sequoia National Forest is located within both Kern and Tulare Counties, while a remaining small portion is located in Fresno County. The Forest's immediate sphere of influence is considered to be both Kern and Tulare Counties. This means that any impacts, whether they be physical or socio-economic, which may be created by adoption of a land and resource management plan, will be noticed to the greatest extent in these two counties.

The DEIS outlines a number of management alternatives, each with a different emphasis, resulting in various management levels that are further analyzed with regard to ten forest issues. In each case, a preferred alternative is identified. The actual draft plan is a detailed incorporation of the preferred alternatives for each forest issue. The resulting emphasis of the plan is timber harvest, dispersed recreation, and ski area development.

Kern County supports the concept of developing a management plan for Sequoia National Forest. However, for such a plan to be effective, it is paramount that old impacts, both physical and socio-economic, be identified and considered. After review of both the DEIS and the draft plan, it is the Kern County Board of Supervisors' concern that the socio-economic impacts be thoroughly identified in the DEIS and be considered in the draft plan. While

Dear Mr. Crates.

Re: Comments regarding Draft "Sequoia National Forest Land and Resource Plan"

Mr. James A. Crates, Forest Supervisor  
 Sequoia National Forest  
 900 West Grand Avenue  
 Porterville, CA 93257

April 28, 1986



BOARD OF SUPERVISORS

SHARON CLARK  
 Clerk of Board of Supervisors  
 Administration and Courts Building  
 1415 Tuxlun Avenue  
 Room 500  
 Bakerfield, California 93301  
 Telephone (805) 861-2107

2681

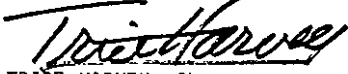
SUPERVISORS  
 ROY A. ASHBURN District No. 1  
 BEN AUSTIN District No. 2  
 PAULINE LARWOOD District No. 3  
 TRICE HARVEY District No. 4  
 MARY K. SHELL District No. 5

2631

- 1- the plan establishes a theme centered around timber harvest, dispersed recreation, and developed ski areas, it is of vital importance to Kern County to be aware of the impacts that these may have on our communities, schools, roads, and other County services. Although not considered a theme in the draft plan, it is also of the utmost importance and of concern to this Board that the socio-economic impacts created from the management of grazing activities and mining operations be thoroughly addressed.

Once again, thank you for this opportunity for comment on the Draft "Sequoia National Forest Land and Resource Management Plan" and for the coordination the Forest Service has provided with Kern County.

Very truly yours,



TRICE HARVEY, Chairman  
Kern County Board of Supervisors

RLA GAB:jrw:s1b

James A. Crates  
April 28, 1986

Page 2

Kern County Board of Supervisors

Resolution:

1. Socioeconomic effects of all alternatives, including the Preferred Alternative are fully discussed in Chapter 4,B.1 of the FEIS. They are not included in the Plan because the Plan is meant to set forth actions and standards, not analyses. In Chapter 4,B.1 of the FEIS there is full discussion of the socioeconomic effects on ranchers resulting from varying levels of range use. However, since mining is activity of such limited scope on the Sequoia, it was not singled out for separate socioeconomic impact analyses.

2655

DEPARTMENT OF  
PLANNING AND DEVELOPMENT SERVICES

RANDALL L ABBOTT  
DIRECTOR  
STEVEN G LADD  
Assistant Director

1103 GOLDEN STATE AVENUE  
BAKERSFIELD, CA. 93301-2499  
Planning Services 18051 861-2615  
Building Inspection (805) 861 2391  
Floodplain Management (805) 861 2892

April 28, 1986

FILE: Agency - U S Forest  
Service - Sequoia  
National Forest

Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

Re DEIS - Sequoia National Forest Resource Management Plan

Dear Sir:

This Department has reviewed the Sequoia National Forest Draft Environmental Impact Statement (DEIS) and the proposed Land and Resource Management Plan (RMP) (proposed Forest Plan) and offer the following comments

- 1- 1. Page 3-3, RMP, and Page 3-15. OEIS.

Statement "By 2000, the county's population is expected to increase from 476,900 to 595,000."

Response. 1980 population for Kern County is noted correctly at 403,089. If the figure noted above references another base year, then the year should be stated. The statement is unclear.

- 2- 2. Page 3-15, DEIS.

Statement "Kern County is 77% white . . . largest minority group is black, accounting for 5% of the total. Culturally the largest minority is Hispanic, standing at 22% . . . Kern County is home for 6,900 Native Americans, or 2% . . ."

Response. 1980 census data note the following 69.7 percent white, 21 percent Hispanic, and 1.5 percent Native American (6,008). Base year should be noted. The distinction between largest racial minority group and culturally the largest minority group is unclear.

- 3- 3. Page 3-5, RMP, and Page 3-18, DEIS.

In the section "Attitudes, Reliefs, and Values," it is inferred that Kern County's planning philosophies are in their infancy and fashioned by individual property desires, rather than sound principles. The first zoning ordinance was not drafted only 15 years ago, that ordinance was adopted in 1957.

It is requested that the following sentence be deleted "Subsequent updates and revisions have tended to maintain the property owner's options as he sees them." This statement is untrue. The County considers the requests of property owners in making sound planning decisions.

- 4- 4. Page 3-13, RMP, and page 3-40 DEIS - Geologic Hazards.
- It is noted that earthquakes are not a significant hazard on the Forest. There are several known and inferred faults just within the Kern County portion of the Forest. Earthquake activity at certain intensities could cause property damage and personal injury. These possible impacts should be noted in the document(s).
- 5- 5. Pages 3-18 and 3-19, RMP, and Pages 3-52 and 3-53, DEIS - Wildlife.
- A discrepancy exists between the wildlife noted as endangered, threatened, rare, or sensitive in the two documents. The Goshawk, Golden Eagle, Osprey, and Prairie Falcon are noted as rare or sensitive in the RMP but not in the DEIS. The Sierra Red Fox and Fisher are noted in the DEIS and not in the RMP. The Yellow-billed Cuckoo is designated as a rare species by the State of California. This species has been sited in the riparian habitats along the South Fork of the Kern River and should be included in the RMP as requiring special consideration to ensure population viability.
- 6- 6. Pages 3-20 and 3-21, RMP, and Pages 3-56 and 3-57, DEIS - Sensitive Plants.
- The "Inventory of Rare and Endangered Plants of California" notes that the Alkali Mariposa Lily (Calochortus Striatus) occurs within the plan area. This plant should be included in the DEIS (plan) in order to require special management attention. The Mouse Buckwheat (Erigonum Nudum var. murinum), Hockett Meadows Lupine (Lupinus Culbertsonii), and Shevock's Monkeyflower (Mimulus Shevockii) may occur within the plan area. These plants should be included in the Forest inventory if identified within the Forest boundary.

Thank you for the opportunity to review the proposed Land and Resource Management Plan (Proposed Forest Plan).

Very truly yours,

RANDALL L. ABBOTT, Director  
Planning and Development Services

*Margaret A. Primer*  
By Margaret A. Primer  
Assistant Planner

JFW

Sequoia Forest supervisor  
April 28, 1986

Page 2

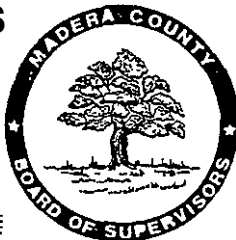
Kern County - Department of Planning and Development Services

Resolution:

1. Please see Chapter 3.D.3a of the FEIS and Chapter 3.B.3a of the Plan for revision and clarification.
2. Please see Chapter 3.D.3a of the FEIS for revisions. The base year has been noted. Our copy of the 1980 census Summary Tape Files (STF) 1 and 3 for Kern County, show 77 percent white and 22 percent Hispanic. However, STF 1 shows 5,981 American Indians while STF 3 shows 6,852 American Indians. Since STF 1 is based on the 100 percent count rather than the sample, we have revised our text to be consistent with the former.
3. Please see Chapter 3.D.3c of the FEIS and Chapter 3.B.3c of the Plan for revision.
4. The scope of the Plan and DEIS is broad and geologic hazards are noted. For more detailed project work, the Geological Maps from the State Department of Conservation are used. Any local faults are identified, and specific hazards are addressed.
5. Please see Table 3.2 Chapter 3 of the Plan, and Table 3.5 Chapter 3 of the FEIS, for a complete list of wildlife species found on the Sequoia National Forest that are listed by Federal and State authority. To the best of our knowledge the yellow-billed cuckoo and osprey do not reside on the National Forest and we do not have any jurisdiction along those portions of the Kern River where they are found to reside.
6. None of the three species of plants that you listed have been identified within the Forest boundary: and, hence, are outside the scope of the Plan. Please refer to the sensitive plant section of Chapter 3 in the Plan for a complete listing of sensitive plants that occur on the Sequoia National Forest. They are also listed in Chapter 3 of the FEIS under a similar heading.

**BOARD OF SUPERVISORS**

J GORWN KENNEDY, District 1  
ALFRED GINSBURG, District 2  
GAIL HANHART McINTYRE, District 3  
JESS LOPEZ District 4  
DON OARNELL District 5



862  
**MADERA COUNTY**

5-16-86

WANDA BRADLEY, Clerk of the Board

MADERA COUNTY GOVERNMENT CENTER  
209 WEST YOSEMITE AVENUE  
MADERA, CALIFORNIA 93637  
(209) 675-7700

May 15, 1986

California Licensed  
Foresters Association  
P.O. Box 1516  
Pioneer, California 95666

Gentlemen:

On May 13, 1986, the Madera County Board of Supervisors  
unanimously supported the MKT Market Alternative Relating to the  
Sequoia Forest Plan.

Please keep us informed on this matter.

Sincerely,

A handwritten signature in cursive script that reads "Don Darnell".

DON DARNELL  
Chairman

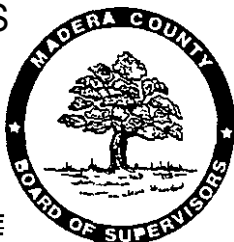
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BOARD OF SUPERVISORS

MADERA COUNTY

J GORWN KENNEDY District 1  
ALFRED GINSBURG, District 2  
GAIL HANHART McINTYRE, District 3  
JESS LOPEZ District 4  
DON DARNELL District 5



WANDA BRADLEY, Clerk of the Board  
MADERA COUNTY GOVERNMENT CENTER  
208 WEST YOSEMITE AVENUE  
MADERA, CALIFORNIA 93637  
(209) 675-7700

March 11, 1986

James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 W. Grand Avenue  
Porterville, California 93251

Dear Mr. Crates:

This letter is in response to your request for public comment concerning the proposed management plan for the Sequoia National Forest.

1- The Madera County Board of Supervisors are particularly concerned about the social and economic consequences that will result from your decision concerning the amount of timber to be harvested in the Sequoia National Forest. It is important that you recognize that your decisions affect more people and businesses than just those firms and their employees who harvest and process timber.

1- It is our understanding that in the proposed plan you have considered only the people directly employed in the timber industry in Tulare County. No analysis or consideration was given to the broader economic and social implications that result from the timber harvest in the Sequoia National Forest. Timber harvesting ripples out and touches counties and Communities far beyond the forest.

2- The needs of all who are impacted by your decisions should be determined. Restrictive and unreasonable limits placed on the amount of timber that may be harvested hurt far more people than the 1% you refer to in your management plan.

2- The timber harvest on the Sequoia National Forest should be maximized over the next decade. It is not only necessary from an economic point of view but also from a social point of view to sustain and enhance our quality of life.

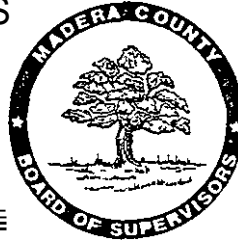
Sincerely,

DON DARNELL  
Chairman

DD:kt

BOARD OF SUPERVISORS

J GORDON KENNEDY, District 1  
ALFRED GINSBURG, District 2  
GAIL HANHART McINTYRE, District 3  
JESS LOPEZ, District 4  
DON DARNELL, District 5



MADERA COUNTY

WANDA BRADLM, Clerk of the Board  
MADERACOUNTYGVERNMENTCENTER  
209 WEST YOSEMITE AVENUE  
MAOERA, CALIFORNIA 93637  
(209) 675-7700

File No: 86099  
Tape No: 1-319  
Date: March 11, 1986

In the Matter of AUTHORIZATION FOR CHAIRMAN TO SIGN LETTER TO  
THE SEQUOIA NATIONAL FOREST REGARDING TIMBER  
HARVESTS.

Upon motion of Supervisor Kennedy, seconded by  
Supervisor Ginsburg, it is ordered that the attached be and it is  
hereby adopted as shown and the Chairman is hereby authorized to  
sign.

I hereby certify that the above order was adopted by the  
following vote, to wit:

AYES: Supervisors Kennedy, Ginsburg, Lopez and Darnell.  
NOES: None.  
ABSTAIN: None.  
ABSENT: Supervisor Hanhart McIntyre,

Distribution:  
CAO  
County Counsel  
Sequoia National Forest  
Senator Cranston  
Senator Wilson  
Congressman Pashayan  
Congressman Coelho  
Congressman Lehman  
Senator Maddy  
Assemblyman Jones  
Sequoia Forest Industries

ATTEST: WANDA BRADLEY, CLERK  
BOARD OF SUPERVISORS  
By *Wanda Bradley*  
Deputy Clerk

Madera County Board of Supervisors

Resolution:

1. In our assessment of local economic effect, **we** focused on the direct economic effects of **our** Plan alternatives. Generally, these are clear and are traceable to the management decisions. In contrast, the indirect efforts you mention, while traceable in part to the management decisions, are not separable from the effects of decisions regarding other forested lands. Hence they are not susceptible to comparable analysis.
2. Since the allowable sale quantity (ASQ) will approximate historic levels, existing levels of outputs will be maintained. To the extent that this level of output contributes to Madera County's quality of life, that quality of life will be sustained.

1481

# COUNTY OF KINGS BOARD OF SUPERVISORS

JOE HAMMOND  
CORCORAN DIST II

GOVERNMENT CENTER  
209 - 582 3211

HANFORD,

CALIFORNIA 93230  
E M 2362

DOYLE DAVIS  
ARMONA DIST IV

ABEL J MEIRELLES  
HANFORD DIST V

CHAIRMAN  
DOM FARUZZI  
NORTH HANFORD DIST III

VICE-CHAIRMAN  
LES BROWN  
LEMOORE DIST I

ROSIE MARTINEZ  
CLERK OF THE BOARD

March 25, 1986

James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, California 93257

Re: Sequoia National Forest  
Draft Management Plan

Dear Mr. Crates:

This letter is in response to your request for public comment concerning the proposed management plan for the Sequoia National Forest.

1- The Kings County Board of Supervisors at their meeting this date adapted Resolution No. 86-029 in support of the Forest Service's decision to defer a recommendation on Segment 1 which effects the proposed location of the Rodgers Crossing Project. A copy of the Resolution is attached.

Kings County is located in an area of water deficiency and groundwater overdraft. *The County*, therefore, has been actively involved in acquiring additional sources of water supplies for its citizens.

We are one of thirty contractors for a water supply from the California Aqueduct and a member of the Mid-Valley Water Authority whose goal is to acquire and transport to this area a water supply from the Central Valley Project.

Additional conservation facilities on rivers tributary to the County together with importing more water and capturing more run-off from the Sierra watershed will be necessary to resolve the water deficiency problem.

We appreciate and support your decision on Segment 1 of the Kings River.

Yours truly,



Dominic Faruzzi  
Chairman of the Board of Supervisors

Attachment  
Copy to Jeffrey L. Taylor

1481

BEFORE THE BOARD OF SUPERVISORS OF THE COUNTY OF KINGS  
STATE OF CALIFORNIA

IN THE MATTER OF  
A NATIONAL FOREST  
DRAFT MANAGEMENT PLAN

RESOLUTION NO. 86-029

WHEREAS, the U. S. Forest Service has prepared the Sequoia National Forest Land and Resources Management Plan, and Draft Environmental Impact Statement, and

WHEREAS, the U.S. Forest Service has deferred a recommendation on the Wild and Scenic River status of Segment 1 of the Kings River, Pine Flat Reservoir to Garlic Meadows Creek, until the Rodgers Crossing Project study has been completed;

NOW, THEREFORE, BE IT RESOLVED, that the Board of Supervisors of the County of Kings supports the U. S. Forest Service decision to defer a recommendation on the Wild and Scenic River Status of Segment 1 of the Kings River until the Rodgers Crossing Project study has been completed.

THE FOREGOING RESOLUTION was passed and adopted by the following vote of the Board of Supervisors of the County of Kings this 25th day of March, 1986.

AYES: SUPERVISORS: HAMMOND, DAVIS, MEIRELLES, FARUZZI  
NOES: SUPERVISORS: NONE  
ABSENT: SUPERVISORS: BROWN

/s/ DOMINIC FARUZZI

Chairman of the Board of Supervisors  
County of Kings, State of California

WITNESS my hand and seal of said Board of Supervisors this 25th day of March, 1986.

/ s ROSIE MARTINEZ

Clerk of said Board of Supervisors

25th March 1986  
Rosie Martinez

Kings County Board of Supervisors

Resolution:

1. Enactment of legislation in November 1987 resolved the matter of the Rodgers Crossing Dam proposal. While the Kings River Wild and Scenic River Act did not designate that portion of the river as Wild and Scenic, it did establish a Kings River Special Management Area. Specific wording in this legislation precludes dam and diversion construction without the specific approval of Congress.

# TULARE LAKE BASIN WATER STORAGE DISTRICT

ESTABLISHED 1926  
1109 WHITLEY AVENUE • PHONE (209) 9924127  
CORCORAN, CALIFORNIA 93212

March 24, 1986

James A. Crates  
Forest Supervisor  
SEQUOIA NATIONAL FOREST  
900 West Grand Avenue  
Porterville, California 932.57

Re: Sequoia National Forest  
Draft Management Plan

Dear Mr. Crates:

The District has reviewed the referenced Plan and desires that this letter be a part of the record for public comment.

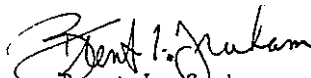
1- Specifically, our comments are directed to the Section on the Kings River. We are in total support as to the decision to defer any recommendation on Segment 1 (Pine Flat Reservoir to Garlic Meadow Creek), until after the Rodgers Crossing Dam Project Study has been completed.

As noted in the SNF Draft Environmental Impact Statement, the Tulare Lake Hydrologic Basin is water deficient and currently experiencing a groundwater overdraft in excess of 1 million acre feet annually. The Kings River is one of several rivers that provide local surface and groundwater to the Basin. By increasing conservation on these rivers, the existing deficiency can be eased.

This District is one of 30 public entities Contracting for water from the State via the California Aqueduct. However, the State Project water only augments our local supplies and, therefore, does not meet all our total needs. Additional conservation facilities on the Kings River are absolutely necessary to balance the groundwater conditions.

Please accept our appreciation and support of the only logical decision to defer a recommendation on Section 1 until after the Rodgers Crossing Project Studies is complete.

Yours truly,

  
Brent L. Graham  
Manager

BLG:cc

■ COMPRISING TULARE LAKE BASIN IN KINGS AND TULARE COUNTIES, CALIFORNIA ■

## Tulare Lake Basin Storage District

### Resolution:

1. Enactment of legislation in November 1987 resolved the matter of the Rodgers Crossing Dam proposal. While the Kings River Wild and Scenic River Act did not designate that portion of the river as Wild and Scenic, it did establish a Kings River Special Management Area. Specific wording in this legislation precludes dam and diversion construction without the specific approval of Congress.



POST OFFICE BOX 1236  
CORCORAN, CALIF 93212

PHONE (209) 992-5642  
CORNER UTICA & 10TH AVE

## ANGIOLA WATER DISTRICT

February 28, 1986

James A. Crates, Forest Supervision  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, California 93257

Dear Mr. Crates:

I am writing this letter, on behalf of the landowners and water users of the Angiola Water District, in response to your request for public comment concerning the proposed management plan for the Sequoia National Forest.

We wish to express our support for your decision regarding the Rogers Crossing area of the Kings River. We feel that it only makes sense to differ any decision on this area of the Kings until after the Rogers Crossing Dam project study has been completed.

It is a well known fact that the Southern San Joaquin Valley has a serious groundwater overdraft problem. A problem which will only get worse in the future unless some long term solutions are worked out to meet the demands of a growing economy. While no one solution will solve the overdraft problem, a combination of conservation, importing more surface water and fully developing our local run-off from the Sierra watershed will be necessary to have any realistic chance of resolving the problem.

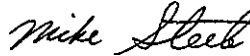
Most importantly we feel that it would be a mistake to overlook any watershed in the Sierra which might be developed reasonably. The Kings River watershed is one of the largest in the Southern Sierra and while Rogers Crossing alone won't solve the problem of overdraft it could make a major contribution to the solution. I think we all recognize that water is essential to life and is the economic foundation of the San Joaquin Valley.

Mr. James A. Crates  
February 28, 1986  
Page Two

The life-style we now enjoy in the central valley depends on an adequate water supply. If we fail to develop additional water storage reservoirs and are not able to keep pace with demand, serious social and economic consequences will result.

Thank you for your support and response to the needs of the San Joaquin Valley's people.

Sincerely yours,



Mike Steele,  
Manager/Secretary

ANGIOLA WATER DISTRICT

cc Representative Pashayan  
Representative Lehman  
Assemblyman Costa  
Senator Vuich

DMS/cs

## Angiola Water District

### Resolution:

1. Enactment of legislation in November 1987 resolved the matter of the Rodgers Crossing Dam proposal. While the Kings River Wild and Scenic River Act did not designate that portion of the river as Wild and Scenic, it did establish a Kings River Special Management Area. Specific wording in this legislation precludes dam and diversion construction without the specific approval of Congress.

**Kings River Conservation District**

4886 E Jensen Avenue ■ Fresno, California 93725  
Telephone: (209) 237-5567

File: 518.00

February 12, 1986

Mr. James A. Cretes, Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, California 93257

Dear Mr. Crates:

This letter is in response to the Forest Service's request for public comment concerning the Sequoia National Forest Land and Resource Management Plan - Draft Forest Plan and the Draft Environment Impact Statement (DEIS).

- 1- The Board of Directors of the Kings River Conservation District (KRC D) on February 11, 1986 adopted a resolution in support of the Forest Service decision that a recommendation on the Wild and Scenic River status of Segment 1 of the Kings River, Pine Flat Reservoir to Garlic Meadows Creek, be deferred until the Rodgers Crossing Project Study has been completed.

KRC D is appreciative of the Forest Service's cooperative attitude by recognizing KRC D's responsibility to fulfill its obligation to the people living within the KRC D Service Area. Created by State law in 1951, KRC D is a public agency that is charged with:

- a) the storage, conservation, distribution and sale of water
- b) the development, distribution and sale of electric power
- c) the drainage, reclamation, and protection of land

Due to social and political change that has occurred since the formation of the District, the public perception of public agencies like KRC D has resulted in a broader definition of responsibility for the Directors of KRC D and that is, they are the managers and stewards of a natural resource of extreme importance to the people - water. **Thus,** the KRC D shares the common goal with the Forest Service of

Division I NORMAN B WALDNER Dinuba • Division II MASARU YOSHIMOTO Fowler  
Division III ALVIN J QUIST Fresno • Division IV GEORGE D McKEAN Riverdale  
Division V HUGH V JOHNS Hanford • Division VI EDWIN H HOWE, Stratford  
At Large, GARVIN M WHITE Fresno

GEORGE D McKEAN President • MASARU YOSHIMOTO Vice President  
JEFF L TAYLOR General Manager Chief Engineer Secretary  
GEORGE L MARTIN Auditor Controller • WILLIAM F DOCKER, Attorney At Law

Mr. James A. Crates, Forest Supervisor  
February 12, 1936  
Page 2

management of natural resources in a responsible manner to benefit all the people.

While the brief description of surface water resources for the Tulare Lake Basin and the current groundwater overdraft problem as noted in the DEIS is sufficient evidence for deferring a Forest Service decision concerning Segment 1 of the Kings River, it is important to acknowledge that the Tulare Lake Easin is only part of a problem that confronts people valley wide. The depleting groundwater supply and the concurrent reduction in water quality extends bevond the Tulare Lake Basin.

The KRCD service area covers 1.1 million acres and includes portions of Fresno, Kings and Tulare Counties. The immediate responsibility of course is the service area. We have learned, however, that we cannot plan nor operate in a vacuum. For example, one of the most serious groundwater overdraft problems exists in the Raisin City/Caruthers area. This area is outside the KRCD service area yet the wells in that area draw groundwater from under the KRCD service area. KRCD must of necessity take a valley wide view and work with many other agencies and organizations if there is to be any hope of finding solutions.

We are particularly pleased that the DEIS recognizes not only the importance of imported water to our area but also the significance of conserving local water supplies to afford cost and energy savings. Development of major water projects in the State of California has come to a virtual standstill. Changes have occurred over the last 20 years in the political and economic environment that require a new direction in water development. The state, and especially the federal government, will no longer fully underwrite the financing of water projects. Local government entities like the KRCD are going to have to do more on their own. Water sufficient areas like Northern California are now reluctant to give up their surplus water unless the water deficient areas in the state have made a good faith effort to resolve their water deficiency problem by conserving as much of the local water as is economically possible

It is generally acknowledged by most experts that additional water projects must be developed in order to sustain our current agricultural production. This means there will be no new land brought into agricultural production by adding to the existing system of dams 2nd reservoirs in the valley. In other words if we wish to maintain the economy and the present quality of life that we now enjoy in this great valley it will be necessary to build more water conservation facilities. The comment in the DEIS, page 3-36, concerning additional acres being brought

Mr. James A. Crates, Forest Supervisor  
February 12, 1986  
Page 3

under irrigation by the year 2000 may be correct for the entire Tulare Basin but it is not representative of the Kings River Service Area; which is currently 95% developed to its potential irrigable area. Our projections are that the total irrigated area in the KRCD service area by the year 2020 will be about the same as it is today.

Developing an additional supply of surface water for the Southern San Joaquin Valley can be accomplished through one or more of the following methods: 1) importing additional water from outside the valley; 2) capturing more of the run-off water from the Sierra and the Sequoia watersheds; and 3) more efficient use of the existing surface water supply. Most experts agree that a combination of the foregoing methods will be needed to solve the problem.

No new surface water storage projects have been constructed on local streams since Terminus Dam on the Kaweah River was completed in 1962. The aggregate active storage capacity of the San Joaquin, Kings, Kaweah, Tule and Kern Rivers is only about 60 percent of the aggregate average annual runoff of these streams. Furthermore, dams along the foothill line on these streams were built by the U.S. Army Corps of Engineers with flood control as a primary purpose; therefore, much of the storage is reserved to control flood flows. The remaining conservation storage is used primarily for seasonal regulation of flows; long-term carryover storage is provided by the groundwater basin.

The fact that no new surface water storage facilities have been added in over two decades coupled with the depletion of the groundwater storage prompted the KRCD to study the feasibility of alternatives that were identified in the "Master Plan Study for the Kings Service Area" in December 1974. This study identified six specific areas for consideration and further study. Two of the six recommendations, the Pine Flat Power Plant and a reservoir at Dinkey Creek have been studied and were approved. The Pine Flat Power Plant was completed in 1983 while construction at Dinkey Creek will begin in 1986.

Three of the six recommendations are yet to be studied in depth, with Rodgers Crossing studies being first, followed by studies of raising the height of Pine Flat Dam and building a dam on Mill Creek upstream from its confluence with the Kings River. In addition, the district is looking for other areas on the Kings River as potential candidates for study to determine their feasibility for water storage facilities.

Mr. James A. Crates, Forest Supervisor  
February 12, 1986  
Page 4

The recommendation by the Sequoia National Forest to defer a decision concerning the Rodgers Crossing area on the Kings River is responsive to the critical need to explore a multiplicity of possibilities to develop additional water conservation projects. The recommendation recognizes that Forest Service decisions carry an impact that goes far beyond the boundaries of a particular forest. Again, the KRCD supports the recommendation.

To demonstrate that there are more people concerned about the water problem besides KRCD, I have taken the liberty of enclosing copies of resolutions of support for the Rodgers Crossing studies that were passed by various organizations and local government bodies. These clearly demonstrate that the Forest Service and KRCD are not alone in trying to deal with a problem that has serious social and economic ramifications.

Should you or your staff desire additional information or have any questions, please do not hesitate to contact me. The KRCD Board of Directors and the entire staff welcome the opportunity to work with you.

Sincerely yours,

Jeff L. Taylor  
General Manager-Chief Engineer

JLT/ar

Enclosures. As Stated

BEFORE THE BOARD OF DIRECTORS  
OF THE KINGS RIVER CONSERVATION DISTRICT  
FRESNO, CALIFORNIA

RESOLUTION NO. 86-8

WHEREAS, the U.S. Forest Service has prepared the Sequoia National Forest Land and Resources Management Plan, Draft Forest Plan and Draft Environmental Impact Statement, and

WHEREAS, the U.S. Forest Service has deferred a recommendation on the Wild and Scenic River status of Segment 1 of the Kings River, Pine Flat Reservoir to Garlic Meadows Creek, until the Rodgers Crossing Project study has been completed,


NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Kings River Conservation District supports the U.S. Forest Service decision to defer a recommendation on the Wild and Scenic River Status of Segment 1 of the Kings River until the Rodgers Crossing Project study has been completed.

THE FOREGOING RESOLUTION was passed and adopted by the following vote of the Board of Directors of the Kings River Conservation District this 11th day of February, 1986.

AYES: Directors Howe, Johns, McKean, Quist, Waldner, White and Yoshimoto

NOES: None

ABSENT: None

  
President

ATTEST.

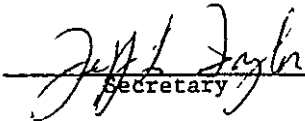
  
Secretary



SECRETARY'S CERTIFICATE

I, Jeff L. Taylor, Secretary of Kings River Conservation District, hereby certify that the foregoing is a full, true and correct copy of a resolution duly adopted at a regular meeting of the Board of Directors of said District duly and regularly held at the regular meeting place thereof on the 11th day of February, 1986, of which meeting all of the members of said Board of Directors had due notice and at which a majority thereof were present.

WITNESS my hand and the seal of Kings River Conservation District this 11th day of February, 1986.

  
Secretary

(Seal)

ORGANIZATIONS AND LOCAL GOVERNMENT BODIES  
WHO HAVE PASSED RESOLUTIONS SUPPORTING  
THE FEASIBILITY STUDIES OF WATER STORAGE  
FACILITIES AT RODGERS CROSSING ON THE KINGS RIVER

ORGANIZATIONS:

Fresno City and County Chamber of Commerce - Sept. 30, 1985  
Raisin Bargaining Association of the San Joaquin Valley - Dec. 9, 1985  
Fresno County Farm Bureau - July 11, 1985

LOCAL GOVERNMENT:

Fresno County Board of Supervisors - Oct. 1, 1985  
Kings County Board of Supervisors - Oct. 8, 1985  
Madera County Board of Supervisors - Sept. 3, 1985  
Tulare County Board of Supervisors - July 9, 1985  
Clovis City Council - Sept. 30, 1985  
Corcoran City Council - Sept. 16, 1985  
Dinuba City Council - Sept. 10, 1985  
Hanford City Council - Oct. 15, 1985  
Lemoore City Council - Sept. 3, 1985  
Reedley City Council - July 16, 1985  
Sanger City Council - Sept. 17, 1985  
Selma City Council - Sept. 3, 1985

## Kings River Conservation District

### Resolution:

1. Enactment of legislation in November 1987 resolved the matter of the Rodgers Crossing Dam proposal. While the Kings River Wild and Scenic River Act did not designate that portion of the river as Wild and Scenic, it did establish a Kings River Special Management Area. Specific wording in this legislation precludes dam and diversion construction without the specific approval of Congress.

ALTA  
IRRIGATION  
DISTRICT

291 NORTH L STREET  
P.O. BOX 715  
DINUBA CA 93618  
509 591 0800

BOARD OF DIRECTORS  
NORMAN B. WALDNER  
LEONARD F. WILEMAN

BEN AGRIFOGLIO  
FRANK M. HARKENTIN  
JAMES MUCKABAY  
FRANK WAPHEIM  
LEONARD W. COLUPAN  
CAROL WALKER

James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 W. Grand Ave.  
Porterville, CA 93257

Dear Mr. Crates

The **Alta** Irrigation District (AID) encompasses approximately 129,000 acres, principally in Fresno and Tulare Counties. Within the District there are approximately **4,000** small farming operations with the average size being less than **40** acres and the cities of Dinuba and Reedley and many small unincorporated communities.

It **is** an economic necessity to the farmers and developing communities within the District to **provide** low cost water for farming operations and to recharge underground aquifers. At the present time there is **a** thirty thousand **acre** feet groundwater overdraft within the AID service area.

1 -

It has been well documented that since 1978 more than four million acre feet of Kings River water has flowed to the ocean as flood waters. Existing reservoirs on the Kings River are not able to retain all the runoff waters from wet or above normal years. As **a** result, additional storage **on** the Kings River **is a** viable solution that needs to be earnestly studied. We would like to express our support for your decision concerning the Radgers Crossing Area on the **Kings** River. It seems to make good **sense** to study the area in question before making **a** recommendation which could have far reaching implications for future generation within the **San** Joaquin Valley.

Thank **you** for your support and response to the needs of the people in the **San** Joaquin Valley.

Sincerely,

ALTA IRRIGATION DISTRICT

*Norman B. Waldner*  
Norman B. Waldner  
President

NBW,jmc

Enc. 1



## Alta Irrigation District

### Resolution:

1. Enactment of legislation in November 1987 resolved the matter of the Rodgers Crossing **Dam** proposal. While the Kings River Wild and Scenic River Act did not designate that portion of the river **as** Wild and Scenic, **it** did establish a Kings River Special Management Area. Specific wording in this legislation precludes **dam** and diversion construction without the specific approval of Congress.

# Riverdale Irrigation District

P O Box 683

RIVERDALE, CALIFORNIA 93656

March 12, 1986

James A Crates - Forest Supervisor  
Sequoia National Forest  
900 W Grand Ave.  
Porterville, CA 93257

Dear Mr. Crates:

1- In response to your request for public comment concerning the proposed management plan for the Sequoia National Forest, the Board of Directors of the Riverdale Irrigation District want to express their support for your decision concerning the Rodgers Crossing Area on the Kings River. It would be wise to wait for any recommendation for this part of the river until after the Rodgers Crossing Dam Project Study has been completed.

Water is a precious commodity for Central California. The future of agricultural and life itself depends on water. The development of additional water storage facilities must be done to keep pace with demand.

Thank you for your support.

Sincerely yours,

RIVERDALE IRRIGATION DISTRICT

*Kimberley Mayfield*  
Kimberley Mayfield, Secretary

## Riverdale Irrigation District

### Resolution:

1. Enactment of legislation **in** November 1987 resolved the matter of the Rodgers Crossing Dam proposal. **While** the Kings River Wild and Scenic River Act did not designate that portion of the river as Wild and Scenic, **it** did establish a Kings River Special Management Area. Specific wording in this legislation precludes **dam** and diversion construction without the specific approval of Congress.



# City of Dinuba

30

*"Rainland U.S.A."*

405 EAST EL MONTE WAY  
DINUBA CALIFORNIA 93618

March 5, 1986

PHONES

City Hall/Finance	209/591-1203
Personnel	209/591-1621
Purchasing/Recreation	209/591-2345
Building/Planning	209/591-1980
Public Works/Parks	209/591-3725
Fire/Ambulance	209/591-3152
Police	209/591-6130

Mr. James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 W. Grand Avenue  
Porterville, CA 93257

Dear Mr. Crates

I am sending you these brief comments in response to your request for public comment on the proposed management plan for the Sequoia National Forest.

1- As ~~spokesperson~~ for the Community of Dinuba, I am concerned that a sufficient amount of National Forest Lands timber will be allowed to be harvested to assure the continued economic vitality of the woods products industry. This industry provides many jobs and benefits in our community and any major cut back could seriously affect the quality of life in our community.

1- In summary, I would encourage you to consider the local economic effects in determining the size of the harvest in order to avoid detrimental social and economic consequences to our community and others who depend on the wood products industry.

Thank you for allowing me to comment on this issue.

Sincerely,

*Barbra Lankford*  
Barbra Lankford  
Mayor

cc Congressman Chip Pashayan  
James H. Anthony  
Assemblyman Bill Jones  
Senator Rose Ann Vuich

i



City of Dinuba

Resolution:

1. As shown in the Record of Decision, local economic effects were one of several factors considered in determining the Forest's allowable sale quantity (ASQ). The average annual volume harvested for the last 27 years was 92.0 MMB with a range from 57 MMB in 1982 to 125 MMB in 1977. The projected annual timber harvest is 101.6 MMB (ASQ is 97 MMB of green timber and 4.6 MMB salvage). Since the future levels under this Plan will approximate the historical levels, no adverse economic change is expected in the local timber industry and related businesses.



City of La Mirada  
Community Services

February 24, 1986

Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, Ca 93257

1- As a white water rafting enthusiast, I am extremely concerned over the plans to dam the Kings River at Rodgers Crossings. I have rafted this section of the river for the past four years and found it to be one of the most enjoyable rafting areas in the California area. I strongly urge the forest department to not allow a dam on this section of the river.

2- The section of river above Kirch Flat Campground offers a multitude of recreational activities and experiences that are becoming harder to find within driving distance from the Los Angeles area. I have worked in the recreation field for over twenty years providing the type of activities and experiences that make life worth living. I realize that this is a very biased statement but without leisure time activities that are challenging and rewarding, life would not be worth the effort we all put forth. The group that I go rafting with on the Kings, approximately 75 adults and children, agree that white water rafting provides a meaningful, challenging and most rewarding recreational experience. It is also within a five hour drive of Los Angeles. To dam this section of river would be a terrible shame. It would eliminate one of the few wild sections of raftable rivers left in California and destroy a variety of other outdoor recreational experiences such as fishing, camping, hiking along a natural river, etc.. I understand that a dam could create several other activities (boating, lake fishing) but with Lone Pine Reservoir within a very short distance that provides those activities, I don't think that additional reservoir type activities will be needed. I also understand that a control situation can be created by the dam to allow continued rafting below the dam but this seems like an attraction at Disneyland versus rafting the white water of a wild, natural river.

3- Again, I urge you to reconsider any thoughts on damming the Kings River but instead make it part of the Wild and Scenic category of the forestry system. Please, on behalf of the 75 plus rafters of the "Brea Rafting Team" place this section of river in the Draft Forest Plan and protect it within the Wild and Scenic River System. It is most definitely a public resource that is worth preserving for the future generations of Californians.

Thank you,

RICHARD C. PEPIN, Director

Kling Center 12900 Bluefield Avenue. La Mirada, California 90638 • (213) 943-7277

Contracted with People Helpers Inc

---

City of La Mirada

Resolution:

1-3 Legislation (November 1987) designating the Kings River as a Wild and Scenic River is now law. This legislation establishes direction for future management of this area. Management actions will be detailed in a management plan, to be prepared within **3** years. River rafting will be one of the activities encompassed by this management plan and may or may not change from the existing situation. Public involvement will be an important aspect of this planning process.



**Tulare County  
Economic Development  
Corporation**

9303 Arcort Drive  
Visalia California  
93277  
209 651 1244

April 25, 1986

Mr. James A. Crates  
Forest Supervisor  
Sequoia National Forest  
900 West Grand Avenue  
Porterville, CA 93257

Dear Mr. Crates.

The Executive Board of the Tulare County Economic Development corporation (EDC), representing the County of Tulare, all of the incorporated cities in the County, and the Tulare County Private Industry Council, has reviewed the Sequoia National Forest Land and Resource Management Plan.

After chat review, the Executive Board of the EDC unanimously supports the "Market Alternative" as being the best approach to maintain jobs and the economic health of our forest industries and balancing timber interests with recreation and wilderness protection.

Thank you for the opportunity to comment on the Draft Environmental Impact Statement.

Sincerely,

Edward F. Graves  
Executive Director

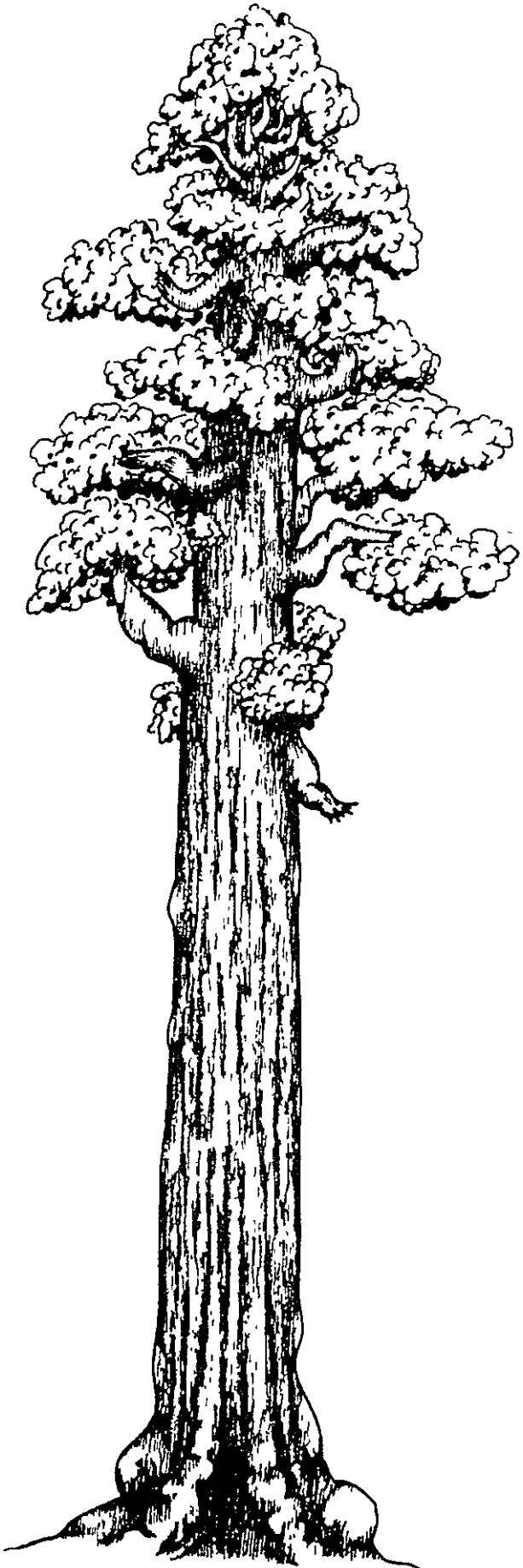
EPG:pcp

Tulare County Economic Development Corporation

Resolution:

1. While the Market Alternative may be good from an economic standpoint, we believe the Preferred Alternative represents a better mix of economic and noneconomic **values**.





Section 8  
RESPONSE TO THE  
CHEC REPORT

The summary of the Cascade Holistic Economic Consultants (CHEC) "Review of the Draft Sequoia Forest Plan and EIS" is reprinted below. Four additional points (12-15) were added to include topics included in the comment yet excluded from CHEC's summary. Forest Service resolutions follow. Numbers added to the margins of the letter correspond to the resolutions.

## REVIEW OF THE DRAFT SEQUOIA FOREST PLAN AND EIS

### Introduction and Summary

The Sequoia National Forest published its draft forest plan and environmental impact statement (EIS) in November 1985. CHEC was retained by the Kern Valley Wildlife Association to review these documents. CHEC visited the Sequoia Forest Supervisor's office in January 1986 to examine FORPLAN runs, background planning data, timber sale information, and other documents relating to the Plan. This report is based on those reviews.

CHEC identified a number of serious problems with the information used in the planning process. These included:

- 1- Timber yield tables overestimate the future growth of both existing and regenerated stands. As a result, proposed timber harvests may be unsustainable in the long-term.
- 2- A side-effect of the yield tables was an underestimate of timber rotation ages. An increase in rotation ages to the legal minimum could affect harvest levels by reducing the amount of "old-growth" (i.e., older than rotation age). The volume of old-growth is a major factor limiting timber sale levels.
- 3- Planners computed harvest levels which would never decline in terms of cubic feet, and then assumed that board foot sales would also never decline. In fact, the board foot:cubic foot ratio, which depends on the size of the trees, will decrease as existing older timber is converted to younger and smaller timber. This will lead to a decline in board foot sales in the future, which may be a violation of the law.
- 4- Planners also overestimated timber prices by about 50 percent. This led FORPLAN, the computer program used to assist planners, to overestimate the number of acres which could profitably be managed for timber. In fact, CHEC found that as much as half of all timber sold by the Sequoia in recent years lost money, and that investments in future timber stands are likely to produce less than two percent rate of return.
- 5- In addition, planners unrealistically assumed that timber prices would dramatically increase in the next 10 years from levels which were already too high. Among other things, this led FORPLAN to allocate tens of thousands of acres of land to timber which are not needed to meet first-decade harvest objectives.
- 6- Planners failed to show that clearcutting is the optimal method of harvest in those areas where it is proposed. In particular, planners

failed to consider that alternatives to clearcutting may reduce the future need for future herbicide applications.

- 7- The yield table for spotted owls in FORPLAN is completely unrealistic, indicating that timber as young as 70 years old can provide satisfactory spotted owl habitat. Although spotted owls are supposed to be an old-growth "indicator species," the yield table actually provides an incentive to rapidly liquidate old-growth.
- 8- Forest Service estimates of water values are greatly exaggerated. Since planners assumed that timber harvests in certain areas lead to greater water yields, FORPLAN proposes to harvest timber which otherwise loses money simply to gain this imaginary water value,
- 9- Current and proposed grazing levels on the Sequoia are far in excess of grazing capacity. Planners failed to evaluate the efficiency of programs aimed at maintaining or increasing grazing levels; such programs are extremely costly and produce little or no gain.
- 10- Planners accepted the goal of promoting local economic stability but failed to evaluate its cost. CHEC estimates that the marginal cost of one timber-related job on the Sequoia is at least \$8,000 per year, and one grazing-related job is at least \$10,000 per year. Given that timber values are lower and marginal grazing costs much higher than those used by planners, these figures are conservative.
- 11- The EIS fails to evaluate the consequences of the proposed doubling of timber harvests on the Cannell Meadows Ranger District, from 15.8 million board feet to 31.7 million board feet (Plan pages C-8 - C-10). This action requires a much more detailed analysis, especially in view of planners' apparently incorrect conclusion that the Cannell Meadows District provides no potential spotted owl habitat.

With the exception of the last problem, most of these errors can be corrected by improving the FORPLAN model and other data between the draft and final EIS. These corrections may require significant changes in the formulation of alternatives, however, and the results of new benchmark and alternative FORPLAN runs may indicate that the preferred alternative should be dramatically altered.

The doubling of harvests on the Cannell Meadows Ranger District may require more drastic action. The local environmental effects of this proposal should be detailed in a separate environmental impact statement.

(The following 4 points were included in CHEC's comment and not in their summary.)

12. New roads will not provide any new roaded or motorized recreation value. While new roads may be used by recreationists, such use would merely be transferred from one part of the Forest to another. The costs of new timber-related roads proposed in the Plan are, therefore, attributable solely to timber management, and not to recreation.



13. It is imperative that data be collected indicating where productive and unproductive soils exist on the Forest. No data, however, exists on the exact locations of soil types on the Forest, according to a 1984 AMS update. Thus, the Sequoia National Forest may be unable to insure that, as Section 6(g)(2)(E) of NFMA requires, "Timber will be harvested from National Forest system lands only where soil, slope, or other watershed conditions will not be irreversibly damaged."

14. The monitoring program included with the Sequoia Plan is extremely weak. Although it requires periodic assessments of plan implementation, no actions are required should some aspect of the Plan be found to be failing. For example, the monitoring program requires managers to determine the success of reforestation, release, and timber stand improvement (pre-commercial thinning), but imposes no requirements if these activities are either unsuccessful or unfunded.

15. The proposed Peppermint Mountain Resort was considered fixed in all alternatives of the Forest Plan EIS, which was prepared concurrently with the EIS for the ski resort.

## FOREST SERVICE RESOLUTION

To: Kern Valley Wildlife Association

**Thank** you for your letter of 2/4/86 forwarding the review of the Draft Sequoia Forest Plan and EIS performed by CHEC. I will take this opportunity to respond to major issues raised in this review.

### TIMBER GROWTH AND YIELD

The points relating to yield tables and overestimation of future growth have been addressed in a letter from Deputy Regional Forester Ray Weinmann to Mr. Randal O'Toole dated November 21, 1986. This letter is part of the planning record. It is on file and available to anyone wishing to review it.

### LONG-TERM SUSTAINED YIELD (TIMBER)

The criticism of using cubic foot estimates in LISY calculations is apparently based on a misunderstanding of how the Scribner log rule is used. This log rule assigns board foot values to individual logs for payment purposes. It does not predict utilized wood content of these logs. The Scribner log rule actually underestimates small log board feet and overestimates large log board feet. This fact is revealed in sawmill lumber recovery studies. The discrepancies between estimated and recovered board foot volume is compensated for by applying empirically derived "overrun" factors in the timber sale appraisal calculations.

The cubic foot measure is used in planning for growth and yield because it is not biased by product output expectations. This is why the National Forest Management Act (NFMA) requires use of the cubic foot measurement in forest planning estimates. While the board foot to cubic foot ratio does indeed change with log size, merchantability and utilization standards remain in effect so that cubic volumes will in fact reflect timber on a net market volume basis.

### TIMBER VALUE

Timber price estimates used in planning are based on historical trend data. The trend for the past 100 years shows increases running ahead of inflation during periods of economic expansion and decreases less than the rate of recession during periods of economic decline. The assumption used in planning is that recent market turmoil will not last and that the long-term price trend will resume. Lumber price trends are nearly matched by timber production cost trends. The general effect is an upward net price trend of about 1/10 of one percent. National Forest planning analyses have shown only a trivial effect, generally less than one percent, on the harvest level and none on the land allocation when price trending is not used.

The CHEC analysis of timber sale economics ignores the fact that the Forest Service is not in business solely to maximize financial return. The Forest Service must be responsive to multiple-use issues. Consideration of other natural resource values often lowers net return from timber.

#### CLEARCUTTING AS THE OPTIMUM HARVEST METHOD

The FOPLAN linear programming analysis invariably shows clearcutting as the preferred harvest method when partial cutting is also an option. Besides providing the most cost-effective method of harvest, clearcutting is also optimal for the following reasons:

- a. Less forest land is used to reach a given harvest goal.
- b. Damaged trees resulting from harvest operations are more feasibly removed so their values are not lost.
- c. Clean-up of logging slash to reduce fire hazard can be more efficiently and effectively accomplished.
- d. Preparation of the area to produce a new timber stand is more easily done and more likely to result in successful stand establishment.
- e. Growth rates of young trees are higher than where they must compete with established older trees in partial cut areas.
- f. Certain diseases, such as dwarf mistletoe and root rots, are more easily controlled when the source of infection is removed from an entire stand at one time.
- g. Clearcutting emulates the natural process that produced stands with large amounts of shade intolerant trees (pines). Without periodic, major disturbances, ecological succession tends to replace pines with fir and incense-cedar. Partial cutting reinforces this tendency.

#### SPOTTED OWLS

The FOPLAN model is simply a way of displaying the total amount of suitable owl habitat on the Sequoia National Forest. It merely indicates the relative difference in habitat between alternatives. Of more importance is how the spotted owl will actually be managed on the ground, and the methods used to arrive at that management.

FOWLAN modeling was originally used as a base to start from in displaying vegetative types on the Forest. All areas considered as suitable habitat were identified. These areas were checked utilizing vegetative type maps and aerial photographs to verify their existence and the extent to which they may have been altered by past management activities. Fragmentation of this habitat was not taken into account.

The next step was to compile the known locations of spotted owls on the Forest. Beginning in the 1970s and continuing to the present time, surveys to identify known locations of owls have been conducted. Some of these surveys concentrated on small areas or were simply sighting reports

documented by Forest Service employees. Other surveys were quite extensive; such as the survey conducted on the Cannell Meadow District in 1986 and on the Forest as a whole in 1987. There is no question surveys should continue into the future.

The third element to be correlated was the Region 5 guidelines in Appendix H of the final EIS for the Pacific Southwest Regional Guide. The direction from this document required the establishment of Spotted Owl Management Areas (SOMA's) which consist of three or more habitat areas of 1,650 acres each of suitable habitat, or potentially suitable habitat. These areas are spaced within 1.5 miles of one another. These groups of habitat areas, or SOMA's, are spaced 6-12 miles apart.

Suitable habitat in each territory consists of 30-80 percent old growth with the remaining acreage in younger stands of mixed conifer and mixed hardwood/conifer stands. The selection of these vegetation types in the habitat areas was based on what currently exists (only mature old growth stands available) and on the adaptability of spotted owls in the southern Sierra Nevadas to utilize different timber types and seral stages.

The establishment of the spotted owl habitat area network on the Forest has led to 40 habitat areas (66,000) acres dedicated to spotted owl habitat and other species that utilize old growth and associated stands (each area is 1,650 acres or larger). Assuming one pair of owls utilize each area, a minimum viable population of 40 pairs of spotted owls will be assured over time on the forest.

Future needs concerning this program include the development of a habitat capability model for the spotted owl in the southern Sierra Nevadas, monitoring of the habitat areas for occupancy and use by the owls, monitoring to insure the areas are being protected under dedication status, and the development of a specific management plan for each area.

#### VALUE OF WATER YIELD

The value of water used in the FORPLAN model was taken from the 1985 RPA assessment as developed for use by the State of California. This value was based on the minimal water cost to agriculture less transportation and storage. This is a conservative estimate because the major watersheds on the Sequoia National Forest have hydroelectric facilities making water yield even more valuable.

#### WATER QUALITY

Best Management Practices (BMP's) were developed to protect water quality. The Forest will monitor the implementation of BMP's and evaluate their effectiveness using the Sequoia National Forest Riparian Standards and Guidelines monitoring plan.

#### LIVESTOCK FORAGE

The 50,500 AUM figure cited as the current carrying capacity is a misinterpretation. Table 3-18 Subsection C should read: "Potential increase in AUMS (constrained maximum) equals 28,250 AUMS. This is a total of the

subsequent estimates of potential increases by vegetation types." We apologize for the error and have corrected this in the final EIS. It is important to realize this is not the present carrying capacity but rather an estimate of the potential increases in AUMS over the present permitted use.

There seems to be some confusion between RPA production targets and carrying capacity. The statement that the Sequoia National Forest has exceeded the carrying capacity is incorrect. The 1980 RPA production targets stated throughout the Plan (55,600 AUMS for 1990 and 59,700 AUMS for 2030) were the Sequoia's share of the projected increase in red meat demand. The carrying capacity deals with the lands ability to support livestock. The targets were incorrectly labelled as AUM's throughout the Plan. They should have been labelled AM's. We have converted these targets to AUM's in the final EIS and Plan to avoid confusion. Again, we apologize for the error. It is correct that the 80,000 AUM goal is above the existing supply and would be expensive to achieve. This goal was based on the assumption that meat consumption was going to increase through the planning period. This has not yet happened. The Preferred Alternative in the Final EIS holds livestock numbers at the 1986 levels through the first decade with local adjustments being made based on fluxuations in feed conditions. There will be little emphasis on expensive nonstructural range improvements. The current livestock numbers are well within the existing carrying capacity for the Sequoia.

There are substantially more than 28 jobs in the private sector dependent on the Sequoia's range resource and substantially less than six full time positions on the Forest that deal directly with range mandgement. The calculation of annual subsidies in the range program is based on these misconceptions and therefore, is not valid. In fact the reverse is true. The Sequoia has for some time realized more money in grazing fees than it has spent administering the range program. It is also important to understand that grazing fees as well as annual Forest Service budgets are determined at a national level and outside the authority of this Plan. Nevertheless we are in agreement that the program should be as cost-effective as possible.

Conflicts between livestock and the recreating public will be addressed on a case-by-case basis.

#### COMMUNITY STABILITY AND GROWTH

The basis for assuming that the Sequoia National Forest has accepted local economic stability as a goal is found in the Draft Forest Plan, page 3-3. This is a portion of a description of the attitudes, beliefs, and values of Tulare County residents, not a discussion of Forest goals.

#### INCREASED HARVEST LEVEL ON THE CANNELL MEADOW RANGER DISTRICT

Harvest levels by Ranger District are approximately proportional to the suitable land base acres and timber inventory on each District for the conditions and constraints imposed by the particular alternative in question. The process of defining suitable land base is described in the Plan, Appendix C. The harvest level assigned to the Cannell Meadow District in Alternative PRF is higher than the traditional level because of

the proportional share of land suitable for timber management on that District.



UNITED STATES  
DEPARTMENT OF  
AGRICULTURE

FOREST  
SERVICE

PACIFIC  
SOUTHWEST  
REGION

REGIONAL OFFICE  
630 SANSOME STREET  
SAN FRANCISCO, CA 94111

REPLY TO: 2410

DATE: November 21, 1986

Mr. Randal O'Toole  
Cascade Holistic Economic Consultants  
425 West Third, Number 2  
Eugene, Oregon 97401

Dear Randy:

We have completed our review of the four major points raised in your publication, "Analysis of Region 5 Yield Tables," CHEC Research Paper Number 17. Our comments are enclosed with this letter.

Our meeting of October 9, 1986 was helpful in better understanding your concerns. However as discussed at that meeting we cannot agree with your conclusions and supporting reasons. Some of your unsubstantiated statements conflict with fundamental stand growth principles. It would have been helpful to have citations and references from the technical growth and yield literature that support your statements.

We believe it would not serve a useful purpose to have an independent third party technically review the Forest Service RAMPREP model and your criticism of it at this time. We would be willing to expend public funds on such an effort if you can provide valid support for your contentions.

You may also want to pursue this matter by submitting your findings to a technical forestry journal for review by independent experts in stand growth and yield. An appropriate publication might be the Western Journal of Applied Forestry.

Sincerely,

RAYMOND G. WEINMANN  
Assistant Regional Forester for  
Timber Management

Enclosure

cc: John Moore, Mother Lode Chapter, Sierra Club  
Steve Beckwitt  
R-6, TM  
WO, TM  
Forest Supervisors



FS 6200 28(7 82)



United States  
Department of  
Agriculture

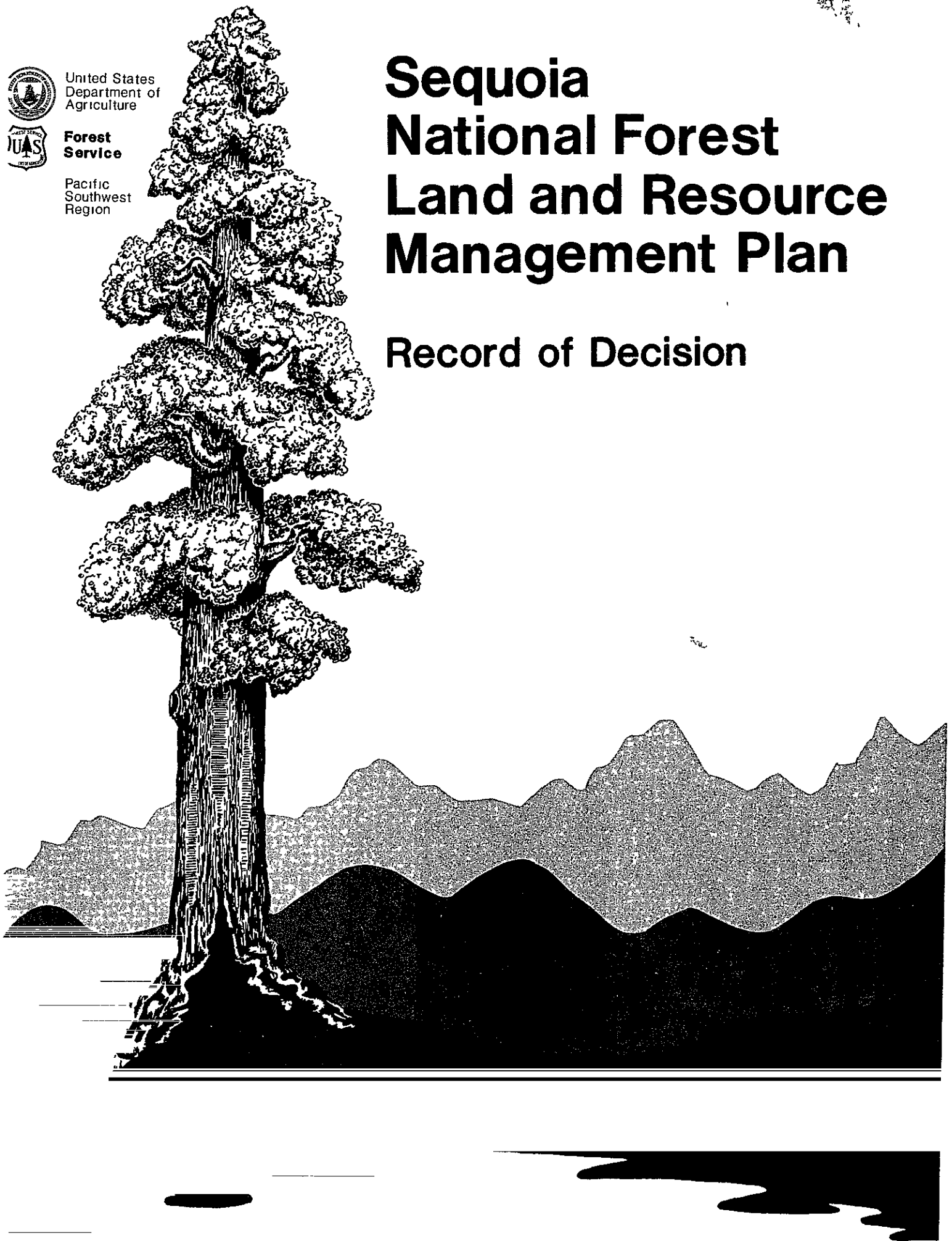


**Forest  
Service**

Pacific  
Southwest  
Region

# Sequoia National Forest Land and Resource Management Plan

## Record of Decision





RECORD  
OF  
DECISION

FINAL ENVIRONMENTAL IMPACT STATEMENT

SEQUOIA NATIONAL FOREST

LAND AND RESOURCE MANAGEMENT PLAN

FRESNO, TULARE, AND KERN COUNTIES, CALIFORNIA

THIS DOCUMENT PRESENTS REASONS FOR SELECTING THE ALTERNATIVE TO BE THE FOREST PLAN FOR THE NEXT 10 TO 15 YEARS. LONG-TERM ESTIMATES OF THE ALTERNATIVE'S ENVIRONMENTAL AND ECONOMIC ATTRIBUTES, CONTAINED IN THE ENVIRONMENTAL IMPACT STATEMENT, WERE CONSIDERED IN THE DECISION.

MARCH 1988

SEQUOIA NATIONAL FOREST  
 RECORD OF DECISION  
 FOREST PLAN

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RECORD OF DECISION

USDA - FOREST SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT  
SEQUOIA NATIONAL FOREST  
LAND AND RESOURCE MANAGEMENT PLAN

FRESNO, TULARE AND KERN COUNTIES, CALIFORNIA

The Forest Service has completed a detailed planning process for the Sequoia National Forest. Included were thorough studies of the lands, resources, and the socioeconomic interests in this National Forest. Seven planning alternatives were studied and analyzed in detail in the Final Environmental Impact Statement (FEIS) for the Sequoia National Forest's Land and Resource Management Plan. This Record of Decision documents my selection and approval of one of these alternatives for future management of the Sequoia National Forest. The alternative *is* summarized here, discussed further in Section III below, and documented in detail in the Forest Plan.

I. THE DECISION

It is my decision to select the Preferred Alternative (PRF) to manage the 1,119,045 acres of the Sequoia National Forest. I have reviewed the environmental consequences of the Plan and the alternatives which are analyzed in the FEIS. I gave particular attention to the 3,000 public comments presented in Appendix N of the FEIS. I have concluded that **the** Plan provides for the coordinated multiple-use management of visuals, recreation, wildlife and fish habitat, watershed, forage, vegetative management, cultural resources, minerals, wilderness, and timber.

As a management strategy the Plan and FEIS are programmatic. The emphasis in the Plan is not on site-specific decisions. Rather, it provides overall systematic guidance and establishes management direction to govern future actions. A summary of the major provisions of this Plan and my decision is as follows:

*note*

Recreation

A variety of recreation opportunities are provided. The improved forest trail system will provide a diversity of opportunities with off-highway vehicles (OHV'S), equestrian and hiking emphasized in specific areas of the Forest. Designated roads and trails will be used for OHV. Whitewater floating will continue while downhill and cross-country skiing opportunities will increase.

Special Interest Areas and Research Natural Areas

I am classifying the Baker Point, Bald Mountain, Inspiration Point, Slate Mountain, and Ernest C. Twisselmann Sites as Botanical Areas. Three Research Natural Areas (RNA's) are recommended to the Chief of the Forest Service for his approval. These represent outstanding examples of the giant sequoia, red fir and Jeffrey pine elements and will encourage

research opportunities. A fourth potential RNA, representing a conifer woodland element, is recommended for review by the Regional RNA Committee.

#### Wildlife and Watershed

Wildlife habitat in chaparral will be enhanced. Riparian areas and stream areas will be managed to emphasize improvement of resource values that include, but are not limited to, water quality, fisheries, and wildlife habitat diversity. Habitat for threatened and endangered species will be protected. By the end of the first decade, habitat on the Forest is estimated to be capable of supporting approximately 75 pairs of spotted owls, which are management indicator species for wildlife associated with vegetation in late successional stages. A network of 40 Spotted Owl Habitat Areas will be managed, consisting of 10 in wilderness and 30 on lands suitable and available for timber production (CAS land). The remaining 35 non-network habitat areas include 10 in wilderness, five on other lands managed under prescriptions compatible with spotted owls, and 20 on CAS land.

#### Wilderness

There are 264,000 acres of wilderness on the Forest representing 24 percent of the Sequoia NF. Additional lands on the Sequoia National Forest are not recommended for wilderness classification.

#### Timber

The timber resource will sustain the historic timber yields through a mix of even-aged and uneven-aged silvicultural techniques. Timber resources within selected sensitive visual viewsheds will be managed with uneven-aged silvicultural systems. About 30 percent of all timber volume will be harvested from approximately 20 percent of the land suitable for timber management using uneven-aged silvicultural prescriptions. The timber sale program will continue to show a positive cash flow if roads are evaluated as capital assets. Giant sequoia groves will be managed to encourage giant sequoia reproduction, protect specimen trees, and sustain the stands over time. New management activities will not be planned within these groves pending completion of the Giant Sequoia Grove Management Implementation Plan.

#### Grazing

Grazing will remain at current levels on the majority of the forest. Slight increases will occur in annual grass areas when vegetative and climatic conditions produce excess forage.

#### Budget

To fully implement the Plan a budget of \$20 million dollars per year is needed in the first decade. Actual annual budgets affect the rate of implementation of the Plan and the outputs produced in any given period. Over time, if annual budgets differ significantly from the projected budget needs estimated by the Plan, the overall goals and direction may not be

achievable. In that event, revision or amendment to the Plan may be warranted.

As provided in 36 CFR 219.10, this decision will remain in effect until the Plan is revised, which is expected to be in 10-15 years. There is no assurance, however, that the outputs will be achieved within the time frame of the Plan. Achievement can be influenced by many factors including budget levels, size of workforce, changes in laws and regulations, national and local economic factors, and the dynamic natural processes and physical factors affecting the Forest. In the FEIS the effects of alternative choices are projected for 50 years, well beyond the planning period, for the sake of analyzing long-term effects. Regarding Plan implementation within the 10-15 year time frame, short-term opportunities, new information, problems, or conflicts may arise in managing the Forest that were not anticipated in the Plan. When this occurs, the Plan can be adjusted.

## II. ISSUES AND ALTERNATIVES CONSIDERED

### A. ISSUES CONSIDERED

The scoping process to determine the issues, concerns, and opportunities for the Forest Plans was conducted simultaneously for all Forests in the Pacific Southwest Region between October, 1979, and January, 1980. Public meetings were held throughout the State and comments were received from individuals, organizations, and governmental agencies. These public issues and management concerns helped define the scope of the EIS (40 CFR 1501.7 and 40 CFR 1508.25).

On the Sequoia, 14 issues were addressed as a result of the original scoping process. They include: Wilderness Management, Further Planning Areas, Land Ownership Adjustment, Water, Recreation, Off-highway Vehicles, Timber, Giant Sequoia, Fish and Wildlife, Roads and Trails. Energy, Grazing, Riparian, and Diversity. A more detailed discussion of the Planning Issues can be found in Chapter 2 of the Plan, and Appendix A of the FEIS. Table 2.28 in the FEIS displays a summary of how each issue is addressed in each alternative. As a result of public input for the Draft Environmental Impact Statement (DEIS) and draft Plan, twelve major issues surfaced and are addressed in Section III of this Record of Decision.

### B. ALTERNATIVES

The EIS and plan were developed under the implementing regulations of the National Forest Management Act (NFMA), Title 36, Code of Federal Regulations, Part 219 (36 CFR 219) published in 47 CFR 43026 on September 30, 1982. The planning actions described in 36 CFR 219.12(b) through (k) have been completed and are properly documented. The National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508) were also followed. In addition, the Plan preparation was guided by the Regional Guide for the Pacific Southwest Region as well as many other laws and regulations.

In response to planning issues, concerns, legislation, and regulations, a range of alternatives was initially developed and analyzed in the DEIS. Each alternative had a different management emphasis resulting

in different levels of resource management. Forest-wide standards and guidelines served to assure quality land stewardship in all alternatives. The multiple-use nature of the alternatives provided a mix of outputs and insured that no single resource element was emphasized to the extent that another resource was excluded. More information about the alternative formulation process may be found in Chapter 2.B of the FEIS.

In response to public comment on the DEIS, some alternatives have been modified and three have been dropped. A more detailed analysis has also occurred with Spotted Owl Habitat Areas, and the established network of 40 SOHA's provides habitat capable of supporting reproductive spotted owls well-distributed across the Forest within the species range. The Preferred Alternative published in the FEIS is a modification of the PRF in the DEIS. It responds to public input by considering a combination of even-aged and uneven-aged timber management, managing off-highway vehicle (OHV) use on designated roads and trails, and several other changes.

The Amenity (AMN) and Wildlife, Fish and Visual (WFV) were modified in response to public comments. The former is managed under uneven-aged principles exclusively; the latter is managed nearly equally between even-aged and uneven-aged principles. The Low Budget (LBU), Current-Economic Dispersed (CED), and Wilderness Capital Investment Emphasis (WLI) Alternatives have been dropped from the set of alternatives considered in detail. Analysis of them is retained in Chapter 2 of the FEIS. These options were dropped because, relatively speaking, they were no longer considered responsive to public issues.

For a complete discussion of the differences among alternatives and their effects, please see Chapters 2 and 4 of the FEIS.

#### PREFERRED ALTERNATIVE (PRF)

This alternative is the basis of the Plan. It produces market commodities and nonmarket goods and services near the 1980 Resource Planning Act (RPA) target levels. Timber management will utilize both even-aged and uneven-aged silvicultural prescriptions, with emphasis on lessening visual impacts.

#### CURRENT ALTERNATIVE (CUR)

This alternative emphasizes production of timber and cattle over developed recreation and nonmarket resources. Timber management will be accomplished using even-aged management techniques. This alternative is a continuation of present management direction.

#### 1980 RESOURCE PLANNING ACT PROGRAM ALTERNATIVE (RPA)

This alternative meets or exceeds the Sequoia National Forest share of the 1980 Resource Planning Act targets as assigned by the Regional Guide. Timber management will be accomplished using both uneven-aged and even-aged management techniques.

#### AMENITY EMPHASIS ALTERNATIVE (AMN)

This alternative emphasizes high levels of nonmarket resources specifically wildlife and fish, dispersed recreation, visual quality and wilderness. Market resources such as timber, forage, and developed recreation are produced at economically efficient levels that support nonmarket resources. Timber management will be accomplished using uneven-aged management techniques.

#### HIGH MARKET EMPHASIS ALTERNATIVE (MKT)

This alternative emphasizes high production levels of market resources, specifically timber, range, and developed recreation. Timber is managed primarily under even-aged silvicultural prescriptions. Nonmarket benefits are produced at economically efficient levels.

#### HIGH PRODUCTION EMPHASIS ALTERNATIVE (PRO)

This alternative meets the 1980 RPA high timber goals. Nonmarket benefits are produced at economically efficient levels. Timber management is accomplished using even-aged management techniques.

#### WILDLIFE, FISH AND VISUAL EMPHASIS ALTERNATIVE (WFV)

This alternative emphasizes high levels of recreational use associated with wildlife, fish, and visual quality. Management of other resources supports wildlife and fish goals and produces commodities at economically efficient levels. Timber is managed equally between even- and uneven-aged silvicultural prescriptions.

### C. PUBLIC PARTICIPATION

The Sequoia National Forest Planning Process incorporated an active public involvement program. Elected officials, Federal, State, and local agencies have been informed and consulted throughout the planning effort. Forest users have had several opportunities to participate. The Forest provided opportunities for all interests to provide input to the Issue Identification Process through making news releases, sending a mailout to over 1,000 people, holding five public meetings in various locations, and six meetings for employees. Nine meetings were held with interested public agencies.

Special attempts to involve and inform minorities were made as an integral part of the broad range of public involvement opportunities. Groups contacted included: The Bureau of Indian Affairs, Tule River Tribal Council, Kern Valley Indian Council, and the Native American Heritage Committee. Spanish translations of news releases were provided to nine Spanish language radio, television and newspaper media.

See Chapter 6 FEIS "Consultation and Mailing List" and Appendix A, FEIS "Consultation with Others" for more detailed information on the public involvement process.

A Notice of Intent to prepare an EIS for the Plan was published in the Federal Register on November 1, 1979. A Notice of Availability of the DEIS and proposed Plan was published in the Federal Register on November 29, 1985, and announced by area news media. Over 1,050 copies of the DEIS and proposed Plan were distributed to the public.

The Forest scheduled and held five meetings following release of the DEIS to the public. Because of public interest, the Forest added two public hearings, held an additional public meeting and extended the public comment period for review of the Draft Documents. Review copies were placed in 28 libraries in communities adjacent to the Forest. In all, six public meetings and two public hearings were held during the 150-day comment period which ended April 28, 1986. About 3000 individuals, elected officials and federal, state, and local agencies commented on the proposed Plan and Draft EIS. These 3,000 responses generated about 7,000 individual comments which were considered in the preparation of the final documents and selection of the PRF as the basis for the Plan. Appendix N of the FEIS contains a summary of these comments and the Forest Service response.

#### 111. REASONS FOR THE DECISION

This section describes the basis for my selection of PRF as the foundation for the Plan. These considerations were derived from the issues, concerns, and opportunities identified through the initial planning process, as well as from public comments and further analyses by the Forest on the DEIS and Proposed Plan (Appendix N).

No single factor determined my decision. Rather, many factors were considered and weighed in making the selection. Based on consideration of all factors, including our multiple-use mandate, monetary and nonmonetary costs and benefits, land capability, protection of the basic resources, public desire, and advice and suggestions from other agencies, organizations, and the professional judgment of experienced Forest officers, the Plan sets a course of balanced use that results in the greatest overall long-term benefit to the public.

In the following sections, A through F, I discuss in detail the factors influencing my decision. Section G summarizes the reasons for my decision to select Alternative PRF as the basis for the Forest Plan and to approve the Forest Plan.

##### A. RESPONSE TO PUBLIC COMMENTS

The Sequoia National Forest responded to all the input received on the DEIS and Draft Plan. A summary of Public Response and Resolution of Responses may be found in Appendix N of the FEIS. This public review and comment process was most helpful to the planning effort. It showed areas of misunderstanding and disagreement, as well as areas of understanding and agreement. Comments included suggested changes, corrections, oversights and criticism of the public involvement process itself.



The Forest received many, varied comments from many different interests. Comments from different reviewers often expressed conflicting views. How the selected Plan handles the issues that surfaced during this public comment period are discussed below.

## 1. BUDGET

Public comment on this issue was concerned with the discrepancy between current Fiscal Year 1987 budget and the much higher cost of implementing any of the alternatives. The question is: how will substantially lower budgets affect resource programs and their priorities?

In response to public comment, the Forest has added to the FEIS Appendix L - Budgets and Their Relationship to the Forest Plan. This Appendix provides an overview of the Federal Government's budgeting process. It also provides an explanation of how the Forest Plan will be used to formulate budget requests. Should Congress continue to fund individual resource programs as they have in the past, the Forest must adjust output levels and priorities accordingly.

Appendix L also provides information on the importance of cooperative projects and funding and the contributions of volunteers to program accomplishments. Further, implementation of the Administration's policy of having users pay fees which are commensurate with the cost or value of the service provided, is also discussed as a means of making up budget shortfalls.

Regardless of annual budget levels, the intent of management is not to relax management requirements specified in the Minimum Management Requirements, Minimum Implementation Requirements, and Standards and Guidelines established by the Forest Plan. (Please refer to Appendix L of the FEIS.) Under NEPA, an Environmental Analysis is completed for every project that affects natural resources. If the Analysis shows the project cannot be accomplished without violating the management requirements listed above, projects will be dropped, modified, or revised to ensure meeting these Standards and Guidelines.

QUOTE

## 2. GIANT SEQUOIA

Considerable public concern was expressed for the protection of the giant sequoia. Many respondents to the DEIS felt that management activities of any kind would endanger the species and the ecosystems where the giant sequoia is found. Some felt that the large whitewood species associated with the giant sequoia had intrinsic values of their own. A segment of the public supported the need to develop a comprehensive giant sequoia management plan before any further management activities are undertaken which may affect giant sequoia. Some respondents supported the use of fire and timber harvesting activities to protect and perpetuate the species.

It is clear that the apprehension of the respondents concerning the perpetuation of the giant sequoia is very real and must be part of any decision. It is also clear that the perpetuation of the giant sequoia in its natural range is dependent upon management of the associated vegetation.

Based on these considerations, the Draft Plan was revised. Specifically, a Forest-wide Giant Sequoia Grove Management Implementation Plan will be developed and incorporated into the Forest Plan as an amendment. Except for emergency rehabilitation due to catastrophic events, no new management activities affecting giant sequoia groves will be undertaken until the plan is completed. This plan will finalize grove boundaries and the allocation of acres to the management categories described in the Forest Plan for all groves. The allocations are: Preservation, 3,900 acres; Non-intensive management, 9,300 acres; Intensive management, 0 acres. The Plan will be the result of an environmental analysis and will have full public involvement.

It is my hope that the development of the Giant Sequoia Grove Management Implementation Plan will provide the opportunity for communication between the concerned public and the Forest Service which will lead to an understanding of the silvicultural requirements of the species and mutual cooperation to perpetuate the giant sequoia.

### 3. CLEARCUTTING

The general public did not accept the amount of additional clearcutting proposed in the Draft Plan. Support for clearcutting was voiced by professional forestry organizations or was implicit in the support for alternatives other than the AMN. Based on these public responses, the DEIS and Draft Plan were revised. A mix of even-aged and uneven-aged silvicultural prescriptions has been incorporated into the Plan.

Under the Forest Plan about 20 percent, or 69,000 acres, of a total of 345,000 acres of the land suitable for timber management will be assigned uneven-aged prescriptions. They will have visual quality or other resource values as a primary objective. Extensive use of uneven-aged management is prescribed in the Standards and Guidelines. For example, some major roads and trails through the forest will have the foreground areas managed under the uneven-aged system with a Visual Quality Objective of either Retention or Partial Retention. Monache Meadows and Sherman Pass viewsheds and the Big Meadow and Salmon Creek areas are also to be managed under uneven-aged management. Timber harvest will be limited to tree selection or group selection in these and other areas described in the Standards and Guidelines.

The remaining 80 percent, or 276,000 acres, of the land where timber will be produced will be managed under even-aged management yields. Allocating a relatively large proportion of acreage to even-aged management allows longer rotations of 110 years (compared

to an average of 80 years in the DEIS) and consequently produces larger trees. This will enhance visual quality when the Forest is regulated as well as produce higher quality wood products. In response to the public, the Forest has been making a special effort to design even-aged silvicultural prescriptions that utilize existing young trees as part of the future timber stand. These procedures have been incorporated into the Standards and Guidelines. Where it is physically and biologically feasible, young trees will be protected during harvest of the merchantable old trees. Also aggregations of mature trees will be left in clearcut areas to provide snags and wildlife habitat. These procedures soften the visual effect to a great degree. Individual areas regenerated in this manner generally will not exceed 25 acres. The current average regeneration unit is 17 acres.

It is important to understand that at the rate of cutting projected in the Plan, only 1.7 percent of the Sequoia National Forest will be regenerated by even-aged prescriptions during the next ten years. This amounts to only 5.4 percent of the land selected for timber management. This is a relatively minor impact on the existing forest condition.

The public expressed concern over the use of clearcutting as a management tool. Other than the adverse affects on aesthetics, they felt that there was a degradation of water quality, unacceptable erosion, and also questioned the ability to regenerate harvested areas or that not enough was known about clearcutting. There is, however, a wealth of research and a long history of the use of the practice. I am confident that the project environmental analyses used by our interdisciplinary teams utilize the knowledge base that is available and that projects will be properly designed. Best Management Practices (BMP's) have been established that have proven effective in protecting water and soil. Appropriate BMPs will be prescribed for all projects.

Even-aged management optimizes the managers' ability to regenerate and maintain control of the Forest site to produce high yields of wood. Larger openings produced by this management system provide conditions for rapid tree growth while providing opportunities for control of Forest pests and economical stand tending and harvest. The new forest is not subject to mechanical damage as would be the case with selection harvest which requires frequent harvests on the same area. While uneven-aged management is more costly and results in some reduction in growth and yield, it does provide the opportunity to manage the timber while reducing the visual effect. In response to public concerns, I believe it is appropriate to modify timber management as shown in the DEIS and the Draft Plan. I am willing to accept the trade-offs associated with the increased use of uneven-aged management as put forth in the FEIS and Plan. I believe that by combining even-aged and uneven-aged management techniques, the Plan balances amenity values and commodity uses.

#### 4. VOLUME OF HARVEST

Public comment was polarized on what the level of timber harvest should be on the Forest. Those advocating a higher level of harvest thought that more of the land base should be committed to timber management and that forest industries would be suppressed unless the harvest were increased. Others stated that the proposed rate of harvest was too high. They identified the budget issues or use of pesticides as reasons to reduce the harvest. Some individuals thought that the timber sale program was an undesirable subsidy to the forest industry. These comments are responded to in detail in Appendix N of the FEIS.

The determination of the Allowable Sale Quantity (ASQ) poses a question of balance among income to the U.S. Treasury, demand for timber and other resource values. To address this balance, we start with analysis of the purely economic solution and compare it with the maximum production solution. In the former case the analysis of timber harvest based only on cash flow to the Treasury indicates a harvest level of approximately 63 MMBF per year when present net value is maximized. Under this scenario, forest roads providing access to forest resources are considered only as a cost associated with specific timber sales, not as a benefit to forest users as well. In the second case, when maximum timber yield is the major objective in the analysis, the indicated harvest level is 130 MMBF. This means that the Sequoia National Forest is currently capable of producing 130 MMBF per year on a sustained yield basis over the life of the Plan. The volume produced above 63 MMBF yields a positive cash flow when roads are considered as a capital asset rather than an expense. The level of harvest may be increased if there is a strengthening of demand for Sequoia National Forest timber.

Having analyzed both the economic and production-based situations, other considerations in establishment of the ASQ are historic demand, the Sequoia National Forest RPA share, and public benefits associated with access to National Forest System Lands. The proposed annual volume of harvest under the plan is 102 MMBF. This volume is comprised of 97 MMBF green timber and 5 MMBF of salvage and other unregulated volume. A harvest level of 102 MMBF is slightly above the historic level of harvest. This level of harvest will maintain the present employment opportunity as well as the public benefits associated with sales of miscellaneous forest products and fuelwood. Regarding historic demand, the actual average annual harvest for Sequoia National Forest has been 92 MMBF for the past 27 years.

It should be noted that the PRF retains all lands suitable for timber production rather than limit the acres to only those acres needed to produce 97 MMBF. This action results in a Long Term Sustained Yield Capacity of approximately 159 MMBF attainable at full regulation over the long term. Therefore, even though the harvest level is set in line with current demand and our 1990 RPA goal, future options are not foreclosed.

## 5. FISH AND WILDLIFE

The public expressed a concern that wildlife was not adequately protected and desired a greater emphasis on wildlife in the Plan. Comments also questioned use of management indicator species for monitoring effects on wildlife, the lack of plans for fish habitat improvement, the adequacy of FORPLAN modeling for spotted owls and the management of Threatened and Endangered (T and E) species.

The Standards and Guidelines in the Plan were rewritten in cooperation with the California Department of Fish and Game to reflect a greater emphasis on the protection of wildlife and fish habitat. This section also details the Forest's cooperative efforts for the management of T and E species under the guidance of Specific Recovery Plans. Streamside management zone and riparian area guidelines were strengthened to meet public concern for the management of these special habitats. Guidelines in Chapter 4 set aside five percent of old growth outside of riparian area habitat. Aggregations of mature timber, one-fourth to two acres in size, will be included under even-age management systems to maintain habitat for snag dependent species. The volume of dead and down woody material retained for wildlife was increased to 132 cubic feet per acre. Oak management receives greater emphasis through Standards which specify that at least 20 cubic feet of basal area per acre will be retained in managed stands.

Some management indicator species were changed and explanations of these species were greatly expanded to provide a clearer understanding of why they were chosen to represent certain habitat types.

Chapter 5 of the Plan provides for coordinating of the monitoring effort with the Sierra and Stanislaus National Forests, the Pacific Southwest Forest and Range Experiment Station and the California Department of Fish and Game.

The analysis and management of spotted owls has been updated. The network of spotted owl habitat areas was increased from the 35 areas (described in the draft EIS) to 40 areas to ensure an appropriate distribution of habitat throughout the species range on the Sequoia NF (see the spotted Owl Network map attached to the Plan for a general location of each habitat area). To the extent possible, while still providing habitat capable of supporting reproductive pairs throughout the species geographic range, the network habitat areas have been located on lands not available for timber harvest or on lands already allocated to prescriptions compatible with spotted owl habitat conditions. Each network habitat area will be managed to provide at least 1,000 acres of suitable habitat, plus approximately 650 acres of replacement habitat to ensure that 1,000 acres of suitable habitat will be available throughout and beyond the planning horizon. Specific identification of the replacement acres (e.g., size, boundary, vegetation types) will be included in a Spotted Owl Management Plan

that will be developed for each network habitat area. These plans will be incorporated into the Forest Plan as amendments.

Within each network habitat area, the primary management objective will be to maintain habitat **for** a reproductive pair of spotted owls. **There** will be no scheduled timber harvest for any network site on the Sequoia **NF**. Unscheduled harvest and other vegetation manipulation may occur to achieve habitat objectives described in the Spotted Owl Management Plan. Other resource management activities or uses will be permitted to the extent they are compatible with the management objectives **for** the habitat area. Based on the habitat and conditions on the Sequoia NF, I believe this decision provides the necessary protection to ensure spotted owl population viability, maintains management flexibility and future options. and at the **same** time. has essentially no impact on the allowable sale quantity of timber.

The Sequoia NF will continue to participate in the Forest Service Spotted Owl Research Development and Application Program, which was initiated in 1987. This five-year program involves inventories, monitoring, studies, and research efforts throughout the range of the spotted owl to assess the effectiveness of management and identify any changes that **may** be appropriate.

**The** fisheries section of the Plan was modified to detail on-going fish habitat improvement. **The** Forest will continue to protect and improve fish habitat through the use of streamside management zones, riparian guidelines, and adherence to Best Management Practices. Measures to improve fish habitat will include meadow restoration, erosion control, timber sale area enhancement, and cooperative programs with the California Department of Fish and Game.

#### 6. ~~OFF-HIGHWAY~~ VEHICLES (OHV'S)

**The** use of OHV's on Forest land brought many comments. Generally, **comment**s were polarized as being pro-OHV or anti-OHV.

Pro-OHV comments were mostly from users who wished to protect and/or expand their activity. Comments addressed trail rerouting, trail system expansion, signing and user education, and emphasis on loop and connector trails. Desires for all terrain vehicle (ATV) use, camping opportunities outside developed sites, and interest in specific trails were also addressed. Utilization of funding generated under the State of California Off-Highway Motor Vehicle Act of 1982 (Green Sticker) for aiding in management and/or facility development was mentioned frequently. **Many** expressed concern about losing riding areas within recently designated wilderness and questioned whether the proposed actions would meet user demands.

Anti-OHV responses were generally from **non-OHV** users. This group mentioned **user** conflicts and environmental damage as concerns. Factors such as noise, trail damage, watershed damage, disturbance

to wildlife, added law enforcement needs and costs, litter, and vandalism were mentioned. Many questioned the wisdom of having any cross-country travel on the Forest, stating that there was no way to prevent the resource damage. Some proposed a few "sacrifice" areas to accommodate OHV's as opposed to extensive open acreage.

Another group of responses were generally neutral. Their comments concerned ways to improve user compatibility. Restricting OHV use to designated roads and trails was often mentioned.

The position regarding OHV use on the Forest was re-examined and changes were made in the Forest Plan. Instead of opening most lands outside of wilderness to OHV use, OHVs will be confined to designated roads and trails. Approximately 475 miles of trails less than 24" wide will be designated open, along with 70 miles of trails greater than 24" (i.e., jeep trails). OHV emphasis areas will be identified on the Forest.

Management direction has been expanded to include enforcement of noise, use of spark arresters and state Green Sticker requirements. Further, a requirement to develop a comprehensive trail management plan for the entire Forest, recognizing all users (e.g., hikers, equestrian and OHV) has been included in the Plan (See Chapter 4). This trail management plan will be incorporated into the Forest Plan as an amendment. The rationale for these changes are as follows: 1) OHV users want riding opportunities that do not harm resources; 2) OHV users have said they do not want conflict and welcome compromise in the spirit of working together; and 3) there is wide recognition of strong anti-OHV sentiment. Consequently, changes in the FEIS and Plan allow the sport to continue as a part of the National Forest recreation program, while minimizing opportunities for conflict.

## 7. ROADS

Public comment on roads focused on two aspects of road management, the amount of new road construction and road closures.

Regarding road construction, the public generally indicated that sufficient road access existed and favored a slower, more limited approach to future road construction. In response to public comments about road construction, the FEIS emphasizes that roads are reactive to resource management objectives. Chapter 3 of the FEIS provides a better explanation of road construction types and objectives in an effort to promote the understanding that most new roads will be short, low standard spurs, and only a few new collector roads will be required.

Chapter 2 of the FEIS, Alternative Descriptions, and Chapter 4, Management Direction, of the Plan indicate that recreation objectives, specifically OHV's, are considered along with resources and economics as a factor in road design and road management objectives.

Regarding road closures, the respondents were equally divided. Those in favor of leaving roads open indicated that more roads should be left open because taxes pay for roads and, therefore, they should be available for public use. More available roads provide better access to remote areas. Those in favor of road closures expressed a desire for increased road obliteration and restoration to more natural conditions.

In response, FEIS Chapter 2, Alternative Descriptions, and Chapter 4, Management Direction to the Plan, emphasizes a commitment to improved signing at road closures to include the reason for road closure. This will result in a better understanding among Forest users as to the resource protection strategies behind many road closures.

In response to those expressing a desire for increased road obliterations, the Forest Service policy to obliterate temporary roads is expressed in the Plan, Chapter 4, Soil and Water.

## 8. PESTICIDES

The Forest Plan incorporates some use of pesticides in its management prescriptions. Some respondents expressed concern that undesirable effects on human health and/or ecological impacts may result from the use of pesticides.

At the present time, the Pacific Southwest Region has suspended the use of herbicides. This was an administrative decision prompted by a ruling of the Ninth Circuit Court of Appeals in Oregon. This suspension will stay in effect until a decision is made on herbicide use based on the Regional Vegetation Management for Reforestation EIS. A Draft of this EIS was issued in 1983, supplemented in 1986, and a Final EIS is to be issued in winter/spring 1988. This Vegetation Management EIS addresses the various types of vegetation manipulation, the effects and costs of their use, and the associated health hazards and risks. This includes an analysis of the various herbicides available for use on the National Forests in California.

If no herbicides were available to deal with competing vegetation, the consequence would be some reduction in the timber land base. An example would be the deletion of lands where dense bear clover is present in the understory. Future yields would be lower as a result of slower growth rates of young trees and the reduction of the land base. It is estimated that the long-term sustained yield would be reduced 26 percent if no herbicides were available. If this situation comes to pass, the effects will be assessed and the Plan will be amended.

There is no moratorium on the use of other pesticides, although that use is minor. All pesticide use adheres to EPA label instruction, and is strictly controlled by Best Management Practices (BMP).



## 9. TRAILS

Public comment on trails management centered on whether the PRF Alternative in the DEIS and Draft Plan placed enough emphasis on the total Forest trail system, including both construction and trail maintenance. The trail issue was closely related to the issue of OHV management.

The level of trail construction/reconstruction proposed (21 miles/decade) and the assertion by trail users that this level would be inadequate to meet future demands were the key aspects of the trails issue. Many respondents compared trail construction and road construction mileages and lamented the difference. Regarding trail maintenance, respondents pointed to the poor condition of trails, with many expressing concern about the impact of timber sales and road construction on the trail system (e.g., slash and debris left on trails, and roads overlying trails without replacement mileage). However, no specific areas of the Forest needing additional access were identified, even though the number of miles of trail managed on the Forest has dropped over the past several years. Trails dropped from the system have been those receiving little public use, so in spite of this drop in mileage, analysis indicates the remaining mileage would be adequate to meet demand through the planning period.

In response to public comments on trails, several changes were made. New trail construction in the next ten years will be increased. This is in recognition of a demonstrated need to improve the system of trails connecting to facilities and providing loop opportunities (e.g., decreasing the need for people to backtrack on the same trail), and the fact that demands will vary among trails. Implementation will be governed by the new comprehensive trail system plan (see OHV discussion above and Plan, Chapter 4). Recognizing the need to resolve resource and/or user conflicts, direction calls for about half of the total trail mileage to be rehabilitated and or reconstructed in the next ten years.

The Preferred Alternative (PRF) has several other changes which will help place emphasis on trails and their management. Management direction for protecting trails from unacceptable impacts, primarily from other projects, has been strengthened. The identification of OHV emphasis areas and the ultimate separation of uses will also improve the experience for hikers and equestrians. Loop trail systems will offer a variety of opportunities for all users. The comprehensive trail system plan for the Forest will take hiking, equestrian and OHV users into account and result in development of a long term trail program which is responsive to user demand and protection of resource values.

## 10. VISUAL RESOURCES

Public comment on this issue addressed the pros and cons of Forest management practices as they relate to the trend of visual

quality. The trend is to move from a natural to a managed condition. Many individuals feel this change represents a decline in visual quality. They prefer activities that would enhance and improve current conditions. Some referred to the past emphasis on logging and road construction, saying these activities resulted in long-term visual degradation. Others supported higher timber volumes, reasoning that timber was a renewable resource and harvesting benefited the land. Some said that through proper management, the Forest could continue timber production and still provide multiple uses and maintain aesthetic values.

In response to public input, several important changes are made in the Forest visual management program. In some of the more visually sensitive viewsheds (e.g., Monache Meadows, Sherman Pass Overlook, Big Meadows/Salmon Creek) and road corridors of the Forest (Blackrock and Sherman Pass) the silvicultural system was changed from even-aged to uneven-aged management. Harvest practices were reviewed and it was determined that in regeneration areas young growth and some aggregations of mature trees on tractor loggable ground would be saved for regeneration, wildlife and visual purposes. A guideline was also established stating that the size of regeneration units would generally not exceed 25 acres. The Forest will place emphasis on the development of public understanding of management actions that result in visual changes.

These revisions have been reflected within the FEIS and/or Plan. The Standards and Guidelines in Chapter 4 of the Plan add a discussion of silvicultural systems and harvest practices. The Office of Information section of this same Chapter adds emphasis to inform the public about Resource Management Programs. The Visual Resources section of Chapter 4, FEIS, was rewritten to emphasize visual "change" rather than "decline". The change noted is the result of managing previously unmanaged lands, recognizing that change does not mean a decline in visual quality to all people.

## 11. WILD and SCENIC RIVER

The majority of public input on Wild and Scenic Rivers evolved around Segment 1 of the Kings River and a proposal known as Rodgers Crossing Dam. Enactment of HR799 in November 1987, resolved the issue which focused on this segment. The legislation establishes a Special Management Area (SMA) which encompasses the Kings River Further Planning Area, and totals approximately 48,000 acres (23,900 acres is on the Sequoia National Forest). It requires Congressional approval for the construction of any dam or diversion within the area. Management of this SMA would be detailed in a management plan to be developed within three years of enactment of the legislation and incorporated into the Forest Plan as an amendment.

Another point of public interest was a desire for the study of the Kern River below Lake Isabella for possible inclusion in the Wild and Scenic River (W&SR) system. This river corridor has been

reviewed. Following evaluation, a determination was made that two of three segments were ineligible for W&SR status. The third segment (Segment 2) is eligible for W&SR status and suitability will be determined in the future (please refer to Appendix E of the FEIS). Specific emphasis toward water-oriented recreation for this important waterway is contained as management direction (see Plan, Chapter 4).

## 12. WILDERNESS, FURTHER PLANNING AND WILDERNESS STUDY AREAS

Public response regarding wilderness centered on wilderness classification as opposed to management. Comments ranged from a desire for maximum additional wilderness classification to no additional wilderness classification. Responses from proponents of wilderness varied from adding a single area to classifying all former Inventoried Roadless Areas (RARE 11) as wilderness. Reasons cited include preservation for future generations, maintenance of ecological and species diversity, and space for mental/spiritual relaxation. Opponents of wilderness classification often stated that wilderness designation was too restrictive and that costs were high due to reductions in commodity outputs and/or management. Many felt that too much land has already been set aside for too few users and the Sequoia National Forest has enough wilderness.

The appropriate amount of wilderness within National Forests has been a continuing issue for over 20 years. Two roadless area reviews resulted in an environmental impact statement that made nationwide recommendations for wilderness, non-wilderness, and further planning status. In 1984, the California Wilderness Act established new wilderness throughout the State. This Act added approximately 100,000 acres to the National Wilderness Preservation System on the Sequoia National Forest including the Monarch, Jennie Lakes, and South Sierra, which were totally new, while additions were made to the existing Dome Land Wilderness. These four, plus the Golden Trout Wilderness, allocate over 264,000 acres, or about 24 percent, of the Sequoia National Forest land base to preservation under the National System. A total of six areas on the Sequoia National Forest comprising, 117,300 acres, were identified as Further Planning Areas (ETA) in the RARE II Environmental Impact Statement.

The DEIS analyzed four of these Further Planning Areas and one BLM Wilderness Study Area for possible addition to the National Wilderness Preservation System. Of the two remaining, one (Kings River) was being studied by the Sierra National Forest and the other (Cypress) by BLM. It should be noted that the Kings River FPA is that area included as the Special Management Area in recently enacted Kings River Wild and Scenic River legislation.

Following evaluation in the DEIS, it was determined that none of the Further Planning Areas (Dennison, Moses, Oat Mountain, and Scodies) in the National Forest had any outstanding attributes/characteristics that would warrant adding them to the System. I find no new information that would support a change in

the original recommendation to release these areas for multiple-use management purposes. Therefore, no additional National Forest wilderness will be recommended under this Plan.

Nevertheless, analysis of public comment regarding the wilderness issue did result in a change in management of about 8,000 acres in the Sirretta Peak area. This area was largely included under a timber emphasis management prescription in the DEIS and Draft Plan. It has been reevaluated and placed in the dispersed recreation-wildlife emphasis with a Semi-primitive Non-motorized classification in Recreation Opportunity Spectrum (ROS). This change will complement management of both the adjacent Dome Land Wilderness and the proposed Twisselmann Botanical Area, which is located within this area. Similarly, adjacent to the South Sierra Wilderness, the Sequoia portion of the Monache Meadows viewshed will be managed with uneven-aged timber management practices utilized as a way to maintain a more natural character of the landscape.

#### B. COMPATIBILITY WITH OTHER PUBLIC AGENCY GOALS

**The** Goals of other public agencies that are affected by National Forest management were considered early in the planning process and during the development of the alternatives in the Draft EIS. The FEIS includes these and also considers comments from public agencies that were received during the public review period (see Appendix N). Where possible, the Plan was modified to accommodate those concerns.

Elected officials commenting on the Draft included: Congressman Charles Pashayan Jr.; the late Congresswoman Sala Burton; State Senator Rose Ann Vuich; State Assemblymen Bill Jones, Don Rogers and Phillip D. Wyman; Kern County Supervisor, Roy Ashburn; Barbara Lanksford, Mayor of Dinuba; and Robert Bremmer, Inyo County Supervisor.

Federal Agencies commenting on the Draft included: Environmental Protection Agency, Federal Highway Administration, United States Department of Interior (Fish and Wildlife Service, National Park Service and Bureau of Land Management), and the Department of the Air Force.

State Agencies commenting on the draft included the Resources Agency of California, Departments of Conservation, Fish and Game, Transportation, Forestry, State Board of Forestry, Parks and Recreation, Water Resources, Health Services, Regional Water Board and State Lands Commission.

Local Governments and Agencies commenting on the draft included Fresno County, Tulare County, Kern County, Inyo County, Madera County, Kings County, Kings River Conservation District, City of La Mirada, Tulare Lake Basin Water District, Angiola Water District, Alta Irrigation District, Riverdale Irrigation District. and Tulare County Economic Development Corporation.

Summarized below are the changes to the FEIS and Plan resulting from the primary points brought forth in elected official's and Agency comments.

A number of elected officials and public agencies had concerns about the economic impacts of planned timber harvest levels, and the effects of clearcutting methods on the environment. In response to these concerns, the Plan will maintain timber harvests at 102 MMF annually, including salvage, and thus maintain the local economic sectors dependent on this harvest. Please see Appendix O of the FEIS for discussion of the Sequoia's role in contributing to the regional supply of timber. To alleviate concerns about harvest methods the Plan now projects uneven-aged management on 20 percent and even-aged management on 80 percent of the acres planned for Timber harvest.

Several elected officials and public agencies had concern about the possible environmental impacts of OHV use. The Plan now restricts OHV use to designated roads and trails and requires the development of a Forest Trail Management Plan (see Plan, Chapter 4).

Numerous changes in the FEIS and Plan resulted from comments by Congressman Pashayan, Assemblyman Jones and California Department of Fish and Game. The approach to monitoring now requires greater coordination with the Department, the Pacific Southwest Forest and Range Experiment Station, and the three National Forests in the Southern Sierra (Sequoia, Sierra and Stanislaus National Forests). Riparian area issues also receive greater emphasis in the FEIS and Plan.

Responding to the United States Air Force comment about visibility within the air space, the Plan now requires notification of the United States Air Force when prescribed burns are planned.

Public involvement with other federal agencies, elected officials, the State of California, local government, and interested publics will not stop with the approval of the Plan. On-going involvement with them is critical to successful implementation of this Plan and all other project and specific resource management plans. As more site-specific planning is done, we will provide additional environmental analysis with public involvement.

#### C. CONTRIBUTION TO THE REGIONAL PRODUCTION OF GOODS AND SERVICES

This Forest Plan will serve to adjust and implement assigned output targets of the RPA (Resources Planning Act) Program.

A consideration in approval of the Plan is that it balances use among all resources while providing for additional opportunities for recreation, wildlife habitat improvement, forage, timber, fuelwood, and water production needed for local economic growth and stability. While several alternatives provide for various increases in these outputs, the Plan provides balanced use of all outputs while protecting the basic soil and water resource (see Output Tables in Chapter 2 of the FEIS).

#### D. SOCIAL AND ECONOMIC STABILITY

The Sequoia National Forest plays a role in the social and economic life of residents in the contiguous foothill communities and the towns in which the lumber mills are dependent on National Forest timber. The latter include Terra Bella and Dinuba. However, the Forest plays a minor role from the perspective of the Kern, Tulare, and Fresno County area of influence *as a whole*. As discussed below, social and economic effects - specifically, numbers of jobs, level of revenues, volume of recreational opportunity, availability of fuelwood and road access - and their implications for social and economic stability during the first decade were considered in selecting the Plan.

The major economic effects of the Plan include increased employment, earnings, fuelwood and revenues to the three county governments. With respect to current levels of economic activity attributable to the National Forest the greatest changes will **be** seen in employment and earnings. In the first decade Forest activity supports, directly and indirectly, about 2,800 person-years of work annually, an increase of about 300 Jobs, or 12 percent. Currently, about half of all jobs associated with forest management activities are timber-related. Since timber production remains virtually the same, and since the number of jobs associated with the range management program is unchanged, most of these new jobs are associated with increased recreational use. From the standpoint of the three-county area, both this addition and the total number of jobs are insignificant in comparison to total county employment. However, from the standpoint of the local communities within which these Jobs are located, they represent a solid long-term component of the economic base. As such, they contribute to the economic stability of these communities.

Total earnings associated with Forest activity are expected to reach 41.4 million dollars annually in the first decade, an increase of 10 percent over current levels. About half of all earnings are in recreation, slightly less than half in timber and the rest in the livestock industry. Again, since these are expected to be earnings over the long term in basic industries, **it is my** Judgement that they contribute to the economic stability of their communities.

Fuelwood and hence road access to the fuelwood, are economic benefits of the Plan in that they provide an alternative energy source for their users. At 21,000 cords, the Plan calls for production of fuelwood at a level higher than at present, thereby easily maintaining present supplies.

Forest management activities yield a return to the federal treasury. Known as Forest Reserve Funds, this income is increased over present **levels**. The Sequoia is expected to generate about 6.2 million dollars annually. Of this total, 25 percent or about 1.6 million dollars will be divided among Fresno, Tulare, and Kern Counties according to the acreage of National Forest System land located in each.

The economic characteristics and impacts described above have social implications *as well*. To the extent that local communities can

maintain or slightly increase their economic base over time, to that extent those communities may remain stable as social systems. In my judgment the management activities called for in the Plan contribute enough economic activity to help maintain local community social stability. By the same token, not so much is provided as to have a marked growth-inducing effect. Please bear in mind that this evaluation deals with all forest management activities except ski areas. While the Plan provides for the study of two ski areas over the long-term, the Plan makes no allocation of land to this use. Instead, it directs that the environmental, social, and economic effects of potential ski areas are to be dealt with in separate project-specific analyses.

#### E. ENVIRONMENTAL QUALITY AND ENVIRONMENTALLY PREFERRED ALTERNATIVE

##### 1. ENVIRONMENTAL EFFECTS.

The following summarizes some key environmental effects which are expected to occur under each alternative. The magnitude, timing, and location of effects will differ for each alternative. These factors were all considered in arriving at the selected Alternative and Plan.

In all alternatives, visual quality will be changed by natural occurrences and management activities. In PRF, impacts to visual quality would occur from regeneration harvest of 1,700 acres per year. PRO would have the highest impact with up to 4,600 acres of clearcuts annually. The AMN, WFV and CUR have less visual impact in the first decade than PRF. In AMN, all land used for timber production is allocated to uneven-aged management prescriptions; whereas, under WFV, about 50 percent of the volume is harvested using the same prescription. In CUR, there are relatively few acres of uneven-aged management; however, most of the volume is harvested under shelterwood practices. Thus, visual impacts are moderate in the first decade but will increase upon reentry.

Under the PRF, the prescribed fire program will average about 5000 acres annually. Fire will be used to prepare timber harvested areas for reforestation, to reduce concentrations of hazardous forest fuels including those in the urban interface, and to improve wildlife habitat and range forage. The long-term benefits include less damage to soil productivity and water quality than that caused by large, high intensity wildfires. Short-term losses include temporary deterioration of air quality and temporary impacts on visual resources. Prescribed fire acres range from 5,000 - 11,000 acres per year for alternatives considered in detail. The PRO Alternative has the highest use of prescribed fire.

All alternatives protect riparian areas and establish streamside management zones. Clearer, more specific guidelines for the management of these areas have been developed to meet the goals of the Plan. Increased protection from streamside management and habitat improvement activities will enhance fisheries, but as user demand increases, available fish may decline. Coordination with

the California Department of Fish and Game will be necessary to balance the increased user demand with available fish habitat.

Under all of the alternatives, old growth habitat will be protected in wilderness areas and at many non-wilderness locations on the Forest. However, within the commercial forest lands old growth habitat will decrease to some degree under all alternatives. The AMN Alternative would show the least reduction while the PRO Alternative would yield the greatest. The PRF Alternative would result in a moderate decline in populations of old growth species and a corresponding increase in populations of other species associated with earlier successional stages. Approximately 374,000 acres of mature to overmature habitat will remain on the Forest. Approximately one-half of this acreage will be in wilderness. The remaining acres will be distributed over the rest of the conifer zone, especially in streamside management zones, giant sequoia groves, retention and partial retention VQO zones, and the network of spotted owl habitat areas.

I recognize that the PRF, or any of the other alternatives, could produce some short-term adverse environmental consequences such as a slight reduction in air quality; visual quality due to regeneration timber harvesting and road construction; and sediment yields due to vegetation management activities. These consequences will be monitored, as shown in the Monitoring Plan, Chapter 5 of the Plan, to ensure compliance with Forest management direction and applicable law and regulations.

## 2. ENVIRONMENTALLY PREFERRED ALTERNATIVE

Although some people may Judge differently depending on their values, I consider Alternative AMN to be the environmentally preferred alternative. It requires the least disturbance of soil and emphasizes wildlife and fish habitat, visual quality, dispersed recreation and wilderness values.

Normarket resources receive first priority. The alternative provides the highest level of wilderness allocation (381,300 acres) of any alternative. Only 43 MMF of timber are planned for harvest. Grazing is limited to 55,000 AUM's. The AMN provides for about 41 percent of the commercial conifer zone to remain unroaded. Wide streamside management zones protect riparian areas from disturbance. Fire prevention receives heavy emphasis. The trail system is extended. Activities at developed recreation sites are de-emphasized. Off-highway vehicles are limited to reduce conflicts with other users. Winter snow use and equestrian uses are encouraged.

The AMN Alternative was not selected for implementation because, in my Judgment, it does not provide for a balanced program that meets the needs of the American people. Also, I believe it doesn't adequately respond to the Forest Service Multiple-Use philosophy and the Forest Service Mission outlined by the Congress of the United States.



F. ECONOMIC EFFICIENCY AND ALTERNATIVES WITH HIGHER PNV THAN PRF

An estimate of Present Net Value (the difference between discounted benefits and discounted costs) was used to determine the most economically efficient alternative. As shown below, PRF which is the foundation of the Plan has the highest Present Net Value (PNV) of the alternatives considered. However, all alternatives except CUR are relatively close and the percent differences are considered insignificant. In my judgement, the PRF provides the best mix of resource activities and schedule of quantifiable and non-quantifiable benefits. It is the most compatible with overall Forest Service goals and objectives.

<u>Alternative</u>	<u>Present Net Value Millions of Dollars</u>	<u>PNV as a % of Preferred Alternative</u>
PRF-Preferred	844	100.0
RPA-1980 RPA Program	843	99.9
WFV-Wildlife Fish and Visuals Emphasis	840	99.5
MKT-High Market Emphasis	831	98.5
PRO-High Production	831	98.5
AMN-Amenity Emphasis	765	90.6
CUR-Current	558	66.1

G. SUMMARY OF REASONS FOR SELECTING PLAN

An important concept in determining the utilization of the Forest's resources in a combination that will best meet the needs of the American people is the Net Public Benefit (NPB). The concept of Net Public Benefit includes both quantifiable and non-quantifiable benefit values. From this overall perspective, PRF presents, in my judgement, the highest Net Public Benefit of all the options analyzed. It responds equally well to the tenets of the Forest Service multiple-use philosophy and to the desire of most members of the public for a balance of uses within the Sequoia National Forest.

The Forest Plan recognizes the diversity of ecosystems on the Sequoia National Forest by recommending three new Research Natural Areas (RNA's) representing the giant sequoia, red fir and Jeffrey pine forest types. A fourth, representing a conifer woodland element, is recommended to committee for review. Pursuant to Title 36, Code of Federal Regulations, Section 294.1(a), and the authority vested in me by the Chief, Forest Service, I classified the Baker Point, Bald Mountain, Inspiration Point, Slate Mountain, and Ernest C. Twisselmann sites as Botanical Areas. These give emphasis to sensitive plants and plant communities that are unique to the Sequoia National Forest.

Giant sequoia groves are recognized as a unique resource in the Plan. Planning processes and procedures are established to insure perpetuation of the groves over time. Each grove will be managed under one of two strategies: preservation or non-intensive management. Continued involvement with the public will lead to better understanding and mutual

cooperation toward perpetuating the giant sequoia resource on the Forest.

✓ The Plan acknowledges a desire for trail systems that respond to the different needs of hikers, equestrians and off-highway vehicles (OHV's) by directing that a comprehensive trail management plan be done. Emphasis areas are established for the development of existing and future OHV trails. Semi-primitive nonmotorized areas are provided for hikers and equestrians. Thus, a separation of noncompatible trail uses is provided for, along with a framework for responding to future user demand, and cooperation with user groups.

Recognizing that wildlife habitats encompass lands adjacent to the National Forest as well as on the Forest, wildlife management, as specified in the Plan will be accomplished in concert with the California Department of Fish and Game, the neighboring central Sierra Forests, National Parks, and Bureau of Land Management. The Plan provides the coordinating link among these partners through joint monitoring agreements with the Pacific Southwest Forest and Range Experiment Station (PSW).

The Sequoia National Forest's Plan provides for production of 101.6 MMBF of timber annually, including salvage material. The historic level of timber harvest is sustained. The emphasis in silvicultural methods has shifted from the even-aged systems employed within the last ten years to a mix of even-aged and uneven-aged management practices. The Plan provides for uneven-aged timber management within some of the more sensitive viewsheds on the Forest. This change in management, along with the greater sensitivity to visual values when planning timber sales, will decrease the potential for adverse effects of timber management on the aesthetic values of the Forest. A greater emphasis is also given to enhancing wildlife and fish habitats through timber management practices.

The Sequoia National Forest has produced a Plan which strives to provide the "greatest good for the greatest number" of today's Forest users. For this, and all of the above reasons, I Judge that compared to other alternatives, the Plan provides the best balance of resource allocations, and will provide the best distribution of long-term public benefits.

#### IV. IMPLEMENTATION, MITIGATION AND MONITORING

The Plan will not be implemented sooner than 30 days after the Notice of Availability of the Plan, EIS, and Record of Decision appears in the Federal Register. However, within Further Planning Areas, implementation will be delayed for 90 calendar days while Congress is in session to allow for Congressional review.

The time needed to bring all activities into compliance with the Plan will vary depending on the type of project. Existing projects, as well as contractual obligations, will continue as originally planned. During implementation, however, the following minimum requirements, subject to valid existing rights, will be met. The Forest Supervisor will assure

that: (1) annual program proposals and projects are consistent with the Plan; (2) program budget proposals and objectives are consistent with management direction specified in the Plan; and (3) implementation is in compliance with the Regional Guide, and 36 CFR 219.10(e), 36 CFR 219.11(d), and 36 CFR 219.27.

Implementation is guided by the management requirements contained in the Forest direction and management area prescriptions which are found in Chapter 4 of the Plan. These management requirements were developed through an interdisciplinary effort and contain measures necessary to mitigate or eliminate any long-term adverse effects. To the best of my knowledge, all practical mitigation measures have been adopted.

Outputs in the Plan may be adjusted as a result of research efforts which produce new information and technologies. Air quality, prescribed fire, riparian trend studies, and other data will enhance and affect plan implementation. Proposals to use National Forest System (NFS) lands will be reviewed for consistency with the Plan. Management Direction contained in Chapter 4 of the Plan will be used to analyze any proposal involving use of NFS lands. All permits, contracts, and other instruments for occupancy and use of the NFS lands must be consistent with the Management Direction in Chapter 4. This is required by 16 USC 1604(1) and 36 CFR 219.10(e).

The purpose of the monitoring program is two-fold: (1) to evaluate whether Forest goals and objectives are being realized; and (2) to determine how closely management requirements have been followed. The results of monitoring the evaluation will be used to measure the progress of the Plan implementation. These results will also help to determine when Plan amendments or revisions are needed (see Plan, Chapter 5).

## V. PLANNING RECORD, AMENDMENTS, REVISIONS, AND ADMINISTRATIVE REVIEW.

### A. PLANNING RECORDS

Planning records contain the detailed information used in developing the Plan and FEIS as required in 36 CFR 219.12.

All of the documentation detailing the Forest planning process is available for inspection during regular business hours at:

Forest Supervisor's Office  
Sequoia National Forest  
900 W. Grand Avenue  
Porterville, California 93257-2035  
(209) 784-1500

These records are incorporated by reference into the FEIS and Plan.

### B. AMENDMENTS AND REVISIONS

The National Forest Management Act requires revision of the Forest Plan at least every 15 years. The Plan may be revised sooner if physical conditions or demands on the land and resources have changed sufficiently to affect the overall goals or uses for the Sequoia

National Forest. When revising the Forest Plan, all the procedures set forth in 36 CFR 219.12 will be followed. This includes scoping, an analysis of the management situation, formulation of alternatives, an estimation of effects, an evaluation of alternatives, identification of a recommended alternative, documentation in an EIS and draft plan, and formal public comment before approval and implementation of the revised plan.

During the implementation of the Forest Plan, various factors may trigger the need to change aspects of the Plan. In this event, based upon the advice and recommendation of the Forest's interdisciplinary team, the Forest Supervisor shall determine whether the proposed changes are significant or nonsignificant. The Regional Forester will approve any significant amendments to the Forest Plan. The determination of significance shall be made in accord with the requirements of 16 USC 1604(f), 36 CFR 219.10(e) and (f), 36 CFR 219.12(k), and pertinent sections of the Forest Service Manual and Handbook. The determination of significance or nonsignificance will be documented in a Decision Notice that is available for public review. No changes will be implemented prior to appropriate public notification. In the event of a significant amendment, procedures set forth in 36 CFR 219.12 will be followed. Determinations of whether proposed changes are significant or nonsignificant are appealable under 36 CFR 211.18.

#### C. RIGHT TO ADMINISTRATIVE REVIEW

The decision documented in this record is subject to appeal in accordance with provisions of 36 CFR 211.18. Notice of appeal must be in writing and submitted to:

Paul F. Barker  
Regional Forester  
Pacific Southwest Region  
USDA Forest Service  
630 Sansome Street  
San Francisco, CA 94111

The notice of appeal, a statement of reasons to support the appeal, and any request for oral presentation must be filed within 45 days after the date of this decision. Items not subject to appeal are recommendations regarding Wilderness, Wild and Scenic River, and Research Natural Area Classification.

An appeal of my decision does not halt Forest Plan implementation. A stay of the decision must be requested. A stay may be requested at any time during the appeal period until a decision on the appeal is made by the Chief, USDA-Forest Service.

Although a number of projects are identified, no decisions on site-specific projects are made in this document. Those projects identified in various parts of the Plan or FEIS are only included in

order to clarify discussions, illustrate a point, or to show that Forest Plan goals and objectives can be achieved. Final decisions on site-specific projects will be made during Forest Plan implementation after appropriate analysis meeting NEPA requirements.



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Paul F. Barker  
Regional Forester

February 25, 1988

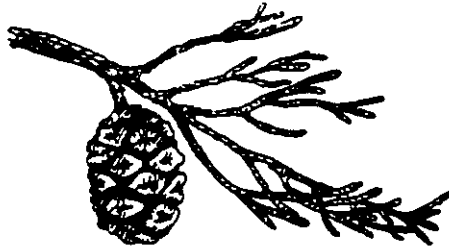
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**Land Management Plan  
1990 Settlement Agreement**

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**MEDIATED SETTLEMENT AGREEMENT  
FOR THE SEQUOIA NATIONAL FOREST**

**July 1990**

**I. PREAMBLE**

- A. On February 25, 1988, the Regional Forester for the **Pacific** Southwest Region of the United States Forest Service made a decision to adopt a Land and Resource Management Plan ("Forest Plan," "Plan," or "LMP") for the Sequoia National Forest. ~~His~~ decision was based on a Final Environmental Impact Statement (~~"EIS"~~) on the proposed Plan and was explained in a Record of Decision ("ROD").
- B. Numerous parties appealed the decision, challenging the Plan and/or the **EIS** on many grounds. The appellants represent a very wide range of interests and a wide range of forest users. The appellants in each appeal are identified in Exhibit A to this Agreement. The appellants filed their various Statements of Reasons by July 20, 1988. The Forest Service filed its Responsive Statements by March 8, 1989. All appeals not otherwise disposed of were then extended pending the outcome of mediated negotiations.
- C. During the fall of 1988, the Forest Service entered into an agreement with the *sequoia mediation agreement, july 1990*

California Department of Fish and Game ("DFG") to settle its appeal, No. 2403. That agreement is set forth in a letter from James A. Crates, Forest Supervisor, to George Nokes, Regional Manager, DFG, dated November 15, 1988 (Exhibit B). The issues raised by DFG were also raised by incorporation in Appeal No. 2332. The terms of Exhibit B, therefore, are incorporated by this reference into this Agreement. Where any more stringent requirements are imposed by this Agreement, they will prevail over the terms of Exhibit B.

D. In December, 1988, the Forest Service hired Ms. Alana Knaster of the Mediation Institute to meet with the Forest Service and the various appellants to make a recommendation on whether the parties should attempt to negotiate a settlement and, if negotiations proceeded, to serve as mediator. During January and February, 1989, Ms. Knaster met with the Forest Service and the appellants and recommended that negotiations ensue. Subsequently, the Forest Service and appellants that chose to participate in the negotiations agreed upon Protocols to govern the proceedings. The Protocols are incorporated by reference into this agreement attached hereto as Exhibit C. Where any more stringent requirements are imposed by this Agreement, they will prevail over the terms of Exhibit C.

E. Between March, 1989 and June, 1990, the parties spent many days in face-to-face discussion and negotiation over issues raised in the appeals and an

enormous number of additional hours developing and discussing proposed solutions to identified problems. Many of those solutions require that information presently lacking be gathered and utilized, both to check the validity of Plan assumptions and to refine the Plan over time. The parties, therefore, decided to settle the Plan appeals by (1) presently disposing of some issues on the merits; and (2) setting up processes for developing needed information, monitoring Plan implementation, and addressing other issues over time.

- F. The parties have differing views on many legal and factual issues raised in the appeals. A party's consent to this compromise agreement does not imply such party's concurrence in any particular interpretation of law or fact, except as otherwise expressly stated in this Agreement.
- G. The parties concur that this Agreement binds them only as provided herein. The parties enter into this Agreement pursuant to compromise because of the unique factual circumstances in the Sequoia National Forest and in settlement of disputed claims to avoid prolonged and complicated litigation and to further the public interest. The parties concur that this Agreement applies solely to the issues raised in administrative appeals of the Land Management Plan for the Sequoia National Forest. This Agreement terminates at such time as the Plan is revised in accordance with 36 C.F.R. § 219.10(g).

**H.** In the interim period **between** signing this Agreement and **finalizing** an amendment incorporating this Agreement into the Plan, the Parties agree that the provisions of this Agreement shall be implemented according to the schedules indicated throughout this document. Such interim action conforms to NEPA direction that, **until** a record of decision is issued, the agency must not limit the range of choice {40 CFR 1506.1(a)(2)}. Continuing implementation of the Plan as is **would** destroy the option of **implementing** some of the provisions of the Agreement; therefore, the Parties agree to this interim direction. The Forest Service anticipates that the **NEPA** process, including preparation of amendments and an **EIS**, may take up to two years.

**I.** Throughout this Agreement, the Forest Service has agreed to perform certain tasks by specified dates or time periods. All parties contemplate that these deadlines are reasonable and that the Forest Service shall adhere to the deadlines. The parties recognize, however, that events arising **from** causes beyond the reasonable control of the Forest Service despite the due diligence and good faith efforts of the Forest Service may preclude the Forest Service from completing the specified **task** by the specified deadline. In such an event, the Forest Service shall, within 21 **days** of the specified deadline, **notify** all parties of its inability to complete the **task** within the specified time, the reasons for that inability, and the date **by** which the **task** shall be completed. Any party may challenge in court either the failure to complete the **task** by the specified

date or the new date set forth **by** the Forest Service for completion of the ~~task~~. If such a challenge is made, the burden of proof shall be on the Forest Service to show that the failure to complete the task **by** the specified date was based on events arising from causes beyond the reasonable control of the Forest Service despite due diligence and good faith efforts and that the new date for completion is reasonable. **Any** cause of action contemplated by this paragraph arises *only* for the parties to this Agreement. The parties also contemplate that the existence of litigation against the Sequoia National Forest **shall** not be precluded from consideration **as** an event arising from causes beyond the reasonable control of the Forest Service.

## *II. AGREEMENTS*

### *A. Riparian Areas, Including Meadows*

1. The Riparian Standards and Guidelines (attached to this Agreement as Exhibit D) shall be incorporated into the Plan through Plan amendment and **its** attendant NEPA process.
2. *Interim*: The Riparian Standards and Guidelines **as** set forth in Exhibit D shall be **fully** implemented in the interim period before the amendment to the Plan is effective. **Any** timber sale contract predating this Agreement will be modified to **conform** to the Riparian Standards **and** Guidelines.

3. **Landings** and non-system roads that have been put to **bed**, are located within **streamside** management zones, and would **be** inconsistent with the **Standards** and Guidelines set forth in Exhibit D, **will** not be reopened and reused **unless** the Sequoia National Forest makes a specific **finding**, based on a project environmental document, that using such roads or **landings** would **cause** less harm to **riparian** resources than **building** new roads and/or landings.

B. *Giant Sequoia Groves*

1. Background: The Parties to this Agreement state:
  - a. The Giant Sequoia Groves in Sequoia National Forest ("Groves") are a unique national treasure that shall be preserved.
  - b. The goal for the administration of the Groves shall be to protect, preserve, and restore the Groves for the benefit and enjoyment of present and future generations.
  - c. The Convene Basin area has been subject of significant timber harvest since the late 1800s. With the exception of designated areas to be preserved, this area of the Forest **will** continue to be available for commercial logging.

2. Implementation:

a. Interim Protection

- (1) Until a final Grove boundary for each Grove is determined in accordance with this Agreement, that Grove, based on the most recent data for the location of giant sequoias, shall be protected, including an interim 500 foot buffer ~~extending from~~ a hypothetical perimeter line around the outermost known giant sequoias in the Grove. This will be a no logging, restricted mechanical ~~entry area~~. For purposes of this Agreement, the following mechanical/motorized uses only will be permitted inside an interim or final Grove boundary line:

- (a) expansion of the parking lot at the Trail of the 100 Giants;
- (b) use of existing roads;
- (c) existing use of OHVs on: i) trail #31E56 inside Deer Creek Grove, ii) trail #31E30 from Belknap to Cedar Slope inside McIntyre Grove, and iii) any established trails identified by the Forest Service as existing on the date of this Agreement, with written notice to all parties, provided however, that

OHV use is subject to final determinations made by the Trail Management Plan;

- (d) Management in accordance with approved fuel load reduction plans;
- (e) use of light equipment to build and/or maintain trails; and
- (f) use of equipment to fight wildfires (use of heavy equipment off of existing roads will require Forest Supervisor approval)
- (g) use of battery operated wheelchairs.

New mechanical/motorized uses shall not be automatically precluded within Grove Influence Zones.

- (2) An additional zone of 500 feet, called the Grove Influence Zone, shall be protected from logging activities inconsistent with Section B.2.d.(1), of this Agreement prior to the identification of final administrative Grove Influence Zone boundaries.

- (3) Notwithstanding subsection (2) above, where no Decision Notice



has been executed as of the date of this Agreement ~~Or~~ a timber sale within the Grove Muenze Zone, no logging plans **will** be approved by the Forest Supervisor within 1000 feet of the hypothetical penmeter line of the Rundel-identified grove until the Forest Supervisor has determined the Grove and Grove Influence Zone boundanes in accordance with this Agreement.

b. *Grove Management*

(1) Within this Plan penod, it is desirable that the Sequoia National Forest shall inventory all giant sequoias (3 feet or larger dbh) in each Grove by size and approximate location in order to provide a suitable data base for future protection of the sequoias; the Sequoia National Forest shall request no less than \$40,000 per year in its annual budget request starting FY1992 and extending through the end of the Plan period for ~~giant~~ sequoia inventory purposes, or until the inventory is completed. Priority for inventory of Giant Sequoia Groves **will** be pursuant to subparagraph (2), below.

(2) Within this ~~Plan~~ period, the Sequoia National Forest shall begin to inventory and evaluate each Grove for its fuel load build-up. Based on this inventory and evaluation, Groves, or parts ~~of~~ Groves, with ~~risks~~ of catastrophic fire and/or exclusion of new ~~giant~~ sequoia

regeneration because of unnatural fuel load build-up **will** be identified and prioritized for fuel load reduction treatment. Pursuant to this prioritization, the Forest Service shall begin addressing the Grove fuel load build-up problems during **this plan** period, with public participation and planning in accordance with **NEPA**.

- (3) Except **as** set forth in section **II.B.2.a.(1)**, there **shall** be no new road-building, logging or **mechanical/motorized** entry (except for entry on existing roads) within the **final administrative** boundary of any Grove during the period of time in which the Sequoia National Forest activities are covered by the 1988 Land and Resource Management Plan. For purposes of this Agreement, prohibited logging **shall** mean any logging activity except logging conducted for the limited and specific purpose of reducing the fuel load in the Groves pursuant to a Grove specific fuel load reduction plan and Grove specific **EIS**. The only salvage logging permitted in the Groves will be that logging permitted and described in the previous sentence. It is agreed that the methods to be used to remove specific trees from the Groves, **as** part of **an** adopted fuel reduction plan, shall be the most **environmentally** sensitive available. The objective of fuel load reduction plans shall be to

preserve, protect, restore and regenerate the Giant Sequoia Groves, without unnecessary damage to any old-growth trees in the Grove. **Any logging** component of a fuel reduction program in a grove shall protect the old-growth pine, fir, incense cedar and black oak components of the stand. **Any tree identified** for removal under this paragraph shall be so identified in the field in consultation with a forester from either the ~~Save-the-Redwoods~~ League ("League") or the Sierra Club ("Club").

c. **Grove and Grove Influence Zone Boundary Identification Procedures**

- (1) The Sierra Club, the Save-the-Redwoods League, the timber industry ("industry") and the Forest Service shall each designate one representative to **serve** on the Grove Boundary Team. The Team shall **begin** to identify final administrative Grove and Grove Influence Zone boundaries prior to September 15, 1990. The Team shall follow the standards and guidelines outlined in subparagraph 2 below in determining final administrative Grove and Grove Influence **Zone** boundary **lines**. The Team shall recommend **final** administrative Grove and Grove Influence Zone boundaries to the Forest Supervisor by December 31, 1991, subject to paragraph **II.B.2.c.(4)**. Copies of the recommendations shall be sent to all parties, who shall have **45** days **from** mailing to submit

comments for the Forest Supervisor's consideration.

(2) **Standards and Guidelines for Grove and Grove Influence Zone**

**Boundary Identification:**

- (a) There will be two zones created adjacent to and external to the hypothetical perimeter line of the outermost known giant sequoia trees in each Grove. The *first* zone will be included within the *final* administrative Grove boundary. The second zone shall be called a Grove Influence Zone.
- (b) **Though** Grove identification is a matter of interpretation, and some adjacent Groves shall be managed **as if** they were a single large Grove (as later described in this Agreement), the Rundel Grove identifications in the Forest Plan are used in this Agreement by name **as** the basis for Grove and Grove Influence Zone boundary identification.
- (c) Sequoia Grove boundaries have not yet been precisely defined. Giant sequoias naturally occur in "scattered" locations outside of, or on the *periphery of*, aggregations of giant sequoias consensually recognized **as** sequoia "Groves."

(d) The ~~final administrative~~ Grove boundaries shall be identified to include both (i) the area ~~within~~ a hypothetical perimeter line around the outermost ~~giant~~ sequoia trees in the Grove, and (ii) a buffer area (which may differ in size for different groves, as later described) beyond the hypothetical perimeter line which shall be included in the ~~final administrative~~ **boundary** of a Grove.

(e) In determining the hypothetical ~~perimeter~~ line **around** the outermost pant sequoia trees in a Grove (which becomes the basis for identifying the interim protection zone and the administrative boundanes of the Grove and Grove Influence Zone), the following guidelines shall apply:

i) Any naturally occumng giant sequoia (1 foot or larger dbh) which ~~is~~ located ~~within~~ 500 feet of at least 3 other pant sequoias (each 1 foot or larger dbh), shall always be included within the hypothetical perimeter **line**; provided, however, that the Grove **Boundary** Team may reasonably adjust the penmeter line for a specific Grove so long as there ~~is~~ a rational basis for the adjustment (such as topographic features) and all participating team members

agree to the adjustment.

ii) Notwithstanding subsection (i) above, all giant sequoias consensually recognized as being included in a Grove identified in the Rundel Grove list used in the Forest Plan shall always be included within the hypothetical perimeter line. In other words, the guidelines for identifying the hypothetical perimeter line shall not be used to fragment the existing groves as identified by Rundel

iii) Where, as described later in this Agreement, several adjacent Groves are to be managed as if they were one large Grove, the hypothetical perimeter line, as defined, shall be a single line around the outermost giant sequoia trees in the complex of Groves, taken as a whole.

(f) Boundaries shall also be identified for Grove Influence Zones (which may differ in size for different Groves, as later described), which shall be contiguous to each Grove. (See Section B.2.d. regarding management of Grove Influence Zones.)

- (g) The parties agree that the Grove and Grove Influence Zone boundary guidelines are ~~minimum~~ protection criteria. The parties **also** agree that management protection such as SOHAs, roadless area management, condor nesting sites, etc., may provide for protection of areas adjacent to Giant Sequoia Groves which exceed the ~~minimum~~ protection described below.
- (h) Further, the parties **also** agree that the types *of* management protection such **as** those set forth in (g) above may also minimize or eliminate issues **concerning precise** Grove and Grove Influence Zone administrative boundaries for many Groves, **as well** the presence of adjacent National Park, State, **Indian**, or private lands.
- (i) Topographical features such as ridges may take precedence over field distance measurements *in finalizing* boundaries of a Grove and/or Grove Influence Zone where such features logically and physically separate giant sequoias from the general forest. **However**, man-made impacts such **as existing** roads ~~shall~~ not diminish the size of the Grove and/or Grove Influence Zones, unless agreed upon pursuant to subsection

(k) of this section.

(j) Specific Grove, Grove Influence Zone, and Isolated Sequoia Tree Standards and Guidelines

i) Black Mountain Grove: (a) The narrow corridor of general forest between the Black Mountain Roadless Area and the Black Mountain Grove in Sections 1 and 12 will be a no logging, restricted mechanical entry area. The extension of road 21S12, beyond its intersection with road 21S25 in Section 1, shall be closed to the public. (b) The balance of the Black Mountain Grove shall receive a 500 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line around the outermost giant sequoias in the Grove within its final Grove boundary line and an added 500 foot Grove Muenze Zone.

ii) Belknap/McIntyre/Wheel Meadow Grove Complex: This will be treated as one large Grove in drawing the hypothetical perimeter line of outermost giant sequoias in the Grove. The Grove Boundary Team may consider a no logging, restricted mechanical entry zone that would extend north and east to Highway 190. The other boundaries of the



Grove shall include a 500 foot **no** logging, restricted mechanical entry zone outside of the hypothetical perimeter line of outermost ~~giant~~ sequoias of the Grove within the final Grove Boundary line and an added 500 foot Grove Influence Zone.

iii) The Greater Evans Grove Complex: The following Groves shall be integrated into this complex and managed as one large Grove in drawing the hypothetical perimeter line of outermost giant sequoias in the Grove: Lockwood Grove, Evans Grove, Kennedy Grove, Burton Grove, Little Boulder Grove, and Boulder Grove. There shall be a 500 foot **no** logging, no mechanical entry **zone** outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove ~~within~~ the final Grove boundary line and an added 500 foot Grove Influence Zone.

iv) Freeman Creek Grove and Watershed: (a) There shall be **no** logging and no motorized vehicle use by the public anywhere in the Freeman Creek Grove Management Area **as** shown on the map, Exhibit E. The Sequoia National Forest shall manage this Area **as** a Botanic Area.

(b) All land areas outside of the Botanic Area but within the Freeman Creek watershed, west of Lloyd Meadow Road, as designated on the map, Exhibit F, shall be managed by the Regulation Class 11, single tree or small group selection uneven-aged management prescription. There shall be no green timber sales scheduled in the watershed west of the Botanic Area in this planning period. Existing plantations may be managed; provided, however, that no management prescription outside and upslope of Grant Sequoias shall adversely impact the hydrology of the Sequoias. (c) The Freeman Creek Tract from North Road to the Lloyd Meadow Road shall be designated as Sensitivity Level One.

v) Indian Basin Grove: (a) There will be no logging except for safety reasons in and near the Princess Campground area south and east of Highway 180, and (b) a 500 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove within the Grove boundary plus an added 500 foot Grove Influence Zone.

vi) The following Groves shall receive a 500 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove within the Grove boundary line plus an added 500 foot Grove Influence Zone: ~~Bearskin~~ Grove, Big Stump Grove, Deer Creek Grove, Grant Grove, Landslide Grove, Long Meadow Grove, Packsaddle Grove, Peyrone Grove, Red Hill Grove, Redwood Mountain Grove, Starvation Creek Grove and ~~Tenmile~~ Grove.

vii) The following Groves shall receive a 300 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove within the Grove boundary line plus an added 300 foot Grove Influence Zone: Powderhorn Grove, Alder Creek Grove, Abbott Creek Grove, Cherry Gap Grove, Mountain Home Grove and ~~Cunningham~~ Grove.

viii) The ~~six~~ hundred (600) acres of Converse Basin Grove recommended for preservation (see section B.2.e.(2) below) shall receive a 500 foot no logging, restricted mechanical entry zone outside of the preservation area.

ix) The following Groves, and their adjacent areas, are protected because of other designations and do not require precise boundary determinations for Sequoia Grove protection purposes: Agnew Grove (Wilderness Area), Burro Creek Grove (to be proposed as Wilderness), Deer Meadow Grove (protected portion of Agnew Roadless Area), Dillonwood Grove (to be proposed as Wilderness), Maggie Mountain Grove (Wilderness), Middle Tule Grove (part Wilderness and part to be proposed as Wilderness), and Silver Creek Grove (to be proposed as Wilderness).

x) Naturally occurring isolated giant sequoia trees (3 feet or larger dbh) located inside or outside of the Grove Influence Zones shall be protected by a restricted mechanical entry within an area equal to at least 2/3 the height of the tree, provided; however, that only single tree selection logging is pemtted in this area, so long as the giant sequoia tree is protected from unnecessary logging damage.

xi) Naturally occurring giant sequoia trees (under 3 feet

dbh) located inside of the Grove Influence Zone shall be protected ~~from~~ all logging operations, including specifically ~~protecting~~ the root system. Every reasonable effort shall be made to protect naturally occurring giant sequoia trees (under 3 feet dbh) located outside of the Grove Influence Zone ~~from~~ road construction, cable logging, and other logging activities. No additional ~~buffer~~ ~~will~~ be required for these trees, though the Forest Service shall make an effort to preserve them ~~within~~ wildlife clumps, ~~within~~ other small areas not logged under the regeneration ~~mosaic~~ silvicultural prescription, or within areas reserved to meet the seral stage diversity requirements.

xii) Any detached naturally occurring group (10 or more giant sequoia trees with at least 4 trees ~~with~~ a 3 foot or larger dbh) located outside the Grove Influence Zone, and not identified by Rundel ~~as~~ included in an existing Grove, shall be given the designation of "Grove" and given a 300 foot ~~no logging~~, restricted ~~mechanical~~ entry zone within the Grove boundary and a 300 foot Grove Influence Zone; provided, however, that the Grove Boundary Team agrees with ~~this~~ designation. If the Grove Boundary Team cannot

agree, the unresolved issue shall be submitted to the Expert Panel for its determination and recommendation to the Forest Supervisor.

xii) If previously unknown Giant Sequoia trees of any size and number outside of the interim buffer or final Grove boundary are discovered, the applicable Grove boundary and/or Grove Influence Zone shall be modified in accordance with the guidelines set forth in this section.

(k) The Grove Boundary Team may reasonably adjust final boundaries of Groves and/or Grove Influence Zones, subject to final approval by the Forest Supervisor, either to expand or contract these zones, for a specific Grove, so long as there is a rational basis for the adjustment (such as topographic features) and all participating team members agree to the adjustment.

(l) With the exception of Converse Basin, these Grove and Grove Influence Zone boundary line standards and guidelines are solely for the purpose of protecting the Groves and the adjacent areas, and are not intended as a

"release" or a management prescription for other areas of the Forest, which shall be managed or protected as otherwise provided in the forest plan and in this Agreement.

- (3) If any logging is planned to occur within 1,000 feet of any interim or final Grove Boundary, a special written notice shall be sent to the appellants. This notice shall include a topographical map which specifically (1) locates the boundary of the proposed cutting unit, (2) locates the Forest Service interim or final Grove Boundary, (3) predicts the distance between the two, and (4) specifies a date and time, no sooner than 30 days, unless otherwise agreed upon, for the interested parties to accompany the Forest Service into the field to review the plan on the ground with the objective to resolve differences prior to the preparation of an EA or EIS.
- (4) If Grove Boundary Team members fail to reach unanimous agreement on permanent Grove and Grove Influence Zone boundaries for all Groves prior to December 31, 1991, or within a reasonable time thereafter, if a specific extended time period is agreed upon in writing by all team members, an Expert Panel of three people shall be formed. The Sierra Club and

Save-the-Redwoods League shall appoint one member, the Forest Service shall appoint one member (acceptable to the timber industry), and the two appointees shall choose a third Panel member. All should have a background in giant sequoia protection. The Panel will address itself to each Grove as to which the Team failed to reach agreement. The Panel will review the maps, the differing opinions of the Team Members, and will go into the field to review the matter on the ground. The Panel will make a formal, public written recommendation to the Forest Supervisor for the boundary line of each disputed Grove. The Forest Supervisor shall, upon receiving the final recommendations of the Grove Boundary Team and the Expert Panel (if one is convened), issue a Plan amendment establishing the boundaries of Groves and Grove Influence Zones.

- (5) Except as otherwise provided in this agreement (see section B.2.e.(2) below, re: Converse Basm), each Grove, with final administrative Grove boundaries determined as described herein, shall remain outside the suitable land base.

- d. Complementary Management in Grove Influence Zones and outside of Groves



- (1) Within the Grove Influence **Zone**, **only** Regulation **Class II**, single **tree**, small group uneven-aged management silvicultural prescriptions will be permitted both before and after **final** administrative Grove Influence **Zone** boundaries **are** identified; provided, however, that **if** a more protective management designation also applies to the area, or portions of the area (such as streamside management **zones**, SOHAs, etc.), the more protective designation shall govern what, **if** any, **logging** activity is allowed in the Grove Influence **Zone**.
  
- (2) In all situations where logging or road construction is planned outside of, but upslope of a Grove, a special written notice shall be sent to all appellants during initial development of project alternatives. This notice shall explain fully the action proposed and shall include a topographical map which specifically (1) locates the proposed cutting unit or road to be built, (2) locates the Grove boundary, (3) predicts the distance between the two, and (4) specifies a date and **time**, **no** sooner than 30 **days**, unless otherwise agreed upon, for the interested parties to **accompany** the Forest **Service** into the field to review the plan **on** the ground with the objective to resolve differences prior to the preparation of an EA or **EIS**. The Decision document for any such activity **shall** include a

specific finding that the Grove **will** not be harmed.

- (3) The Sequoia National Forest shall consider Regulation **Class 2** helicopter ~~single~~ tree removal for logging operations outside and upslope of, and in close proximity to, a Grove.

e. **Special Area Designations**

- (1) The Sequoia National Forest shall manage the Freeman Creek Grove Management Area as a Botanic Area. (See further discussion in section **B.2.c.(2)(j)(iv)** above).
  
- (2) The Sequoia National Forest shall amend the Plan to provide for management of the Converse Basin Grove under Regulation **Class II** small group or single tree selection and shelterwood silvicultural prescriptions; provided, however, that the regeneration mosaic prescription may be used, if appropriate, in certain limited circumstances (ie. areas logged since circa 1950). No other clearcutting will be permitted in the Converse Basin Grove. Such management activity in the Converse Basin Grove must be pursuant to a plan and **EIS** that shall, among other things, (a) allocate the 600 acres previously recommended by the Forest Service for preservation to preservation management with a buffer,

and (b) allocate 10% of the remaining (approximately) 2400 acres (240 acres) in the Grove for preservation and regeneration of Giant Sequoias to replace trees cut at the *turn* of the century. This 10% should be chosen in areas where there has been significant regrowth of the giant sequoia (ie. areas where 70-100 year old giant sequoias are abundant), and no designated preservation units shall be less than 40 acres. All giant sequoias 3 feet or larger dbh in Converse Basin shall be preserved, regardless of any other permitted logging activity. Small giant sequoias may be cut along with other species.

f. Regeneration of Cut-Over Giant Sequoia Groves

- (1) The objectives of regenerating cutover Giant Sequoia Groves will be to restore these areas, as nearly as possible, to the former natural forest condition.
- (2) The Forest shall implement the regeneration plan required by the Stipulation for Entry of Judgment dated 12/27/89, in Sierra Club v. U.S. Forest Service, Case No. CVF-87-263 EDP.

g. This Agreement and the standards and guidelines which it contains shall be interpreted liberally, in the event of ambiguity, in order to

implement the purpose of protection of the Giant Sequoia Groves and Grove Influence Zones.

- h. Research projects may be permitted if consistent with this Agreement. Research projects are subject to NEPA

**C. *Grazing and Oak Management***

1. ***Introduction:*** Livestock grazing is subject to applicable riparian standards and guidelines. The Plan **will** be amended to clarify that **Animal** Unit Months ("AUMs") allotted under the Forest Plan **will** not be increased over recent historic levels of approximately 68,000 annually.
  
2. ***Livestock Grazing in Blue Oak Savanna*** -- The Plan shall be amended to change management area prescription **B06** on page **4-77** of the Plan to:
  - a. Range
    - (1) Give priority to maintaining and enhancing blue oak.
    - (2) Develop water, fences, trails, etc., to facilitate optimum use of forage.
    - (3) Retain at least **700** lbs./acre residual *dry* matter (RDM) as the utilization standard for livestock use.

- (4) Winter grazing allotments will limit browse utilization to a change of no more than 15% of preferred browse or 5% of staple species to heavily browsed conditions (form class 3 or 6). Limited browsing will maintain browse in satisfactory condition and indicate that green feed is available for wildlife during winter "green up" (inadequate green forage period).
- (5) Allotment Management plans will emphasize wildlife use of mast crops.
- (6) Pursuant to a contract with the Forest Service, the University of California through the Fresno Foundation California Agricultural Technology Institute, has completed and published in November, 1989 a study of reproduction and age-class frequency of blue oaks on the Sequoia National Forest. Based upon the results of this study, the Sequoia National Forest will adopt allotment specific minimum threshold levels of oak recruitment for implementation in allotment plan revisions beginning in 1991 or sooner as specified in item (7) below.

(7) The Sequoia National Forest will identify allotments where oak reproduction **is** at or below the **minimum** recruitment threshold level and **will** develop long-term strategies to increase recruitment of oaks into these **stands**. Upon renewal, allotment management plans **will** be used to prescribe management strategies to improve management of oak and enhance recruitment based on the University of California study of the Sequoia National Forest along with other studies. **A** variety of strategies will be considered to obtain an adequate recruitment of oak. The Forest Service **will** monitor recruitment of oak species into the **stands as** part of allotment plan inspections and analysis.

3. **Oak Management**-- The Plan shall be amended to change management direction on page 4-30 of the Plan under Oak Management to:

- a. In mixed conifer-hardwood stands, leave at least 20 square feet per acre basal area of oaks where this currently exists.
- b. Where it currently exists in pure hardwood **stands maintain** a minimum average of **50** square feet per acre basal area. Leave

heavy mast-producing trees in any harvest of oaks.

- c. Where it currently exists, leave a minimum of 30 square feet per acre basal area of oaks in mixed conifer hardwood stands identified as key deer areas.
- d. Live oak stands will not be subject to vegetative manipulations other than prescribed burning, thinning for vigor, or for wildlife and watershed habitat improvement.
- e. In mixed hardwood-conifer or hardwood stands, favor retention of oak trees exhibiting active use as cavity nesting sites or graineries.

- 4. Black Oak. Prescription OW6 -- The Plan shall be amended to change management area prescription **OW6** on pages 4-79 and 81 of the Plan to:

Emphasis

Livestock grazing will be emphasized in black oak woodlands. Where black oak stands are overstocked, thinning may be done to improve age structure, mast production, vigor, or to create fuelbreaks. Range improvement will be provided as needed.

### Opportunities

Wood harvesting in black oaks will be permitted to improve age structure, mast production, vigor, or to create fuelbreaks. Recreation activities which are acceptable within Semi-Primitive Non-Motorized class will be emphasized. Camp and picnic facilities will not be developed. Dispersed recreation will be limited. Watershed improvements which enhance and protect range productivity will receive priority. Transportation system planning and management will favor range activities. Wildlife habitat will be managed to maintain or enhance harvest species and to maintain viable populations of oak woodland dependent species.

### Fish and Wildlife

- a. Provide for 1.5 snags per acre. See section J.1.c.
- b. Maintain at least 50 square feet basal area per acre of oaks where it currently exists.
- c. Maintain understory vegetation to provide horizontal and vertical diversity.
- d. Ensure a stable or upward trend in supply of oaks.



- e. There should be a good distribution of all age classes of oaks that will optimize acorn production. The desired objective is to establish good regeneration and a healthy, viable stand.

seedlings	0-20 years
saplings	21-80 years
mature and decadent	81-250 years

**Range**

- a. Develop water, fences, trails, etc., to facilitate optimum use of forage.
- b. Retain at least 700 lbs./acre residual dry matter (RDM) as the utilization standard for livestock use.
- c. Winter grazing allotments will limit browse utilization to a change of no more than 15% of preferred browse or 5% of staple species in heavily browsed conditions (form class 3 or 6). Limited browsing will maintain browse in satisfactory condition and indicate that green feed is available for wildlife during winter “green up” (Inadequate green forage period).

- d Allotment Management plans will emphasize wildlife use of mast crops.

5. Livestock Grazing of Burned Mixed Chaparral -- The Plan shall be amended to change management area prescription MC6 on page 4-82 of the Plan to:

Fish and Wildlife

- a. Provide wildlife adaptations in all water developments.
- b. Consider wildlife needs for cover and edge in vegetation manipulation projects.

Range

- a. Use prescribed fire as primary method to accomplish age class management.
- b. Implement vegetative manipulation projects on slopes less than 40% when crown cover of browse species is greater than 70% or average height exceeds 5 feet.
- c. Develop water supplies, fences, and trails where needed on

intensively treated lands.

- d. Allotment Management Plans will be used to prescribe management strategies for the first three growing seasons to manage hestock grazing to promote recovery of the mixed chaparral community and maintain native plant species diversity following prescribed fire. Salting, managing water development, riding, deferring or changing season of use and drift fencing are some of the strategies to be considered for implementation following fire to maintain native plant species diversity.

6. *Effects of Prescribed Fire on Ape-Class and Diversity in Mixed Chaparral --*

A Plan amendment will change management indicator species on pages 3-25, 3-26, and 3-27 of the plan to:

- a. Page 3-25 -- Species associated with early successional stages: deer and California *quail*.
- b. Pages 3-26 and 3-27, Table 3.6, "Indicator Species Used to Determine Changes in Habitat" on page 3-26 and the write-up on "Early Successional Stage" on pages 3-26 and 3-27 of the plan will be changed to include the California quail.

7. Prescription **MC5** - The Plan shall be amended to change management area prescription MC5 on page 4-69 of the Plan to:

Fish and Wildlife

- a. There should be a good distribution of chaparral age classes with the objective of maintaining a healthy, viable stand.

seedlings, sprouts	1-10 years
young	11-30 years
mature/decadent	31+ years

- b. Implement vegetative manipulation projects only when crown density of browse species is greater than 70% or average height exceeds 5 feet.
- c. Develop water supplies on intensively treated lands.
- d. Treat vegetation on slopes greater than 40% to establish a 31+ year age-class rotation.

8. Prescription MC6 –The Plan shall be amended to change management area prescription MC6 on page 4-82 of the Plan:

Fish and Wildlife

- a. Provide wildlife adaptations in all water developments.
- b. Consider wildlife needs for cover and edge in vegetation manipulation projects.

Range

- a. Use prescribed fire as primary method to accomplish age-class management. No more than 60% of the vegetation should be in the seedling/sprout--young age-class. Slopes over 40% are allocated to provide age-classes of 31+ years and older.
- b. Implement vegetative manipulation projects on slopes less than 40% when crown cover of browse species is greater than 70% or average height exceeds 5 feet.
- c. More than 50% of the prescribed fires are to occur in the late summer and fall.

d. Develop water supplies, fences, and *trails* where needed on intensively treated lands.

9. **Type Conversion** -- References to type conversion are to be deleted from the Plan. A Plan amendment **will** make the following deletions:

a. Delete the statement "convert chaparral types to annual grass on slopes less than 10%" from the Fish and Wildlife Section, item 2, on pages ~~4-46~~ and ~~4-69~~, and from the Range section, ~~item 2~~, on page ~~4-82~~ of the Plan.

b. Delete the statement "limit type conversions" from the Fish and Wildlife section, item 4, on page ~~4-44~~ of the Plan.

c. Delete the statement "allow type conversions in ecosystems for wildlife needs" from the Fish and Wildlife section, item 2, on page ~~4-72~~ of the Plan.

d. Delete the words "chaparral type conversions and" from Fish and Wildlife section, item 2, on page ~~4-82~~ of the Plan.

e. Delete the words "or type converted" from *Vegetation* sections, 1)

chaparral on page 49 of the Plan.

10. *Allotment Plans and Effectiveness*-- The Plan shall be amended to make the following changes:
  - a. To Forest-wide Standards and Guidelines add on page 4-30 of the Plan under Range: Allotment management plans **will** include specific information on range condition, trends, livestock grazing capacity, utilization maps and measurements, and forage and habitat allowances for wildlife and they **will** assess grazing impacts on wildlife, fisheries, water **quality** and other environmental values. Where such information is lacking from an allotment management plan, it shall be added when the plan is **next** amended or renewed. Management plans will develop strategies to minimize or discourage livestock use in botanical areas. Where livestock use is in direct conflict with the values for which the botanical area was established, that use will be **eliminated**. Where livestock grazing is shown to be beneficial for the endangered or sensitive species, it **will** remain.
  - b. Forest-wide Standards and Guidelines on page 4-30 of the plan under Riparian Areas: The Plan **shall** be amended to change the

last sentence to read, "Monitor the effectiveness of the Sequoia National Forest's Riparian and Wetlands **Standards** and Guidelines.

- c. The quarterly project planning schedule shall include the allotment plans that are scheduled for renewal or amendment.

**D. Allowable Sale Quantity**

1. Background

- a. Calculation of a sustainable, maximum Allowable Sales **Quantity** (ASQ) from a given land base requires that the Forest Service make a number of assumptions. These include **assumptions** about the intensity of future timber management, regeneration success, growth rates, funding levels, probable environmental Impacts, and probable success of mitigation measures.
- b. The Sequoia National Forest believes that the assumptions used in developing the Sequoia's yield tables and in calculating the ASQ agreed to below are reasonable ones and are conservative.
- c. The conservation group appellants, however, are concerned that many of the assumptions are unproven and may be overly optimistic. In their opinion the calculated ASQ may not be



sustainable **from** the Plan's timber land base, and it may have to be reduced based on actual experience. The timber industry, on the other hand, considers the productive capability of the Forest to be at least twice the **ASQ** agreed to below.

- d. **All** parties recognize that the assumptions used **in** calculating the **ASQ** must be examined in light of actual experience **as** the **Plan** is implemented to **determine** whether the **ASQ** is appropriate and sustainable. This question **will** be addressed in the Forest's **annual** reports and five-year Land Management **Plan** review. (See **Section W.**)
  
- e. The **ASQ** calculations referred to below assume that herbicides and other forms of brush control **will** be used on the Forest pursuant to Regional authorization. Nothing in this Agreement **implies** any party's consent that use of herbicides is appropriate or waives any party's right to challenge herbicide use in the Region.

- 2. ASQ. The **ASQ** under the Plan for the decade beginning in 1990 shall be **750 million** board feet ("**MMBF**") **from** the suitable (regulated) land base (green and salvage volumes), subject to 16 **U.S.C. § 1611**. The Forest may also sell during the decade **50**

MMBF of unregulated salvage and other unregulated volume. Any logging of unregulated lands shall be solely for the purpose of achieving a specified wildlife, recreation, fishery, sensitive plant, or research objective; salvage; or restoration in case of a catastrophic occurrence.

3. Short Fall in Timber Sale Program in FY 1988 and 1989. The parties acknowledge that administrative appeals and litigation have significantly reduced the Sequoia's timber sale program during fiscal years 1988 and 1989. As a result, the two principal purchasers of timber on the Sequoia National Forest, Sierra Forest Products and Sequoia Forest Industries, represent that they currently have record low volumes under contract on the Sequoia National Forest. The shortfall in volume between the volume scheduled in the FLMP and actual volume sold in fiscal years 1988 and 1989 may be made up, if feasible, over the life of the Plan; however, any make-up volume for FY 1988 and 1989 shall be from the salvage of dead and dying trees.

4. Existing Timber Sales Under Contract. As of the date of the signing of this Agreement, the parties agree that any green timber sale under contract on the Sequoia National Forest shall not be subject to further challenge by any party, provided, however, that the Sequoia National Forest shall

continue to enforce the terms of all timber **sale** contracts. the Forest and Sierra Forest Products agree to suspend logging and related activities in units 12, 32, 33, 34, and 39 of the Scraps timber **sale**. (These units are within 1.5 miles of the center of a Spotted Owl Habitat Area.) The suspension shall last until the Forest has, with respect to the identified units, complied with the requirements of section D.5.b(2).

5. *Interim Timber Sale Program.* The sales listed below do not necessarily meet all of the requirements of this Agreement. Nevertheless, the parties agree that these **sales** may go forward, without further challenge by any party, provided that the terms and conditions set forth in a. and b. below are adhered to. The parties reached this agreement concerning the designated timber sales in a spirit of cooperation: **their** intent is to facilitate the Forest's orderly implementation of this Agreement while, in the interim, minimizing disruption of the local timber supply. Their intent is also to address, in **an** expeditious manner, **important** environmental concerns (particularly spotted owls and watershed conditions) that were raised in connection with the listed **sales**.

**EA's Drafted or Issued & Subject to Appeal (FY 89-90)**

<u>District</u>	<u>Sale</u>	<u>Volume</u>	<u>WS &gt; 80%</u>	<u>Aff. Vol.</u>	<u>Net Vol.</u>
HL	Lightning'	2.0			2.0
HL	Doney	2.2	1		2.2
HL	Buck Rock	3.5			3.5
TR	Mountaineer	3.0			3.0
TR	Jerkey	4.5			4.5
HS	Vincent	6.0	1	.485	5.5
HS	Ranger 13%	1.7	2	.03	1.67
GH	Liebel 14%	8.5	4	.95	7.5
CM	Paloma*	5.4	1	1.07	4.3
CM	Casa-Guard	<u>18.7</u>	4	7.5	<u>11.2</u>
	Total	55.5		10.14	45.38

**EA's Yet to be Drafted (FY 90)**

HL	Rabbit	2.0
HL	Hyde	1.0
GH	Flat'	5.1

<b><i>Total Potential</i></b>	<b><i>Total Volume Released</i></b>
<b><i>Volume</i></b>	<b><i>Unconditionally</i></b>
<b>69.0</b>	<b>51.68</b>

• Designates FY 89 Carryover Sales

a. **Watershed Review.**

- (1) For each timber sale listed above which contains units within a subwatershed above 80% of the threshold of concern, harvesting of those **units** shall be deferred **until** the Forest conducts a site specific field inspection to verify the pre-

project Cumulative Watershed Evaluation ("CWE") calculation for each watershed and to verify that the proposed project will generate the projected Equivalent Roaded Areas ("ERAs") that have been identified.

- (2) The review referenced in section D.5.a(1) above will be conducted by Forest Service personnel within 60 days of the signing of this Agreement. Both the timber industry and conservation appellants will have the opportunity to designate one individual to observe the review of the field verification work. However, the Sequoia will set and manage the schedule to meet the deadline. The purpose of the review is to insure that adequate measures have been prescribed for these units for control of erosion and sedimentation, and to determine whether mitigation should be modified, or whether units should be modified or omitted, in order to protect soil and water resources.
- (3) **A minimum** of two professionals (earth scientists or hydrologists) will field review **all units** in each of the affected watersheds. For each **unit**, the reviewer will determine one or more new Erosion Hazard Ratings

("EHR") as necessary for proper site evaluation, taking into consideration variations in slope, aspect, vegetative cover, etc. The EHR will be compared to the disturbance coefficient rating used for the CWE analysis. If the projected disturbance levels are different, a new CWE will be formulated.

- (4) On sites demonstrating a high EHR, the professionals will review the mitigation listed in the Environmental Assessment ("EA") to determine if it is adequate to mitigate the concerns identified and their own professional concerns based on field review. If the mitigation is not adequate, the professionals may propose additional mitigation, modification of units, or elimination of units as necessary to address such concerns. Logging and/or roadbuilding shall not be allowed where it would cause impacts to exceed the Threshold of Concern.
- (5) All proposed mitigation must be financed and completed as part of the proposed project. Unfunded WINI proposals will not constitute acceptable mitigation.

- (6) Post-project monitoring **will** be conducted in accordance with the Sierra National Forest monitoring plan. Monitoring **will** be conducted both to ascertain if mitigation was implemented and to evaluate its effectiveness.
- (7) Units which are (1) not subject to the watershed review requirements of sub-paragraph a., and (2) not subject to re-evaluation concerning spotted owls (see section b below), may be released for timber harvesting.

b. Spotted Owl Review.

- (1) For the sales listed above, the Forest **shall** identify timber sale units within **1.5** miles of the center of a **SOHA** (an "adjacent SOHA" for the purposes of this Agreement). The Forest shall allow no harvesting of such units (the "affected units") until the spotted owl review provisions of this subsection b. have been completed.
- (2) Affected units shall be reviewed **as** follows:
  - (a) Unless the Forest has already determined such occupancy **status** during the last five years, **the** Forest

shall conduct field work to determine occupancy status of each adjacent SOHA, (including attempting to locate any owl pairs, and a pair's nest site or major roosting site(s)).

- (b) The Forest shall review for compliance with Regional protocols the pre-project survey methods and analyses that were used for network and non-network owls. Any pre-project survey not in compliance shall be brought into compliance.
- (c) The spotted owl biological evaluation **will** be brought into compliance with the requirements of section E.2.b.(2) and (3) of this Agreement.
- (d) If after following the procedures set forth above, the Forest determines that there are **no** spotted owl pairs in the timber sale area or in the adjacent SOHA(s), it may proceed with the sale **as** planned unless the requirements of section **E.2.b(3)(f)** apply.
- (e) If after following the procedures set forth above, **the**



Forest finds a spotted owl pair in the affected units, but not in the adjacent SOHA, the Forest shall conduct a field review to reassess the best 1000 acres of core and 650 acres of replacement habitat and to determine if the Forest should recommend adjusting the SOHA boundary to include the owl pair. If the Forest recommends a change, it shall protect both the original SOHA and the proposed SOHA pending a Regional decision.

- c. With respect to the Casa Guard timber sale, the timber industry agrees to assist the Forest Service in addressing the erosion problem at Rodeo Flat and to repair water bars and side drains within the Fish Creek drainage.
  
- d. The parties agree not to challenge the Flat, Rabbit, and Hyde timber sales, provided the following conditions are met: these sales shall be subject to the Interim Timber Sale Program Watershed and Spotted Owl requirements in section D.5.a. and b., and shall otherwise meet all requirements of this Agreement, except CWE (section N), spotted owls (section E.2.b.) and the EAs (section P). As to the EAs, the Forest shall complete the EAs in conformity

with Forest Service regulations and procedures, and shalt make every reasonable *effort* to comply with section P below, consistent with the objective of completing the **EAs** for inclusion of the timber sales in the 1990 sales program. The Flat Timber Sale shall also comply with legal requirements for protection of the Manposa Lily (per the Species Management Guide). Before issuance of the **EAs** for any of these sales, a representative of the conservation appellants will meet with Ken Fisk or the appropriate District Ranger to attempt in good faith to work out any problems. For the conservation appellants, the representatives will be, for Flat, Brett Matzke; for Rabbit and Hyde, John Rasmussen.

6. *Timber Industry Fund.* Beginning with FY 90, the timber industry agrees to pay \$1 per thousand board feet for volume harvested into a fund that will be managed by the companies to finance watershed improvement, reforestation or recreation related projects which benefit the Sequoia National Forest. For each year, the fund shall be contributed with 30 days after the end of the calendar year based upon the actual volume of timber harvested (net scale) during the prior year.
  
7. The Regional Forester agrees to expedite and decide all remaining pending administrative appeals involving Sequoia National Forest timber

sales within 30 days of the date of the signing of this **Agreement**, or 30 days after the administrative record in the particular appeal is closed, whichever occurs later. The Regional Forester further agrees to petition the Chief or the Secretary of Agriculture to conclude any subsequent review by their own offices as rapidly as possible.

*E. Old Growth, Wildlife Species, and Fisheries*

1. Background.

- a. The Sequoia National Forest manages for old growth values in Spotted Owl Habitat Areas, riparian zones, wilderness areas, giant sequoia groves and significant portions of other areas as required for wildlife and visual values.
- b. In May 1990, the parties reviewed the Sequoia National Forest's spotted owl network and practices for compliance with Regional direction. The provisions of section 2.b. below embody the conclusions of that review.

2. Spotted Owl Habitat Areas (SOHA)

- a. The Sequoia NF shall review the SOHAs on the Forest. The objectives of the review will be to utilize giant sequoia groves and other unregulated areas in the Spotted Owl Network, if doing so

will maintain or improve the **quality** of the habitat in the network **while** lessening the impact of the network **on** the suitable land base. **As** part of the **SOHA** review, the Sequoia National Forest will consult with the Department of Fish and Game. Any changes in **SOHA** areas will be subject to current guidelines for habitat, **distribution**, occupancy, and other relevant criteria. **SOHA** network changes under this item will require **Regional Office** approval and public review.

b. **Biological Evaluations for Spotted Owls.**

- (1) **Background:** The parties agree that it is important to verify an existing **SOHA** before any timber harvest occurs **within** a **1.5** mile radius from the center of the **SOHA**. (**The 1.5** mile distance was originally adopted by the Sequoia for purposes of analysis). Verification means determining owl habitat **types** and quantities and owl use. For practical purposes, owl use is determined by identification of owl pairs or location of either a nest site or major roost site.
- (2) For all timber sales, pre-project surveys for non-network **owls** must be done according to **Regional** protocols and documented in a biological evaluation ("BE").

(3) When any portion of a timber sale is located within 15 miles from the center of a SOHA (an "adjacent SOHA" for purposes of this Agreement), the spotted owl BE for the sale must include:

- (a) **Types** and **amounts** of habitat-available within the adjacent SOHA(s);
- (b) Discussion of the **results** of spotted owl survey, inventory, and monitoring work done in each adjacent **SOHA** during the previous five years;
- (c) Discussion of all other spotted owl survey, inventory, and monitoring work (including surveys for non-network owls) performed in connection with the sale.
- (d) Discussion of the occupancy **status** of adjacent **SOHA(s)**. Where occupancy of an adjacent **SOHA** has not been determined, **the** Forest shall conduct field work **to** determine occupancy. **A** survey for **occupancy** shall include attempting to locate during

the breeding season any pairs of spotted owls in the SOHA, and either the pair nest site, or major roosting site(s).

(e) Clear statements of conclusions drawn from (a)-(d).

(f) Consideration of any SOHA adjustments that might be appropriate to better incorporate known spotted owl sighting locations and suitable habitat outside the SOHA.

i) Where the Forest has been unable to verify pair occupancy in a SOHA within the last 5 years (1986-1980), and is unable to verify owl pair occupancy during two successive years either within the SOHA or within a 1.5 mile radius from the center of the SOHA, then the Forest shall review the SOHA location for the purpose of determining an alternate more effective location.

ii) The BE must be completed before preparation

of the timber sale decision document. Any recommended changes in SOHA boundaries **will** be forwarded to the Region. **Pending Regional** action on such recommendation, no logging or roading **will** occur that is inconsistent with the **original** or the proposed **SOHA** boundanes. ■

(4) All **SOHA** assessments, reassessments, adjustments, and readjustments shall occur independent of and without reference to timber sale boundaries.

(5) **The Forest** shall *fully* document all spotted owl determinations.

3. **Furbearers**

a. **The Sequoia National Forest will** manage habitats and activities for threatened and endangered species to achieve recovery objectives, and for sensitive species, to insure that they do not become threatened or endangered because of Forest **Service** actions (as specified in **FSM 2670**).

- b. Sierra Nevada red fox, pine marten and fisher will be managed as sensitive species. Region 5 of the U. S. Forest Service is developing Regional guidelines and directives for furbearer management. In FY 1990 and 1991, the Forest will identify critical habitat for these species in accordance with Region 5 Draft 1989 Guidelines for furbearer, or amendment thereto, and provide interim protection of this habitat. The Forest will use biological evaluations when surveys or historical observations indicate the presence of furbearers within a proposed project area, or when the proposed project may have a potential effect on the species or their critical habitats. Biological evaluations shall be based on surveys of the project area and shall evaluate habitats within the project area in the context of the distribution of the species within the Forest. Preference, when consistent with Regional guidelines, will be afforded to the fisher in its range from 4,000 to 8,000 feet in elevation and to the marten between 8,000 and 13,000 feet in elevation.
- c. The Forest Plan shall be amended to incorporate management practices, and critical and other habitats, essential to the conservation of these species after the Region finalizes the appropriate guidelines and directions. The Forest agrees to



proceed rapidly with any such Plan amendment and to publish the proposed Plan amendment within one year of the Region's final guidelines for any of the specified species.

- d. The Forest acknowledges the need to determine the distribution, status and trend of these species and their habitats within the Forest for biological evaluations, interim ~~management~~, and the Forest Plan amendment. The Forest will request adequate funding through the annual budgeting process to accomplish this in an expeditious manner. The Forest ~~will~~ negotiate with the Region to locate ~~funds~~ if possible for the 1990 field season to commence a systematic, intensive track plate survey of the Forest. In any event, the Region shall provide ~~funds~~ necessary to conduct the survey by the end of the 1991 field season. (Track plate survey ~~will~~ be used unless the Forest Service determines in consultation with Dr. Reg Barrett that another survey method would provide better data.) The track plate survey should include ~~as~~ many other species ~~as~~ practicable. The Forest Service ~~will~~ consult/confer with Dr. Reg Barrett of U. C. Berkeley in designing this survey.
- e. Exhibit H identifies certain closed ~~canopy~~ (>40%) mature or old growth ~~stands~~ which may meet some of the habitat requirements

for furbearers or may have the potential of being identified as **critical** furbearer habitat. **Until** the furbearer habitat network is established, biological **evaluations** will be used to determine the potential effects on furbearers and the **establishment/maintenance** of **their** critical habitation and viable populations where project proposals impact the above identified areas. Where projects are proposed impacting old **growth stands** in **Exhibit H**, disclosure in the **EA/EIS** will show analysis of such impacts on maintaining adequate old growth resources and need to maintain **these** areas for furbearer habitat. **The** Forest Service shall **consult** with the Department of Fish and Game to determine whether **these stands** should be protected as a means of meeting the habitat/seral stage diversity requirements.

4. **Bald Eagles**

**The** Plan will be amended to include the following standard: Protect important roost **trees** and feeding areas for **wintering** bald eagles in **the** vicinity of Pine Flat **Reservoir** and along the Kern River.

5. **Goshawks**

**The** Plan will be amended to include the following standard: Protect all **active** goshawk nests until an approved Sequoia National Forest Goshawk

Network is established. The Forest will submit a proposed network to Region 5 by January 1, 1991 for approval. Nest protection will include 125 acres of habitat having a restricted operating season from April 1 to August 1 and will include 50 acres of undisturbed suitable habitat surrounding each active nest site. Each project area will be examined for active goshawk nests with the results reported in the environmental document for that project.

6. Condors. The Condor Recovery Plan is currently being revised. The following requirements shall apply until such time as the revised Condor Recovery Plan is Implemented.

a. Suitability Criteria for Evaluating Nesting Sites

- (1) All previously inventoried Giant Sequoia trees with cavities identified as suitable for use by a California condor shall be designated potential condor nesting sites. All newly discovered Giant Sequoia trees with cavities having a potential for condor nesting shall also be designated potential condor nesting sites.
- (2) Until a determination is made that these potential condor nesting sites are unsuitable for use by California condors, management shall be governed by subsection b. below.

- (3) Determination of cavity suitability shall be based on the criteria, found in the May 4, 1984 Memorandum by K Jimenez-Anderson (USDA, Sequoia National Forest) entitled 'Surveying Sequoia gigantea Groves for Condor Nests and **Roosting** Trees,' with the following exceptions: the following criteria, described in the aforementioned memorandum, shall NOT be considered in determining cavity suitability (a) "perches available for young and adults to utilize while hopping in and out of **rest**," and (b) "fairly easy approach **from** the air, and space below for taking **off**."

b. Management of Potential Nesting Habitat

- (1) No clearcutting shall occur within 1/2 miles of a potential condor nesting site.
- (2) **Construction** of new permanent roads and **trails** for public use within 1/2 mile of any potential condor nesting site is prohibited. The spacing of temporary roads and landings shall not be any closer **than** three-eighths of a mile. The intent of this provision is to **maintain** the general forest

canopy surrounding potential nest sites so that condors will feel "safe" entering and leaving the nesting area.

- (3) When California condors are released and are capable of nesting (approximately five years after release), the Sequoia National Forest in consultation with the Condor Recovery Team shall prepare and implement a road and trail closure plan. The Forest and Condor Recovery Team shall follow the standards and guidelines outlined in the subparagraphs (a) - (d) below in preparing this plan.

- (a) All roads (except roads currently paved and those named in (d) below) and trails within .5 miles of a potential nesting site shall be closed to all use, and those within 1.5 miles shall be closed to motorized use, from January 1 through June 30 each year. This closure may be lifted after April 30 each year if the Sequoia National Forest in consultation with the Condor Recovery Team has completed field observations, after April 15, and has concluded that condors are not actively nesting in the affected potential nesting area. The sole limited exception to

this closure shall be for Forest Service vehicles conducting administrative business that could not be postponed ~~until~~ after the closure season. Logging-related uses and recreation uses are specifically excluded during this closure period.

- (b) If the Forest Service determines that condors are nesting in the area, roads and trails within 15 miles of the nesting sites shall be closed for the balance of that calendar year.
- (c) Notwithstanding sub-paragraph (a) above, the following may remain open:
  - i) Road 21S05, for recreational use, with a seasonal restriction on the operation of heavy equipment.
  - ii) Road 21S94 from Camp Nelson to the gate at the Tule River Indian Reservation.

- iii) **McIntyre Summer Home Tract**
- iv) **Belknap Campground**
- v) **Redwood Meadow Campground**
- vi) **Trail of One Hundred Giants**
- vii) **Long Meadow Campground**
- viii) **23S05 White River Road**
- ix) **Quaking Aspen Campground**
- x) **Holey Meadow Campground**
- xi) **If additional potential nest sites are discovered, the Forest Service in conjunction with the Condor Recovery Team shall determine if additional campgrounds, road, or other public uses may remain open.**

c. Management of Active Nesting Habitat

Perennial and intermittent streams upstream and within 1.5 miles of an active nesting site shall not be drafted as a source of water for dust abatement, prescribed burning, broadcast burning, or any other purpose (except to fight wildfires) during the calendar year in which a nest is active.

d. Management of Roosting Habitat

- (1) The roost sites identified in the Sequoia National Forest shall remain outside the suitable land base, and shall be designated Wildlife Habitat Management Areas.
- (2) When California condors are released, the Forest Service, in consultation with the Condor Recovery Team, shall prepare and implement a road and trails closure plan. Additionally, all roads (except currently paved roads) and trails within 1/2 miles of the roost sites shall be closed to all public use.

7. Fisheries

- a. Amend Plan, Table 4.2 on p. 4-14, under Direct Habitat Improvement, Resident Fish (Miles of Streams), Decade one-- Change from 3 {miles} to 5 [miles] of the streams in need of repair



or enhancement with available access.

- b. Amend Standards and Guidelines for Fish, ~~wildlife~~ and Plant Habitat Coordination, Plan at 4-28, **as** follows:

Restore and enhance fisheries habitat **through** implementation of "Rise to the Future" (an action plan for the National Forest fisheries program). Continue to identify via **stream surveys** all **streams** that are in need of fish habitat repair or enhancement and have the present **use** and access to justify such work, presently estimated **as** at least 50 miles of streams on the Forest. Complete repair or enhancement work on such **streams** at a rate of 10% per year so **as** to accomplish inventoried work within a **decade**, as prioritized by WINI.

- c. Amend Plan Goals on p. 4-3 to add: Promote recreational opportunities **by** striving to increase **fisheries** biomass by 20% **via** habitat improvement projects.
- d. Amend Plan **Standards and** Guidelines on p. 4-28 to add

- (1) **Portions** of Section 30 of the Slate Mountain roadless area will be removed from the suitable land base and managed to protect habitat of the Kem River Rainbow Trout.
- (2) **A** Riparian Demonstration Area **will** be developed for the critical habitat for the Little Kem Golden Trout.
- (3) Rainbow trout population surveys **will** be done in connection with stream channel surveys to comply with Forest Service guidelines for monitoring population trends of management indicator species.
- (4) Base line data will be generated using stream surveys, Region 5 Fish Assessment model, and identification of beneficial uses of water in CWE analysis.

**F. Suitable Lands**

1. **Background** The parties recognize that the Forest Service has a duty under the NFMA, 16 U.S.C. §§ 1604(k), to review the suitability of forest lands (including roadless areas) for timber production every ten years, and that the review could trigger a Plan amendment affecting land allocations.

2. The Plan shall be amended to provide: **As** the Sequoia **NF** implements the Plan, it shall identify on an on-going, site specific basis, **all** lands not suitable for timber harvesting due to regeneration problems, erosion or soil problems, Isolation, rocky terrain, or **any** other reason. The soils mventory shall be consulted in this process. Suitability shall be specifically addressed in each timber sale environmental document.

3. The **Plan** shall be amended to remove **from** the suitable land base the following: Giant Sequoia **Groves** (except portions of Converse Basin), oak woodlands, unregulated portions of stream-side management **zones**, **semi-primitive**, non-motorized areas, and other areas so designated in this Agreement. A list of all forested land that will be excluded from the suitable timber land base under the **Plan as** amended in accordance with this Agreement is attached **as** Ex. H.

4. **Reforestation Data Review.** The Sequoia National Forest **has** awarded contracts for the collection of reforestation data. The **data** collection is expected to be completed **by 12/31/90**. The data gathered **shall** be public information. The reforestation data gathered pursuant to the contracts shall be subject to challenge **as** follows:

a. **Any** party may challenge the accuracy of any site specific

determination if the challenge is accompanied by a statement of a Registered Professional Forester ("RPF") setting forth the basis of the challenge. The Sequoia National Forest shall make a written determination regarding the specific site and shall make that determination public.

- b. Any party may challenge any standard field procedure by presenting a written statement supported by a statement of an RPF setting forth the basis of the challenge. The Sequoia National Forest shall make a written determination regarding the challenged standard field procedure and shall make that determination public.
- c. Nothing in this section shall limit or impair a party's ability to raise questions concerning reforestation or the accuracy of reforestation data in connection with an administrative appeal of a specific project decision and/or project NEPA document.

- 5. Reforestation Report. With 6 months of completion of data collection, the Sequoia NF shall prepare a reforestation report. The report shall be made public pursuant to the Public Information and Report section below. The report shall include the following:

- a. Description and map of areas of past reforestation efforts, including current stocking levels.
  - b. Statement regarding conclusions based on data; e.g., whether certain land characteristics lead to greater reforestation difficulty.
  - c. Determination of whether there is need to change the suitable land base.
6. Interim: The results of the most current surveys and examinations of nearby plantations within the planning area (at least first and third year stocking exams); e.g., the compartment or group of compartments under study, shall be set forth and discussed in the environmental documentation for the relevant timber sale.

G. ***Roadless Areas***

1. The **Plan** shall be amended to incorporate **all** of the land use allocations and management direction set forth in this section.
2. **Hume Lake District**  
**Agnew Roadless Area** west of **Lightning** Creek **will** be classified as **unregulated**. No road building or logging **will** occur. **The area will** be

managed for giant sequoias, watershed, wildlife, and roadless recreation.

3. *Tule River Ranger District*

- a. Moses Roadless Area. The Regional Forester shall recommend that the mapped portions of the Moses Roadless Area (see Exhibit K) be included in the Wilderness System as provided under the Wilderness Act of 1964. Pending final disposition by the executive and/or legislative branches, the mapped portions of the Moses Roadless Area shall be removed from the available timber land base and the area will be managed to preserve its wilderness character.
  
- b. Slate Mountain Roadless Area will be divided into regulated and unregulated areas as shown on Exhibit J. Except for possible logging and road building incidental to the proposed development of the Peppermunt Mountain Resort (to be analyzed in an appropriate NEPA document), no commercial logging or member harvest roads will be allowed in the unregulated area.<sup>1</sup> Portions of Section 30 will be managed to protect habitat of the Kern River Rainbow Trout. The Coy drainage will be managed to protect the

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1. This exception does not in any way signify that the parties to this Agreement believe that the Peppermunt Mountain Resort should be approved and built.

Camp Nelson watershed and, together with the Rogers Camp saddle, to provide old growth habitat linkage between Slate Mountain and Black Mountain. Logging of the regulated area will be limited to Reg. II sanitation, single tree selection by helicopter, except that a portion will be limited to Reg. III management as shown on Exhibit J, with no roads or landings within the roadless area.

- c. Black Mountain Roadless Area will be classified as unregulated. No road budding or logging will occur. The Area will be managed for giant sequoias, watershed, wildlife (deer mitigation corridor, old-growth species), roadless recreation, and sugar pine gene resources.
- d. Dennison Roadless Area will be classified as unregulated. It will retain its current Plan designated as a Semi-primitive, Non-Motorized Area.

4. Hot Springs Ranger District

Lion Ridge Roadless Area will be divided into regulated and unregulated areas as shown on Exhibit J. No road building or logging will be allowed in the unregulated area. Logging in section 35 and the northwest corner

of section 36 **will be** limited to Reg. II ~~sanitation,~~ **single tree** selection by helicopter, **with** no roads or landings in this area. **The** unregulated lands will be managed for watershed, wildlife, (old-growth species and condor), and recreation.

5. **Cannell Meadow Ranger District**

- a. Woodpecker Roadless Area **will be** classified **as** unregulated. It will retain its current Plan designation of Semi-Primitive, Non-Motorized. (**See** also Off Highway Vehicles, section L below.)
- b. South Sierra Roadless Area **will be** classified **as** unregulated and managed **as** Semi-primitive, Non-Motorized.
- c. Rincon Roadless Area. Dispersed recreation and habitat protection for Golden Trout will be emphasized in a comdor along Durwood Creek. The corridor will be 300 feet each side of the Creek **as** measured from the lughwater mark, and it will be unregulated. The remainder of Rincon roadless area will be classified CF7. Timber **will be** managed by uneven-aged management (group and **single tree** selection).

6. Other Roadless **Areas** not mentioned herein **will be** managed pursuant to



the 1988 LMP.

7. **EIS.** Before any roadless area is entered for the first time, the Forest will undertake public scoping to help determine the degree of interest in a proposed "first entry" project in a roadless **area**. If the project may cause significant adverse environmental impact, a project level Environmental Impact Statement (EIS) **will** be prepared. A "first entry" into an area involves **ground-disturbing** activities (e.g., a new road, timber sale or watershed improvement) in an area which has been heretofore roadless. **A** proposal to rehabilitate something already existing in the roadless area (e.g., rebuild an existing **trail** or reconstruct a range improvement) **will** not be considered a "first entry."

The EIS shall include but not be limited to:

- a. Inventories and/or information on water **quality, fish** habitat; **wildlife** habitat; endangered, threatened, sensitive or rare plant, **fish** and wildlife species; management indicator species; **soils; and** erosion hazard ratings.
- b. Inventory of meadows and riparian areas.

- c. Inventory of timber types, using standard conventions. With respect to old growth **stands** considered for harvest, species mix and understory will be identified; this information will also be documented on stand record **cards, using** standard stand record card conventions.
  - d. Discussion of all reasonably foreseeable activities within the entire roadless area for the next decade and their cumulative effects.
  - e. Evaluation of the use of uneven-aged management.
8. An **EIS** will be done for first entry into the Rincon, Slate, and Lion Roadless Areas. For purposes of this Agreement, the Peppermint Mountain Resort **FEIS** is not considered a first entry **EIS**. However, within the proposed Peppermint Study Area, it is recognized as the basis for further study and NEPA process if development of that project proceeds.
9. NEPA documents on the following roadless areas shall include a discussion giving special attention to the stated concerns:
- a. Cannell roadless area: site productivity, reforestation, erosion

hazard.

- b. Staff roadless area: rainfall and reforestation.

**H. Special Areas**

The Plan shall be amended to assure management of particular areas as stated below.

1. The trail from Cannell Cabin to Kem River shall be designated as visual Sensitivity Level 1, with foreground Retention VQO.
2. Salmon Creek Trail from Horse Meadow Camp to Salmon Falls shall be designated as visual Sensitivity Level 1, with foreground Retention VQO. The Salmon Creek watershed and the area around Big Meadow shall be managed as Partial Retention to protect visual and recreational values. Timber management shall be uneven-aged only. (See Exhibit K.)
3. Big Meadows area on the Hume Lake District (as shown on a map attached as Exhibit M): the Forest Plan shall be amended to change the land use designation from CF 7 to CF 1. The management emphasis shall be dispersed recreation. Timber will be harvested on a Regulation Class II basis, with careful attention to protecting visual values.

Uneven-aged and even-aged silvicultural prescriptions shall be used as appropriate; however, there will be no clearcutting other than regeneration mosaic cutting. Future VQO's from roads and trails shall be Retention or Partial Retention. All Trails entering the Jennie Lakes Wilderness shall be Sensitivity Level 1 and shall have a Foreground Retention VQO.

4. The Freeman Creek Area. See Section B.2.c.(2)(j)(iv) above.
5. The California Riding and Hiking Trail shall be addressed, and appropriate visual protection shall be determined, in the forthcoming Trail Plan.
6. Fish Creek Watershed restoration needs will be considered as an integral part of all project level planning within area shown on map in Exhibit M. The Sequoia National Forest is sensitive to watershed restoration needs in Fish Creek and is currently doing a WINI Survey and Fish Habitat needs survey. This is one of the priority watersheds on the Forest for evaluation and restoration. All projects proposed for this area are subject to the NEPA process, and a site-specific analysis must precede any project plan. The Fish Creek Watershed restoration project was started in 1989. Restoration efforts will continue throughout calendar year 1990,

**mth rehabilitation** work to be focused on private land and a reduction of live stock **use**. The Forest Service **will** furnish a plan scheduling **the** balance of restoration work **by** December 31, 1990.

7. *Breckenridge*: The SOHAS and Condor roosting habitat **will** be protected. Project proposals for this area will be analyzed on a site-specific basis **and** **will** follow the **NEPA** process.
8. *Basket Peak* The condor roosting area **as** covered in **the** existing Plan will be protected.
9. *Converse Basin Giant Sequoia Grove*: See section **B.2.e.(2)**.
10. *Lion and Blue Ridges*. Condor roosting sites **will** be protected.
11. *Taylor Creek* The Forest Service has developed a watershed restoration plan for Taylor Creek. Funds to implement the project have been requested.
12. *Fay and Caldwell Creeks*. The Forest is sensitive to watershed conditions in Fay and Caldwell Creeks. Following **the** Fay **fire**, various activities to help protect **the** watershed were implemented. A validation of **the**

effectiveness of the activities and a survey of ~~other~~ watershed improvement needs will be undertaken. This **will be** scheduled for completion prior to the midpoint of the Plan period.

13. **Rancheria Road** The southern portion of the Western Divide Highway, known as the Rancheria Road (from the Kern/Tulare County line south to the Kern Canyon) will be managed under a foreground partial retention visual quality objective.

I. ***Timber Management***

1. Proposed revised forest-wide Standards and Guidelines at FLMP pages 4-31 to 4-33 are displayed in **Exhibit N**.
  - a. **ASQ 75 MMBF**
  - b. **53% Regulation Class I**  
**~~44%~~ Regulation Class II**  
**3% Regulation Class III**
  - c. **Average Rotation 145+**
  - d. **Harvest Methods**. At the project level, harvest methods used to

implement the Plan will be prescribed based on site specific analysis. The Forplan model projects that the mix of harvest methods used (expressed as annual averages over a decade) will be as follows:

Clearcut <sup>2/</sup>	600 Acres	13.5 MMBF
Shelterwood	1,308 Acres	31.4 MMBF
Group Selection	868 Acres	28.5 MMBF
Intermediate		<del>1.4</del> MMBF
		75.0 MMBF

However, due to recent direction from the Regional Forester, the Sequoia National Forest intends to implement New Forestry and New Perspectives (see Ex. Q) as soon as possible. The Tule River Ranger District has just been designated by the Regional Forester as a New Forestry/New Perspectives pilot district for Region 5, and training commenced in June 1990. The Forest intends to experiment with New Forestry silviculture on other districts as well while the pilot project proceeds. When New Forestry is better defined based upon the pilot project and other experience and

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2. Clearcutting shall be done as regeneration mosaic cutting wherever possible.

research, the Forest Plan may be amended, after NEPA review, to incorporate new direction about implementing New Forestry practices.

The Forest expects that ~~implementation~~ of New Forestry concepts will reduce clearcutting below the level projected by Forplan. The Forest will monitor and report ~~annually~~ in ~~the~~ Annual Report on the mix of cutting methods actually prescribed. Since New Forestry cutting methods do not match any of the classical silvicultural categories, they will be monitored and reported separately. If a significant discrepancy should develop between projected and actual cutting methods, the Forest Supervisor shall determine whether the Plan should be amended.

2. Steep Slopes: The Plan shall be amended to allow only Regulation Class II single tree selection via helicopter timber harvesting on slopes greater than 60 percent on granitic soils. The guideline on Harvest Systems (Plan at 4-32) shall be amended to provide that aerial systems will be used where slopes exceed 35 percent unless the Sequoia National Forest makes specific findings, based on environmental documentation, that an alternative is preferable. The parties recognize that some incidental timber harvesting may occur, due to the irregularity of terrain, on small



areas having slopes greater than 60 percent.

3. **Harvest Location:** The first guideline under this heading on page 4-32 of the Plan shall be amended to provide that a **mix** of understocked and better stocked **stands** will be harvested. The Sequoia National Forest will emphasize harvest and restocking of understocked **stands** to the extent feasible. **In** determining what activities should **occur on** understocked **stands**, the full range of multiple use values shall be considered.
  
4. **True Fir Management:** The Plan shall be amended to add the following Management Direction: During this Plan period the Forest **will** test the true fir cutting and regeneration practices described in a document entitled "The Development of a Policy and Guidelines for the Management of True Fir Forest Cover on the Sequoia National Forest" (1983). These sales **will** be closely monitored to determine if true fir regeneration is successful. When the Plan undergoes its five-year review, the Forest will prepare a written evaluation of its true fir policies based upon this monitoring. The Forest Supervisor will make a decision whether amendment of the policies, continuation or cessation of true fir logging, or other action is appropriate. **A** similar written report, review, and management decision **will** be made after an additional five years.  
  
The true fir sales tentatively scheduled through 1995 are:

	<u>Tule River</u>	<u>Hume Lake</u>	<u>Cannell Meadow</u>	<u>Hot Springs</u>
90	Jerkey Mountaineer			Vincent
91	Red Helicopter	Echo Weaver	Fish Tri	
92	McIntyre Helicopter		Durrwood scout	Tyler
93	Mahogany Tie Helicopter		Stoney- Schaeffer	
94	Crest		Danner Helicopter South Helicopter	
95	Bench		Bull Helicopter Burnt Helicopter Fault Helicopter	

Sugar Pine: The following guidelines will be incorporated into the plan.

- a. The Forest recognizes the need to ~~maintain~~ healthy sugar pine and infected but surviving sugar pine in order to ensure the survival of rust resistant trees so that the potential ~~for finding~~ a rust resistant seed source will not be lost.
- b. Silviculture prescriptions ~~shall~~ include consideration of ~~means~~ of

maintaining the widest possible base of sugar pine genes.

Generally, this means protecting as wide a variety of sugar pine trees as possible consistent with meeting Land Management Plan objectives and being compatible with timber harvest and related activities.

- c. Continue to plant a modest mix (5-10%) of sugar pine along with other mixed conifer species, even though major gene resistant stock is not now available. This may mean collecting seed from non-tested trees in order to maintain a sugar pine seedbank. With resistant stock, this percentage could be increased.
- d. Intensify the effort to collect sample cones from candidate resistant trees. The Forest has financial support from Tree Improvement, and it is a high priority.
- e. Continue to protect trees that are known to carry resistance. Collect seed from these trees for the Forest seedbank.

- 6. **Mixed Conifer Diversity:** The Plan shall be amended to prescribe that reforestation and TSI prescriptions will generally emulate existing species composition. Variation from this guideline will be the exception and will

**be** discussed in an environmental document. Commercial **values will not** be the **sole** justification for increasing the proportion of **high** value species.

7. *Silvicultural Systems:* This section of the Plan at 4-31 shall be amended to delete references to logging in streamside management zones and in giant sequoia groves. The remainder of this section of the Plan shall be amended as necessary to be consistent with this Agreement. The following shall be added to this section of the Plan:

a. Both even and uneven-aged silvicultural systems shall be evaluated and used as appropriate at a given site.

b. *Uneven-aged management:*

(1) Uneven-aged management shall be conducted as Regulation Class II, which corresponds to an average rotation age of 140 years.

(2) The U. S. Forest Service shall use its best professional **expertise** to **assure** the success of uneven-aged management where applied. It shall **ensure** that prescriptions do not result in highgrading of Forest **stands**, and it shall **use** its

best efforts to overcome ~~difficulties~~ **of** uneven-aged management (e.g., record keeping, **minimizing** damage to unlogged trees) that are identified in Appendix G of the **EIS**. The U. S. Forest Service shall invite foresters with experience and expertise in uneven-aged management, including Bob Heald of the University of California Experimental Forest at Blodgett, **California**, and/or other experts, to assist it in its efforts to develop harvest plans, to train personnel, and otherwise to accomplish its goal of successfully implementing uneven-aged management.

- (3) Both natural and artificial regeneration shall be used, **as** appropriate.

c. Clearcutting:

- (1) The Sequoia National Forest is taking steps to modify and reduce the impacts of clearcutting. Examples of such practices include regeneration mosaics (see Exhibit N Appendix 1). Clearcutting shall not exceed 600 acres per year **as an annual average** over a decade.

- (2) Determination to Clearcut: Clearcutting **as** a regeneration

harvest tool **shall** be used *only* where (a) it is determined to be the optimum method to achieve management objectives on a site-specific basis; (b) the potential environmental, biological, aesthetic, engineering, and economic impacts on the advertised sale area have been assessed, as well as the consistency of the sale with the multiple use of the general area: (c) cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources, and the regeneration of the timber resource, and (d) cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain. Clearcutting shall not be selected as a harvesting method primarily because it will give the greatest dollar return or the greatest unit output of timber.

(3) *Clearcutting Size Limits.*

- (a) On cable ground, clearcuts shall be limited to a maximum size of 15 acres unless a site-specific analysis documents reasons for exceeding 15 acres and the action is approved by the Forest Supervisor. Where feasible, smaller openings shall be used.

- (b) **On** tractor ground, **no** continuous opening shall exceed ten acres in **size** (even though the harvested area may exceed ten acres) **without** the approval of the Forest **Supervisor** with specific reasons stated in the decision document.
- (c) **Reasons** for exceeding size **limits** are: responding to an insect or disease infestation; limitations of cable **logging** (i.e., need to reach a corner); **salvage** logging of fire-damaged trees; and limitations imposed by the existing road **configuration**. It is **the** intent of the U. S. Forest Service, however, to operate within the size **limits** wherever feasible and to exceed them only rarely.
- (d) The size and opening **limits** shall not apply to **timber** sales that have decision notices prior to the effective date of the mediated agreement of the Plan. The U. S. Forest Service shall, in its discretion, decide whether to revise these **sales** to reduce the **size** of openings based **on** the following factors:
- i) **Visual** sensitivity of the area.

- ii) **Cash loss** to the U.S. Government.
- iii) Unit and road engineering costs in making adjustments.
- iv) Increases in road construction and operation costs.
- v) Amount of disruption to the sales program.
- vi) Silvicultural prescriptions.

(4) In clearcut **units**, healthy and vigorous advanced regeneration **will** be saved wherever feasible, including on cable-logged **ground**.

- d. **Seed Tree Method:** Seed tree cutting is the harvesting of all trees in one cut, except for a small number of seed bearers left singly or in small groups, usually 5-10 per acre. Seed tree cutting will be subject to the same size limits as clearcutting.

**J. Snags and Dead Material**

1. **Snags.**

- a. **Inventory.** Early in the sale planning process for each timber sale, the U. S. Forest Service shall inventory existing snags within the affected compartment. Inventory results shall be displayed in the



sale environmental document.

- b. The Standards and Guidelines section of the FLMP shall be amended to include the following: Logging, thinning, and site preparation activities shall be conducted **so as** to assure that the following **minimum** guidelines are met or exceeded at all times. The Plan shall be amended to incorporate these guidelines.

- (1) Achieve and **maintain** a **minimum** average of **1.5** hard snags per acre **on** commercial forest land and in each compartment.

- (a) Hard snags shall meet or exceed the following sue and density requirements:

<u>Sue (dbh)</u>	<u>Snags/100 Acres</u>
<b>≥ 24</b>	<b>50</b>
<b>≥ 15 &lt;24</b>	<b>100</b>

- (b) In even-aged treatment areas, clumps or aggregations of mature trees averaging **4%** to **6%** of the treated sale area (exclusive of riparian zones) shall be left to

provide for snags, snag recruitment, and wildlife screening. These clumps shall be established in close coordination with a wildlife biologist and should range from 1/2 acre **to 2 acres in size**. They shall be marked as clearly as possible on stand record cards, as well as **on** the ground.

- (2) Protect all **existing soft** snags except where they **are** a safety hazard. Where it is not possible to protect **soft** snags, equivalent numbers of green trees shall be left for additional snag recruitment, or **wildlife** clumps shall be increased in size as per recommendation of wildlife biologist.
- (3) Wherever possible, snags being actively used shall be selected for retention.

- c. **Snag-Deficient Lands.** In a compartment where the snag inventory reveals a deficiency of existing snags to meet the **minimum** standards for hard snags, the Sequoia National Forest shall take steps to assure that at least the **minimum** standards will be met **as soon** as possible. For timber sales, at least the project area will be brought up to current standards **as** part of project Implementation.

Such steps may include **girdling** live trees, removing the tops of live trees to create snags, leaving cull trees **standing**, or other appropriate measures. Individual live or cull trees left for wildlife shall be designated prior to harvest or other management activities.

2. **Dead Material.**

- a. Retain approximately 132 cubic feet per acre of well-dispersed down logs. Ideal size of log is 20 inches in diameter and 20 feet in length.
- b. Retain all large decomposing logs where consistent with other management and protection objectives.
- c. Leave 10% of the area of each regeneration unit with untreated slash for wildlife habitat.
- d. Utilize management techniques which will minimize charring of downed **woody** material left for wildlife cover and habitat.

3. **Monitoring.** Timber sales and site preparation activities shall be monitored to assure that snag and dead material guidelines are met (see Section R).

**K. *Demonstration/Research Sales***

The Sequoia National Forest **shall**, on an ongoing basis, identify timber sales or other projects, such **as** site preparation activities, which **will** be used to test and evaluate new approaches to management concerns. These projects shall be known **as** Demonstration Projects and shall be evaluated in the Annual Reports- and five year plan review document. The Sequoia National Forest **shall** propose at least *two* such projects for discussion at each **annual** meeting of the parties (see Section U).

**L. *Off-Highway Vehicles (OHV)***

1. *Background*

- a. The Sequoia National Forest maintains that it made sound management decisions regarding the designation of the Semi-primitive Non-Motorized (SPNM) areas, considering all the variables involved. Some appellants disagree. **This** section of the Agreement attempts to resolve those differences.
  
- b. The Sequoia National Forest is **continuing** its efforts to complete the Sequoia Forest Trail Plan. **This** long term effort will establish the 10-15 year **trail** system for the Forest, the appropriate use and **mix** of **trails** (e.g., hiking, OHV, and equestrian), and necessary trail protection.

2. SPNM Areas. *All* interested parties and the Sequoia National Forest shall explore ~~locations~~ for alternate trails, primarily to accommodate OHV travel, in the Sirretta Peak and ~~Dy~~ Meadows/Long Valley areas.

a. Sirretta Peak.

(1) The following **are** specific objectives for the Sirretta Peak area:

(a) The ~~Sirretta~~ Peak trail shall not impact ~~significantly~~ the Twisselmann ~~Botanical~~ Area or adjacent sensitive areas, including areas to the ~~north~~ of Sirretta Pass, such ~~as~~ Sirretta Meadow.

(b) The Sirretta Peak trail shall provide a loop riding opportunity.

(c) The Sirretta Peak trail shall provide a positive riding experience by being within a conifer zone setting, to ~~the~~ extent possible.

(d) The Sirretta Peak trail ~~shall~~ be designed under the

trail standards as "most difficult" or close to the "most difficult" standard as a means of controlling the amount of use.

(e) To discourage inexperienced riders from using the Sirretta Peak trail, signs reflecting the difficulty of the trail shall be posted and the trail shall be as difficult as possible on either end. This is intended to prevent riders from starting on the trail before they realize that it is beyond their ability.

(f) Any new trail shall be designed to have a minimum impact on the designated SPNM area.

(g) All parties shall be given opportunities to assist in location, analysis, and design of any proposed trail during the environmental analysis of the new trail. Field review of possible locations shall take place during the 1990 field season, if possible.

(h) Over the long term, the U. S. Forest Service shall consider the separation of OHV use and the popular

equestrian/hiker camp areas near the **north** end of Big Meadows in pursuing opportunities to link a north--south **OHV** trail through the area.

- (i) The State Green Sticker grant program will consider the rescoping of previously authorized projects on the Forest if the decision is **made** to construct a new loop trail in the vicinity of Sirretta Peak. Further, the Forest **will** consider this trail to be its top **priority** for Green Sticker funding.

- (2) The **following** are constraints on actions to be taken in the Sirretta Peaks area:

- (a) The Big Meadows area shall not be used **as an OHV** staging area for trail use up to the Sirretta Peak area.

- (b) Due to the sensitivity of the area, trails in the **vicinity** of Sirretta Peak shall not be used for competitive events of **any type**. This constraint is the result of this mediation and should not **be** considered a precedent for other areas. Competitive events

considered appropriate in a National Forest setting will be directed to other more suitable areas of the Forest.

- (c) An environmental analysis shall be done to ensure evaluation of important resources, with particular emphasis on effects on **soils** and vegetation.
- (3) All parties agree to support the process of alternative **trail** investigation and analysis, and state that they believe there is a real possibility of finding an alternative **trail** location where impacts can be successfully mitigated.
- (4) If necessary, the SPNM boundary **shall** be adjusted to accommodate motorized use on a new **trail**.
- (5) "Compensation credit" shall be considered for closing of the existing Sirretta Peak trad to **motorized** use.
- (6) Interim: The following shall govern use of the existing Sirretta Peak **trail** until such time as an alternative loop trail is analyzed and a final decision is made. IN the absence of



unforeseen circumstances, a decision will be made within two years of entry of this Agreement:

- (a) **OHV's** shall be allowed to continue to utilize the trail over Sirretta to the Dome **Land** Wilderness boundary in Trout Creek. This shall entail an exception to full implementation of the **SPNM standards** as established in the **Plan**. Specifically, continued use of **OHV's** on this trail shall be allowed for the interim **time** period. All other aspects of the **SPNM** management in this vicinity shall be Implemented.
- (b) if the final decision is to build a new loop trail, interim use will continue on the Sirretta Peak trail by **OHV's** until the new trail is complete.
- (c) If the final decision is not to build a new trail, the Sirretta Peak trail shall be closed to **OHV** use at the **time** that the final decision is **made** or final appeal or litigation is concluded.
- (d) ~~Use~~ of the existing Sirretta **Peak trail** shall be

monitored jointly by the Sequoia National Forest, OHV users, horse users, and other interested groups. If any of the following are identified as problems, every effort shall be made to correct or mitigate the situation. (This effort shall occur over time, not as a one-time effort). If these efforts prove unsuccessful, the U. S. Forest Service shall consider closing the trail to OHV use.

- i) O W trespass into the Dome Land Wilderness.
  - ii) OHV use of the Machine Creek trail.
  - iii) Off-trail OHV damage to the Twsselmann Botanical Area or the meadow areas in Trout Creek.
  - iv) Switchback cutting on trails, particularly on the south slope of Sirretta, by OHV users.
- (e) Damage by non-OHV users shall also be monitored and appropriate actions taken to correct problems.
- (f) The OHV groups party to this Agreement shall

develop, place, and ~~maintain~~ signs urging user etiquette and responsiveness in *this* area. In addition, they shall distribute written information **on** proper use and expectations in the Sirretta area. **This** shall be coordinated with the Sequoia National Forest.

b. *Dry Meadow/Long Valley*

- (1) *Background.* A previously recognized Sequoia National Forest system ~~trail~~ traverses the area **north** of ~~Dry~~ Meadows to the Forest boundary. This "~~trail~~" was dropped **from** the system in **1984**, but continues to be used by recreationists. The objective discussed here relates to deciding if this or a realigned ~~trail~~ in the vicinity **will** be placed **on** the Forest ~~trail~~ system and what use **will** be allowed **on** that trail.
- (2) *Objective.* Exploration of opportunities to establish a North–South route **via** the Forest Trait Management Plan.
- (3) *Constraints*
  - (a) **The** proposed Long Canyon Research Natural Area3 (RNA) **shall** be protected **from** public use.

are identified, **levels** of actual and potential impacts are reviewed, and the level of **controversy** regarding actual alternatives becomes more clearly defined.

3. **Trail Plan Considerations.** Appellants raised **some issues** that are best resolved in the Trail Plan. **The** following **issues** shall be dealt with more fully in the Forest Trail Management Plan:

a. **Issue.** Imbalance of 4-wheel **drive trails** compared to trails available to other users. **The** 4-wheel **drive** parties **seek** assurance that the Sequoia National Forest **will** consider more miles of 4-wheel drive trails.

**Resolution:** The Forest Service recognizes the **limited** amount of 4-wheel drive trails available on the Forest **and** shall analyze opportunities to develop more 4-wheel **drive** trails in the Trail Plan to create a better balance among all users.

b. **Issue.** **The** Sequoia National Forest **will** not take "credit" for the **amount** of trails that are closed **as** they move from open **riding** areas to use of designated roads and trails *only*.

Resolution: In the development of the Trail Plan, the Sequoia National Forest shall inventory all trails and roads, both open and closed. As the level and types of use change (i.e., from open area use to designated routes only), an assessment of the "cumulative benefits" shall occur. "Cumulative benefits" are the overall benefits derived from the change. As inventoried or pre-existing trails or trail sections are closed, "compensation **credit**" shall be assigned. "Compensation credit" represents the net benefit or value gained from the closure. One action **can** provide credit for another action. The credits **can** be held in check **until** needed. The banking of credits, in and of **itself**, does not drive the Sequoia National Forest to seek additional opportunities. The goal is to keep track of gains and losses.

- c. Issue: Collaboration and cooperation is necessary to designate new trails in areas of controversy or in areas where access is needed for trad uses other than the designated emphasis (e.g., a ~~hiking~~ trail in an **OHV** emphasis area, or vice versa).

Resolution: The best method for achieving this continued cooperation is **by working through** the **Trail** Plan **as** it develops.

All users will be asked for continued involvement in the **Trail** Plan.

Cooperation is one of the methods the Sequoia National Forest is planning to Stress **as** it makes decisions on acceptable trail use and location. Specific trail location in areas of controversy *can* be coordinated **through** district personnel **as** they prepare and analyze new trail locations in environmental analyses.

- d. **Issue:** There will be a long term need for cooperation among **various** user groups in **identifying** trail uses and opportunities.

**Resolution:** This matter **was** raised in the **scoping** phase for the Trail **Plan**. This Agreement is made with the understanding that, in consideration of cooperation between the parties to locate **OHV** routes in some areas, **similar** cooperation **will** be forthcoming to locate hiker and equestrian **trails** in other parts of the Forest, especially along the Western Divide between Slate Mountain and Greenhorn Summit.

4. **Plan Revisions.** The Plan shall be amended **as** follows:

- a. Prescriptions OW5, MC5, PS5, and CF5

- (1) Under Dispersed Recreation, #1

**Change from:** Increase opportunities for increasing public enjoyment and benefits with emphasis on **hiking**, equestrian

use, fishing, hunting and viewing (**Note:** Slight wording differences exist in various prescriptions).

Change to: Increase opportunities for public enjoyment and benefits.

(2) Under Dispersed Recreation, #4

Change from: Manage OHV use by location and period of use based on wildlife needs (e.g., excluding OHV's from key areas during fawning and nesting).

Change to: Manage recreation activities by location and period of use based on wildlife needs (e.g., excluding incompatible use from key areas during fawning and/or nesting).

b. Prescription CF5

Under Fish and Wildlife. #5

Change from: Create and/or maintain a vegetative buffer strip along OHV trails and areas designated for OHV use to reduce impacts on wildlife.

Change to: Create and/or maintain a vegetative buffer strip along trails to reduce impacts on wildlife.

- c. Prescriptions B06, OW6, MC6, PS6, and CF6

Under Dispersed Recreation, #4 (#5 on Rx OW6, MC6 and

Change from: Restrict OHV use seasonally to reduce conflicts with grazing.

Change to: Restrict or reduce recreation use seasonally to mitigate significant conflicts with grazing.

- d. Prescription CF6

Under Dispersed Recreation, #6

Change from: Remove OHV trails from meadows.

Change to: Remove trails from meadows, wherever necessary to protect meadow resources.

- e. Prescription CF7

Under Dispersed Recreation, #5

Change from: Provide OHV recreation opportunities when



compatible with timber activities.

Change to: Enhancement of recreational opportunities will be considered in timber sale planning, where appropriate.

- f. Amend Table 4.2 on page 4-13 through 4-15 of the Plan by adding the following: References to trail mileage such as: miles open to OHV use, miles closed to OHV use, miles with seasonal closures, miles to be constructed/reconstructed/relocated are estimates. Final mileage shall be determined in the Trail Plan being developed by the Forest.
- g. Recreation Standards and Guidelines, of the Plan, page 4-16. Under Recreation Opportunity Spectrum (ROS), add Minor adjustments may be made to the ROS class boundaries based on analysis in various plans and/or projects, such as the Forest Trail Management Plan, Spotted Owl Habitat Area Management Plans, Wild and Scenic River Management Plans, and individual timber sale evaluations.
- h. Add to page 4-20 of the Plan under "non-motorized" "Cross-country travel may be restricted to prevent resource damage."

- i. Strike the following from page 4-90 of the Plan: "OHV use **will** be allowed on designated **trails** if such use does not threaten values within the SLA."

**M. Yield Tables**

1. The U. S. Forest Service is developing new timber **yield** tables for the Sequoia Forest. Under existing contracts, the necessary data **will** be available by July 1991. The tables and all **data** and determinations shall be available pursuant to the Public **Information** and Records section below.
2. The new yield tables shall be subject to peer review before **implementation**, which review shall be completed **as soon** as possible.
3. Following peer review, and at the time of the five-year review of the FLMP (1993), the U. S. Forest Service shall make appropriate changes and **d e t e m e** whether the allowable sale quantity set forth in the Plan should be amended based on the new yield tables. Changes **to** the yield tables and determinations **regarding** changes to the allowable sale quantity shall be documented and the documentation made public pursuant to the Public Information and Records section below.

**N. *Cumulative Watershed Effect***

1. **Background.** On June 9-11, 1989, the parties to this Agreement convened a panel of geologists and hydrologists to evaluate the Cumulative Watershed Effects methodology as it has been applied in the Sequoia National Forest for compliance with recently changed Regional direction (R-5 FSH 2509.22, 7/88, Amend. 1). The panel spent two days in the field examining representative sample of watersheds. They then re-assembled with the parties to present their review of the methodology and recommendations for improving the Forest's current approach to watershed evaluation and protection.
  
2. **Objectives of the CWE Methodology.** The CWE methodology is an index to alert managers when to be concerned about a watershed because of multiple activities in a watershed. It needs to be viewed as a developing approach with the initial model being continually refined, building upon past practices and based upon as much information as one can gather from operations and impacts.
  
3. **Implementation of Panel Recommendations.** In accordance with a negotiated agreement to incorporate the consensus findings of the panel into a final settlement document, the Sequoia National Forest agrees to

implement the recommendations of the **CWE** panel as follows:

a. **CWE** Methodology

(1) **Beneficial Uses of Water**. The Forest Plan shall be amended to incorporate the following standards:

(a) The beneficial uses **that** are most sensitive to watershed disturbance are **fish** habitat and domestic supply. The Forest shall manage any watershed in which it **has** identified one of these **as a** beneficial use to protect such use, **as per RWQCB Basin Plans**, using developed **criteria**. The Forest shall identify and protect sensitive reach(es) (weakest links) in the watershed. In all cases, the Forest shall protect soil productivity.

(b) The Forest shall **determine** the proper size of the watershed **unit** to be subject to **CWE** analysis based on the identified beneficial use(s). The **unit** size will generally range from 250 to 2,000 acres.

(c) Each project **NEPA** document shall identify the

beneficial **uses** of water and the most sensitive stream reach(es) as part of the **CWE** analysis.

- (2) *Identification and Evaluation of Processes Within the Watershed (CWE Analysis)*. The Sequoia National Forest staff will determine the controlling processes of concern (as required by **FSM 2509.22, 7/88, Amendment 1**) in order to **assess** disturbance coefficients and mitigation opportunities.
- (a) Where, according to established criteria, **soil** erosion and sediment supply **are determined to be controlling** processes, **CWE** shall analyze change **in soil** erosion and sediment supply **as** processes independent of change **in annual** peak flow run-off.
- (b) In **assessing** sediment impacts, relative changes in **erosion** and sediment **delivery** rather than **only** the amount of compaction shall be assessed.
- (c) **CWE analysis** shall identify **the** most crucial elements in the watershed, **i.e.** the **specific** processes that **are** controlling the system (**e.g., rain on snow** events and

surface erosion).

- (d) The Forest **will** establish a process ~~for~~ developing **and** ~~evaluating~~ coefficients relevant to the identified dominant processes which influence CWE on identified Beneficial Use of concern. **This will** include evaluating results of past activities. Coefficients **will be consistent** with the level and type of activity and site conditions. The Forest **shall** consider **factors such as** position of activity on slope, ~~aspect~~, sensitive lands, and ~~existing~~ erosion when applying disturbance coefficients.
- (e) When sedimentation is identified as the controlling process, the Sequoia National Forest shall modify its disturbance coefficients to include evaluation of sediment yield and transport. Where sedimentation is identified **as** a dominant earth-forming process by established ~~criteria~~, the Forest **will** identify erosional processes ~~affecting~~ sites **as** mentioned in items c and d above. The Forest **will** identify **soil condition** class and ~~evaluate~~ it together with erodability potential to

give information on site conditions that address sediment yield.

- (f) To facilitate the implementation of these requirements for bringing the Forest's CWE analysis procedures into greater conformity with regional guidelines (a-e above), the Forest, with the assistance of Region 5 Watershed Evaluation staff, will convene a workshop by October 15, 1990 to develop criteria by which to identify Beneficial Uses and controlling processes of concern and to develop a procedure for adapting Region CWE methodology to account for sediment yield, transport, and delivery applicable to conditions on the Sequoia National Forest, an accompanying field guide and a workplan for testing and refining the procedure. Participants in the workshop shall include U.S.F.S. watershed experts (either from the Region 5 office, personnel from other forests and regions, and/or experts from the Pacific Southwest Experiment Station) and independent watershed experts. The workshop work product shall be completed by December 15, 1990

and shall **be** used **in** the 1991 sales program.

Representatives of the conservation appellant **group**, timber industry appellant group and recreation user appellant group will be permitted to observe this workshop.

The Forest **will** initiate the process for **applying** and verifying this procedure in a set of paired watersheds on the Forest. The workshop **participants will** select the watersheds to **be** utilized after **reviewing** Sequoia Forest recommendations. This **will** require **taking** field measurements during the winter 1990-91 and follow-up measurements during the 1991 **runoff** season.

- (g) In determining **ERAs** for **any** given project, the Forest shall state the **assumptions** that formed the **basis** for its calculation, including **any modifications of** standard ERA values that **might** have been made because of site-specific observations, **and** shall distinguish between **existing** and residual **ERAs**.



(h) Any ~~mitigation~~ or ~~affirmative~~ watershed improvement project shall not affect the ERA calculation in that watershed until such ~~time~~ as the ~~mitigation~~ or ~~affirmative~~ project has been successfully completed and shall apply only to the period of that ~~mitigation~~.

(3) *Determination and Evaluation of Recovery Rates.* The Forest shall undertake the necessary steps to develop clear and publicly trackable methods for evaluating ~~subcultural~~ recovery rates, including road ~~construction~~.

(a) ~~Until~~ such time as there is sufficient ~~data~~ to establish the recovery rate in a given watershed, the Forest shall utilize a linear ~~thirty~~ year recovery rate. However, the Forest may use an exponential recovery rate instead of a linear recovery rate if the Forest determines surface erosion to be the ~~predominant~~ hydrological ~~process impacting~~ the streams and ~~can~~ provide either references or on-site inventories to support these recovery rates.

- (b) If a proposed project would increase ERAs to within **20%** of the threshold of concern in a watershed, the Forest **will** perform **an** on-site review to **determine** the actual recovery rates and to evaluate the effects of the proposed project.
- (c) Where field verification is Impossible, the Forest **may** **assume a thirty** year recovery rate.
- (d) **Where** field **verificauon** is undertaken, the recovery rate should be based **on** a time **trend** in the ERA for management **units**. The ERA at any point in time is determined based **on an** on-site **inspection** of site conditions (percent cover, stand development, measure of **soil** disturbance, and compaction, development of erosion pavements, etc.), and **a** professional assessment of how these factors **influence** on-site generation of parameters of concern (peak **flows**, sediment, etc.).

Factors used to judge the ERA for **a** site will be **explicitly** recorded **and data** sheets of site conditions

(percent cover, etc.) will be **maintained** by the forest to allow for future changes **in assessment** relationships.

- (e) If a site **requires replanting** that includes site preparation, and **if** the evaluaaons indicate that the Beneficial Uses are sensitive **to** site prep, then the recovery calculation will be calculated anew, usmg **an** era base that reflects site disturbance conditions following the subsequent site preparation.

b. **Data Gathering and Monitoring**

(1) **Purpose**

The purpose of **establishing** a CWE monitonng program and record center on the Sequoia National Forest is to implement an adaptive management program that measures the **effects of** alternative management practices on beneficial uses of water in the Forest.

(2) **Approach**

The Sequoia **National** Forest will undertake the steps set forth **below** to establish baseline data and to improve **CWE**

monitoring of the **Forest**.

- (a) The priority watershed parameters to be ~~monitored~~, as well as where to be monitored, will be evaluated at the ~~Forest/District~~ level. The Sequoia National Forest will make these ~~determinations in~~ conjunction with ~~identification~~ of the processes ~~acting in~~ each specific area, the sensitivity of sites **and** other variables, such as winter access. ~~Within~~ **within** nine months of entry ~~of~~ this agreement, the Sequoia National Forest shall make a ~~determination of its~~ initial watershed monitoring priorities, including a description ~~of~~ circumstances in which ~~particular~~ monitoring ~~techniques~~ are more appropriate than others, reasons for reaching this determination, and sources of **funding**. This determination shall be ~~set~~ **set** forth ~~as~~ a public document.

The parties to this agreement ~~recognize~~ that, for reasons ~~of funding and~~ workforce ~~limitations~~, not all agreed upon monitoring actions are possible **immediately**.

- (b) The Sequoia National Forest will establish representative sampling stations on a set of paired watersheds that will assess watershed conditions for the purpose of measuring watershed response to management activity over time and refine the CWE model. Sampling will include acquiring channel cross-section data and peak flow data, suspended sediment, bedload, water temperature and chemistry, and grain size distribution within the bed. Where sampling is difficult, surrogate reaches that are able to be sampled may be substituted. The Forest may utilize data from existing USGS gauging stations (continuous watershed discharge measuring stations) in the three major basins draining the Forest (Kings, Tule, and Kern) as part of this monitoring effort.
- (c) The Sequoia National Forest will establish photo stations at each of the gauging stations and shall establish several additional stations at extremely sensitive channel sites or at sites near recent management activities.

- (d) The Sequoia National Forest **will** collect data **on** fish habitat conditions **and** fish populations from available **sources** as part of **its** watershed sampling stations monitoring effort.
- (e) The Sequoia National Forest will do ~~stream channel~~ **surveys** for **all streams** covered by the relevant **CWE**, including fish habitat information following Regional direction, **as** set forth in **RS** document **R-5 FS Handbook 3/89, Chapter 2, Fish Habitat Assessment.**
- (f) At the project level, the Sequoia National Forest **will** measure **soil** movement **through** site condition evaluation, **through** on-site erosion surveys **with** sediment traps, or other methods.
- (g) The Sequoia National Forest **will** monitor implemented **WNI** project effectiveness.
- (h) The Sequoia National Forest shall establish a record center for watershed **information** in conjunction with

the public information and records section described in section V. The record center is important for the ongoing development of the **CWE methodology** on the Forest, for passing on information to succeeding forest hydrologists, and for improving public access to information used by managers in their decision-making. The record center shall house the information enumerated in section **N.3.b.** above, as well as the following additional watershed information:

- i) **CWE Calculation Sheets by Watershed** for analyses of completed projects.
- ii) **Management Archaeology** (history of human actions in the watershed).
- iii) **WINI Updated Annually.**
- iv) **Documentation of Recovery Rates for Analysis of completed Projects.**

- v) Range **Condition** and Trend Reports; Actual Use Records, and **Utilization** Records.
- vi) Data **from** "barometer watersheds".
- vii) Snow melt **hydrology**.
- viii) Stream channel analyses measured against **distance from** the site of disturbance.

The Sequoia **National** Forest **may** elect to house the watershed **information** in **District** offices **on** the Forest. The Forest shall designate **an individual** or individuals **who** shall have **responsibility** for ensuring that the **files** are updated twice a year. Where records are not maintained in the Forest Supervisor's office, an index shall be **maintained** indicating where **information** is housed.

c. *Field Techniques*

- (1) The Sequoia **National** Forest will continue to evaluate channel stability inventories **in conjunction with** fish habitat



surveys where fisheries are determined to be the beneficial use. The Forest will use this information to validate or renew existing analyses for optimum fish habitat.

- (2) The Sequoia National Forest shall maintain a separate, regular renewed inventory of the factors that are aggregated to develop the stream channel stability rating.

d. Threshold of Concern, Mitigation, and Cessation of Management

Activities

- (1) The Sequoia National Forest shall keep all Watershed Improvement Needs Inventory projects in working order and shall conduct all inventories during NEPA project planning. The Forest shall ensure that the funding for all watershed improvement projects that are designated in the NEPA document as necessary for reducing unacceptable environmental impacts, or which are included as part of the CWE evaluation as necessary to bring a project under threshold of concern, is available prior to implementation of the project. All other proposed projects shall occur commensurate with funding.

- (2) The Forest **will** implement mitigation measures adopted to balance project impacts during the project implementation phase and **will** monitor these projects during project monitoring phase.
- (3) The Sequoia National Forest **shall** conduct Best Management Practice Implementation and Effectiveness Evaluation monitoring to evaluate BMP effectiveness, attainment of project objectives, and maintenance needs. This monitoring program shall **be** designed **so** that the range of site conditions and practices **on** the Forest are included. Stratification according to these conditions and replication are important considerations in designing the monitoring program, but a 100 percent sample is not required. Specific criteria for the design of this effectiveness monitoring program shall be developed by the experts convened by the Sequoia **staff** (see section **N.3.a(2)(f)**) in concert with Region **5**. If the Forest fails to initiate effectiveness monitoring **within** one year of completion of any timber sale scheduled for monitoring, then the Forest **shall** not approve additional timber sales in the watershed of influence **until** the effectiveness monitoring for that sale **has** been

completed. Additional effectiveness monitoring shall be conducted at appropriate times to evaluate major events.

- (4) At the end of the three years following adoption of this Agreement, the Forest agrees to obtain an independent review of their Best Management Practice Implementation and Effectiveness Evaluation monitoring for three timber harvesting projects selected by the renewers from the list of sales monitored during this three year time frame. The experts shall evaluate the efficacy of the monitoring approach utilized as well as the representativeness of the sales selected by the Forest for monitoring.
  
- (5) During project planning, when the consumed and projected ERAs for any watershed reach 80% of the total available ERAs for that watershed, then the Forest must conduct a site-specific field inspection to verify the pre-project CWE calculation for that area and to verify that the proposed project will generate the projected ERAs that have been identified. The Forest will identify mitigation to ensure that if a project goes forward, the Threshold of Concern shall not be exceeded.

- (6) Any management decisions to exceed the TOC should be justified by long-term watershed or other overriding objectives, e.g. salvage of timber in a burn might be justified even though it exceeds the TOC if it allows installation of WTNs, reduces the potential for an insect infestation, or can remove snags or mobile in-stream debris that represents a hazard to human health.
- (7) During the three years following acceptance of this agreement, there will be no additional management activities in any watershed that has reached the Threshold of Concern, other than mitigation or improvements, until such time as the watershed has recovered to 80% of the Threshold of Concern.
- (8) At the end of the three years, the Forest shall undertake an independent review of its CWE methodology to determine if it has been adequately validated based upon field review and if the Sequoia's CWE methodology is meeting Regional guidelines. If it is determined that the methodology has been validated and is meeting regional guidelines, then the

Forest may undertake projects in watersheds that have reached TOC as long as ERAs do not exceed the TOC subject to the conditions in (5) and (6) above.

- (9) Grazing impacts will continue to be addressed through stream channel surveys. Improvements to documentation will include comments in the remarks section where disturbance to stream banks occur from hoof shear or other factors, whatever the cause.

e. NEPA Documentation

Each project NEPA document shall, as part of the CWE analysis, display the management history of the area and describe how it has impacted the watershed(s).

O. soil Quality Standards

1. Background

- a. The parties disagree as to the value, efficiency, and effects of broadcast burning.
- b. Organic matter will be maintained at a level necessary to protect the soil from excessive erosion as determined from site

investigations.

- c. **Soil** and water resources **will** be protected **through** the use of Regional **Soil** Standards currently being developed.
- d. Protection of forest **soils** is a primary goal of forest management and, based on that understanding, the standards in the following sections **will** be implemented.

2. The Plan shall be amended **to** incorporate the **Soil Quality** Objectives and **Soil Quality** Standards set **forth** in the Draft **FSH 2509.18 Soil** Management Handbook (**FSH 1989, R-5, Supp. 1**) dated September 1988 (attached as appendix to Monitoring Plan) as interim direction pending finalization. **Any** more stringent standard set **forth** in the Plan or **this** Agreement shall govern.

3. The Plan shall also **be** amended to include the following standards to protect Forest **soils**:

- a. Site preparation measures **will** be devised to retain substantial ground cover and **still** reduce the risk of catastrophic fires.

- b. Silvicultural prescription shall **be** designed to ~~maintain soil~~ organic ~~matter~~ and provide for the ~~continual~~ recruitment of coarse woody debris.
- c. After site prep, ~~as much organic material as possible~~ shall be left ~~on the ground~~ for soil protection, consistent with ~~fire~~ protection, wildlife, reforestation and other resource ~~needs~~ <sup>as</sup> specified in project **NEPA** document.
- d. Jackpot ~~burning~~, **gross yarding**, and/or lop-and-sawer shall be evaluated ~~as~~ alternatives to broadcast burning ~~as~~ a means of ~~reducing~~ slash and for site preparation. **These** options shall be discussed in each ~~timber sale EA or EIS~~. Consistent with ~~reduction~~ of clearcutting and other appropriate considerations, the Forest Service shall reduce the amount of broadcast burning ~~on the Forest~~.
- e. Where broadcast ~~burning~~ is ~~prescribed~~, the environmental documentation and decision notice ~~shall~~ include ~~documentation~~ of specific-justification for **the practice**. The prescription shall have an objective of **leaving ground cover** commensurate with the erosion potential of each ~~specific~~ site. Slope **will be** considered

within the site analysis. Each broadcast burn shall be monitored to determine whether the prescribed ground cover objective has been met, and the monitoring results shall be included in the annual report required by the Monitoring Plan and Five Year Renew sections below.

**P. Information in Timber Sale Environmental Assessments (EA's) and Environmental Impact Statements (EISs)**

1. **Background.** Some appellants believe that past EA's and EIS's for Sequoia Forest timber sales, as well as the Plan and EIS, lacked sufficient information regarding environmental impacts of proposed actions. The following is designed to affirm Sequoia National Forest's responsibilities under NEPA as projects are implemented pursuant to the Plan. The specific provisions below are further elaboration of those responsibilities.
  
2. **Procedural Requirements.**
  - a. Notice of preparation of an EA or EIS shall be sent to all parties to this Agreement as well as other interested parties.
  
  - b. Where possible, the U. S. Forest Service shall consult with interested parties, including representatives of citizens' groups, when laying out cutting units. The parties agree that such



consultation may help avoid **time-consuming** appeals of number sales.

- c. Anyone who **so** requests during the scoping process will be notified when cutting units for the various alternatives have been tentatively located and provided appropriate maps. In appropriate cases, for example, if **significant** public interest is **expressed**, the Forest will conduct a field trip at this stage of project development. The Forest Service will provide reasonable notice of a field trip. The Forest Service will use **its** best efforts to assure that between the time the tentative maps are available and the time the Decision Notice is issued, the project site will be accessible for field review.

3. Substantive Requirements. In addition to requirements specified in 40 CFR 1500 et seq. the **EA** or **ELS** shall include as applicable, but not be limited to, a discussion of the following:

- a. Related projects within the timber compartment, including, but not limited to, past timber sales, years of previous cuts, **reforestation history** (including **backlogs**), probable future timber sales in the area, and **a** map of proposed cutting units and existing plantations.

- b. Statement of ERA's in the watershed, including but not limited to, the number currently available, the threshold of concern, the number of ERA's to be used by the proposed project, and the number of ERA's estimated to be used for reasonably foreseeable projects in the watershed.
- c. Documentation of CWE analysis as described in Section N.
- d. Identification of each stream and stream reach, whether perennial or intermittent, that is important for fisheries, and designation of applicable streamside management zone. These streams and stream reaches shall also be documented on stand record cards as these cards are prepared.
- e. Statement of estimated cost of sale, including but not limited to, estimated cost of reforestation (including multiple plantings, if reasonably foreseeable), project-related mitigation, and roads. The expected source of funding for each such cost shall be stated.
- f. Statement of estimated revenues from the sale.
- g. Refinement of order 3 soil map data as necessary to analyze soil

stability and erosion hazard.

- h. Stand information, including but not limited to, proposed silvicultural treatment, existing pest problems if applicable, estimated volumes, forest type in the cutting unit, the location and estimated acres of old growth habitat to be cut and to be retained, species of trees to be cut, and the species of trees to be replanted. Detailed prescriptions will be completed for each stand after a Decision is issued. Detailed prescriptions include a detailed description of the stand.
- i. Protection strategy, as appropriate, for streamside management zones, wetlands, and meadows, with respect to such management activities as road crossings, cable corridors and harvest units. Maps included as appropriate.
- j. Identification of Class 1, 2 and 3 streams and statement of specific riparian standards and guidelines applied to each riparian zone affected by proposed project. Class 4 streams will be identified during project layout and protected according to the Riparian Standards and Guidelines.

- k. Statement of mitigation, including but not limited to, a description of planned actions, expected funding, proposed time frame, and a map reflecting mitigation projects.
- l. Identification of any land **within** the sale area that **is** unsuitable for timber harvesting and a statement of the reasons **for** unsuitability.
- m. Discussion of productive condition **of soil**; how **standards for** soil cover, **soil** porosity, and organic matter **will** be met.
- n. Discussion of **methods** to reduce **slash**, including for example, jackpot **burning**, **gross** yarding, lop-and-scatter, and broadcast **burning** (see Section 0.3).
- o. Statement of site specific effects of proposed project on changes in water quality, changes in water yield, channel **degradation**, sedimentation, and effects **on** downstream sedimentation, and effects on downstream **fish** habitat.
- p. See also, **as** relevant, **the following** sections of this Agreement:
  - E.2.b (spotted owl **surveys**)
  - E.5 (goshawk surveys)

F.2 (ongoing suitability review)

F.6 (reforestation history--interim requirement)

L7.a. and c.(2) (site-specific determination of cutting method)

L7.c.(3) (justification for exceeding clearcut size limits)

J.1.(a) (snag inventory)

N.3.a.(1)(c) (beneficial uses of water and most sensitive stream reaches)

N.3.e (management history as part of CWE analysis)

O.3.d and e. (alternatives to broadcast burning)

Q.3 (improvement of data base--inventories and surveys)

T.2.a (project mitigation and restoration work).

Q. *Improvement of Data Base*

1. **Background.** The Sequoia National Forest recognizes the need to gather additional information regarding the resources of the Forest.
2. **Policy.** The Sequoia National Forest shall give priority to fulfilling these information needs in a timely manner. The Sequoia National Forest shall give priority to inventories and surveys of areas where land-disturbing projects are proposed.
3. With the exception of sales specified in Section D.5, the Forest shall not

approve an **EA** or **EE** until the information specified below, if relevant to the decision, is developed for the area of effect for each resource:

- a. Watershed Improvement Needs.
- b. Riparian and Meadow Inventory.
- c. Stream channel surveys for all streams covered by the relevant **CWE**, including fish habitat information following Regional direction, as set forth in **RS** document **R-5 FS Handbook 3/89, Chapter 2, Fish Habitat Assessment.**
- d. Rare and sensitive plant surveys.
- e. Wildlife habitat surveys on sensitive, threatened, and endangered species, as well as indicator species.
- f. Snag survey.
- g. Archeological surveys.
- h. Information on range condition, trends, hestock grazing capacity, and forage and habitat allowances for wildlife.

4. **Specific Information Requirements**

- e. **Background.** In order to assess the status of forest resources and to properly predict the probable effects of future management, the Sequoia National Forest must improve its data base.
- b. **Funding Priority.** The Sequoia National Forest agrees to seek

budgets annually that are sufficient to develop the information listed in Section c below:

c. *Required Information*

(1) *Watershed Improvement Needs Inventory.*

(a) ~~will~~ be updated and computerized on a compartment basis commensurate with timber sale project planning.

(b) Will be updated annually thereafter.

(c) Will identify needed actions by project name, number, or other appropriate identifier.

(2) The Forest Riparian and Meadow Inventory will be constructed from project planning analyses and as appropriated funds are available.

(3) Stream channel surveys, including fish habitat condition, will be completed as proposed timber sales and other projects are being evaluated and, for other areas, as appropriated funds are available.

- (4) Fish habitat inventory following Region 5 direction set forth in R5 document R-5 FS Handbook 3/89, Chapter 2, Fish Habitat Assessment: Survey fisheries and aquatic riparian habitat to assess the condition and trend where active land management is planned to predict and monitor environmental impacts and make informed management decisions. Surveys will be done in accordance with Region 5 direction which includes aquatic vertebrate survey of specific species, age class and numbers by seine, snorkel, visually and/or electroshocking.
- (5) Habitat needs of sensitive species: spotted owl, goshawk willow flycatcher, great grey owls, furbearers (sierra red fox, pine marten, fisher, and wolverine) as per recovery plans or other applicable regional guidelines.
- (6) Information necessary for the monitoring of MIS and sensitive species.
- (7) Population census and habitat needs for threatened and endangered species per recovery plans: peregrine falcon, bald eagle, condors, Little Kern Golden Trout.



- (8) Botanical Investigations for sensitive plant species as per Forest Service Manual 2609.25.
  - (9) Current ecological status of the land for each grazing allotment.
- 

**R. Monitoring**

1. The ~~Plan~~ shall be amended to include the Monitoring Plan as set forth in Exhibit O. The Sequoia National Forest shall conduct a monitoring program as set forth in that Exhibit. The Forest agrees to seek budgets annually that are sufficient to fully implement the monitoring program.
2. The following additional requirements apply:
  - a. A monitoring report shall be prepared for each timber sale (1) at the time timber sale contract work is completed and (2) after site preparation.
  - b. A monitoring report for a timber sale shall report on at least the following: compliance with each Plan standard for soil productivity (~~soil~~ cover, ~~soil~~ porosity, and organic matter); compliance with

BMP's; compliance with Standards for snags and for dead-and-down material; compliance with riparian standards and guidelines; and achievement of other mitigation measures identified in the project document. A selected sampling of timber sales shall be subject to additional monitoring pursuant to section N.3.d(3) and (4).

3. Program Monitoring shall include monitoring of wildlife habitat trends in accordance with the Tn-Forest Plan; provided, however, that the Forest shall commence its monitoring efforts under the Tri-Forest Plan immediately rather than waiting for the Sierra and Stanislaus Forests to adopt their final Forest Management Plans.
4. The Sequoia National Forest Management Team's annual report on the Forest's monitoring effort as detailed in the Monitoring Plan shall be included in the Annual Report (see Section W).

**S. *Implementation of Agreement***

1. The Sequoia National Forest shall give priority to initiating the Plan amendment process. In the interim, the actions, standards and guidelines specified in this Agreement shall be implemented.

2. The Tule River Indian Tribe has a strong interest in employment

opportunities, both public and private, that might be generated by Sequoia Forest management. All parties hereto recognize this interest. Sierra Forest Products and Sequoia Forest Industries agree to give preference to Tule River and other Indians with respect to training and employment opportunities to the maximum extent allowed by law. The Sequoia National Forest agrees to assist the Indians by providing them maximum possible employment opportunities in the full range of forest management activities.

3. **Within two weeks of the effective date of this Agreement,** the Forest Supervisor will issue a directive to inform all personnel about this Agreement and to emphasize the importance of full compliance with the Agreement and proposed amendments to the Plan **starting** immediately. Included in such directive, or in one or more separate directives from the Forest Supervisor, shall be the following, within 45 days of finalization of the Agreement:
  - a. Explanation to all persons involved in preparation of timber sale environmental documents of the minimum analysis and documentation requirements set forth or cross-referenced in section P.

- b. Explanation to **all persons** who enter or **use** information on **stand record cards** of the **requirements in** sections J.2.a.2 and P.3.d that wildlife clumps and stream reaches **important** for **fisheries** shall henceforth be identified on **stand record cards**.
  
- c. Explanation to **all persons** involved in timber management of **the** amended Plan **standards and guidelines concerning** riparian **areas**, actions near giant sequoia trees or **groves**, hardwood **retention**, wildlife species, timber **management**, snags and dead material, and **soil** quality (set forth in **portions** of **sections A, B, C, E, I, J, and O**).

Copies of these directives shall **be** pronded in **draft form** to counsel for the appellants for ten days **so** that they may make suggestions. Copies of the final directives shall **be** sent to all appellants.

#### **T. Budget .**

1. **Background.** Some parties are concerned that the budget assumptions in **the Plan** are unrealistically **high**, and that the Plan **will** never be fully funded. There **is** a concern **that** implementation of **mitigation** measures, **monitoring** programs, and restoration and habitat improvement work, **among** others, will not receive sufficient **funding**, particularly in light of

the timber management practices anticipated and planned for many areas of the Forest. Therefore, the parties agree that the budget and project funding level shall be monitored and Forest activities adjusted in accordance with the following:

2. ***Process***

- a. Each EA or EIS on a timber sale, road construction project, or other proposed projects shall include a separate list of proposed project mitigation measures and restoration and/or improvement work based on the text of that document. The list shall state which are mitigation measures relied upon to support a decision and thereby covered by the timber sale contract and which need to be done but are not necessary to support the decision. It shall also include the information shown on the sample form (Exhibit Q, "Mitigation Form"). For timber sales this list shall be updated at least (1) after timber sale contracts are sold (to indicate which mitigation measures will be covered by K-V funds); (2) the year for which appropriated dollars are requested; and (3) as project-related mitigation actions are completed.
- b. As soon as the decision to approve the project is made, all listed restoration or enhancement measures not to be performed as an

**integral** pan of the **project** (i.e., **measures** not covered by the timber sale **contract**) shall be assigned to the appropriate resource function and entered on the WNI or other appropriate inventory of action needs (habitat improvement needs, trail improvement needs, etc.). **For** each resource function such action needs shall be **identified** on the inventory by project name, number, or **other** appropriate identifier.

- c. Each resource function **will** be responsible for funding these enhancement and restoration needs **out** of current budget dollars **as** available **and/or** for requesting appropriated **funds**. **An** annual account of the **status** of these needs shall be kept **by** each resource function and shall be available for **public** review.
- d. All **mitigation** required to support a **FONSI** shall be funded out of the **timber** sale contract and project dollars, including appropriated **funds**. **If** full **funding** is not available, the project shall be **modified** or postponed **until** such funding is sufficient. Restoration and enhancement activities, which by **definition** are **not** required to support a **FONSI**, shall be accomplished **as** funding is available.
- e. **Starting** in **FY** 1991, the Forest Service shall include in the annual

report on Plan implementation (see Section W) information on:

- (1) Projects which have been completed, including all associated mitigation and restoration actions and **their** estimated costs.
  - (2) Projects completed except for associated restoration and enhancement work, and the estimated cost of completing such work.
3. **As** a general matter, the Sequoia National Forest agrees to seek balanced resource budgets sufficient to meet all its obligations under the Plan and this Agreement. The Regional Forester agrees that disaggregation of Regional budgets will not be done strictly on a prorata basis of line item appropriations tied to commodity **outputs**, such as timber harvest levels, but will take into appropriate account the cost of funding the multiplicity of obligations required by the FLMP and this Agreement.

**U. Multiple Use Liaison Committee and Fact-Finding**

1. The Appellants shall convene a meeting of the parties to this Agreement, including the Forest, to discuss management of the Forest pursuant to the implementation of this Agreement and the Plan. The parties assembled for this purpose shall be referred to as the Multiple Use Liaison

~~Committee~~ (hereafter the **Liaison Committee**). The Appellants will schedule ~~two meetings~~ at ~~six~~ month intervals during the ~~first~~ year following entry of this Agreement and **annually** thereafter **until** the issuance of a **new** Sequoia National Forest Land Management Plan.

2. Each ~~Party~~ shall **be** represented by a person or persons empowered to represent that party **fully**, but in no **case** shall the **number** of persons representing each party exceed the number which served on the Negotiating Committee. Each ~~party~~ shall designate **a** contact person who **shall** serve for **a minimum** of one year to provide ongoing ~~communication~~ between that party, the Forest, and other members of the **Liaison** Committee.
3. The general purpose of the meetings of the ~~Liaison Committee~~ is to continue the cooperation among the ~~parties~~ begun in the mediation process, to **assess new** information and to review the effectiveness of the Agreement and Plan. Its purpose **will** not be to renegotiate the harvest levels, land base or level of ~~effort~~ to be expended **by** Forest personnel in **managing** each of the ~~multiple uses~~ protected **by** the Plan.
4. The Appellants **shall** attempt to schedule ~~meetings~~ to accommodate **as** many ~~panics~~ **as possible** both with respect to location and **time**. Any



party may choose not to attend.

5. The agenda for the **Liaison Committee** shall include consideration of the following work outputs as they are prepared pursuant to this Agreement.
  - a. The Annual Report, including a **minimum** of two Demonstration/Research Projects.
  - b. The Giant Sequoia Grove boundaries and management plan proposals.
  - c. Proposal for the realignment of SOHAs.
  - d. Relevant studies and management guidelines for furbearers (as they evolve).
  - e. Study on the reproduction and age class of Blue Oaks.
  - f. Proposed management regimes for Siretta Peak and Dry Meadow Long Valley **OHV trails**.
  - g. Results of the independent **reviews** of **CWE model** verification and

mitigation effectiveness monitoring.

- h. Status of employment in private sector timber harvesting and public sector forest management activities of the Tule River Indian Tribe.
- i. Proposed volunteer projects to address reforestation failures, habitat damage or erosion problems (see 7 below).
- j. The Five Year LMP Review.

6. In addition, each party may submit items for discussion at the meeting. The meeting agenda shall include an opportunity to discuss as many items as practical. The Forest shall prepare a draft agenda in consultation with the contact persons and shall distribute the agenda in advance of the meeting. The first agenda item at each meeting will be to finalize the order of items for discussion.

7. As part of an ongoing cooperative effort to address the on-the-ground needs of the Forest, the parties agree to a partnership to jointly identify restoration projects that cannot be undertaken by the Forest because either financial or budget constraints that would be in the best interest of

the forest to implement in an earlier time frame. The timber industry agree to contribute to the fund on an **annual** basis based upon their level of use of the forest. See Section D.5.f. The **grazing** industry agrees to match this contribution on an **in-kind** basis. The other parties may match this contribution either in dollars or **in-kind** on these restoration projects. The Multiple Use Liaison Committee shall identify projects that might be undertaken through the combined resources of the parties and propose a schedule that accommodates as many parties as possible for working on these projects under the **supervision** of Forest personnel.

8. The parties recognize that there are likely to be differences of opinion regarding implementation of this Agreement because of the complexities of forest management. To ensure a timely response to concerns about impending potential violations of the Agreement that are not subject to a **NEPA** and administrative appeal process, and to prevent perceived violations from escalating to litigation, a party shall present an allegation of such a **potential or** perceived violation of the Agreement, in writing, to the Forest Supervisor who shall respond within 5 working days to this report, unless unforeseen circumstances preclude a response within 5 working days. In such a circumstance, the response shall be provided as soon as reasonably possible. If this response does not satisfy the claimant, then the Forest shall convene a conference call of the contact

persons to discuss the **issues with** respect to adherence to the agreement and/or possible remedies. If **the party** is still dissatisfied, then **it** may **initiate** whatever remedies **are** available under current law. In the event that the alleged violation requires immediate **injunctive** relief, the party need not await the Forest Service's response before **seeking** such relief.

9. **Fact-Finding.**

- a. If the parties **are** unable to reach a negotiated agreement as a result of the conference **call discussed** in paragraph **II.U.9** above, the parties may agree that the matter be submitted for **fact-finding** to the **full** extent permitted by law. The fact-finder shall be chosen by the parties.
  
- b. The **fact-finding** procedure shall be conducted in **an** expeditious and **cost-effective** manner according to rules and a timetable which shall **be set out** by the fact-finder **after** consultation with the parties to the **fact-finding**. Except for good cause shown by a party to the **fact-finding**, or if the fact-finder requests **an** extension and the participating parties agree to the fact-finder's request, the timetable shall result in a decision **within** 30 days of the appointment of the fact-finder.

c. Because of the financial constraints on many of the participating parties, the parties to this Agreement shall attempt to identify potential fact-finders in advance of any dispute from a list of professionals to be supplied by the Administrative Conference of the United States, which maintains a list of fact-finders in each Region of the U.S. who are willing to provide their services pro-bono. (Travel/per diem must be defrayed by the participating parties). Unless the participating parties agree otherwise, the parties participating in the fact-finding agree to share equally the cost of the fact-finder to the full extent permitted by law. Each participating party will pay its own costs, expenses and attorney fees.

**V. Public Information and Records**

1. Completed NEPA documents (including all referenced specialist reports), monitoring reports, Annual Reports, completed allotment plans, annual update of WINI, quarterly EA planning schedule, and other final reports such as the Reforestation Report (see Section V) shall be available for public review, in a designated room, during normal working hours, at the Sequoia National Forest headquarters in Porterville, California. The intent is to increase the availability of information including completed District NEPA documents, specialist and monitoring reports, etc., for

quick access by the general public.

2. The records and information shall be maintained in a manner conducive to easy access.
3. Any party may recommend improvements to the availability of the records specified in "1" above to the Forest Supervisor.

***W. Annual Report and Five Year Review***

1. The U. S. Forest Service shall prepare an Annual Report describing implementation of the Plan generally, its progress and problems in implementing the Plan, and reporting specifically the following:
  - a. The Annual Report shall include a description of information gathering and monitoring work required by the Plan that could not be accomplished, its estimated cost and why; a status report on accuracy of and refinements to CWE analysis based on that year's planning and monitoring; a status report on BMP effectiveness.
2. Additionally, the Sequoia National Forest shall describe how the Plan is expected to be implemented in the coming year, including expected projects and budgets.

3. The Annual Report shall be made public and shall be sent to the parties at least three weeks before the date of the yearly meeting of the parties.
4. The Sequoia National Forest shall also make public its written 5 year review of the Plan, which shall address, **inter alia**, whether the Plan should be amended based on information obtained over the previous 5 years. Such topics as budget deficiencies that have affected Plan implementation, relation of yield table assumptions to field observations, changes in FORPLAN assumptions, review of timber management techniques, monitoring results, or effectiveness of **BMP's** and Standards and Guidelines shall be discussed as they apply.

#### **X. Enforcement**

1. Any party may pursue its legal or administrative remedies at any time. The right to enforce this Agreement is vested only in the parties to this Agreement.
2. In the event that any party brings a civil action to enforce any portion of this Agreement, venue shall be proper in the Federal District Court for either the Northern or Eastern District of California, and no party shall challenge for improper venue any action brought in either court.

3. The parties involved in an **administrative** appeal may agree to mediate or otherwise negotiate the resolution of the appeal. Each party involved in the dispute resolution process agrees to pay an equal share of the cost of such resolution. Costs will be limited to cost of a mediator and the mediator's associated expenses (if used), supplies and meeting facilities, unless otherwise agreed to in advance of expenditure. The negotiation period shall be no more than **four weeks unless all** parties to the negotiation agree to extend the period.

**Y. NEPA Compliance**

1. The **Plan** shall be amended to reflect this Agreement as soon as possible. It is recognized this could take as long as two years.
2. The Plan amendment shall require a Supplement to the **LMP EIS**. It is understood that since this new round of **NEPA** process is open and public, the decision may not conform to this Agreement verbatim.
3. If the **Plan** is not amended substantially in conformity with this Agreement, the Agreement is voidable at the option of any party. As to any party that chooses to void the Agreement, the present appeal is reinstated.



### III. ADDITIONAL MATTERS

#### A. Matters Resolved

1. The appeal of the Forest Plan, **EIS**, and Record of Decision filed by each of the undersigned appellants **is** hereby wthdram. Each appellant agrees to notify the **Chief** of the Forest Semce of the withdrawal of his/its appeal.
  
2. Each appellant agrees to support implementation of this Agreement through the adoptlon of Plan amendments ~~examined in~~ a supplemental **EIS** and through appropriate public involvement in other Forest Service actions ~~described in~~ this Agreement. Each appellant agrees not to appeal the Plan amendments required by this Agreement provided such amendments ~~implement~~ this Agreement without material change. This agreement not to appeal such Plan amendments does not apply to any amendments for ~~which~~ this Agreement does not specify the content of the amendment, even though the Agreement refers to a process that might result in a Plan amendment (**e.g.**, eventual ~~determination~~ of **specific** giant sequoia boundaries, or adoptlon of a **specific** furbearer habitat network).


3. If the interim direction is not implemented or the Plan is not amended substantially in conformity with the Agreement, the Agreement is voidable as to that party at the option of any party other than the Forest Service. As to such party that chooses to void the Agreement, that party's present appeal is reinstated. The USFS may void the Agreement if any party fails to act substantially in conformity with the requirements of this Agreement. If the USFS voids the Agreement, all appeals are reinstated.
4. Each party agrees to review the Proposed Draft Amendment to the Plan during the public review period and to identify to the Sequoia National Forest in writing any provisions that are not in substantial conformity with the Agreement.
5. Except as provided in paragraphs 1, 2, and 3 above, and in any other paragraph in which specific timber sales for 1990 are settled, the appellants reserve their rights to initiate and pursue appeal or judicial review of any Forest Service actions, including, but not limited to, any future amendment or revisions of the Plan.

B. Amendment of Plan. The provisions of law governing Plan Amendments

continue to apply to the Sequoia National Forest Land Management Plan, and the Forest shall consider amendments to the Land Management Plan in the event of circumstances not contemplated by this Agreement or in the Land Management Plan.

- C. **Modification of Agreement.** This Agreement may be modified upon written approval of all the parties hereto. The parties agree to discuss proposed changes to this Agreement in good faith, including those changes proposed by the Forest Service based on changed conditions or new information.
- D. **Authority to Enter Agreement.** Each signatory to this Agreement certifies that he or she is fully authorized by the party he or she represents to enter into this Agreement, to execute it on behalf of the party represented and legally to bind that party.
- E. **Integration.** This Agreement constitutes the entire agreement among the parties and may not be amended or supplemented except as provided for in the Agreement.

**IT IS SO STIPULATED**

  
\_\_\_\_\_  
**JULIE E. MCDONALD**  
**SIERRA CLUB LEGAL DEFENSE FUND**

\_\_\_\_\_  
**Dated** July 1990

**ATTORNEYS FOR**

**SIERRA CLUB**

**SOUTHWEST COUNCIL, FEDERATION OF FLYFISHERS**

**THE WILDERNESS SOCIETY**

**NATURAL RESOURCES DEFENSE COUNCIL**

**IT IS SO STIPULATED**

  
\_\_\_\_\_  
**BRETT MATZKE**  
**GOVERNOR, REGION 4 CALIFORNIA TROUT, INC.**  
**CONSERVATION CHAIR, KAWEAH FLYFISHERS**

7/9/90  
Dated


**ON BEHALF OF**

**CALIFORNIA TROUT, INC.**


**KAWEAH FLYFISHERS**



IT IS SO STIPULATED

  
\_\_\_\_\_  
JAMES A. CRATES  
FOREST SUPERVISOR  
SEQUOIA NATIONAL FOREST  
(advisory signature)

7/10/90  
Dated

  
\_\_\_\_\_  
PAUL F. BARKER  
REGIONAL FORESTER  
PACIFIC SOUTHWEST REGION

July 13, 1990  
Dated

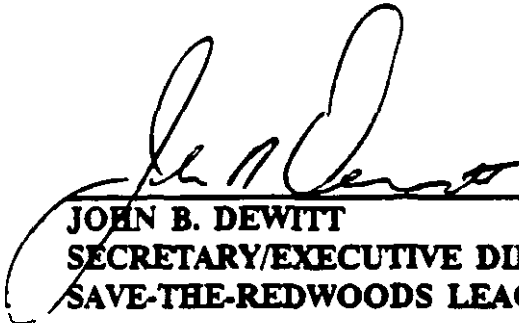
ON BEHALF OF

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE

**IT IS SO STIPULATED**

  
\_\_\_\_\_  
**BRADLEE S. WELTON**  
**ATTORNEY AT LAW**

7/7/90  
Dated

  
\_\_\_\_\_  
**JOHN B. DEWITT**  
**SECRETARY/EXECUTIVE DIRECTOR**  
**SAVE-THE-REDWOODS LEAGUE**


July 9, 1990  
Dated

**ON BEHALF OF**

**SAVE-TEE-REDWOODS LEAGUE**



IT IS SO STIPULATED

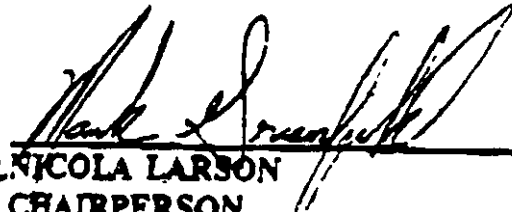
  
\_\_\_\_\_  
LEE J. CHAUVET  
DEPUTY DIRECTOR  
OFF-HIGHWAY MOTOR VEHICLE RECREATION DIVISION

19 July 90  
Date

ON BEHALF OF

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION

**IT IS SO STIPULATED**

*for*   
for **NICOLA LARSON**  
**CHAIRPERSON**

10 July 90  
Dated

**ON BEHALF OF**

**TULE RIVER INDIAN TRIBE**

IT IS **SO** STIPULATED

*Tim Ryan*

\_\_\_\_\_  
TIM RYAN  
PRESIDENT

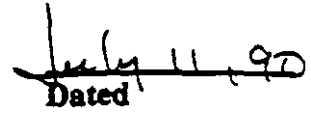
*July 19, 1990*  
\_\_\_\_\_  
Dated

ON BEHALF OF

PHANTOM DUCK CLUB

**IT IS SO STIPULATED**

  
**BRUCE HAFENFELD**

  
**Dated**

**ON BEHALF OF**

**HAFENFELD RANCH**

**CALIFORNIA CATTLEMEN'S ASSOCIATION**

**IT IS SO STIPULATED**

  
**RONALD SCHILLER**

7-18-90  
Dated

**ON BEHALF OF**

**HIGH DESERT MULTIPLE-USE COALITION**

**IT IS SO STIPULATED**

*Patrice Davison*  
**PATRICE DAVISON**

*7-19-90*  
**Dated**

**ON BEHALF OF**

**CALIFORNIA ASSOCIATION OF FOUR WHEEL DRIVE CLUBS -**

IT IS **SO** STIPULATED

  
SUZANNE SCHESSLER


July 23, 1990  
Dated

ON BEHALF OF

CALIFORNIA NATIVE PLANT SOCIETY

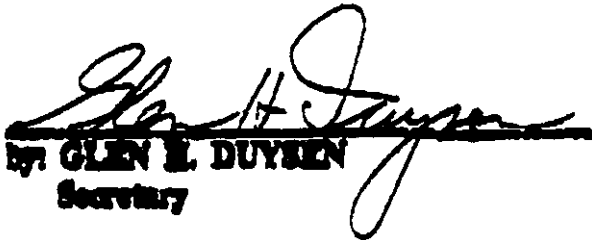
**IT IS SO STIPULATED**

**SEQUOIA FOREST INDUSTRIES**

  
by: **JAMES E. ANTHONY**  
Executive Vice President/  
General Manager

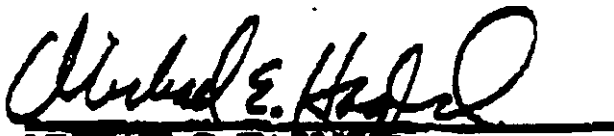
July 10, 1990  
Dated

**SIERRA FOREST PRODUCTS**

  
by: **GLEN E. DUYEN**  
Secretary

July 10, 1990  
Dated

**EAGLUND & KIRTLEY**

  
**MICHAEL E. HAGLUND**

July 10, 1990  
Dated

**ATTORNEYS FOR**

**SIERRA FOREST PRODUCTS and  
SEQUOIA FOREST INDUSTRIES**



**IT IS *SO* STIPULATED**

*Jerry Counts*  
**JERRY COUNTS**

*7/18/90*  
**Dated**

**ON BEHALF OF**

**AMERICAN MOTORCYCLE ASSOCIATION DISTRICT #37**

EXHIBITS AND APPENDICES  
TO  
MEDIATED 1990 SETTLEMENT AGREEMENT  
SEQUOIA NATIONAL FOREST  
LAND MANAGEMENT PLAN

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# Exhibit A

## LIST OF APPELLANTS

United Four Wheel Drive Association

Sierra Club, et al.

Scenic Shoreline Preservation Conference, Inc.

Save-the-Redwoods League

Tule River Indian Tribe

California Native Plant Society

American Motorcyclist Association, District 37

Sierra Forest Products, et al.

Phantom Duck Club

California Association of 4WD Clubs

California Off-Road Vehicle Association

California Attorney General for the People

High Desert Multiple-Use Coalition

## Exhibit B



UNITED STATES  
DEPARTMENT OF  
AGRICULTURE

FOREST  
SERVICE

SEQUOIA  
NATIONAL FOREST

900 W. GRAND AVE.  
PORTERVILLE, CA 93257  
(209) 784-1500

REPLY TO: 1920

DATE: November 15, 1988

Mr. George Nokes, Regional Manager, Region 4  
California Department of Fish And Game  
1234 East Shaw Avenue  
Fresno, CA 93710

Dear George:

I appreciate the efforts of Rod Goss and your staff in working toward the resolution of the California Department of Fish and Game's appeal of the Sequoia National forest Land and Resource Management Plan.

We acknowledge your concerns and are willing to propose amendments to the Sequoia Land and Resource Management Plan described as in this letter as resolutions of your appeal (2403). These amendments are subject to NEPA and NFMA analysis including public disclosure environmental analysis and documentation. and issuance of a decision notice.

The following documentation includes specific discussion on each appeal point from the meetings. Notes from each of the four meetings by the team are designated by an (M1) through (M4), followed by a formal resolution proposal. Negotiation team members included from Fish & Game: Rod Goss and Stan Stephens; from the Sequoia National Forest: Gordon Heebner, Resource Officer; Jay Probasco, Hot Springs District Ranger; Terry Kaplan-Henry, Hydrologist; Steve Anderson, Hume Lake District Wildlife/Range Conservationist; Tom Henry, Facilitator.

### A. Aquatic Resources Issues

#### Appeal point #1: Unrealistic fisheries benefits

(M3) Steve stated that the Forest has an on-going Fishery habitat improvement program and cited use of a 20-person crew as an example of on-going work. Jay felt that by greatly improving the Forest's Standards and Guidelines, the ability to achieve the Fishery benefits is greatly improved. Stan agreed with Jay's point, but also pointed out that there is not adequate Watershed Improvement Needs Inventory (WINI) documentation and that the Forest needs to get the WINI up-to-date, and on-line. Steve pointed out that Fish & Game personnel can help the Forest and WINI program immensely by providing documentation of projects when they encounter them in the field. The team as a whole felt that they could move on to more specific appeal points, and pending resolution of the remainder of the Fishery points, this "all-inclusive" point could be settled. The team agreed to move on. \*-----

(M4) Based on the agreed-upon resolution of specific points on Standards and Guidelines and other points related to Fisheries, the team agreed that this point was resolved.





**PROPOSED RESOLUTION:** Based on the agreed-upon resolution of appeal points #2,3,5,6,7,8,9, and 10 of the Aquatic Resources and the adoption of Revision IV of the Riparian Standards and Guidelines, the team agreed that this point was resolved.

**Appeal Point #2: Non-specific Standards and Guidelines For Aquatic Protection.**

(NB) The team agreed that the key to this appeal point is that the BMP's (and Standards and Guidelines) must be aggressively monitored in order to ensure that they have been adequately implemented and have been effective. Gordon, Steve, and Jay discussed the increased monitoring going on with BMPs and Standards and Guidelines. This discussion was very useful to Stan, who was not fully aware of the rate or method of monitoring. Some examples cited were direct cross-referencing of BMP's with the Timber Sale Contract (BMP handbook), checklists of Standards and Guidelines for use in Sale Administrator inspections, and regularly scheduled monitoring trips to each district by the Forest Management team. Steve recommended that language be added in the LMP monitoring plan as a separate line item that directs that BMP's and Standards and Guidelines be aggressively monitored and that the FS also improve monitoring of site preparation activities. Stan and Rod agreed that with this more aggressive and more fully documented approach to the use and effectiveness of BMP's and S G's, this appeal point could be resolved.

**PROPOSED RESOLUTION:** Formal resolution of this point is three-fold:

- 1) The team agreed that the Forest has Improved BMP monitoring for implementation and effectiveness.
- 2) The Forest will adopt Revision IV of the Riparian Standards and Guidelines as an interim measure pending analysis and adoption of a Forest Plan Amendment through NEPA process.
- 3) Monitoring of aquatic resources will be included in the pending PSW/Tri-Forest Monitoring Plan.

**Appeal point #3: Non-specificity of Aquatic Habitat Improvement Measures.**

(NB) Steve stated that the Forest has been doing about three miles of habitat improvement work per year and that the "30 miles per decade" is reasonable to accomplish. Rod pointed out that page 4-14 of the Plan says we will do it, but what Standards and Guidelines will the Forest hold itself to to assure Fish and Game (and the rest of the public) that the work is done (i.e. type of structures, etc)? Gordon stated he did not feel it was appropriate to reference the specific funds to accomplish annual or programmatic work (such as "Rise to the Future", Challenge Grant \$, etc.) when these funds cannot yet be counted on to provide consistent sources of funding. In getting back to the specific Standard and Guideline to provide direction for accomplishing programmed work, Stan offered the "increase biomass by 20%" as a standard to shoot for in proposing projects. This figure is directly from the RPA goals. The team agreed that this figure provides a crisp link from national programs to the Forest Plan and then to project level planning. There were several reservations from the team about the appropriateness of this standard for all projects. After discussion, the team agreed that "20% biomass increase" could be an effective project objective and can serve well as a key element of the Forest monitoring plan, but that there are numerous other project objectives which would drive fishery habitat improvement projects. Some other objectives





mentioned were: Increase recreational use; maintain gene pools; correct existing resource problems: mitigation for proposed activities. Gordon emphasized that Biologists must be clear in **establishing objectives** in order to help the Forest prioritize projects. and that the objective should not just to increase biomass, but rather to promote some aspect of the Fishery habitat or program. with biomass being a key **"indicator"** of effectiveness where appropriate. Steve offered to add language in 4-3 and 4-7 of Management Direction in the Plan.

PROPOSED RESOLUTION: Formal resolution of this point is to add the following proposed language:

Pg. 4-3 of the LMP (Wildlife, Fish, and Plant Goals):

6) **Promote** recreational opportunities by striving to increase fisheries biomass by 20 percent via habitat improvement projects.

Appeal point 14: Impacts of Projected Recreational Use.

(M3) The team agreed that this was an **"all-inclusive"** appeal point and that its resolution hinged on the successful resolution of other **more** specific points. The team agreed to move on and reconsider this later.

(M4) Eased on agreed-upon resolution of specific appeal points on Standards and **Guidelines** and other Fishery-related points, the team agreed that this point was resolved.

PROPOSED RESOLUTION: Formal resolution of this point is two-fold:

- 1) Clarification that angling is estimated to be associated with **40%** of **current** overall recreational use. There is **expected** to be an increase of **3%** in angler use per year.
- 2) Resolution of appeal points #2 and #3 will provide **effective** measures to mitigate the effects of planned **increases** in **recreational uses** upon trout populations.

Appeal point #5: Protection and Monitoring of Nontrout Aquatic Resources.

(M3) There was no **recommendation** of which species are proposed by Fish and Game to monitor in the **non-trout habitat**, and Rod and Stan were unclear at this time as to the **specific species** that are **Indicator species**. Rod pointed out that at the **lower elevations** (below the trout habitat), cattle grazing is the activity which could **impact** the habitat. Regarding the non-trout habitat above trout populations, the Forest position is that full implementation of **BMP's** and **Standards and Guidelines** would adequately **protect** habitat in the **lower elevation** non-trout habitat. Rod and Stan agreed that this was **appropriate**. The team then discussed the **interpretation of information** in the Plan. The Plan does note that **one-half** of the **streams** on the Forest are non-trout habitat. Gordon and Steve pointed out that this **"one-half"** refers to **streams** above **existing trout** populations, at the higher **elevations**. The language in the appeal point **interpreted** this **"one-half"** as being primarily below the trout population. The team discussed adding **some indicator species** (such as an **amphibian**) to the **monitoring plan**. Rod stated that **adequate monitoring and protection** of the **lower elevation** non-trout habitat can be **adequately covered** by Use of the **LMP Standards and Guidelines** being developed, as well as







JFN  
11/18/8  
from

considering a new guideline to protect habitat In the Blue Oak-Savannah type ~~for~~ cattle grazing (along with related monitoring). Pod and Stan agreed that with our new LMP Standards and Guidelines. monitoring plan, and an adequate guideline for the Blue Oak/Savannah type. this appeal point could be resolved. PROPOSED RESOLUTION: Resolution of this point is two-fold:

- 1) Interim adoption of Revision IV of the Riparian Standards and Guidelines.
- 2) On-going development of PSW/Tri-Forest Monitoring Plan.

Appeal point 66: Non-specificity of Aquatic Monitoring Methods

(M3) The team agreed that with the agreed-upon changes In the existing Forest monitoring plan and the pending work on the Tri-Forest monitoring plan with PSW and Fish & Game, that we will be providing adequate monitoring.

PROPOSED RESOLUTION: Based on the current development of the PSW/Tri-Forest Monitoring Plan, this point is resolved.

Appeal point #7: Mitigation of Livestock Impacts on Aquatic Resources.

(M3) The team agreed to work on resolution of this point in conjunction with appeal point 127, which deals with forage allocation as well as impacts from livestock.

(M4) The team reviewed the rough draft of Revision IV of the Forest Riparian Standards and Guidelines. The focus of the review and discussion was on two new guidelines: #7- "Forage and Utilization" and #8- "Woody and Herbaceous Vegetation in Riparian and Wetland Ecosystems". The titles were wordsmithed by the group to reflect a broader focus. Gordon discussed with the group the current efforts by Fish and Game and PSW to Jointly develop management direction, a mountain meadow inventory systems and evaluation criteria to help determine project needs in meadows. The team agreed that these products will provide needed direction and "tools" for Biologists in the field, but that the final product may be a long way off. The team made some wording changes In Standard and Guideline #8, in which the reference to Fisheries was strengthened. The team also recognized the lack of specific implementation direction to reestablish or enhance meadows which had been impacted from past activities. The following addition was proposed to add to the "Implementation" section of the Standard and Guideline: "Re-establish vegetative cover structure conditions which enhance Fish and Wildlife, as identified in the Forest Riparian Wetland Inventory. Establish demonstration areas for habitat establishment or enhancement in cooperation with California Department of Fish and Game". This last sentence on development of demonstration areas was agreed upon by the team to initiate an immediate and positive meadow management program on the Forest pending the final product being jointly developed by PSW and Fish and Game.

PROPOSED RESOLUTION: Resolution of this point is three-fold:

- 1) Interim adoption of Revision IV of the Riparian Standards and Guidelines.
- 2) Expected development of a Mountain Meadow Inventory System (PSW, Tri-Forest, and Fish and Game).





3) Resolution of appeal point #13 of Terrestrial Resource Issues.

Appeal point #8: Aquatic Baseline Information

(M3) The point of this appeal is that Rich Standage, former Sequoia Forest Fisheries Biologist, stated in his "Analysis of the Management Situation" that 70% of the streams on the Forest are in fair or good condition; however, the Plan altered the specific language he used from "fair and good" to "medium and high". Stan stated that this change in the language misrepresented the on-the-ground condition. Jay recommended that the Plan language be changed to conform to the language used in Standage's document since it was the primary basis for the Plan's analysis of the fishery situation. The team agreed to this change. Rod stated that he felt this was an easily resolvable point.

PROWSED RESOLUTION: Resolution of this point will be the addition of the following language in the LMP:

Paragraph 3 on page 3-18 of the plan will be amended as follows:

Delete sentence #4. Insert "Habitat quality of trout streams on the Forest was estimated to be 32% in good condition. 39 % in fair condition and 29% in poor condition. This assessment is based on a comparison with a fishery in the Golden Trout Wilderness."

Sentence #6; change "...medium or low ratings..." to "...fair or poor ratings..."

Appeal point #9: Aquatic Protection Guidelines Resources.

(M3) The team agreed that Revision III of the Standards and Guidelines provides good protection of riparian zones. The team reviewed a rough draft of Revision IV. A key addition is inclusion of a guideline on meadow protection for woody and herbaceous vegetation, as well as the existing guideline on protecting streambanks. The team agreed that with the pending revision of the Riparian Standards and Guidelines and the Monitoring Plan, this point is resolved.

PROWSED RESOLUTION: Resolution of the point is two-fold:

- 1) Interim adoption of Revision IV of the Riparian Standards and Guidelines.
- 2) On-going development of PSW/Tri-Forest Monitoring Plan.

Appeal point #10 Effects of Even-age Timber Management Upon Aquatic Resources.

(M3) The team agreed that resolution of appeal points regarding adequate Riparian Standards and Guidelines and a Monitoring Plan would resolve this point.

PROPOSED RESOLUTION: Same as appeal point #9 (of Aquatic Resources Issues).





## B. Terrestrial Resource Issues

### Appeal point #1: Monitoring of Management Indicator Species.

(M2) The team agreed that the Plan did not have adequate monitoring. Steve handed out to the group a monitoring plan developed by Bea Anderson (Wildlife Biologist) and Ken Anderson (Rango Conservationist). The team reviewed it, and Rod stated that it was very close to what he was looking for. He stated that Fish and Game wants PSW and the three Forests to interact for a complete plan that includes the research capabilities that PSW can provide. Rod stated that if we (FS) can agree that PSW will give us direction and that we will follow that direction, that is all Fish & Game can reasonably ask. Gordon stated that in November of 1988, work is to begin on a Tri-Forest/PSW monitoring plan, and he recommended that Fish & Game be a part of the team effort. The team agreed to this. The objective of the cooperative monitoring plan effort should be to develop a plan to meet needs of all agencies involved. The team agreed that the Monitoring Plan developed by Anderson and Anderson is adequate, with changes as recommended by Steve. Steve will add specific elements of the habitat that should be monitored closely now. These elements are: Riparian Zones; Hardwood component (for gray squirrels and other key species); Snags (using the Guild approach); Old growth. With these additions, the team agreed the existing plan would be adequate until a PSW/3-Forest/Fish & Game Plan could be developed. For formal resolution: Rod will review the changes Steve will make at the next meeting. If these are agreeable, this appeal point will be dropped. An additional action item: Gordon will contact Gordon Yamanaka to establish a timetable to complete the Monitoring Plan.

(M3) Steve and Gordon informed the group that the three forests and PSW would be meeting on November 10, 1988 to begin work on the monitoring plan. Stan Stephens discussed his serious concerns about the poor references made to the fishery resource and feels more emphasis should be included. Steve stated that Stan should attend the upcoming meeting and the team concurred. Rod feels that the agencies are definitely on the right track for a comprehensive monitoring plan. Based on Steve's additions to the existing Sequoia Forest monitoring plan as discussed in meeting #2, Rod is willing to drop this appeal point. Rod also added that Blue Oak reproduction should be added as a key monitoring element of the hardwood component, as it is key to the appeal by the California Native Plant Society.

(M4) Rod discussed the "loose end" on Goshawks he had identified at the close of meeting #3. Rod stated that this point was not recognized when Julie and he discussed and verified the 30 appeal points over the phone. He feels that the LMP Standards and Guidelines do not adequately protect the Goshawk. He referenced a study by Bloom (conducted for Fish and Game), which states that the current 50 acre no-cut area around existing sites is not inappropriate. The report does, however, state that with the limited amount of knowledge for Goshawks, a more conservative approach of 125 acres of no-cut may be more appropriate. Rod stated that this may be more of a regional issue, since all Forests are following the regional guide (Rainbow Book). Steve stated that he talked with Jim Shevock about this point and Jim had indicated that the Region would probably stick to the current guidelines. Rod stated that we need to protect known site locations in all areas, as well as in SOHAs, wildernesses, etc., and that protection from disturbance during the nesting period is highly critical to prevent abandonment. This protection is in addition to protection of the habitat surrounding the nest site, which is addressed by the current guidelines. Jay recommended that until the Forest can establish its Goshawk network, the Forest should retain the 50 acre core zone and also restrict





disturbing activities within an additional 75 acres around the nest until the fledging period is over. The team agreed that this is an acceptable approach but also encouraged heavy monitoring of known sites.

**PROPOSED RESOLUTION:** Resolution of this appeal point is three-fold:

- 1) The Forest will add the following specific habitat elements to the LMP monitoring plan: riparian zones; snags; **hardwood component**; old growth.
- 2) Resolution of appeal point #5 of Terrestrial Resources Issues (Snag Management) for adequate protection of Pileated Woodpecker habitat.
- 3) Delete last paragraph of **Old Growth Habitat** pertaining to Goshawks on page 4-29 of the LMP and substitute the following:

"Protect all active goshawk nests until an approved Forest goshawk network is established. 125 acres of habitat will have a restricted operating season from April 1 to August 1 and include 50 acres of undisturbed habitat around each active nest site.

This issue is resolved pending development of a joint monitoring plan involving PSW and the Tri-Forests (Sierra, Sequoia, **Stanislaus**).

**Appeal point #2: Deer Population Projections.**

(M1) Resolution of 12 is directly tied to 118. The team agreed to work on 118 and re-visit this "all-inclusive" point after resolution of other more specific appeal points.

(M4) At the end of meeting 14 (after agreeing on tentative resolution of all specific appeal points), the team reviewed point #2. Rod stated that with the revised and/or new LMP Standards and Guidelines as currently agreed upon by the team, this point is resolved.

**PROPOSED RESOLUTION:** Resolution of this point is five-fold:

- 1) To improve provisions for winter range forage, add the following language in the LW:

Pg. 4-77 Prescription for B06 (Range section), 3):

**Retain at least 700 lbs./acre residual dry matter (RDM) as the utilization standard for livestock use.**

Pg. 4-67 Prescription for OW5 (Range section), 2):

Pg. 4-77 Prescription for B06 (Range section), 4):

Pg. 4-80 Prescription for OW6 (Range section), 3):

**Winter grazing allotments will limit browse utilization to no more than 15% of preferred browse or 5% of staple species in heavily browsed condition (form class 3 or 6). Limited browsing will maintain browse in satisfactory condition and indicate that green feed is available for wildlife during winter "green up" (inadequate green forage period).**





- Pg. 4-67 Prescription for **OW5** (Range section), 3):
- Pg. 4-77 Prescription for **BO6** (Range section), 5):
- Pg. 4-80 Prescription for **OW6** (Range section), 4):

Allotment Management Plans rllll allocate emphasis for use of mast crops to rlldllfe.

2) To improve provlsions for summer range forage. add the following language in the LMP:

Pg. 4-32 Forest-Wide Standards and Guidelines (Timber Management; Regeneration Methods section), add paragraph 5 as follows:

- Retain summer forage for deer where preferred browse species occupy a timber site after harvest:

Specifics

- a. Determine the brush control needs on a site specific basis.
- b. Consult rllth a Wildlife Biologist when planning brush control measures.
- c. Maintain brush complexes rllth preferred browse species at <sup>11/18/80</sup> ~~no~~ <sup>approximat</sup> ~~no~~ <sup>BDN</sup> 20% of the area.

3) To Improve meadow cover, add the following language in the LW:

Pg. 4-28 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plant; Habitat Coordlnatlon section), add paragraph 4 as follows:

- Inventory all meadows and riparian areas to determine areas lacking cover for wildlife and utllite fencing, dan logs, willow or aspen plantings and brush piles to improve areas identified as poor habitat.

4) To reduce recreational Impacts on wildlife, change the following language in the LW:

Pg. 4-38 Forest-Wide Standards and Guidelines (Facilities and Energy; Facilities section), delete c) under paragraph 2 and replace with the following:

- (c) Close roads not needed for recreational access and/or provide for adequate screening to minimize impacts on wildlife.

5) To provide travel corridors and fawning areas for deer, the Forest will on an interim basis Implant Revision IV of the Forest's Riparian Standards and Guidelines.

Appeal point #3: Bald Eagle Protection.

(M1) Rod stated that the Plan provides only reactive protection, and that we need to be pro-active in providing habitat protection. Gordon stated that the pro-active part of the FS role in managing Bald Eagles is our compliance and implementation of the Recovery Plan of the US Fish and Wildlife Service. In regards to monitoring, It is currently defined in the FLMP as a cooperative





effort with PSW and the three Forests. The team recommended adding new language to our existing forest monitoring plan, stating clearly that we will implement the monitoring plan for the Recovery Plan for Bald Eagles. A key to assurance of no impact on the eagles by this plan (from Fish & Game perspective) is that no new physical developments are proposed.

(M2) After reviewing the Sierra Forest Plan language, the team agreed to add language to the prescription for Veg Types Blue Oak- Savannah and Oak Woodland for protection of the Bald Eagle.

PROPOSED RESOLUTION: Add the following language to the LMP:

Pg. 4-29 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; General section, add paragraph 9:

- Protect important roost trees and feeding areas for wintering bald eagles at Pine Flat Reservoir and along the Kern River.

This addition is proposed to be added to the section on Forest-wide Standards and Guidelines rather than Prescriptions as noted in the meeting documentation.

**Appeal point #4: Riparian Habitat Protection.**

(M1) The team was in agreement that Revision IV of the Forest Riparian Standards and Guidelines is adequate from a NEPA standpoint, but that the language must be clear that management in riparian zones shall be for the enhancement of riparian-dependent species only. Terry Henry will provide additional language in the S&Gs to clarify and resolve this point. Terry read a rough draft to Rod and Rod agreed in principle to her proposal. Adoption of Revision IV will lead to resolution of this appeal point.

(M2) No further work was pursued on this. Terry will have the revised Riparian Standards and Guidelines available for the third meeting for review by Rod and Fish and Game Fisheries representatives.

(M3) See documentation under #7.

PROPOSED RESOLUTION: See resolution of appeal point #2 of Aquatic Resources Issues. The Forest will adopt Revision IV of the Riparian Standards and Guidelines on an interim basis pending final revision and adoption through the Forest Plan amendment process.

**Appeal point #5: Snag Management.**

(M1) Steve discussed applicability of research by Raphael G White, in which 3 1/2 snags per acre are recommended as ideal. He pointed out the large amount of areas set aside within and adjacent to the Forest, such as National Parks, SOHAs, wilderness, and riparian zones. Based on these set-aside areas, the Forest can appropriately apply a lower snag average and still maintain population viability. Rod responded that the 1 1/2 snags per acre refers to hard snags only, and assumes that all soft snags are retained. He stated that hard and soft snags are separate elements of wildlife habitat and should be managed as separate components. The FS has the ability to save all soft snags on tractor ground, but cable ground is a different story- only hard snags are being left. Gordon suggested that maybe FS should increase the percent of mature timber left in wildlife clumps to compensate for the falldown in soft snags on cable ground. The team had an open discussion about this possibility





and developed a rough draft of a guideline. Rod continued to encourage the FS to increase awareness of field personnel to the habitat needs and to encourage innovation as a key to further success.

(M2) Rod began the discussion by inquiring as to the source of the size class distribution per 100 acres as proposed in the Plan. According to research by Chapel, pileated woodpecker average snag size is 30 inches. Rod stated that the 20 inches listed in the Plan is minimum use size and is not acceptable as an average. Rod also referenced Evelyn Bull's study in Northeastern Oregon, where the average diameter of 105 nest trees is 32 inches. The team agreed to raise the minimum diameter of the large snags to be saved from 20 inches up to 24 inches, recognizing that larger snags will be necessary to truly meet habitat needs of numerous species (besides the pileated woodpecker) using these large snags. Rod also referenced research of Raphael and White which showed the average diameter of trees used for other-than-nesting is 16 inches, well above the 10 inch minimum diameter listed in the Plan. Gordon recommended a change from the minimum of 10 inches to 16 inches (anything larger than 15 inches for field use). The team adopted this change and then was in consensus about the recommended changes. The changes are: 50 snags per 100 acres greater than or equal to 24 inches in diameter; 100 snags per 100 acres greater than 15 inches in diameter. The team then discussed the extent of pileated woodpecker habitat and whether this guideline should be applied on the forest as a whole. As the mixed conifer and Red fir vegetative type is habitat (Ward Thomas, reference), the team agreed that it is appropriate to apply this guideline forest-wide. A final key to the team's discussion and agreement is that the Forest will be managing for the mean recommended diameters (>16" and >24") and larger. Steve raised the concern that snags <16 inches won't "count" in our snag management; he then referenced field data by Steve Self which indicates that most of the Forest exceeds the newly agreed-upon guideline, and hence the 10"-16" snags are of no great consequence in meeting the snag guideline.

PROPOSED RESOLUTION: The following language changes to the LMP are proposed:

Pg. 4-29 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; Snag and Own Log Section), delete paragraph 2 (a,b,c) and replace with the following:

— Maintain a minimum average of 15 hard snags per acre on commercial forest land in each compartment.

a) Hard snags should meet or exceed the following size and density requirements:

Size (dbh)	Snags/100 Acres
>24	50
>15	100

b) In even-age treatment areas, clumps or aggregations of mature trees averaging 4% to 6% of the treated sale area (exclusive of riparian zones) will be left to provide for snags, snag recruitment, and wildlife screening. These clumps will be established in close coordination with a Wildlife Biologist and should range from 1/2 acre to 2 acres in size.

— Protect all soft snags except where they are a safety hazard. Where it is not possible to protect soft snags, ground trees will be left for additional snag recruitment or wildlife clumps will be increased in size.



Chapter 7, FEIS Appendices, Appendix J-8; add the following



Harvest unit: That part of a management stand that is actually harvested including wildlife clumps. The harvest unit does not include uncut riparian buffers along perennial streams.

Appeal point #6: Silviculture.

In clarifying the specific points of the appeal. Julie Allen and Rod Goss identified several specific items. These specific items precede the following meeting notes.

**"State-of-the-Art Reforestation"**

(M1) Rod stated that the Issue is not really "What is 'State of the Art', but rather that "State of the Art" reforestation is not clearly linked to the Plan's Standards and Guidelines. Rod recommended that for resolution, more clear language needs to be added where reference is made to "State-of-the-Art" that clearly displays an awareness of the Impacts on other resources and the use and mitigating effects of Standards and Guidelines on the effects.

(M2) In terms of formal resolution of this point, Rod suggested additional language to the Plan directly stating that application of "State-of-the-Art reforestation" includes use of Standards and Guidelines intended to buffer the effects on other resources, Steve will develop language to meet this need.

**"Residual Vegetation in Plantations"**

(M1) Rod stated a need for F&G to be assured that brush remaining in a plantation (acceptable from a silvicultural standpoint) is designed to help meet deer habitat needs, rather than an unpredictable mix. Desirable species mix should be developed from input by Wildlife Biologist. Steve stated that despite "State-of-the-Art" reforestation, there is brush in every opening. Rod confirmed this and accepted, but emphasized that "State-of-the-Art" should include residual brush mixes by design, not by accident. Action Item: Rod will develop a rough draft guideline which will help silviculturists in conjunction with biologists design residual brush complexes which will make projected deer population increases more realistic, since projections are partially dependent on early successional browse in new openings.

Based on an acceptable guideline for helping to assure a desirable mix of browse species in plantations. Rod stated that both points 112 and 118 could be resolved.

(M2) Rod reviewed the first meeting notes and stated that they accurately reflected his position. He distributed a rough draft of a Guideline on leaving preferred browse in plantations during release operations. The team generally supported points 1 through 4 of his draft, and stated that point 5 would need further discussion as to whether it was a viable option. The specifications of points 4 and 5 of the draft guideline are from the North Kings Deer Herd Study. Gordon emphasized that a list of preferred browse species should be available to silviculturists. Two sources are the N Kings Deer Herd Plan and the Forest Range Handbook. Steve mentioned that in consulting with his district silviculturist (Don Fuller), control during establishment of the plantation (first five years) is critical. Beyond that, it is easier to live with brush competition. Jay stated that control is more critical than timing depending on the brush complex. Tom stated that point 4 of the guideline indicates that brush levels would be at a minimum of 20%, and







with less-than-100% control of non-preferred browse, plantations can easily have 30% brush cover or more. Rod stated that he would accept 20% total brush cover as a guideline, with preferred browse selected over other species during prescription development.

(M4) The proposed guideline on retaining brush in plantations was presented briefly to the Forest Silviculturists and further clarification and discussion is needed before final acceptance of the guideline. The team agreed to postpone formal work on this point, but discussed several key points: 20% of the area in brush cover is more appropriate than 20% crown cover, and; the Silviculturists feel the language of the guideline should recognize that tree survival and growth have a priority over brush in plantations, and that meeting the brush retention guideline should not threaten plantation establishment standards. Rod made it clear that this guideline is not an "either/or" situation and that close coordination with the Biologist and innovative thinking are key elements to meeting all resource objectives. The team agreed that the final guideline should contain a clear "objective" statement and that the Forest Silvicultural group should meet to get the wording down. As the guideline is currently stated, appeal point 118 is resolved.

PROPOSED RESOLUTION: See resolution of appeal point #2 (Section 2) of Terrestrial Resource Issues.

119 and 120- "Dead and Downed Material"

(M1) The problem here was that there was no follow-through from the meeting of the three Forest Supervisors, Staff officers, and Fish & Game where consensus was reached on dead retaining dead and downed material. The only documentation the team had was notes that Gordon had of the meeting. Steve recommended that the FS add language to the Plan Incorporating the agreements of the meeting, as well as saving all soft snags and retaining downed material in an uncharred condition as much as practical. This resolution was agreeable to the team. Rod's comments were positive in that he recognizes the difficulty in saving snags in many situations (such as broadcast burning). He encouraged the FS to continue to encourage innovation and flexibility in trying new methods, knowing we will lose some and win some. The Dead and Down guideline is just that - an average.

(M2) Steve provided the team with a rough draft of a guideline for retention of dead and downed material. The team reviewed and changed some of the language. After wordsmithing, the guideline was accepted as resolution of this appeal point.

PROPOSED RESOLUTION: Resolution of appeal points #2 and #5 of the Terrestrial Resource Issues and the addition of the following language to the LMP:

Pg. 4-29 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; Snag and Down Log Management section), add the following:

- - - Retain all-large decomposing logs where consistent with other management objectives.
- Leave 10% of each regeneration unit with untreated slash for rilllife habitat.
- Utilize management techniques which will minimize or eliminate charring of downed woody material left for rilllife cover and habitat.





These changes clarify the ambiguity of "state-of-the-art reforestation" and address the retention and management of dead and downed material.

Appeal point # 7: Meadow Management.

(M4) Rod agreed that this appeal point is resolved based on Revision IV of the Forest Riparian Standards and Guidelines and adequate allocation of forage for wildlife uses. Rod stated that the team took a pro-active and long-term approach rather than a short-term solution such as cessation of meadow use by livestock.

PROPOSED RESOLUTION: This point is resolved by the resolution of appeal point #2 of the Terrestrial Resource Issues.

Appeal point # 8: Species Diversity.

(M2) Rod recognized that not all T6E or sensitive species can be tracked or formally monitored, such as the wolverine, pine marten, fisher, and others. Gordon pointed out that the "Guild" approach to monitoring should track the habitat for all species relying on a particular habitat type. Rod agreed to this point. The Forest does maintain sighting records for many of the species not monitored individually. Steve pointed out that sensitive plants are monitored in response to project proposals. Rod agreed that this was appropriate. Rod said he would check back with his Data Base personnel and Botanist. He stated he would be willing to drop this appeal point based on the new LMP Standards and Guidelines being developed or revised as well as an adequate monitoring plan.

PROPOSED RESOLUTION: This point is resolved based on pending development of the PSW/Tri-Forest Monitoring Plan.

Appeal point #9: Energy Development.

(M1) Rod stated that there are no guidelines whatsoever to help guide energy development. The team agreed to Rod's recommendation that the Forest review the Standards and Guidelines for energy development contained in the Sierra LMP and either customize them or incorporate "as is".

(M2) Gordon read the language from the Sierra NF Draft Plan. His concern is that the language is somewhat unclear and could lead to considerable work and expense on the part of the Forest simply to issue a preliminary letter triggering formal responses and studies by a project proponent. Gordon will check with the Hydro coordinator on the Sierra to clarify the intent of the guideline.

(M3) Gordon reviewed the guideline from the Sierra NF Draft Plan and stated that he was willing to accept the wording as is except for the reference to setting Fish and Wildlife objectives for Class I watersheds. He was very unsure about who even does this work. The team agreed that the wording with Gordon's recommended deletion is acceptable and the appeal point would be resolved.

PROPOSED RESOLUTION: Add the following language to the LMP:

Pg 4-37 Forest-Wide Standards and Guidelines (Facilities; Energy Section), add the following:



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- -- Seek flows and **habitat** conditions below **new** hydroelectric projects which maintain fishery and wildlife resources near naturally occurring conditions.
- -- During re-licensing of hydroelectric projects. **seek flows** and habitat conditions more favorable to fish and wildlife on projects where habitat has been degraded by the project

Appeal point # 10: Standards and Guidelines, General.

(M1) Rod proposed that the team table this discussion. as resolution of other points may clear this one up without dealing with **it** specifically. The team agreed.

PROPOSED RESOLUTION: This appeal point **is** resolved by a combination of clarification and resolution of points pertaining to **specific** Standards and Guidelines.

Appeal point # 11: Capability to Carry Out Planned Activities.

(M2) The team agreed that staffing **is** a problem. Jay and Gordon pointed out that staffing is increasing. as the Forest is currently hiring a Fisheries Biologist, and an assistant to a zone Wildlife Biologist has been hired. The team was unclear as to a clear point of resolution. Rod stated that he would be **willing** to drop the appeal point based on continued efforts by the Forest to increase staffing levels. Wordng to the effect that "**We (FS)** agree with the need for adequate staffing levels to **implement** necessary monitoring requirements, and we will pursue adequate staff".

PROPOSED RESOLUTION: Eased on the discussion of current staffing levels and projected increases. this point **is** resolved. Higher staffing levels are anticipated and national **emphasis** appears to be shifting in favor of wildlife and fisheries funding.

Appeal point #12: Vegetation Type Conversions.

(M1) Rod stated that the California Native Plant Society was a key **initiator** of this appeal point and **shows** up as a central point of **their** appeal. The key point **is** that type **conversions** are essentially proposed in the Plan and **therefore must be justified** in the Plan, according to NFMA. The project level is not the place to **justify** type conversions. Jay **commented** that **it** appears there are **two** options: 1) **Amend** the plan to **include** appropriate justification for conversions. or 2) **defer** proposed typo conversion from the Plan. The team agreed that Jim Shevock should be consulted as to his response to the Cal. Native Plant Society about **his** response before we **resolve** this point. Rod requested that if the Plan eventually does include **justification** for type **conversions**, that **there** be language to provide standards and **guidelines** for buffering the Impacts on **wildlife**.

(M2) No further **information** was introduced. Gordon had **attempted to** contact Jim Shevock on **his** response to the California Native Plant **Society**, but had no response to share as yet. Gordon will **provide** input by **next meeting**.

(M3) Gordon stated that **after** a lengthy discussion with Jim Shevock, he is **recommending** that proposed type **conversions** be **dropped** from the Plan. **He** stated that in one alternative, the Forest would **increase** water **yield** by





converting 3,000 acres of chaparral. This proposal was inadvertently carried over to the Recommended Alternative, although it shouldn't have. The team agreed that based on the exclusion of type conversions in the Plan, this appeal point is moot.

PROPOSED RESOLUTION: A minor Plan amendment deleting all references to proposed type conversions from the Recommended Alternative will be initiated.

Appeal point # 13, Forage Allocation.

(M3) Rod discussed with the group the value of high mountain meadow habitat to seasonal deer use, such as fawning cover. He referenced data from the North Kings Herd Study which linked the health and success of the deer population and fawn survival to the amount of cover available in the early season. He then pointed out that the management prescription for the CF7 type allocated primarily all forage to livestock and said that this was unacceptable given the essential role that early season cover and forage provides the deer population. Steve stated that 50% use is the upper level for livestock use, and when that level is reached, livestock are removed in order to provide adequate habitat for wildlife species. Rod recognized this use level, but stated that the 50% left over was not adequate habitat or forage for riparian-dependent species. He feels that livestock and wildlife needs should be co-equal, rather than forage allocated primarily to livestock. Jay noted that needs of riparian-dependent species should be adequately met before allocation of resources to other uses. Jay made this point in reference to the new Riparian Standards and Guidelines, in effect stating that livestock grazing should not compromise riparian-dependent species. The team agreed to a Plan language change: on page 4-87, delete the phrase "primary use", and insert language to the effect that livestock forage allocation must be compatible with LMP Standards and Guidelines and needs of riparian-dependent species. Jay summarized by noting that the team had agreed on two of three critical habitat elements for deer, which are dependent upon vegetation within the conifer zones: 1) leaving desired brush species in plantations, and; 2) leaving a buffer strip around perennial streams and meadows. The other key element which the team was currently working on was vegetation within the meadows and streamside zones. Rod agreed with this summarization by Jay. Gordon pointed out that the Forest is identifying demonstration areas, and he would like Fish and Game Biologists to identify critical habitat within these areas for project work. The team agreed that the long-term solution for adequate forage allocation for both livestock and wildlife was the work currently underway with PSW and Fish and Game. The team agreed that an interim resolution had three key elements which the team had agreed to: 1) Improved Standards and Guidelines; 2) New plan language in the Conifer zone management prescription, and 3) demonstration areas, especially in key deer habitat.

Rod then moved the discussion to the Blue Oak/Savannah, Black Oak/Woodland, and Pinyon/Sage vegetative types, and pointed out that again, forage allocation was primarily for livestock use. He would like to see adequate allocation for wildlife needs, as the forage and habitat are critical to healthy deer populations. He feels that livestock cannot be kept on from February to December and still provide for wildlife. He would like a more equitable allocation. Rod stated that the recommended range of 400-600 pounds of which retention as a minimum to be left is inadequate, as commonly the lower end of the range becomes the standard, especially in tough years when all users need the higher rates. He noted that the Los Padres and Stanislaus have higher minimum rates (700 pounds). Jay recommended that the Forest adopt a minimum of 700 pounds on all three vegetative types, and the team agreed that this higher mulch rate was appropriate for adequate wildlife forage allocation. Gordon





notes, however, that the Forest carries only 800 AUMs on the Pinyon/Sage type and the higher mulch rates would not apply well to this type. Steve recommended keying to a particular species for proper timing to end livestock grazing rather than a mulch standard. Rod agreed that because of the low use and uniqueness of this vegetative type, a different standard would be appropriate. The Fish and Game appeal cited problems in the Pinyon/Sage type from over-grazing. After discussion, the team agreed that these problems are primarily on BLM land and hence were not pertinent elements of the appeal point.

After resolving the amount of mulch to be left, the team began discussion on the season of use. Rod recommended a February-May season. The basis for this is to prevent overuse of the forage and resulting overuse of the brush forage, which is critical to deer population in the latter part of the season. Jay pointed out that livestock management revolves around management of the allotments and that the Forest needs to establish a goal to work towards, recognizing that it cannot be reached overnight. He stated that the Forest should work toward a goal of getting livestock off the range early enough to provide adequate acorn and brush for the deer and other species. Rod then stated that with the increased residual mulch rates and a goal of early-off to provide adequate acorn crops for wildlife, that we can monitor brush and feed utilization carefully. Based on these agreed-upon elements, Rod felt that the Forest was moving in the right direction and that the point about adequate allocation was resolved. The team agreed to this. Jay reiterated that in allotment plan review and revision, the Forest must consider adequate provision for acorn crops and residual mulch for wildlife-dependent species.

Rod then raised the point about early-on allotments, in which livestock essentially graze through the winter or very early spring months (October-December or January). He stated that he is very concerned with this policy, as the livestock utilize all the green grass. Rod appeared to urge for a stop to this particular practice. Gordon was very clear that he did not support a blanket approach to this problem, as the problem was more site-specific and is very limited in scope. Gordon suggested that in the allotments on the Greenhorn district, overuse is avoided by monitoring and so a blanket approach is not merited. Jay suggested that if our current approach is keeping overuse from occurring, then maybe the Forest could formalize this approach in a Guideline to provide more direction to all the allotments and/or units. Jay suggested that the Forest look at the methodology Wayne Nelson applies on his allotments on the Greenhorn district and see if it is applicable to the Forest. These kinds of "early on" allotments represent only four of the 50+ allotments on the Forest, and so it seems reasonable to look forward to an acceptable resolution to this last element of the appeal point. Jay, Gordon, and Steve agreed to meet next week to review the Greenhorn approach and give consideration to a Guideline to provide for adequate forage allocation between livestock and wildlife on these allotments. Rod was very agreeable to this approach. Rod's primary concern is that livestock seems to be given primary allocation on many vegetative types which provide key wildlife habitat. An equitable resolution (to Rod/Fish&Game) must provide equal consideration of wildlife which are dependent-upon those resources.

The team recognized that it had discussed resolution on all of the key points of the whole Fish and Game appeal as summarized and agreed to over the phone between Julio Allen and Rod. Rod notes that there were a few "loose ends" in the appeal which need to be addressed prior to development of a document capturing and proposing the formal resolution of the appeal points.

(M4) The team agreed that the notes from the previous meeting accurately stated the discussions and positions. Gordon, Steve, and Jay met on October 26, 1988 to continue work on a rough draft guideline for the "early-on"





allotments. As discussed earlier, the intent of the guideline is to help ensure that there is adequate forage for deer while providing for winter **livestock grazing**. Steve proposed the following guideline:

"In Blue Oak-Savannah and Oak Woodlands, no more than **15%** of preferred browse or **5%** of staple browse species will be heavily browsed (**form class 3 or 6**). Limitation on browsing will maintain browse in **satisfactory** condition and be an indication that adequate green feed is available for wildlife during the inadequate green feed period."

Steve also recommended the inclusion of the following language in Management Direction for the Blue **Oak/Savannah** and Oak Woodland vegetative types: "Wildlife use will be the emphasis for use of mast production."

Rod stated that acceptance of this guideline meant additional **monitoring** by the Forest in allotments grazed during the winter. Steve acknowledged this additional monitoring need. Use of this guideline will be in management of the allotments, so that monitoring of the use may be directly and **immediately** linked to adverse impacts if that **is** the case. The Forest can respond by (for instance) reducing number of head, **removing stock, etc.,..**

Rod then discussed two minor sub-points of the 'Forage' appeal point. The first was that the Plan has proposed increased AUMs under the **Recommended** Alternative. Gordon stated that this was not the case. Steve referenced the Plan, stating that the current level is approximately **68,000 AUMs** annually and the Plan projects no increase. Gordon stated that the Forest **is** headed **toward** maintaining this level with no planned increase. Rod stated that **Decade 2** shows an increase, which could occur theoretically in year **11** of the Plan (first year of **Decade 2**), and that some of the language of the Plan **implies** a planned increase. Steve noted that by applying Standards and Guidelines and by accomplishing habitat improvement projects, the Forest can increase **its** grazing capability, **but that** there are no plans to increase. The major and **immediate** benefit of increasing grazing opportunities would be to reduce pressure on riparian zones and meadows, as well as other areas. Steve referenced page 3-42, where language clearly states that no increases in AUMs are proposed. Rod agreed to the discussion and stated that this sub-point was clarified and resolved.

Rod's second point was the **ambiguity** of the allocation of forage which would be available in plantations. Gordon stated that the Forest is not assigning any AUMs to these areas and that there is no intention to **increase AUMs** due to an increase in available forage in plantations. The **immediate** effect would be to spread the cattle over a larger area, once again reducing **overall** grazing pressure and impacts.

**PROPOSED RESOLUTION:** Resolution of this point is **two-fold**:

1) Resolution of appeal point **#2(a)** of Terrestrial Resources Issues (guidelines for mulch retention and browse **utilization**).

2) The **following** language changes are proposed:

Pg. 4-85 Management Area Prescription CF6 (Emphasis section): delete second **sentence**.

Pg. 4-87 Management Area Prescription CF6 (Range section): delete **2**).

Pg. 4-86 Management Area Prescription CF6 (Fish and Wildlife section): add to **2**) delete "...fisheries..." and replace with "...riparian dependent species...".





Appeal point # 14. Old Growth Retention.

(M1) Steve Anderson stated that this lack of clear language was an error in word processing. in that the proper reference of "five percent of each vegetative type/seral stage combination..." was included in the text of the Plan EIS but was not carried through to the text of the Plan. Steve will provide new language for the Plan text to correct this.

(M2) Rod agreed with the notes from the previous meeting. Steve will provide correct language for inclusion into the Forest Plan.

PROPOSED RESOLUTION: Make the following changes in the LMP:

Pg. 4-32 Forest-Wide Standards and Guidelines (Timber Management; Diversity section): delete second guideline and replace with the following:

- Provide for an array of early and late successional stage habitat over time in each ecosystem. A minimum of 5% of the total area of each vegetative type in forested lands will be maintained in each seral stage/habitat type combination. Allocation of habitat type/seral stage combinations will be done on a compartment basis.

Appeal point 4 15: Unexercised Riparian Water Rights.

This point is moot, as the "Wallet Creek" decision confined that the Forest Service had rights for on-forest uses but no rights to divert water to maintain minimum flows.

C. Additional Issues in "Statement of Additional Reasons"

Appeal point # 16:

(M2) Steve pointed out that in the Blue Oak-Savannah (B02) and Oak Woodland (Owl and 01121 vegetative types, the Forest could increase the optimum carrying capacity of hardwoods in these areas. Steve recommended that on page 4-44, hardwood carrying capacity be raised to "50 square feet of basal area per acre". This recommended change is consistent with research by Hurley. This change would be applied to all three of the above listed vegetative types. The team agreed to this change, as no proposals for manipulation of the vegetative types are anticipated during the life of this plan. The guideline does provide for direction if projects are proposed. rather than excluding any proposal within the prescription for the areas. In veg types 0116 and B06, the current guidelines are to retain 20 square feet basal area of hardwoods. The team agreed to raise this recommended level to 50 square feet, or if levels are currently below this, to retain the current levels. Steve pointed out that page 4-10 contained language that states "...Blue Oak will not be harvested..." The team agreed that this was too restrictive, in that under certain circumstances, it would be desirable to harvest Blue Oak (to promote regeneration, for instance). The team agreed to this change. and also agreed to add language in the prescription for the Blue Oak that any harvest will favor mast-producing trees. Steve agreed to develop these Plan language changes. Steve and Gordon will contact Tom Beck on the Stanislaus and inform him of our proposed changes.





The team then began discussion on hardwood retention levels in **treatment** (harvest) areas in the conifer forested zones. Steve noted that the current retention levels are 20 square feet per acre averaged over a timbered **compartment**, and that these levels provide a **medium-to-high** level of habitat. Rod pointed out that the 20 square feet needs to be in mast-producing oaks to provide for adequate habitat. Rod then discussed with the group the value of extremely high use of acorn-producing oaks, and that the **bottom** line is that 'We need all we can get because they all get used'. There is a direct correlation between the **increased availability** (and use) of acorns and the health and vigor of the deer herd in terms of fawn survival and winter fitness. Steve concurred that oaks are vitally important and felt that the current guideline is adequate. Gordon then recommended additional language to the existing guideline that the existing 20 square feet should be in mast-producing oaks, averaging 80 years and older. The team agreed to this **recommendation**. Although not a part of this appeal point, Gordon emphasized the need in our Plan to recognize the need and **direction** for providing **regeneration** of oaks, especially in the mixed **conifer-hardwood** type. He emphasized the point that oak stocking levels should be applied on a compartment basis, rather than a unit-specific basis, as numerous land managers are **attempting** to do. He suggested adding language to the **CP7** prescription to provide **direction** in regenerating oaks (especially in overstocked stands). The team then discussed the technology available to protect and manage for oaks. **Oaks** on tractor-loggable ground can be left. The **problem** is on **cable-yarded** ground that is subsequently broadcast-burned for site preparation. The team agreed that intensive efforts must be made on cable ground to save hardwoods, especially where they occur in clumps. The team also discussed the need in area-specific environmental analyses that **Wildlife** Biologists (both FS and Fish & Game) need to be specific as to the critical areas for oak management. Rod stated that he will accept 20 square feet of **mast-producing** (80 years and older) oak retention levels for compartment planning, and that the burden of proof will be on the Biologists to point out areas where **increased** levels are necessary, such as holding areas or migration corridors. In these areas, the team agreed that an increased level of 30 square feet per acre would be appropriate. Gordon also **recommended** that the word **"indicator"** be deleted from the first paragraph on page 4-30. As **formal resolution**, the team agreed to **add/change** language to the hardwood retention guideline requiring 20 square feet of 80 years-and older-oaks be retained per acre. In key areas, 30 square feet should be retained as a guideline.

**PROPOSED RESOLUTION:** The following changes in **LMP** language are proposed:

Pg. 4-30 **Forest-Wide Standards and Guidelines** (Fish, Wildlife, and Plants; Oak Management section): delete the first **guideline** and replace with the following:

- In mixed conifer-hardwood stands, leave at least 20 **square feet** per **acre** basal area of oaks **where** this currently exists.
- In pure hardwood stands maintain a **minimum average** of 50 square foot **basal area** per acre. Select for leaving heavy **mast-producing** trees in any harvest of oaks.
- Leave 30 **square feet** basal area of oaks in **mixed conifer-hardwood** stands **identified** as key deer areas.

Pg. 4-30 **Forest-Wide Standards and Guidelines** (Fish, Wildlife, and Plants; Oak Management section): in last guideline, **delete** "...**indicator**..."



Pg. 4-10 under 6) **Woodlands**, delete **"Blue oaks will not be harvested."**







Your signature will constitute your **recommendation** of this agreement and withdrawal of the California Department of Fish and Game's appeal of the Sequoia National Forest Land and Resource Management Plan. Upon receipt of the signed agreement, I will take **action** to make the proposed changes. This document shall be made part of the record in the **Sequoia** National Forest Land and Resource Management Plan appeal number 2403.

I appreciate your willingness to work with the Sequoia National Forest personnel to resolve this appeal.

Sincerely,

  
 JAMES A. CRATES  
 Forest Supervisor  
 Sequoia National Forest

11/22/88  
 Date

\*   
 GEORGE NOKES  
 Regional Manager  
 Region 4, California Department of Fish and Game

11/18/88  
 Date

\*note change on appeal point 2-2.



EXHIBIT C

PROTOCOLS SEQUOIA NATIONAL FOREST PLAN MEDIATED NEGOTIATIONS

A. Purpose and Goals

The purpose of these negotiations is to resolve issues and concerns raised in the appeals of the Sequoia Forest Plan through mediated negotiations involving appellants, intervenors and The Forest Service to the mutual satisfaction of all the participants.

The goal of the negotiations is to reach consensus on the specific content and wording of proposed amendments to the Plan. For those issues that require further study or implementation of a planning process, the parties will agree upon a specific plan of action including a feasible timeframe and reference points for reviewing the progress in carrying out the plan of action.

The Forest Service is committed to using any consensus reached in these negotiations as the basis of proposed changes to the Sequoia Forest Plan. The Appellants agree to support consensus outcomes by withdrawal of the appeals that formed the basis for the negotiations at the end of the negotiations process. Appellants agree not to file new appeals on changes formally adopted by USFS that are based upon consensus items.

B. Structure

1. Participants in the Sequoia Forest Plan Mediated Negotiations shall include representatives of appellants, intervenors and USFS, Sequoia Forest staff. See attached list.

2. Alana Knaster, President of The Mediation Institute, Los Angeles, California shall serve as mediator in this process.

3. Each appellant, intervenor or interest caucus will appoint a minimum number of designated representatives to be seated at the table. These designated representatives shall constitute the Negotiating Committee.

4. Individual appellants or intervenors may joint with other appellants or intervenors to form an interest caucus. Appellants who cannot participate in the negotiations in a full capacity, may authorize another appellant group or member of its interest caucus to communicate its interests and positions. The full Negotiating Committee shall be kept appraised when such designation occurs.

Each appellant, intervenor or interest caucus may also include other team members who they believe are necessary and appropriate to represent their interest and who may attend all sessions. These team members may be designated to participate on technical

sub-committees. Team members who are not seated at the table may be called upon to elaborate on a relevant point by a designated representative, but they may remain at the table only for that purpose.

5. Alternates may substitute for designated representatives in the event that they cannot attend a negotiations session. However, it is the responsibility of the designated representatives to fully brief that alternate. Alternates must have full authority to represent the position of their group at negotiating session.

If more than one third of the designated representatives from the Negotiating committee cannot attend a scheduled session, then that session shall be postponed.

6. Sub-committees may be established to address particular issues or tasks that either require additional technical expertise or are better handled in a small group setting. such working groups may include either designated representatives or team members. There will be no more than one representative per interest caucus on a sub-committee. Not all appellants, intervenors and interest caucuses need to participate on each working group. The decision to participate or not is the prerogative of that group.

The sub-committees are not authorized to make decisions for the full Negotiating Committee. They are responsible for making recommendations on possible solutions to resolve controversial issues under consideration.

7. Each appellant intervenor or interest caucus shall name a contact person who shall be responsible for coordinating communication between and during meetings with team members, other members of the Negotiating Committee and with the mediator.

#### C. Decision-making Process

8. The Negotiating Committee and all sub-committees shall operate by consensus. "Consensus" is defined as an agreement of all the designated representatives or designated sub-committee members.

9. Designated representatives are expected to represent the concerns and positions of their caucus and to ensure that any agreement reached is acceptable to their constituents who may not be directly participating in the negotiations.

Sub-committee members have the responsibility of ensuring that any position taken has maximum assurance of broad acceptability to the caucus they represent.

10. Any member of the Negotiating Committee or the mediator are permitted to call for a confidential caucus deliberation.

11. The mediator may assist in intra-group communication as requested and may be asked to participate in confidential caucus deliberations.

12. The participants may reach a consensus that resolves most but not all of the issues that are being negotiated. If this occurs, the parties may agree to have their consensus proposals incorporated into Plan amendments. They will then eliminate remaining areas of disagreement and how they will pursue those differences outside the process.

#### D. Scheduling

13. A tentative schedule of meeting dates will be established at the first negotiating session to enable participants to arrange their schedules.

14. Meeting agendas for negotiating sessions and sub-committee meetings will be developed by consensus. Meeting agendas may be amended by the mediator with the concurrence of the Contact Persons.

15. Meetings of any sub-committees may be scheduled between negotiating committee sessions or in conjunction with such sessions. All Negotiating Committee members will be informed of sub-committee meetings.

#### E. Confidentiality

16. All parties agree to negotiate in good faith throughout the negotiations process. Specific offers or other statements made during the negotiations may not be used by any participant for other purposes including pending or future litigation.

17. Documents, offers and notes presented to the mediator or to the Negotiating Committee shall be considered an offer or attempt to compromise and shall not be admissible or discoverable by the negotiators. These documents, offers and notes are protected from disclosure by the mediator and by any participant under California Code 1152.5, which reads as follows:

a) Subject to the conditions and exceptions provided in this section, when persons agree to conduct and participate in a mediation for the purpose of compromising, settling or resolving a dispute:

(1) Evidence of anything said or any admission made in the course of the mediation is not admissible in evidence and disclosure of any such evidence shall not be compelled in any civil action in which, pursuant to law, testimony can be compelled to be given.

(2) Unless the document otherwise provides, no document prepared for the purpose of or in the course of or pursuant to, the mediation or copy thereof, is admissible in evidence and disclosure of any such document shall not be compelled, in any civil action in which pursuant to law, testimony can be compelled to be given.

(b) Subdivision (a) does not limit the admissibility of evidence if all persons who conducted or otherwise participated in the mediation consent to its disclosure.

The parties to the Sequoia Plan Mediation Process agree to the provisions enumerated above. Excepted from this prohibition are:

1. documents otherwise available to the public under the freedom of information act
2. records, files or documents prepared by the Forest Service which constitute extractions, compilations or summaries of public information that is available to the public under FOIA.
3. FORPLAN runs prepared or produced by the Forest Service at the request of the Negotiating Committee or any subcommittee.

The Forest Service agrees that it will produce a reasonable number of FORPLAN runs at the request of any single party. The results of these runs need not be disclosed to the rest of these parties unless they are subject to public disclosure under FOIA. USFS will provide sufficient technical assistance to any interest group that wishes to request one or more FORPLAN runs to allow the group to frame its requests properly.

Confidential material may be discussed within any participant's organization to the extent such discussion is necessary to formulate negotiating positions. Such documents may be distributed for discussions, but collected at their conclusion.

18. Sessions will not be recorded nor will formal minutes be kept. The mediator shall provide notes of the meeting to summarize progress in the negotiations.

#### F. Meeting Privacy and the Press

19. All negotiations sessions including meetings of subcommittees shall be closed to the public, since they are considered to be settlement talks by the parties participating.

20. The Negotiations are confidential and shall not be discussed with the press, except to state that the process is proceeding and the participant is bound by confidentiality. No discussion characterizing positions will be held with any non-

participant group, government agency or public official about the negotiation process even if a member should withdraw from the negotiations. Generally, press inquiries will be referred to the mediator.

#### Protection of Participants

21. Personal attacks on individuals that impute their motives or behavior are unacceptable. Any such attack shall constitute grounds for terminating participation of the offender from the remainder of that negotiation session. He or she shall be replaced by an alternate at the table.

#### Withdrawal from the Process

22. Any appellant, intervenor or interest caucus may withdraw from the negotiations without prejudice by giving notice to the mediator, and stating its reasons for withdrawing. Remaining parties will determine whether it is in their interest to continue negotiating in the absence of the withdrawing party.

#### Determining Progress in the Negotiations

23. The Reviewing Officer agrees to extend the administrative appeal process until April 30. On or before April 30th, all the members of the negotiating committee shall evaluate whether they have made sufficient progress in the negotiations to request a further extension, suspension. Should they decide to proceed, the negotiations shall be extended until May 31.

#### Pre-conditions

See attached document

# Exhibit D

## RIPARIAN AND WETLANDS STANDARDS AND GUIDELINES

### SEQUOIA NATIONAL FOREST

**1ST** MEDIATION DRAFT AMENDMENTS  
(in bold print)

FEBRUARY 22, 1990

FROM REVISION IV (4/4/89)

Approved by:

\_\_\_\_\_  
JAMES A. CRATES  
Forest Supervisor  
Sequoia National Forest

The direction contained herein is dynamic and will be critiqued and updated as new resource management data is collected, experience is gained, and monitoring results are analyzed. Revisions will occur through interagency interdisciplinary involvement using the NEPA process and/or Land Management Plan amendments. Sequoia National Forest personnel are committed to conscientious management, improvement, and protection of riparian areas.

RIPARIAN AND WETLANDS STANDARDS AND GUIDELINES

SEQUOIA NATIONAL FOREST

Riparian ecosystems and wetlands are among the most valuable and sensitive resource complexes of the Sequoia National Forest. These areas have an importance to fish, wildlife, riparian plant species, water quality, livestock grazing and recreation disproportionate to their limited extent.

The Sequoia National Forest Land and Resource Management Plan, in accordance with laws and policies, directs the Forest to establish management zones for areas influencing riparian and wetland ecosystems. In accordance with this direction, Standards and Guidelines have been prepared.

GOAL

The goal of the Sequoia National Forest Riparian and Wetland Standards and Guidelines is to emphasize management, improvement, and protection of riparian and wetlands areas during the planning and implementation of land and resource management activities affecting streamcourses and meadows.

OBJECTIVES

The objective of riparian and wetland management is two fold: To manage, improve, and protect these areas while implementing land and resource management activities; and to manage riparian and wetlands ecosystems as an integral component of adjacent land, recognizing their unique values.

STANDARDS

The following standards are not subject to change at the Forest level as they reflect Public Law and commensurate Forest Service Manual direction.

1. Manage riparian areas under the principles of multiple use and sustained yields, while emphasizing protection and improvement of soil, water, vegetation, and fish and wildlife resources. Give preferential consideration to riparian dependent resources when conflicts among land use activities occur. [FSM 2526.03-2]
2. Delineate and evaluate riparian areas prior to implementing any project activity. [FSM 2526.03-3]
3. Give special attention to land and vegetation for approximately 100 feet from the edges of all perennial streams, lakes, and other bodies of water. This distance shall correspond to at least the recognizable area dominated by the riparian vegetation [36 CFR 219.27e; FSM 2526.03-5],
4. Provide protection where resource management activities are likely to seriously and adversely affect water conditions or fish habitat. [NMFA, P L 94-588]
5. Facilitate the determination of sound vegetation manipulation practices based on watershed conditions and land capability--rather than decisions based solely on silvicultural characteristics and the public demand for goods. [NFMA P.L. 94-588]

July, 1990



6. Correct existing and prevent potential water quality problems through the implementation of Best Management Practices (BMP's) as contained in Water Quality Management for the National Forest System lands in California, a State of California Water Resources Control Board (SWRCB)/USDA Forest Service Cooperative Agreement. [Clean Water Act, P.L. 92-500, Section 208]

This agreement contains the following provisions from NFMA P.L. 94.588:

- a. Protection of streamcourses from detrimental changes in temperature. (BMP 1.8)
  - b. Protection of streamcourses from blockage. (BMP 1.19)
  - c. Protection of streamcourses from detrimental deposits of sediment. (BMP 1.19)
- 7 Avoid long and short term adverse impacts associated with modification of floodplains and wetlands. Minimize, to the extent practicable, destruction, loss, or degradation of wetlands (E.O. 11988 Floodplain Management and E.O. 11990 Protection of Wetlands). (BMP 1.18)
  - 8 Conduct monitoring of...individual management practices, to determine how well objectives have been met and how closely management standards and guidelines have been applied (NFMA, NEPA, FSM 1922.7, 36 CFR 219.12k),

#### GUIDELINES

These guidelines are to be implemented whenever Forest riparian vegetation and wetlands are likely to be impacted by Management actions. This will occur during project plan development anytime a proposed activity falls within 250 feet of a streamcourse and/or meadow.

Pre-existing uses shall continue. When site-specific conflicts are identified (as specified by law and Forest Service direction) and documented in the Forest Watershed Improvement Needs Inventory (W.I.N.I.), they will be handled on a case by case basis. Using these guidelines<sup>1</sup>, use conflicts (e.g. recreation, new or inventoried trails, livestock use, roads, etc.) shall be analyzed to quantify the degree of impacts and justify corrective actions. In resolution of conflicting uses, compensation credit shall be considered and consideration documented.

The resulting prescriptions are intended as a general guide and may require modification to suit individual sites through interdisciplinary processes and line decisions during project-level environmental assessments and/or environmental impact statements. They will be annually monitored on all projects and updated periodically.

#### 1. STREAMBANK STABILITY

Objective: Maintain streambank integrity.

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<sup>1</sup>The statement of objectives and accompanying explanation for guidelines 1 through 8 apply to all forest uses. The implementation sections for guidelines 1 through 5 were developed primarily to address new activities or projects.

**Explanation:** Low, overhanging streambanks held together by root mass and other vegetation provides cover and habitat for fish and wildlife. This environment represents a dynamic, unstable condition, where chunks of streambank occasionally fall and add sediment to the stream. Management activity that diminishes the root masses or vegetation bordering these areas tend to result in a loss of fish and wildlife habitat, and create a major source of sediment within the stream system.

**Implementation:** Identify all stream reaches with undercut or raw streambanks. Layout management activity to protect and maintain vegetation and streambank integrity within 50 feet of unstable streambanks. Designated stream crossings are an exception and should be determined with the aid of appropriate personnel which will be determined by the complexity of the situation. Stream crossings on Class I and II streams should be done in consultation with California Department of Fish and Game.

Improvements such as development of water troughs, watershed improvement projects, rerouting trails, stream crossing structures, and construction of barriers to protect unstable and/or sensitive stream banks will be designed to minimize impacts on the streambank.

## 2. VEGETATIVE COVER

**Objective:** Provide adequate vegetative cover, vertical diversity and habitat for a wide variety of riparian dependent wildlife species.

**Explanation:** Retention of conifers, snags, hardwoods and riparian vegetation adjacent to streams, springs, seeps, bogs, and meadows is important to maintaining the diversity and abundance of riparian wildlife. Stand structure, canopy cover, flora, woody debris, litter, and availability of water are the primary elements that determine wildlife diversity and abundance.

**Implementation:** Establish a management zone that is a minimum 100 feet horizontal distance on both sides of perennial streams and Class II and III intermittent streams and around meadows; 100 feet horizontal distance on both sides of Class III intermittent streams where necessary for fish spawning, rearing, or migration; 50 feet on both sides of other intermittent streams, seeps, springs, and bogs; and maintain riparian vegetation on ephemeral streams. Vegetative cover within these zones is to be managed for the protection or enhancement of riparian dependent resources. Vegetative manipulation may occur within this zone with the intent of improving riparian dependent resources. Projects must meet concurrence with earth scientist, wildlife and fisheries biologists. Timber harvesting will not be scheduled within the vegetative cover zone. Timber could be removed in this zone for wildlife or fisheries improvement projects.

Designated cable corridors and road crossings are exceptions and are to be determined by appropriate specialist. Cable corridors will be minimized

and will not exceed twenty feet in width. Proposed new crossings of Class I and II streams will be identified in environmental documents. Consultation should occur with outside agencies when crossing Class 1 or Class 2 streams. Road and trail crossings will be designed to cross drainages as "quickly as possible" to minimize construction parallel to streamcourses within SMZ's.

### 3. STREAM SURFACE SHADE

Objective: Maintain stream surface shade through vegetation retention to protect streams from detrimental changes in temperatures. (BMP 1.8)

Explanation: Maintenance of vegetation and trees within 50 feet of fisheries, or intermittent streams feeding into fisheries, is extremely important for blocking summer solar radiation and preserving suitable stream temperatures. The dissolved oxygen content of water decreases with increased stream temperature resulting in waters less habitable for fish populations. Streams with prolonged temperatures above 70°F cannot sustain a viable trout fishery and spawning is severely limited above 57°F.

Implementation: Where management activity for enhancement of riparian dependent species is proposed within 50 feet of a perennial stream and intermittent streams affecting fisheries, baseline data will be established by use of a device designed to measure the average total solar radiation. The goal of this guideline will be to maintain an average minimum of 65% blockage of available July/August solar radiation within the affected project site. Designated cable corridors and road crossings are exceptions and are to be determined with appropriate personnel input. Monitoring will require a similar set of readings to determine the effects of management activities on stream shading.

### 4. INTERCEPTION OF SEDIMENT

Objective: Protect streamcourses from detrimental deposits of sediment.

Explanation: A sufficiently wide strip of land that is relatively undisturbed by groundbase machinery can act as an effective filter and infiltration zone to capture sediment from upslope management activities. Groundcover creates the tiny ponding spaces and hydraulic roughness that slows runoff and allows sediment to fall out of suspension and be deposited before it reaches the stream.

Implementation: Maintain a protective ground cover of duff, litter, plants, downed woody debris, and slash within a filter strip.

Where percentage of ground cover resulting from management activity are below 50%, an interdisciplinary analysis is required to develop appropriate mitigation to negate environmental consequences. Designated stream crossings are an exception to this direction.

Groundcover percentages in filter strips affected by management activities can be estimated by the use of photo guides. Treatments designed to increase the efficiency of this filter strip may include the establishment of living plants, introduction of litter, slash, or other treatments as identified.

Table 1 gives filter strip widths necessary for the interception of sediment in slope distance (feet) from the apparent high water mark of the channel. Both sides of the drainage need to be evaluated independently for appropriate filter strip widths when effected by management activity.

Table 1  
FILTER STRIP WIDTH IN SLOPE DISTANCE (FEET)

STREAM CLASS	SLOPE DISTANCE (FEET)					STREAM ORDER
	<30%	>30%	>40%	>50%	>70%	
MEADOWS	100	150	200	250		-
I	100	150	200	250		4+
II	100	100	150	200	1.5x	3-4
III	50	100	100	150	DISTANCE	2-3
IV	≤50	≤50	75	100	TO SLOPE	1-2
IV	≤50	≤50	≤50	≤50	BREAK	1-0

The standard 50 foot filter strip when applied to Stream Class IV (Order 0, 1, and 2) should be determined based on existing ground conditions. Approval of distances of less than 50 ft. will be in concurrence with earth scientists or fisheries biologists.

#### 5. STREAMSIDE MANAGEMENT ZONE DESIGNATION

Objective: To designate a streamside management zone along streams and wetlands that will be managed for protection and enhancement of riparian and wetland ecosystems.

Explanation: The Streamside Management Zone is not a zone of exclusion, but a zone of closely managed activity. Management may occur within riparian zones but not to the detriment of riparian dependent resources. In these areas riparian dependent resources will receive the primary emphasis.<sup>3</sup>

This zone acts as an effective filter and absorptive zone for sediment, maintains shade, protects aquatic and terrestrial riparian habitats, protects channel and streambanks, and promotes floodplain stability (BMP 1.8). Guidelines 1 through 4, which discuss management of the previously mentioned topics need to be evaluated to assess the extent and level of activity prescribed for a specific streamside zone or wetland (see Table 2). Streamside Management Zones vary by Stream Class, percent slope and stream type (perennial, intermittent, or ephemeral) to meet management objectives.

Implementation: Streamside Management Zones will be established and maintained for all streamcourses and wetlands affected by management activities. Project plans will be designed to include site-specific prescriptions for the prevention of sedimentation, stream damage, and the protection of riparian dependent species. Table 2 displays the appropriate

.....  
<sup>3</sup> Pacific Southwest Region Land Management Planning Direction, March 1, 1982, Revised Jan. 15, 1984 pg. 4-28 (Rainbow Book)

Management Requirements and Constraints with respect to stream type and Class.

Landings and non-system roads that have been put to bed, that are located within streamside management zones, and that would be inconsistent with these Riparian Standards and Guidelines, will not be reopened and reused unless the Sequoia National Forest makes a specific finding, based on a project environmental document, that using such roads or landings would cause less harm to riparian resources than building new roads and/or landings.

Table 2  
Management Requirements and Constraints with respect to Wetlands, Stream Type, and Order

	PERENNIAL/INTERMITTENT			INTERMITTENT/EPHEMERAL	
	WETLANDS (MEADOWS)	CLASS I ORDER 4+	CLASS II ORDER 4-3	CLASS III ORDER 3-2	CLASS IV ORDER 2-1 ORDER 1-0
<b>SUMMARY OF GUIDELINES 1-4</b>					
PROTECTION OF UNSTABLE STREAMBANKS		<-----50FT----->			
MAINTENANCE OF VEGETATIVE COVER	<-----100FT----->		<--50FT <sup>1/</sup> -->	<---MAINTENANCE OF EXISTING RIPARIAN VEGETATION--- &gt;</td	
PROTECTION OF STREAM SURFACE SHADE		<-----50FT----->			
INTERCEPTION OF SEDIMENT	<-----100-250+ FT----->	<-----100-250+ FT----->	<-----100-200+ FT----->	<-----50-150+ FT----->	<-----50-100+ FT-----> <-----50+ FT----->
<b>MANAGEMENT ACTIVITIES</b>					
TRAILS/ROAD/SKID PATTERNS	INAPPROPRIATE	APPROPRIATE PERSONNEL			
	<---LOCATION--- &gt;</td <td colspan="4">&lt;---INPUT---<!--&gt;</td--> </td>	<---INPUT--- &gt;</td			
LANDINGS	<-----INAPPROPRIATE LOCATION----->				
CABLE YARDING		FULL		PARTIAL	PARTIAL
	<-----SUSPENSION----->			SUSPENSION	SUSPENSION IF POSSIBLE
FALLING	<-----DIRECTIONAL.FALLING TO SKIDDING PATTERN----->				
HARVEST REGULATION	<-----UNREGULATED----->	REGULATION <-----CLASS I-III----->			
CULTURAL PRACTICES (MECHANICAL)	<-----MAINTAIN GROUND COVER REQUIREMENTS #4----->				
PRESCRIBED FIRE	<-----MAINTAINGROUND COVER REQUIREMENTS GUIDELINE #4----->				

Note Where confusion exists in determining the level of protection for a stream, stream class is used over stream order, i.e , a perennial. Order 1 stream will be classified as a Class III streamcourse and managed for riparian dependent species A stream of this type will receive a minimum of 100 ft management zone.

1/ 100 feet for Class III intermittent streams important to fish migration, spawning and travel corridors.

2/ Limited groundbase machinery refers to designated crossing and access to watershed restoration or wildlife/fisheries enhancement projects

6. MEADOW HYDROLOGY

Objective: Maintain or re-establish hydrologic characteristics of meadows to retain their ecological and physical characteristics (BMP 7.1; BMP 7.2)

Explanation: Meadows are found in a forest, and are exceptionally productive in areas with high soil-water content. Productivity results from continuous or seasonal high soil-water content.

Meadow ecosystems are as stable as the surrounding vegetation. Erosion occurs on the drainage area above it, therefore, erosion affects what occurs on a meadow. The hydrologic character is maintained by a balance of surface and subsurface flows. Management activities have the potential to alter the hydrologic character through interception of surface flows, concentration of surface flows, increases of surface flows, and changes in the water table.

Alteration of the hydrologic character can result in a change in herbaceous species composition and encroachment of woody species.

Implementation: Activities that take place on or within 250 feet of a meadow require site specific attention during project planning to describe the risk of altering the hydrologic character. Project management activities related to hydrology should address direct and indirect effects on the meadows hydrologic character. An ID should be prepared, including consulting with cooperating agencies and permittees.

An initial assessment will be conducted to determine if erosion is occurring in the meadow from identifiable sources. If erosion is occurring, erosion control measures are the cause. Existing adverse conditions will be identified through the Watershed Improvement Needs Assessment (WANA) (FSH 2509.15 form FSH-2507). Plans will be developed from prioritized WANA issues to establish and maintain meadow characteristics and riparian habitat. Native plant species should be given preference for seeding is required in meadow and riparian habitat.

Effects from offsite activities will be evaluated by tracking past management activities and monitoring stream channel stability. Use the Sequoia NF Cumulative Watershed Effects Working Guide, 1987 (FSH 2509.22 Sequoia National Forest #1) and FSH 2509.23 Stream Reach and Channel Stability Inventory (BMP 7.8).

7. FORAGE UTILIZATION

Objective: Maintain or re-establish vegetative cover within wetlands to retain site productivity (BMP 8.2; BMP 8.3).

Explanation: Vegetative cover in mountain meadows provides forage, contributes to biological and aesthetic diversity, promotes water infiltration, and filters sediment.

To maintain vegetative cover, the physiological needs of the plants must be met. The factors effecting plant growth and vigor includes soil moisture, nutrients and solar radiation.

Accumulation of needed carbohydrate reserves depends upon the balance between respiration and photosynthesis. After grazing, the leaf area left and age of the leaf tissues largely control a plant's photosynthetic capacity. Leaf blades older than 28 days generally have a much reduced photosynthetic capacity. Grazing treatments that maintain an abundance of young leaves may give as great or greater carbohydrate storage and herbage production as protection from grazing.

Perennial plant species require carbohydrates to grow. During winter, carbohydrate levels remain constant as plants are dormant. Reserves decline rapidly during spring growth and build up during maturation. Studies suggest early grazing is detrimental when reserves are being spent to produce spring growth or near the time of flowering. Late season grazing of emerging shoots can also reduce carbohydrate storage.

Implementation:

- A. Livestock will not be permitted to graze in meadows until Kentucky bluegrass heads begin to emerge; and/or Nebraska sedge flowers are almost open. (BMP 8.2)
- B. Allowable Use Factors will be established for each key meadow to assure maintenance of vegetative stability and site productivity.
- C. Cattle will be distributed in a manner consistent with moderate forage utilization within meadows. Plant height/weight ratios will be used to monitor the results. (BMP 8.3)
- D. Grazing will cease in time to permit regrowth sufficient to store carbohydrates for initial spring growth (as specified in individual allotment plans).

## 8 Woody and Herbaceous Vegetation in Riparian and Wetland Ecosystems

Objective: To maintain and protect woody and herbaceous vegetative cover, vertical diversity and habitat for fish and wildlife in riparian and wetland ecosystems.

Explanation: Woody and herbaceous vegetation provides habitat for a variety of wildlife and fish within riparian and wetland ecosystems. The structure of this vegetation provides fish and wildlife with valuable thermal and hiding cover.

Livestock grazing on palatable species has the potential to influence the amount of woody and herbaceous vegetation in these ecosystems. There is the need to manage livestock within riparian and wetland ecosystems.



Implementation: Determine the distribution, vegetative structure, condition and trend of riparian areas and wetlands by developing a Forest Riparian Wetland Inventory.<sup>4</sup> Identify riparian and wetland areas impacted from past forest management activities in Allotment Management Plans and Watershed Improvement Needs Inventory (WINI) (FSH 2509.15 form FS 2500-7, BMP 7.1). Plans will be developed to maintain or re-establish riparian and wetland ecosystems. Effectiveness monitoring of projects will occur.

Allotment management plans will identify management strategies needed to maintain or re-establish vegetative structure conditions that maintain and/or re-establish fish and wildlife habitat in key areas. These areas will be identified in the Forest Riparian Wetland Inventory. Develop demonstration areas for habitat re-establishment in concert with California Department of Fish and Game.

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<sup>4</sup>CDF&G and PSW are currently working on defining parameters that are essential to wildlife in wetland ecosystems. Their study will include direction on what factors should be inventoried, a monitoring plan and evaluation criteria.

APPENDIX 1

Glossary

Bog.

Wet spongy ground, with soil composed mainly of decayed vegetative matter.

Compensation Credit: (needs to be defined)

When actions are taken to remove, modify, **or** reduce, pre-existing use in order to benefit the environment (i.e., wildlife habitat, vegetation, soils, viewsheds, etc.) these benefits are noted and applied to the NEPA/CEQA process when these uses are relocated or replaced in a less impacting manner **or** location.

Dependent Resources:

Those resources directly dependent upon riparian and wetland ecosystems for their existence, including water quality, fish, riparian dependent wildlife, riparian related aesthetics, and riparian vegetation.

Duff and Humus:

Decomposed organic plant material that accumulates as a result of litter fall.

Ephemeral Streams:

1. Defined channels that follow slight depressions in the natural contour of the ground surface.
2. Carry surface runoff and hence flow during and immediately after periods of precipitation or the melting of snow
- 3 May or may not have riparian vegetation.

Filter Strip:

A sufficiently wide strip of land with relatively undisturbed ground cover that acts as an effective filter and infiltration zone to capture sediment from upslope management activities.

Floodplain:

That portion of a stream valley adjacent to the channel, which is built of sediment during the present regime of the stream and which is covered with water when the stream overflows its banks at flood stage (Wildland Planning Glossary, PSW, 1976).

Ground cover:

Low growing vegetation, fragments, and fine organic matter such as litter, duff and twigs in contact with the soil surface.

Guideline:

Guidelines are designed to give management direction to implement the Standards under normal management conditions.

Intermittent Streams:

1. Carry water most of the year, but ceases to flow during the dry season because evaporation and percolation into bed and banks exceeds available flow.
2. Have well-defined channels. Channels with active scouring or washing are included even though they may flow only during or immediately after periods of precipitation or the melting of snow.
3. Normally lack litter indicating streamflow sufficient to move material during runoff.
4. May or may not have riparian vegetation.

Litter:

Organic plant material that falls on the ground and has minor decomposition. Plant parts are easily identified and often species may be identified.

Perennial Streams:

- 1 Normally flow yearlong, except during periods of extreme drought.
2. Have well-defined channels and show signs of washing and scouring.
3. May or may not have riparian vegetation.

Regulation Classes:

Regulation Class I prescriptions are even-aged management prescriptions for existing timber stands with full timber yields expected. These represent harvest regimes on lands not otherwise constrained that result in optimum timber production in volume and/or value.

Regulation Class II prescriptions are management prescriptions under "special conditions" for existing timber stands. Reduced timber yields would be expected. These represent harvest regimes on lands designated to meet non-timber objectives that result in a mean rotation longer than optimum for timber production. Generally other values are accounted for by constraints on harvest rates, not by modifications to yield tables.

Regulation Class III prescriptions are for existing stands which are equivalent to the former "marginal timber yield" categorization. Timber outputs resulting from prescriptions in this class will be regulated as a separate, non-interchangeable component of the allowable sale quantity.

Unregulated: Timber on commercial forest land that is not considered part of the annual harvest because other resource values are greater (e.g., recreation, -aesthetics).

Riparian Ecosystem:

A riparian ecosystem is a transition between the aquatic ecosystem and the adjacent terrestrial ecosystem. It is identified by distinctive soil characteristics, vegetative communities and associated animal life found in close proximity to streams, watercourses, lakes, meadows, and springs. The ecosystem exists because the water supplied is in excess of that available to the adjacent uplands, and is sufficient for the growth of mesic (water-loving) vegetation such as willows, sycamores, and alders.

Riparian Vegetation:

Mesic (water-loving) vegetation such as willows, sycamores, and alders. Grasses, shrubs, sedges and rushes may also make up riparian vegetation.

Seep:

Small spring, pool or other place where water has surfaced.

Slash:

Woody material left on the ground resulting from management activity.

Standard:

Standards are performance criteria based on Public Law and Forest Service Manual direction. A principle requiring a specific level of attainment, a rule to measure against.

Stream Classification System:

Stream classification is a means of identifying resource values and beneficial uses associated with streams. Once values and uses are recognized, stream protection guidelines can be established for use in the planning and management of these lands. Within project areas, all streams and segments thereof must be classified.

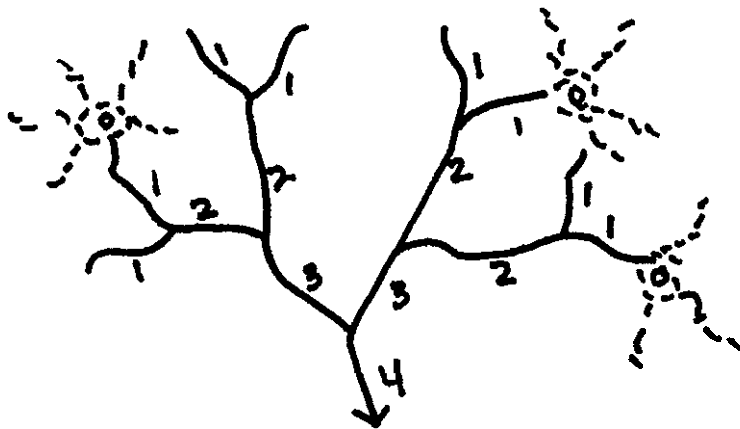
Stream classification is based upon an evaluation of the following factors: (1) flow characteristics (perennial, intermittent, or ephemeral stream types); (2) present and foreseeable instream and downstream values associated with waters of the stream; and (3) characteristics of the stream environment.

1. Class I, Highly Significant. These are either perennial or intermittent streams or segments thereof, which meet one or more of the following criteria:
  - a. Are habitat for large numbers of resident and/or migratory fish for spawning, rearing, or migration.
  - b. Furnish water locally for domestic or municipal supplies.
  - c. Have flows large enough to materially influence downstream water quality.
  - d. Are characterized by major fishing or other water-oriented recreational uses.
  - e. Have special classification or designation, such as wild, scenic, or-recreation rivers.
  - f. Are habitat for threatened or endangered animal species, or contain plants which are potential or viable candidates for threatened or endangered classification.
2. Class II, Significant. These are either perennial or intermittent streams or segments thereof, which meet one or more of the following criteria:

- a. Are used by moderate numbers of fish for spawning, rearing, or migration.
  - b. Furnish water locally for industrial or agricultural use.
  - c. Have enough water flow to exert a moderate influence on downstream quality.
  - d. Are used moderately for fishing and other recreational purposes.
3. Class III, Moderately Significant. These include perennial or intermittent streams, or segments thereof, which meet one or more of the following criteria:
- a. Are habitat for few fish or spawning, rearing, or migration.
  - b. Are rarely used for fishing or other recreational purposes.
  - c. Have enough water flow to exert minimum influence on downstream water quality.
4. Class IV, Minor Significance. These intermittent or ephemeral streams, or segments thereof, not previously classified.

Stream Order Classification:

"First order" streams are unbranched drainages found usually but not exclusively at the head of drainage basins. "Second order" drainages are formed when two or more first order reaches come together and so on as illustrated below.



Zero order drainages occur in the headwaters of first-order drainages as an extension of the channel. A zero-order drainage is an unchanneled basin above the channel head and may or may not contain riparian vegetation. These basins can be extremely subtle features identified only by careful inspection in the field. These types of drainages are the site for long-term accumulation of sedimentary debris and of convergence of shallow groundwater during storms. (Reneau and Detrich, 1987; Detrich and Dune, 1978; Okunishi and Iida, 1981). Not all channels have zero order basins at their head. (Area of shallow groundwater convergence around 0 order basins are shown as dotted lines in above diagram).

Streamcourses:

A natural configuration in the land surface which transports water in a perennial, intermittent or ephemeral circumstance (BMP Handbook).

Streamside Management Zone:

A strip of land adjacent to a stream channel which includes all of the riparian ecosystem and may include a band of contiguous terrestrial ecosystem land. It is a strip of land managed to protect riparian area dependent resources and both on-site and downstream aquatic ecosystem values and uses. The width of the strip is variable. It is defined by an on-site investigation of the existing physical/biological environmental conditions and identification of the riparian area dependent resources and aquatic values and uses requiring protection. Its delineation is applicable to intermittent and ephemeral as well as perennial streams, and to wetlands, bogs, seeps, wet meadows, and other areas of land where riparian area dependent resources and/or aquatic ecosystem values and uses are to be protected (BMP 1.8).

Wetlands:

Areas that require saturated or seasonally saturated soil conditions for growth and reproduction such as swamps, marshes, bogs, sloughs, glades, meadows, floodplains, mud flats, and natural ponds. Generally, the water table stands at or above the land surface for at least part of the year.

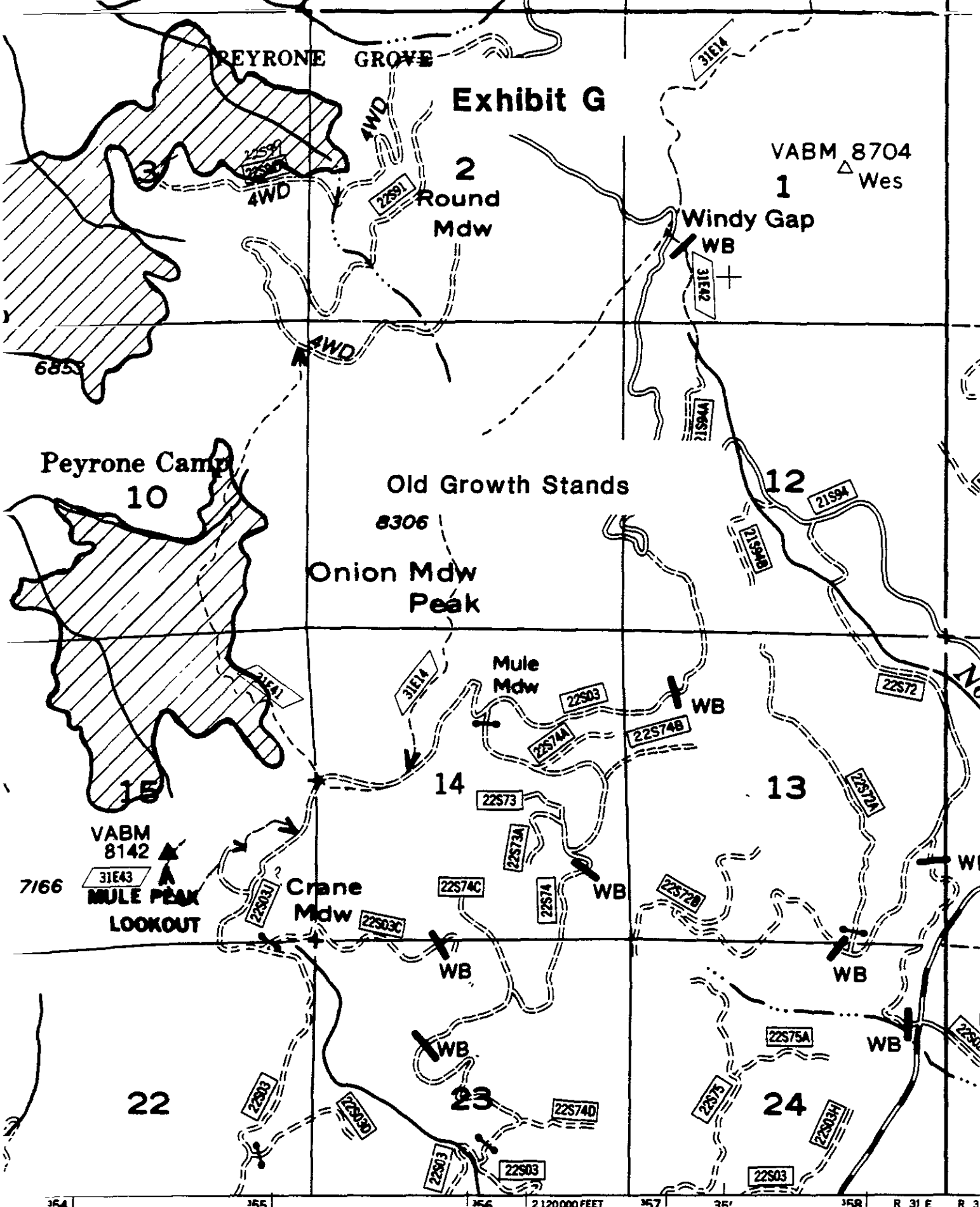


## **Exhibit F**

NO EXHIBIT TEXT



# Exhibit G



VABM 8704  
1  
Wes

VABM 8142  
31E43  
MULE PEAK  
LOOKOUT

6/26/90  
44

354 | 355 | 356 | 2120000 FEET | 357 | 358 | R 31 E | R 3

PARKER PEAK

GROVE

Redwood  
Corral

T I O N

Exhibit G

28

Soldier  
Meadow

33

Parker Peak

31

32

Upper  
Parker  
Mdw

WB

SEQUOIA

6

5

Parker  
Meadow

4

Parker  
Pass

7

8

9

Hatched  
Peak

Old Growth Stands

STARVATION  
CREEK GROVE

18

Creek

Cold Springs  
Saddle

Cold Springs  
Peak

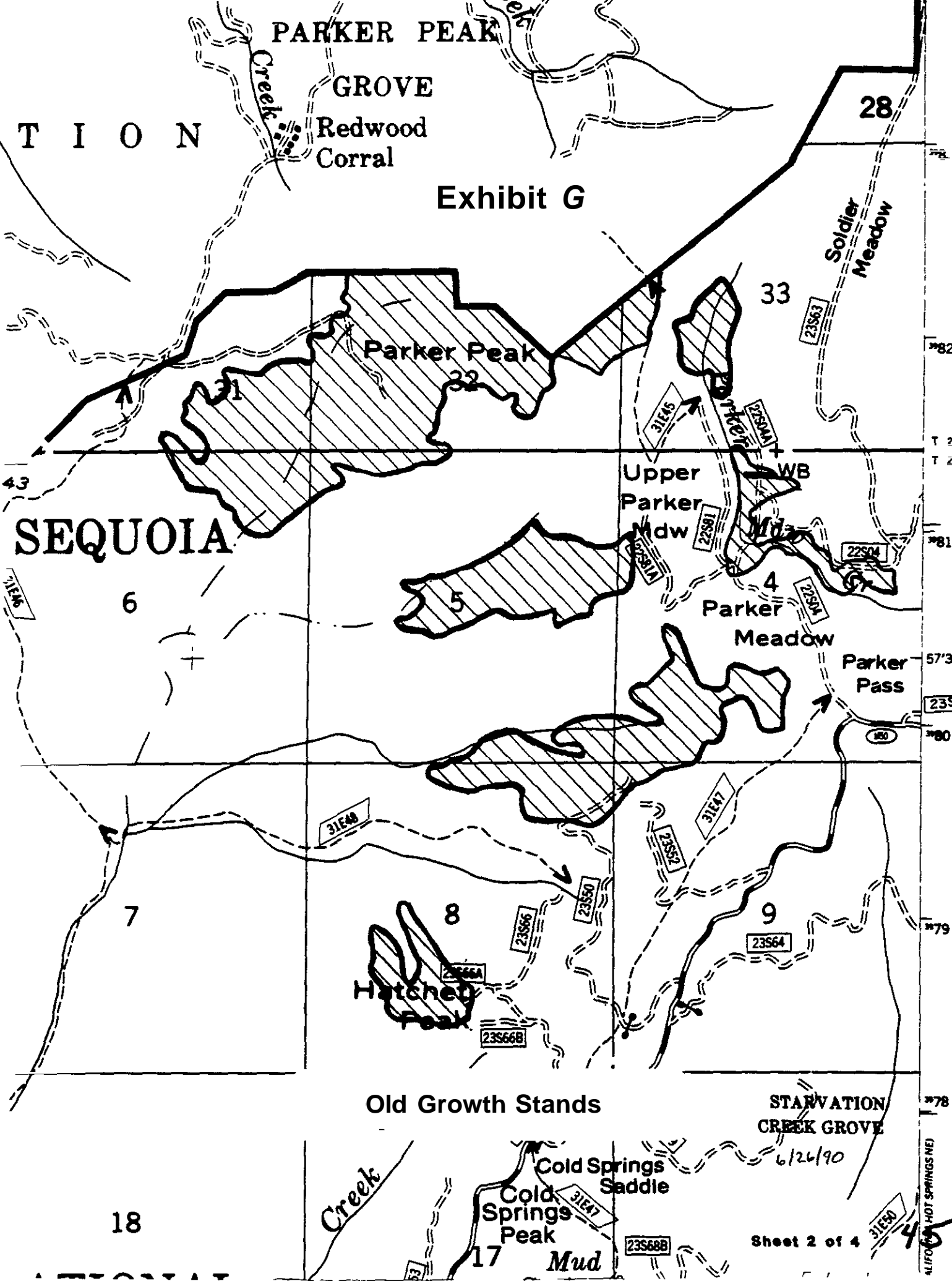
Mud

17

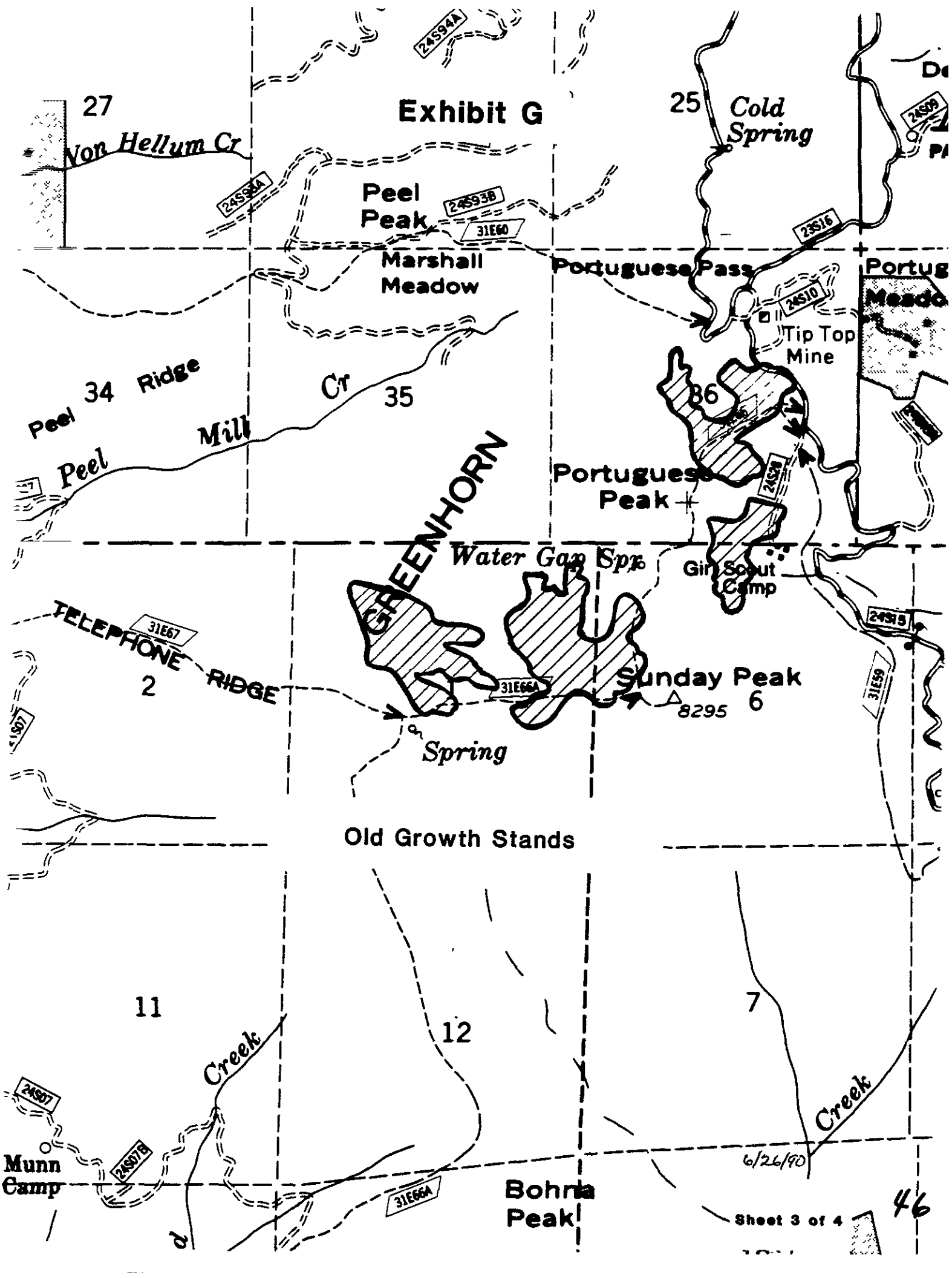
Sheet 2 of 4

ALIFON (HOT SPRINGS NE)

45



# Exhibit G





# Exhibit H

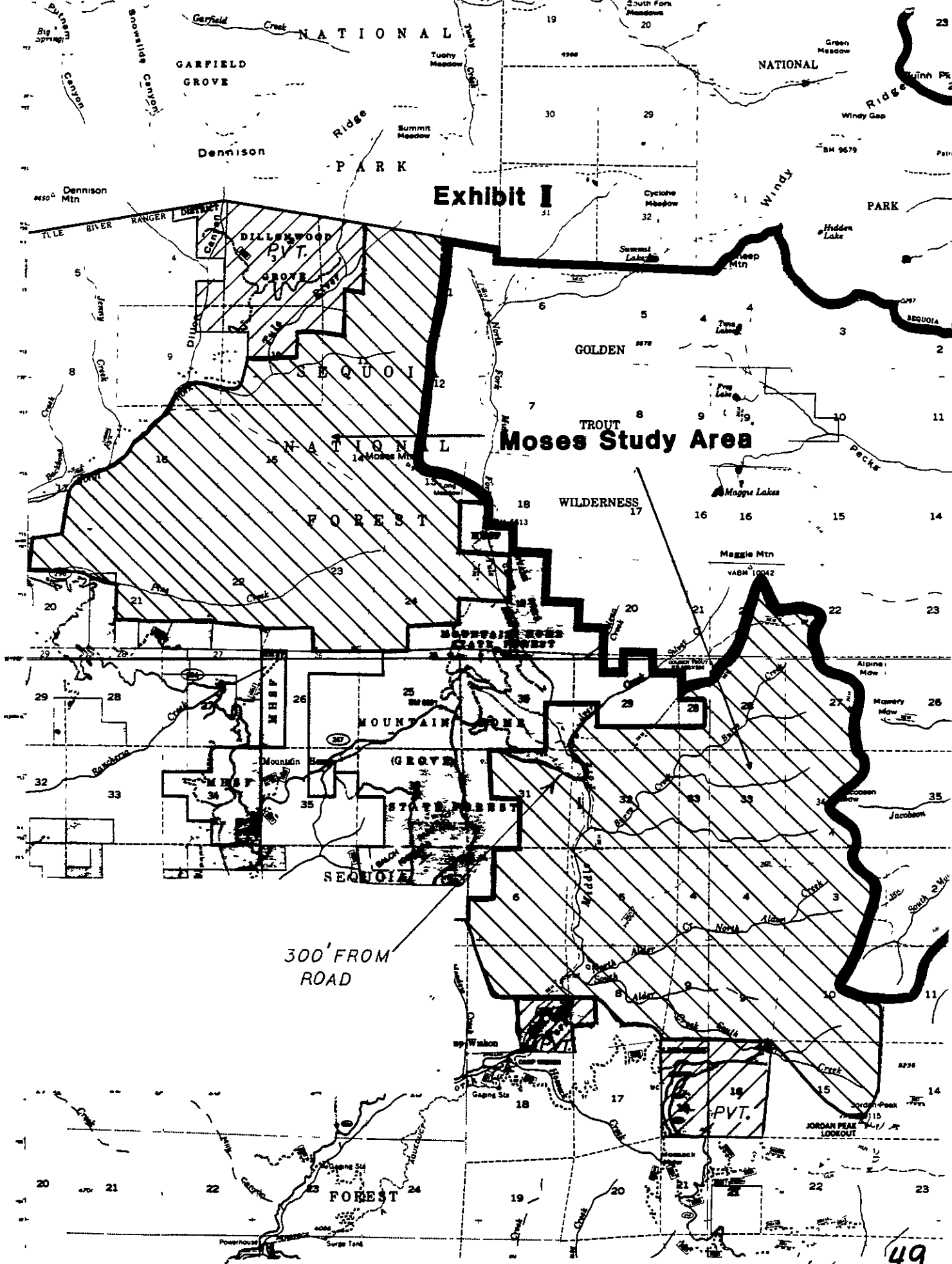
MEDIATION AGREEMENT  
SEQUOIA NF 3-14-90

## COMMERCIAL FORESTLAND EXCLUDED FROM ASP (UNREGULATED)

1. Giant sequoia outside of wilderness and SOHA's: 10,887 ac.
  2. SOHA's outside of wilderness and roadless: 58.892 ac.
  3. HSRD Condor area: 2,120 ac.
  4. Additional condor roost areas: 3,000 ac.
  5. SMZ:
    - a. Stream order I & II: 10,268 ac.
    - b. Stream order III & IV (riparian vegetation only): 1,208 ac.
    - c. Meadow Management Zones: 2.612 ac.
  6. Black oak occupying suitable conifer sites: 18.600 ac.
  7. SPNM outside of wilderness and SOHA's: 6.472 ac.
  8. Steep and rocky: 24,100 ac.
  9. Agnew west of Lightning Creek: 3,859 ac.
  10. Moses: 5,526 ac.
  11. Black Mountain: 2.116 ac.
  12. Dennison: 2,391 ac.
  13. Woodpecker (Sirretta Peak): 7,967 ac.
  14. South Sierra: 2.464 ac.
  15. Lion Ridge (partial): 1.581 ac.
  16. Freeman Grove influence: 2,736 ac.
  17. Converse Basin: 240 ac. (an additional 600 ac. is in Kings River SMA)
  18. Peppermint Ski Area (outside of Roadless): 3,753 ac.
  19. S. Fork Peppermint Creek: 682 ac.
  20. Kings River SMA: 2,670 ac.
  21. Corridors:
    - a. Durrwood Creek in Rincon: 490 ac.
    - b. Cannell Trail: 469 ac.
    - c. Salmon Creek Trail: 335 ac.
    - d. Buck Rock area (General's Hwy. and trails leading into wilderness): 1,192 ac.
- TOTAL ACRES EXCLUDED: 176,610

# Exhibit I

## Moses Study Area

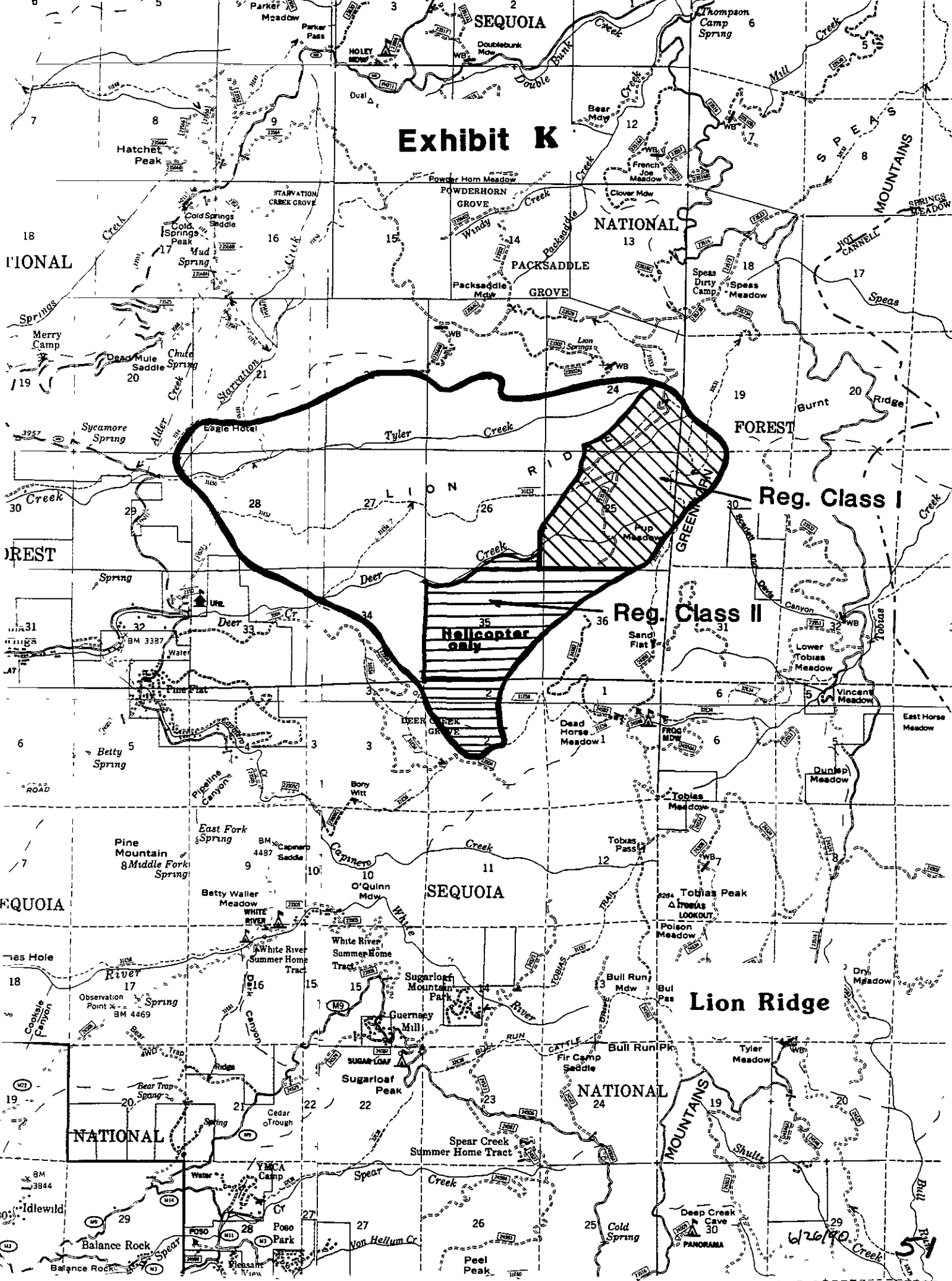


300' FROM ROAD

6/26/90 49



# Exhibit K





# Exhibit I

NATIONAL

F O R E S T

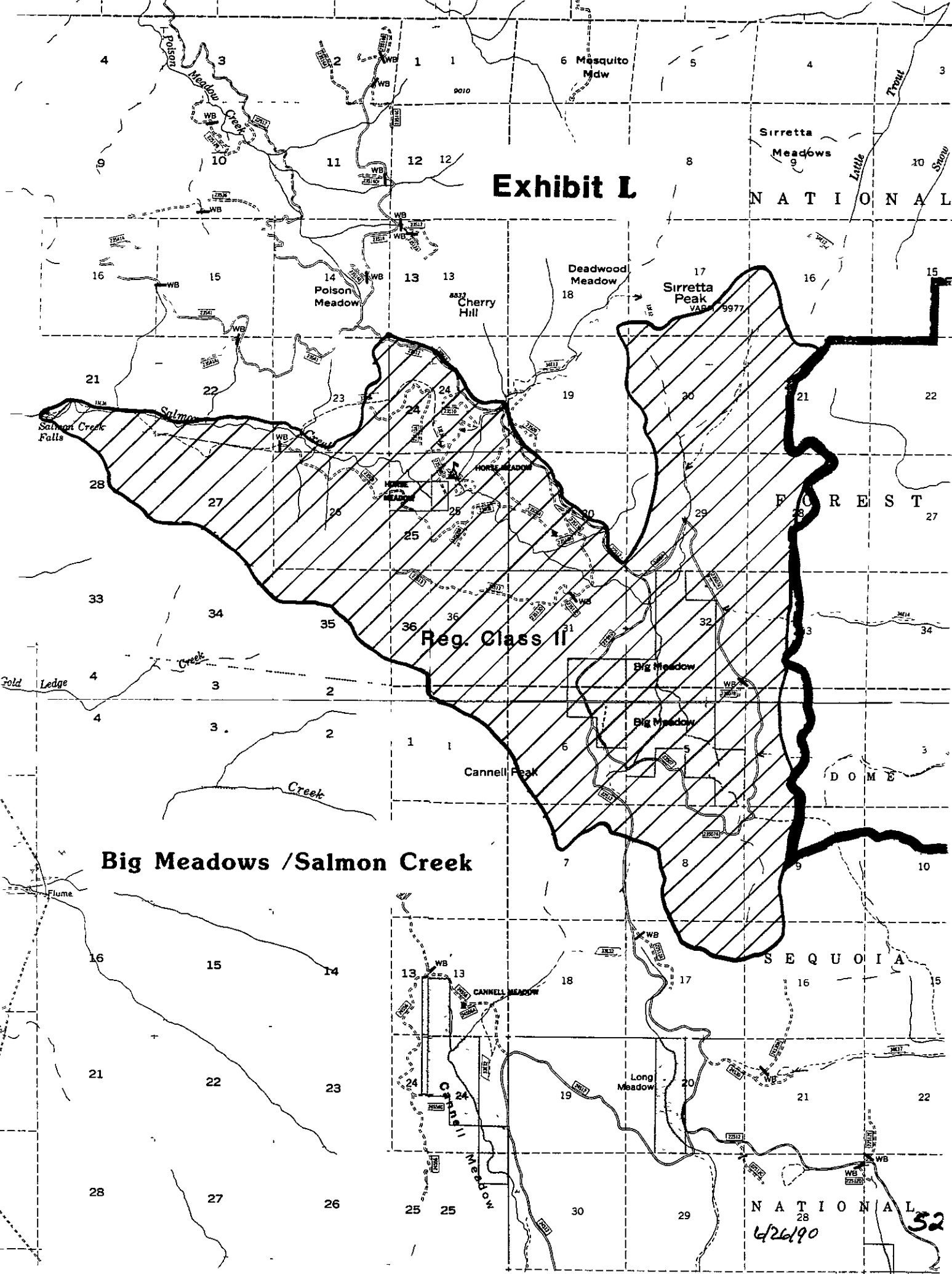
D O M E

S E Q U O I A

NATIONAL

## Big Meadows / Salmon Creek

Reg. Class II



4/26/90

32



EXHIBIT N

The Forest-wide Standards and Guidelines for Timber Management at pages 4-31 to 4-33 will be amended as follows.

A. Silvicultural Systems

1 Both even-aged and uneven-aged silvicultural systems shall be evaluated and used on the Forest as appropriate to a given site.

2. Uneven-aged management:

a Uneven-aged management shall be conducted as Regulation Class 2, which corresponds to an average rotation age of 140 years

b. Both natural and artificial regeneration shall be used, as appropriate

c. Openings created by group selection shall be limited generally to two acres. Larger openings will be allowed only where necessary to achieve specific silvicultural goals that are stated in the applicable NEPA document, and only if approved by the Forest Supervisor.

d. Apply uneven-aged management single tree selection, as the principal silvicultural system within foreground of roads, trails, and high use sites that are Sensitivity Level 1.

e Generally apply uneven-aged silvicultural systems in Sensitivity Level 1, middleground areas. Allow even-aged silvicultural systems in such areas only when harvest practices and related activities:

a) Do not visually detract from a Class A landscape feature or an identified focal point;

b) Are screened by terrain;

c) Occur at or near a perpendicular angle to the direction of travel;

d) Occur in low variety landscapes.

f. Apply even-aged management or uneven-aged management within middleground view of roads, trails and high use sites that are Sensitivity Level 1. The system to be selected will meet the assigned Visual Quality Objective and the silvicultural requirements of the site.

g. Apply uneven-aged management, single tree or group selection, as the principal silvicultural system within foreground of Sensitivity Level 2 roads and trails, Sherman Pass Viewshed, Salmon Creek-Big

Meadow area and other areas to be agreed upon in negotiations over special areas. Within these areas, even-aged prescriptions are allowed only where terrain, stand characteristics, operational factors, or non-timber objectives make this necessary and justified by the project environmental analysis.

3 Clearcutting and Other Forms of Even-aged Management:

a. The Forest is taking steps to modify and reduce the impacts of clearcutting. These steps include such measures as retention of existing reproduction where feasible, identification and retention of wildlife clumps within cutting units, retention of snags and dead-and-down material, and greater retention of slash and ground cover than has been customary. One example of the Forest's new approach is the use of a modified form of clearcutting called "Regeneration Mosaic" cutting, which is defined in Appendix 1.

b. Determination of Clearcut: Clearcutting as a regeneration harvest tool shall be used only where (a) it is determined to be the optimum method to achieve management objectives on a site-specific basis; (b) the potential environmental, biological, aesthetic, engineering, and economic impacts on the advertised sale area have been assessed, as well as the consistency of the sale with the multiple use of the general area; (c) cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources, and the regeneration of the timber resource, and (d) cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain. Clearcutting shall not be selected as a harvesting method primarily because it will give the greatest dollar return or the greatest unit output of timber.

c. Size limits:

(1) On cable ground, clearcuts and seed trees cuts shall be limited to a maximum size of 15 acres unless a site-specific analysis documents reasons for exceeding 15 acres and the action is approved by the Forest Supervisor. Where feasible, smaller openings shall be used.

(2) On tractor ground where clearcutting or seed tree cutting is used, no continuous opening shall exceed ten acres in size (even though the harvested area may exceed ten acres) without the approval of the Forest Supervisor with specific reasons stated in the decision document.

(3) Limit regeneration areas requiring reforestation to 25 acres without approval of the Forest Supervisor.

(4) Reasons for exceeding size limits are: responding to an insect or disease infestation; limitations of cable logging (i.e., need to reach a corner); salvage logging of fire-damaged trees; and limitations imposed by the existing road configuration. It is the

intent of the USFS, however, to operate within the size limits wherever feasible and to exceed them only rarely.

d. In clearcut units, healthy and vigorous advanced regeneration will be saved wherever feasible, including on cable-logged ground. Clearcutting shall not exceed 600 acres per year annual average per a decade.

B. Harvest System

1. Use a variety of logging systems to harvest forest products. Use ground-based systems (such as tractors) on slopes of less than **35** percent, and aerial systems (such as highlead, skyline, or helicopters) where slopes exceed 35 percent, unless the Forest Supervisor makes a specific finding, based on the environmental documentation, that an alternative is preferable.

2. On slopes greater than 60 percent, timber harvesting will be limited to Regulation Class **2** single tree selection via helicopter.

C. Regeneration Methods

1. Plant all regeneration areas requiring reforestation except where natural seeding is prescribed. Regeneration by natural seeding will be applied primarily in the true fir type and in areas where uneven-aged silvicultural practices are prescribed.

2. Save viable existing reproduction where feasible and incorporate into silvicultural prescriptions for new stands.

3. Utilize current state-of-the-art regeneration techniques, including controlling pests, such as gophers, and controlling competing vegetation.

4. To assure long-term site productivity, meet regional soil standards. Existing draft regional standards shall be followed until final standards are adopted.

D. Harvest Location

1. A mix of understocked and better stocked stands will be harvested. The Forest will emphasize harvest and restocking of understocked stands to the extent feasible. In determining what activities should occur on understocked stands, the full range of multiple use values shall be considered.

2. Make logging slash and dead and down material available for firewood throughout the Forest. Make some green material available for firewood.

E. Diversity

1. In order to maintain Forest diversity, particularly within the mixed conifer forest type, reforestation and timber stand improvement prescriptions shall generally emulate existing species composition. Variation from this guideline will be the exception and will be discussed in an environmental document. Commercial values will not be the sole justification for increasing the proportion of high value species.

2. Provide for an array of early and late successional stage habitat over time in each ecosystem. A minimum of 5% of the total area of each vegetative type in forested lands will be maintained in each seral stage/habitat type combination. Allocation of the habitat type/seral stage combinations will be done on a compartment basis.

3. Design vegetation treatments to provide for edge, corridors of cover, and enhancement of special habitat features such as meadows for wildlife.

F True Fir Management

1. During this Plan period, the Forest will test the true fir cutting and regeneration practices described in "The Development of a Policy and Guidelines for the Management of True Fir Forest Cover on the Sequoia National Forest" (1983), incorporated into this Plan as Appendix 2. All true fir sales will be closely monitored to determine if true fir regeneration is successful. When the Plan undergoes its five-year review, the Forest will prepare a written evaluation of its true fir policies based upon this monitoring. The Forest Supervisor will make a decision whether amendment of the policies, cessation of true fir logging, or other action is appropriate. A similar written report, review, and management decision will be made after the additional five years. The following true fir sales are tentatively scheduled for sale between now and 1995:

G Sugar Pine Management

1. Silvicultural prescriptions are to consider means of maintaining the widest possible base of sugar pine genes. Generally, this means protecting as many sugar pine trees as possible while meeting Land Management Plan objectives and being compatible with timber harvest and related activities. Current direction regarding sugar pine retention is set forth in Appendix 3.

2. Continue to plan a modest mix (5-10%) of sugar pine along with other mixed conifer species, even though major gene resistant stock is not now available. This may mean collecting seed from non-tested trees in order to maintain a sugar pine seedbank. With resistant stock, this percentage could be increased.

3. Intensify the effort to collect sample cones from candidate resistant trees. This is a high priority.

4 Continue to protect trees that are **known** to carry resistance. Collect seed from these trees for our seedbank.

H Integrated Pest Management

1. Apply the principles of integrated pest management to the control of competing vegetation, animal pests, and diseases. Consider a full range of management strategies and techniques before prescribing treatment designed to reduce damage from any forest pest. Strategies include indirect control (which focuses on increasing host resistance to pests) and direct control (which seeks to reduce pest populations). Techniques include biological,

chemical, mechanical, manual, and prescribed fire in prescriptions considered in the control of pest damage. Control of competing vegetation will be within the scope of Regional direction based upon an approved environmental impact statement.

- I. Giant Sequoias. Delete this whole section.

# Exhibit O

## CHAPTER 5

### MONITORING AND EVALUATION REQUIREMENTS

#### A. PURPOSE

The purpose of monitoring and evaluation is to provide information on the results and progress of Forest Plan implementation so that:

- Necessary changes in the management practices can be instituted; and,
- Indicated plan amendments/revisions can be made.

#### B. MONITORING AND EVALUATION SYSTEM

The total monitoring system on the Forest consists of a wide variety of actions. The monitoring plan presented in this document consists of those special activities that focus on evaluating the broad aspects of plan implementation. Other monitoring consists of reports, reviews and records that occur as a routine part of Forest management. Actions not duplicated in this plan include such things as: individual and annual fire reports; management attainment reports; annual timber management action plans, reviews and reports; budget and financial management documents; recreation information management reports; environmental analysis reports; activity reviews; audits; and general management reviews.

Monitoring and evaluation are separate, sequential tasks. Monitoring is designed to observe and record the results of both natural processes and actions permitted by forest land and resource management plans. Evaluation looks at those results, determines how well those results meet forest plan direction, and identifies measures to keep the plan viable.

There are three distinct levels of monitoring: 1) implementation monitoring, 2) effectiveness monitoring, and 3) validation monitoring. Each is defined as follows:

Implementation Monitoring: Implementation monitoring determines if plans, prescriptions, projects and activities **are** implemented as specified in the project level environmental document (e.g., EIS). Implementation monitoring answers the question: "Was the required measure performed on the ground as specified in the project environmental document?"

Effectiveness monitoring is done if prescriptions and management objectives are met, and the level of monitoring is conducted on a limited basis by resource values and related issues.

Effectiveness monitoring is done only after determining that a prescription project, or activity to be monitored has been approved in the project direction. The question: "Did the required practice actually occur?" If the answer is "yes", no further monitoring need be done. If the answer is "no", the project must be halted until that termination is made, other activities in the watershed may or may not be halted and on the characteristics and scope of the project in its context.



Validation Monitoring: Validation monitoring determines whether the initial data, assumptions, and coefficients used in development of the plan and required practices are correct: or if there is a better way to meet forest planning regulations, policies, goals, and objectives. Validation monitoring is generally done only when effectiveness monitoring results indicate that a given practice may not be working. The primary exceptions are in fields such as wildlife where broad population trends must be evaluated.

Exhibit 5-1 displays the process for evaluating monitoring results from each monitoring level. There is a direct, sequential relationship between the levels. This relationship is designed to focus initial attention at the implementation monitoring phase.

Exhibit 5-1

EVALUATION OF MONITORING RESULTS  
FOR FOREST PLAN IMPLEMENTATION

IMPLEMENTATION MONITORING  
PROJECT  
RESULTS

Consistent With NO Is Compliance NO Amend  
Project EA & Forest Plan? Feasible? Plan &/or adjust project

YES

YES

Ensure  
Compliance

Issues, 'Concerns or NO Continue Implementation  
Opportunities Still Exist? Monitoring

EFFECTIVENESS MONITORING  
RESULTS

Most Effective Action NO Do Assumptions and NO VALIDATION  
Taken & ICO's Resolved? Coefficients Appear Reasonable? MONITORING

YES

YES

Document Evaluation and  
Continue Implementation  
Monitoring or Amend the  
Plan if More Effective  
Action is Needed

Continue Effectiveness  
Monitoring

RESULTS

Continue Validation NO Assumptions and  
Monitoring Coefficients Valid  
and ICO's Resolved?

YES

Documentation Evaluation  
and Continue  
Effectiveness Monitoring  
or Amend Plan if Change  
is Needed

### C. MONITORING REQUIREMENTS

The planning regulations at 36 CFR Part 219 require monitoring to:

1. Compare planned versus applied management standards and guidelines to determine if management objectives are achieved [36 CFR **219.12(k)**].
2. Quantitatively compare planned versus actual outputs and services [36 CFR **219.12(k)(1)**].
3. Determine significant changes in land productivity [36 CFR **219.12(k)(2)**].
4. Determine planned cost versus actual costs associated with carrying out prescriptions [36 CFR **219.12(k)(3)**].
5. In cooperation with State Fish and Wildlife agencies, determine population trends of the management indicator species and relationship to habitat [36 CFR **219.19(a)(6)**].
6. Evaluate effects of National Forest management on adjacent land, resources, and communities and the effect of activities on adjacent lands on the National Forest [36 CFR **219.7(f)**].
7. Determine if lands are adequately restocked [36 CFR **219.12(k)(5)(i)**].
8. Determine, at least every ten years, if lands identified as unsuitable for timber production have become suitable [36 CFR **219.12(k)(5)(ii)**].
9. Determine whether maximum size limits for harvest areas should be continued [36 CFR **219.12(k)(5)(iii)**].
10. Ensure that destructive insects and disease organisms do not increase to potentially damaging levels following management activities [36 CFR **219.12(k)(5)(iv)**].

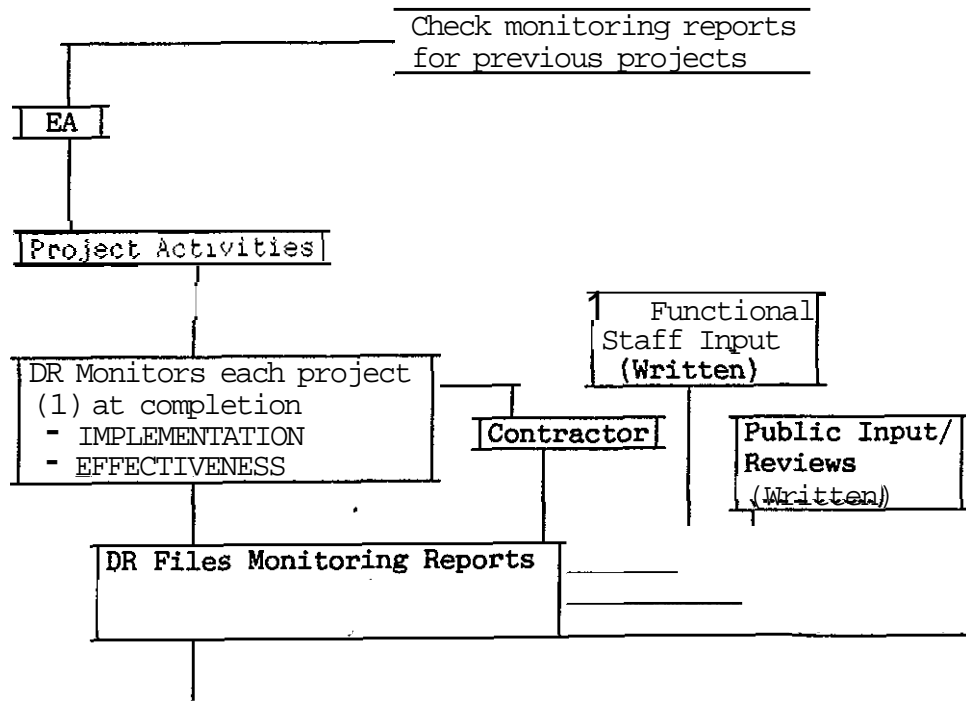
### D. THE TWO PART APPROACH TO MONITORING

In order to structure a monitoring system that was simultaneously responsive to the requirements discussed above and project-oriented, a two part approach to monitoring and evaluation is adopted for the Sequoia National Forest's Land Management plan.

#### 1. Project Monitoring

The major part and centerpiece of the monitoring effort focuses on in-the-field project monitoring. Exhibit 5-2 details this process for all management activities affecting water, soil or vegetation (e.g., fuels management, timber sales, etc.).

Exhibit 5-2: Project-Based **Annual LMP** Monitoring



- (1) Includes management activities affecting air, water, soil, and vegetation such as timber sales, grazing allotment management, fuels management, site preparation, etc.

In summary, the District Ranger is responsible for ongoing and post-project review of all projects. He/she performs implementation monitoring and coordinates effectiveness monitoring. In the case of a timber sale, harvest activities and subsequent site preparation are to be monitored separately. With input from the public, other agencies, in-house Forest staff and/or contractors, the Ranger files a monitoring report on each project which is kept at the district office. Copies are filed in the Supervisor's Office, as well to facilitate public review of them. Annually the forest management team selects a sample of completed projects drawn from each district. The Management Team monitors the monitoring effort, as well as the management results on-the-ground. Projects are to be selected with an emphasis on soil productivity and water quality. At year's end, the management team reports on both the monitoring effort and on-the-ground results. Evaluation of results and recommendations for Plan amendment, or changes in practices and policies, are made at this time.

Table 5-3 shows in detail those items that shall be monitored as appropriate to a given sample project. The heading "Assessment Process" simply identifies the monitoring process to be followed at each of the three phases of monitoring. Precision is the exactness or accuracy of measurement techniques. Validity is the expected probability that information acquired through sampling will reflect actual conditions. Both precision and validity are qualitatively rated as either high, moderate, or low. The accuracy for precision and validity levels are:

<u>Level of Precision/Validity</u>	<u>Expected Accuracy</u>
High (H)	Within $\pm$ 10%
Moderate (M)	Within $\pm$ 33%
Low (L)	Within $\pm$ 50%
N/A	Cannot be established.

Minimum monitoring frequency simply specifies how often and at what sample size the assessment will be made. The responsible staff is, in each case, the member of the forest management team who is responsible for the assessment. The standard indicating further action is the "trigger" for further monitoring procedures. Estimated average annual costs are shown for each assessment process. If a practice is already part of on-going forest management and thereby already budgeted, it is labeled "SOP" for "standard operating procedure".

## 2. Program Monitoring

The second part of the forest plan monitoring process responds to specific requirements of NFMA that must be done on a forest-wide basis and to the need to monitor some aspects of the forest's program on a forest-wide basis. These include such items as actual versus planned levels of output and costs and evaluation of the maximum size of harvest areas. These shall be monitored as appropriate and, except where noted, reported every five years. In addition, every ten years, land identified as unsuitable in the forest plan will be re-evaluated for suitability (using the same or updated methodology as shown in Appendix C) and a report of results made.

### a. Cost and Output

A national Program Development and Budgeting Review Team has been established to compare FMP planned (estimated) implementation costs and outputs with actual costs and outputs. Their charter is as follows:

- (1) "Level" or gain better equity among Regions for financial schedules that fund the land management plans for the period 1990 to 2000.
- (2) Improve our ability to develop cost-effective program budgets that reflect national priorities among Regions at less than full LMP funding while recognizing Regional equity and other managerial objectives.
- (3) Improve our ability to carry through with decisions made during the program development process.
- (4) Carry out congressional direction.
- (5) Implement our plans.
- (6) Gain efficiency and consistency in achieving our agreed-upon objectives and targets.
- (7) Develop consensus among Regional Foresters so that they can support a national NFS PD&B process.

At the present time, the Timber Sale Program Information Reporting System (TSPIRS) provides financial information covering the forest timber program for any given year. It covers timber revenue and associated costs, socioeconomic effects and accomplishments, and future benefits and costs resulting from that year's program. All Program Information Reporting System (ALLPIRS) is being tested nationwide at this time. It will be implemented to provide financial information for all the resource programs.

Until the new financial monitoring systems are in place, annual monitoring of LMP implementation costs will consist of (1) reviews of annual budget submittals for the Forest and their relationship to the

broad funding categories shown in LMP as a reflection of the balanced program contained in the LMP; (2) reviews of the annual budget allocations to the Forest and their relationship to broad LMP funding categories as a way of assessing whether actual allocations are directing management activities in a way that implements (or deviates from) the LMP. Whichever is available, the interim system or the developing system will be used to determine if amendment to the LMP is required at the five year FLMP review.

Regarding output monitoring, until the new output monitoring system is in place, the annual Management Attainment Report, which shows how many/much of various selected activities/outputs have been accomplished in a given year, shall be used as the basis of annual output comparisons with FLMP direction. Whichever is available, the MAR system or the new system will be used to determine at the five year FLMP review whether the FLMP needs to be amended.

b. Resources

- (1) Forestwide CWE - To be added as per final version of Settlement Agreement.
- (2) Tri-forest Wildlife Plan - This plan and its monitoring provisions are incorporated by reference.

c. Adjacent Lands - The effects of management activities on adjacent lands shall be analyzed in site-specific NEPA documents and monitored on a project basis under the appropriate resource heading as listed on Table 5-3.

d. Data Bases

The forestwide data bases containing timber stand and CWE information are to be updated as part of the analysis process.

- (1) CWE - The inventory of ERA's is updated for each compartment when the CWE analysis for a given activity *is* done.
- (2) Timber Stands - The timber stand inventory for each compartment shall be updated annually on a project basis starting in 1991.



TABLE 5.3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
AIR QUALITY: Air Quality Maintenance					
A <b>MONITORING OBJECTIVE:</b> To conduct management activities within the air quality regulations mandated by federal, state, and local governments.					
1. <b>Implementation:</b> Determine if appropriate smoke management techniques to reduce emissions, minimize impacts, and meet prescription objectives are implemented.	High	Two projects/ District/Year	District Ranger	When assessment indicates departure from smoke management techniques that meet the objectives of the burn.	1,000 (SOP)
2. <b>Effectiveness:</b> Photographic tracking of smoke plumes, manual photos, personal observations, and notations monitoring the transport and dispersal of smoke.	Moderate	Two projects/ District/Year	District Ranger	When assessment indicates smoke transport outside that predicted in the burn plan.	4,000 (New Cost)
3. <b>Validation:</b> Review smoke management plans and photographic tracking to evaluate smoke management techniques.		Two projects/ District/Year	Forest Resource Officer	When assessment indicates smoke management techniques (not unpredictable environmental change) is responsible for failure to predict smoke transport.	4,000 (New Cost)

TABLE 5-3: LMP MONITORING PLAN (Project-based)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>CUMULATIVE WATERSHED EFFECTS</b>					
<b>MONITORING OBJECTIVE:</b> To Protect beneficial uses of water from the cumulative effects of multiple land management activities.					
<b>1. Implementation</b>					
Determine <del>if</del> Cumulative Watershed Effects (CWE) analysis <del>is/was</del> performed and documented in a project NEPA document for all projects affecting water quality and beneficial uses in all specified sub-watershed(s) in watersheds of influence. Determine if analysis conforms to direction in Sequoia National Forest <del>CWE</del> working guide consistent with current R-5, FSH 2509.22, Chapter 20.	H/H	Annually during post-project reviews and inspections for 2 completed projects per district per year.	Forest Resource Officer and Timber Management Officer	Determine <del>if</del> the WE analysis accurately reflects watershed conditions. Determine if the project NEPA document reflects mitigation responsive to watershed needs and mitigation <del>meets</del> its own objectives after accomplishment.	15,000 (SOP)
<b>2. Effectiveness</b>					
Determine <del>if</del> WE analysis was effective in identifying potential problem areas and targeting required mitigation responsive to concerns relative to water quality and beneficial uses.	H/M	Annually during post-project reviews and inspections for 2 completed projects per district per year.	Forest Resource Officer and Timber Management Officer	Determine if mitigation alleviated concerns and <del>if</del> problem areas were accurately identified.	15,000 (SOP)
<b>3. Validation</b>					
Determine <del>if</del> factors used in WE analysis accurately quantify site conditions, disturbance, and affected environment. Determine If predicted long-term effects to soil and water from management activity are reasonably evaluated.	M/M	As post-project monitoring indicates need and/or R&D efforts dictate needs to change	Forest Resource Officer	Recruit help from earth scientists internally or externally. depending on need, severity, and scope of the problem or to help identify problem. Regional expertise may be needed to evaluate the method used for validation based on Regional perspective.	

SEOUOIA NATIONAL FOREST

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>DEVELOPED RECREATION USE</b> Management of Developed Recreation Sites and the Effect on Health, Safety and Resources					
Monitoring <b>Objective:</b> Ensure safety, health, and environmental protection at developed recreation site.					
A. <b>Implementation and Effectiveness:</b> Assess the level of safety, health, and impact on natural resources from developed recreation.  Utilize BMP's 4-1, 2, 3, 4, 5, 6, 7, 9, and 10 and the BMP assessment forms RS-2525-II-Rec 21 and 22 to assess the implementation and effectiveness of monitoring these recreation activities.	H/H	Annually in monitoring report and in EA's for all new or reconstructed recreation projects.	District Ranger	<b>If</b> projects or monitoring reports do not reflect appropriate BMP's or <b>if</b> measured results do not meet BMP standards.  If results do not meet BMP standards.	\$15,000
B. <b>Validation:</b> In cases where effectiveness monitoring indicates questionable effectiveness of prescribed standards, validation monitoring will determine <b>if</b> changes or assumptions need to be made.  Study and evaluate recreation facilities not meeting standards, and adjust management to meet acceptable standards.	H/H	As indicated by results of effectiveness monitoring.	Forest Recreation Officer		Unknown

## SEQUOIA NATIONAL FOREST

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>FACILITIES:</b> Transportation system management and maintenance.					
<b>Monitoring Objective:</b> Determine effectiveness of transportation system management.					
1. <b>Implementation:</b> Determine if transportation system is in compliance with Forest Plan and meeting resource objectives.	High	Ongoing	Forest Engineer	When assessment indicates departure from Forest Plan and resource objectives.	\$500
2. <b>Effectiveness:</b> Evaluate the transportation system's effectiveness in meeting established road management objectives.	Moderate	Annual	Forest Supervisor	When review of road management objectives indicates variation.	\$2,000
3. <b>Validation:</b> Review non-compliance of road management objectives with Districts. Review to determine if objectives should be changed.	Uoderate	Annual	Forest Supervisor	Variability in road management objectives that may be more appropriate.	\$2,000

TABLE 5-3: LIP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL WST (\$)
<b>FISHERIES</b>					
<b>I. MONITORING PROGRAM</b>					
<b>A. MONITORING OBJECTIVE:</b> Ensure the maintenance of suitable habitat to provide viable fish populations.					
<b>1. Implementation</b>					
Ensure that P-5 Minimum Management Requirements, FLW Guidelines, Riparian Standards 6 Guidelines and Best Management Practices are being implemented as designed in project NEPA document.	H/H	Sample 5 projects per year.	Forest Resource Officer	When assessment indicates departure from requirements contained in project EA's.	5,000 SCP
<b>2. Effectiveness</b>					
Determine if project plans and prescriptions achieve their stated objectives, guidelines and requirements for the protection and/or enhancement of suitable fish habitat, utilizing the R-5 Habitat Assessment and Fish Habitat Relationship programs.	M/M	Sample 5 projects per year.	Forest Resource Officer	When the R-5 Habitat Assessment and the Fish Habitat Relationship programs indicate a 20% change in fish habitat capability for a specific stream.	50,000 SCP
<b>3. Validation</b>					
Determine if assumptions used to formulate guidelines and habitat capability models are achieving the FLW goals and objectives by utilizing the Fish Habitat Relationship program to model all fish habitat on the Forest.	M/M	10 years	Forest Resource Officer	10% deviation from the 1990 RPA goal.	1,500
Assess fish population trends to validate Fish Habitat Relationship Program model.					

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>LITTLE KERN GOLDEN TROUT:</b>					
<b>Monitoring Objective:</b> Maintain suitable habitat to ensure viable populations.					
<b>A. Implementation:</b>					
1. Ensure that provisions in recovery plans are carried out.	High	Annually	Tule River District Ranger	As per Recovery Plan	2,000
<b>B. Effectiveness:</b>					
1. Population indices	Moderate	Every 5 yrs	Tule River DR in cooperation with CDF&G	As per Recovery Plan	500
2. Habitat monitoring	Moderate	Every 5 yrs	Tule River DR In cooperation CDF&G	As per Recovery Plan	500
C. <b>Validation:</b> R5 Fish Habitat Assessment Program	Moderate	Every 10 yrs	Forest Resource officer	As per Recovery Plan	2,000

## SEQUOIA NATIONAL FOREST

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL WST (\$)
<b>RECREATIONAL USE OF TRAILS:</b> Effects of OHV and Other Trail Users on Land and Other Natural Resources					
<b>Monitoring Objective:</b> Evaluate effects of trail construction, maintenance, and use by OHV's, horses, hikers, and other on natural resources.					
A. <b>Implementation:</b> Develop standards to measure impacts of trail use in the Trail Plan. (BMP 4-8 sets implementation direction)	M/M	Annual review of standards used in monitoring report.	Forest Rec. Officer	If standards are not being applied in project analysis, design, or monitoring report.	\$1,000
Develop standards modeled after BMP's used for road construction and maintenance (to be developed in the Trail Plan).	M/M	All new projects and sample of maintenance projects annually.	Forest Rec. Officer		
B. <b>Effectiveness:</b> Determine effectiveness of prescribed standards compared to planned objectives. Determine if a change is needed in the Trail Plan.	M/M	All new projects and a sample of other existing trail facilities annually.	District Ranger	If impacts exceed the ability to manage and maintain trail use within prescribed standards at a reasonable cost.	\$5,000
Review all new construction and sample maintained and other existing trail facilities to determine if they meet the standards.					
C. <b>Verification:</b> In cases where effectiveness monitoring indicates questionable effectiveness of prescribed standards, validation monitoring will determine if changes or assumptions need to be made.	H/H	As indicated by results of effectiveness monitoring.	Forest Rec. Officer	N/A	Unknown
Install research plots/studies to measure impacts, evaluate results, and adjust standards to reduce impacts to acceptable levels.					

## SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>RANGE MANAGEMENT</b>					
A <b>MONITORING OBJECTIVE:</b> Provide for the health and vigor of rangeland vegetation. <sup>1</sup>					
<b>1. Implementation</b>					
Monitor ecological change on all allotments where vegetative change is prescribed in the Allotment Mgmt. Plan (AMP) by photo transect method as described by Frost, W.E., McDougald, N.K., Smith, E.L. and Clawson, W.J. Procedures for Measuring, Analyzing and Interpreting Vegetation Trend in Riparian Area. University of California Range Science Report No. 23, August 1989.	M/M	3-5 yrs.	Forest Resource Officer	Deviation from prescriptions in AMP.	12,000
<b>1. Effectiveness</b>					
Inspections to monitor the effectiveness of management practices on intensively managed allotments for compliance with AMP. (Option-add "This includes range readiness, forage utilization & livestock distribution.")	H/H	Annually 50% all AMP's	Forest Resource officer	Deviation from standards set in FSH and Manuals. and AMP direction.	5,000 (SOP)
<b>3. Validation</b>					
Measure species frequency and cover in transects as set forth in Frost, W.E., McDougald, N.K., Smith, EL and Clawson, WJ. Procedures for Measuring, Analyzing, and Interpreting Vegetation Trend in Riparian Areas. University of California Range Science Report 23, August 1989.	M/M	As determined by Eff. monitoring.	Forest Resource Officer	When interpretation of statistical comparison indicates that a change has occurred in relation to the vegetative objectives adjust AMP management practices.	3,000

<sup>1</sup>Inventories need include inventory of each allotment to determine current ecological status of the land and revision of allotment management plans to comply with revised Forest Service direction ("Change on the Range").



TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>SENSITIVE PLANTS<sup>1, 2</sup></b>					
<b>MONITORING OBJECTIVE:</b> Ensure that LMP goals, objectives, standards and guidelines provide protection for plants listed on the R-5 Sensitive Plant List.					
1. <b>Implementation:</b> Inspect project activity to assure compliance with requirements specified in species management guides and/or project NEPA document.	H/H	Annually 2 projects per District.	Forest Resource Officer	When review team detects deviation from species management objectives as shown in project NEPA document.	2,000 (\$OP)
2. <b>Effectiveness:</b> Inspect known locations of sensitive plant populations to determine if effects of project on plant habitat were accurately predicted and mitigations effective.	H/H	Same as above.	Forest Resource Officer	When reviewing officers detect any change in the species habitat that may be detrimental to its continued existence.	3,000 (\$OP)
3. <b>Validation:</b> Conduct a botanical investigation (R-5 FSH 2609.5, 3/88) and if necessary revise Species Management Guide to reflect required changes. Apply new guidelines for future project planning.	H/H	As effectiveness monitoring indicates the need.	Forest Resource Officer	When botanical investigations indicate population trend is approaching decreasing/increasing viability of the species.	2,000

<sup>1</sup>Inventory needs include a botanical investigation for 26 sensitive species in order to determine their status and the significance of each individual population. Priorities for development of Species Management Guides are listed in Section 1.14 of R-5 FSH 2609.25. Threatened and Endangered Plants Handbook.

<sup>2</sup>Species population trends will be monitored in conjunction with species management guides at the rate of at least one per year based on available funding.

## SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project and Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>SENSITIVE WILDLIFE SPECIES</b>					
A <b>MONITORING OBJECTIVE:</b> Ensure that LMP goals, objectives, standards, and guidelines provide sensitive species habitat to sustain species habitat to sustain viable populations.					
<b>1. Implementation</b>					
Inspect project activity to assure compliance with project NEPA document regarding protection of sensitive species habitat.	HH	Annually two projects per District.	Forest Resource Officer	When review team detects deviation from species management objectives, as per project NEPA document.	TBA
<b>2. Effectiveness</b>					
a. Inspect habitat identified project NEPA document to determine if project effects on species habitat were accurately predicted and mitigations effective.	H/H	Same as above.	Forest Resource Officer	When the reviewing officer detects any change in the species habitat that may be detrimental to viability.	2,000 SOP
b. Determine if project effects and prescriptions achieve LMP objectives by utilizing the Wildlife Habitat Relationship computer program to model the long-term effects.	M/M	Minimum 3 years.	Forest Resource Officer	When long-term effects indicate habitat capability is declining and may not sustain viable populations.	2,000 SOP
c. Perform population census on the following species as directed by the R-5 Species Management Guides.					
(1) Spotted Owl Determine nesting success and population viability of forest network.	M/M	As determined by the USF&WS and U.S. Forest Service (Washington Office).	Forest Resource Officer	Downward trends in nesting success as determined by Regions 5/6 R&A.	130,000 SOP
(2) Goshawk Determine nesting success and establish network of nest sites to assure species viability.	M/M	Annually until network is established and every 3 years thereafter.	Forest Resource Officer	Deviation from FLW Guidelines and R-5 Minimum Management Requirements.	7,000 SOP
(3) Willow Flycatcher Survey potential nest sites associated with projects supplemented with data from Riparian ecosystem monitoring for avian guilds.	M/M	Annually for 5 years and every 3 years thereafter.	Forest Resource Officer	Deviation from R-5 Minimum Management Requirements and LMP Guidelines.	SOP funds are included in wildlife validation monitoring section.

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	6/22/90	ESTIMATED AVERAGE ANNUAL COST (\$)
				GUIDELINES INDICATING FURTHER ACTION	
(4) Great Grey Owls Determine nest sites and nesting success. Data will be collected while gathering spotted owl information.	M/M	Same as above.	Forest Resource Officer	Same as above.	\$OP funds are included in spotted owl monitoring section.
(5) Furbearers Assess available habitat for Pine Marten. Fisher. Wolverine and Sierra Red Fox with proposed projects.	L/L	As directed by the Regional Forester.	Forest Resource Officer	Deviation from R-5 Minimum Management Requirements.	10,000
3. <u>Validation</u> Determine if the direction in R-5 Minimum Management Requirements and Forest Plan provide habitat to sustain viable populations of sensitive species.	M/M	Whenever effectiveness monitoring indicates a need.	Forest Resource Officer	When changes in species habitat and/or populations are altered in a manner that may affect the viability of the species adjust practices and/or guidelines.	2,000

\*Inventory needs include a biological investigation for 7 listed species in order to determine population density and habitat needs.

## SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>SOIL</b>					
<b>I. MONITORING PROGRAM</b>					
<b>A. MONITORING OBJECTIVE:</b> Ensure that management practices and prescriptions maintain inherent long-ten soil productivity.					
<b>1. Implementation</b>					
Determine if project plans and prescriptions are implemented as designed and documented in project NEPA document.	H/H	Annually during pre- and post-harvest and pre- and post-site prep. project reviews and inspections for 2 completed projects/district.	Forest Resource Officer and Timber Management Officer	Departure from contract or NEPA document requirements.	15,000 (SOP)
<b>2. Effectiveness</b>					
Determine if plans and prescriptions are effective in meeting the objectives and S&G's specified in project NEPA documents and Forest plan. Key soil properties to observe are compaction, erosion, puddling, displacement and severity of burn.	M/M	Annually on post-project harvest and site prep. reviews for 2 completed projects/district.	Forest Resource Officer and Timber Management Officer	Long-ten soil productivity standards are being met when at least 85% of an activity area is in acceptable soil condition (Draft R-5 FSH 2509.18 Soil Mgt. Handbook, Sept. 1988, Supp. #1).  The following defines acceptable soil condition for 85% of the area (FSH 2509.18). 1. Soil cover is present in amounts that prevent accelerated erosion rates from exceeding soil formation rates over time, i.e., the kind, amount and distribution of soil cover is guided by the R5 Erosion Hazard Rating. 2. Soil porosity is at least 90% of its natural condition. 3. Soil organic matter is present in amounts sufficient to prevent significant short or long-term nutrient cycle deficits, and avoid adverse physical soil characteristics.	10,000 (SOP)

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<p>3. <b>Validation</b></p> <p>Determine if CWC coefficients, S&amp;G's and management requirements maintain long-term soil productivity. Utilize monitoring methods discussed in Chapter 2 of FSH 2509.18 - Soil Management Handbook. 10/87.</p>	H/H	Whenever effectiveness monitoring indicates a need.	Forest Resource Officer and District Ranger	<p>a. Soil organic matter is at least 85% of natural conditions in the upper 12 inches.</p> <p>b. Large woody material is available, is about 5 to 20 logs per acre in contact with the soil surface. Size should be 20 inches in diameter and 20 feet long, of all decomposition classes.</p> <p>c. Litter and duff covers approximately 50 percent of the disturbed area, less than 3 inches in diameter and in contact with the soil surface. Annual litter fall may be used to compensate for litter removed during management.</p>	<p>When detrimental changes in soil properties over an activity area exceed 15% of the acceptable soil condition, consider adjusting practices and/or guidelines to prevent significant impairment (FSH 2509.18, 10/87).</p>

## SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project and Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>THREATENED AND ENDANGERED SPECIES</b>					
<b>II. MONITORING PROGRAM</b>					
A <b>MONITORING OBJECTIVE:</b> Assure that all National Forest System habitats and activities for threatened and endangered species are managed to achieve recovery objectives, so that special protection measures provided under the Endangered Species Act are no longer necessary. Threatened and endangered species include Condors, Peregrine Falcon, Bald Eagle and Little Kern Golden Trout.					
<b>1. Implementation</b>					
Determine that project plans and prescriptions are implemented as designed, consistent with the Biological Evaluations.	H/H	Annually. Two projects per District.	Forest Resource Officer	Deviation from Recovery Plan or FLMP Standards. Guidelines or MMR's as interpreted through project NEPA document.	TBA
<b>2. Effectiveness</b>					
a. Determine if implemented plans and prescriptions achieve the objectives of the Recovery Plan. Utilize the Wildlife Habitat Relationship computer program to model the long term effects.	M/M	10 years	Forest Resource Officer	(same as above)	TBA
b. Perform population census on the following species as directed by Recovery Plans.					
(1) Peregrine Falcon Helicopter survey of Kings River, Tule River, Kern River and ground check of superior nest sites to determine reproduction success.	M/M	Annually for 5 years; then every 3 years.	Hume Lake District Ranger	Deviation from direction in Recovery Plan.	7,000 SCP
(2) Bald Eagle Survey of suitable habitat to determine changes in wintering populations.	L/L	As directed by Bald Eagle Recovery Team.	Hume Lake District Ranger	Report census data to Recovery Team for evaluation.	500 SCP
(3) Condors Monitor known nest & roosting sites to determine occupancy.	M/M	Project Basis as established by Condor Recovery Team	Forest Resource Officer	Deviation from direction in Recovery Plan.	2,000 sop
(4) Little Kern Golden Trout Determine success of re-establishment program in Little Kern River watershed through R-5 Habitat Assessment Program.	M/M	5 years	Tule River District Ranger and CDF&G	Deviation from LKGT Management Plan.	
<b>3. Validation</b>					
Determine if direction in Recovery Plan is meeting goals and objectives of the Endangered Species Act.	H/H	Whenever effectiveness monitoring indicates a need.	Forest Resource officer	When trends in T and E habitat and/or populations indicate changes significant enough to affect species recovery, coordinate with USF&WS' Division of Endangered Species and CDF&G for Recovery Plan revisions.	1,000 SCP

## SEOUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project and Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>TIMBER</b>					
<b>A. MONITORING OBJECTIVE: Determine regeneration success.</b>					
1. <b>Implementation:</b> Determine whether site was planted in accordance with R-5 Silvicultural Handbook and project NEPA document.	H/H	Two completed projects per District per year.	Management Team/ Timber Mgt. Officer	Indicator of variance from silvicultural prescription is Notice of Non-Compliance with planting contract.	20,000 (SOP)
2. <b>Effectiveness:</b> Determine survival and stocking by 1st and 3rd year plantation exams following regional standard method (FSM) and compilation into forestwide report.	HIH	Two completed projects per District per year.	Timber Mgt. Officer	Survival or stocking levels fall below minimum Regional standards.	10,000 (SOP)
3. <b>Validation:</b> Validate (1) the assessment of the operational environment (Silvicultural Practices Handbook) by a certified silviculturist and (2) appropriate regeneration techniques suitable to site conditions were used.	H/H	As indicated by results of stand exams or variation from standards.	Timber Mgt. Officer/ District Ranger	If validation confirms capability and suitability, then stand is replanted. If validation indicates stand is not capable and suitable, then remove from land base.	40,000
<b>B. MONITORING OBJECTIVE: Determine if growth rates of young timber stands are meeting FORPLAN projections.</b>					
1. <b>Implementation:</b> Determine current growth rates.	M/M	Every 10 years through Forest Inventory.	District Ranger	Current annual net growth projections will not provide for 23 MAF by decade 16 (FLMP, C-6).	5,000
2. <b>Effectiveness:</b> Compare Table 3 of "6th Annual Forest Vegetation Management Conference Proceeding, 1984," by John Fiske, and Small Trees Model as appropriate growth and yield models to field inventory.	MIM	Every 10 years.	District Ranger/ Timber Mgt. Officer/ Planning Officer	Stand growth fails to meet minimum Regional stocking levels and height/diameter growth.	0
3. <b>Validation:</b> Reviewing growth model assumptions and projected yields by analytical comparison of actual to expected rates of growth.	M/M	When effectiveness monitoring indicates growth rate is less than projected rate.	District Ranger	Same as above.	2,500

6/22/90

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
C. <b>MONITORING CWECTION:</b> Determine effectiveness of red fir regeneration methods.					
1. <b>Implementation:</b> Utilize 1983 Sequoia National Forest guidelines for regeneration in red fir type, first and third year stocking exams.	HIH	Annually	District Ranger	Prescriptions for regeneration of red fir type do not follow 1983 guidelines.	1,000
2. <b>Effectiveness:</b> Determine stocking of red fir regeneration units.	H/H	5 years after reforestation.	District Ranger	Stocking level is below minimum for red fir type.	1,000
3. <b>Validation:</b> Whether red fir regeneration is occurring to meet reforestation assumptions of plan.	H/H	When effectiveness monitoring indicates that minimum stocking is not being achieved.	District Ranger	Validation confirms that red fir regeneration guidelines are ineffective.	2,000
D. <b>MONITORING CWECTION:</b> Maintain regulation to achieve the desired age class distribution.					
1. <b>Implementation:</b> Timber harvest schedule according to Timber Management Plan (LMP, App. 6).	H/H	Every 5 years.	Forest Timber Management Officer	Annual harvest acreage by type of harvest does not meet an average annual upper limit of: regeneration 600 acres; shelterwood 1,308 acres; selection 868 acres.	0
2. <b>Effectiveness:</b> Determine amount of acres allocated to harvest type from annual Programed Harvest Statement.	HIH	Every 5 years.	Forest Timber Management Officer	Average annual for the decade acres harvested exceed 600 acres regeneration; 1,308 acres shelterwood; and 868 acres selection (FLMP, C-4).	1,000
3. <b>Validation:</b> Determine that management direction of 70% even-aged harvest and 30% uneven-aged harvest is appropriate.	H/H	When effectiveness monitoring indicates average annual acres harvested have exceeded standards.	Forest Timber Management Officer	Same as above.	5,000



6/22/90

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES STANDARD FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>E. MONITORING OBJECTIVE:</b> Verify the capable-available-suitable land base for project under study.					
1. <b>Implementation:</b> Evaluate tentatively suitable land base during canpartment analysis. Document as appropriate in project NEPA document.	H/H	Annually Every project	District Ranger	Lands analyzed do not appear to meet suitability criteria.	10,000
2. <b>Effectiveness:</b> Identify unsuitable portions. Document in NEPA document. Adjust LMP data base.	H/H	Annually Every project	District Ranger	Tentative CAS lands cumulatively may not provide average annual allocation acreage (standard described in "D") or greater than the 75 MMBF of ASQ (standard described in "C").	10,000
3. <b>Validation:</b> Determine validity of suitable land base. Adjust LMP data base as required.	H/H	As indicated when effectiveness monitoring shows standards not being met. Minimum every 10 years.	Forest Timber Mgt. Officer/ Planning Officer	Same as above.	2,000
<b>F. MONITORING OBJECTIVE:</b> Maintain tree species representation of natural stands in regenerated stands.					
1. <b>Implementation:</b> Application of silvicultural prescriptions having objective of maintaining timber type being harvested as analyzed in project NEPA document.	H/H	2 projects/ district/year,	Forest Timber Mgt. Officer/ District Ranger	Silvicultural prescription produces type conversion Without justification.	5,000
2. <b>Effectiveness:</b> Determine if implemented silvicultural prescriptions are resulting in maintenance of timber type.	H/H	2 projects/ district/year, 5 years after reforestation.	Forest Timber Mgt. Officer/ District Ranger	Plantation surveys indicate that a timber type is not maintained.	10,000
3. <b>Validation:</b> Verify silvicultural prescriptions for maintaining timber type.	H/H	5 years after reforestation as required	Forest Timber Mgt. Officer/ District Ranger	Validation confirms that prescriptions were ineffective.	10,000

## SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ V	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
WATER					
<b>MONITORING OBJECTIVE:</b> To ascertain that project activities maintain or improve water quality at an acceptable level.					
<b>1. Implementation</b>					
Use R-5 BMP monitoring assessment process (in draft) to record the implementation of management practices.	H/H	Two projects per district per year.	Forest Resource Officer	Departure from NEPA project or contract requirements.	10,000 (SOP)
<b>2. Effectiveness</b>					
Use R-5 BMP monitoring assessment process (in draft) to determine the effectiveness of management practices.	M/M	Annually monitor same two projects per district as monitored during Implementation Monitoring.	Forest Resource Officer	Failure to meet objectives stated in project NEPA documents and R-5, FSH 2509.22, 3/88. R-5 Supplement 1 (BMP Book) Chapter 10.	10,000 (SOP)
<b>3. Validation</b>					
Determine the changes needed in Best Management Practices to provide adequate protection for the beneficial use of the water.	M/M	As defined by BMP Effectiveness Evaluation Process (WEEP)	Forest Resource Officer	Non-point source: <del>BMP</del> is inadequate to protect documented beneficial use as identified through Effectiveness Monitoring.  Point source: Deviation from water quality standards.	2,000

## SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
<b>WETLAND &amp; RIPARIAN AREAS</b>					
<b>MONITORING OBJECTIVE:</b> Ascertain that riparian and wetland ecosystems are protected when implementing land and resource management activities.					
<b>1. Implementation</b>					
Determine if Riparian and Wetland Guidelines are being implemented as designed in project NEPA document.	H/H	Two projects per year per district.	Forest Resource Officer	Departure from Riparian and Standards and Guidelines as specified in NEPA project requirements.	
<b>2. Effectiveness</b>					
<b>a. Riparian Dependent Vegetation:</b>					
Determine if implemented management activities are effective protecting and/or enhancing wildlife habitat in riparian and wetland areas (see Wildlife Monitoring).	M/M	Annually monitor same two projects per district as monitored during Implementation Monitoring.	Forest Resource Officer	Failure to meet vegetative objectives established in the appropriate NEPA documents.	
<b>b. Water Quality:</b> Determine if the R-5 BMP monitoring assessment process (in draft) is effective in the protection of the riparian and wetland ecosystems (see Water Monitoring).					
	HIH	Same as above.	Forest Resource Officer	Departure from NEPA project or contract requirements and failure to meet objectives established in Riparian and Wetland Standards and Guidelines and FSH 2509.22, 3/88. A-5 Supplement.	
<b>3. Validation</b>					
<b>a. Riparian Dependent Vegetation:</b>					
Monitor to determine if habitat conditions are consistent with species needs thru:					
<b>(1) Assessing riparian dependent species, using Avian Guild techniques as described in Three Forests Monitoring Plan.</b>					
	MIM	Annually for 5 years to establish baseline; then once every 3 years.	Forest Resource Officer	20% decline in avian species associated with wetlands and riparian ecosystem.	
<b>(2) Utilizing R-5 Fish Habitat Assessment Process.</b>					
	M/M	10% of forest streams annually.	Forest Resource Officer	20% decline in fish habitat capability.	
<b>(3) Measure species frequency and cover in transects as set forth in Frost. W.E., McDougald, N.K., Smith. E.L., and Clawson. W.J. Procedures for Measuring, Analyzing and Interpreting Vegetation Trend in Riparian Areas. University of California Range Science Report No. 23, August 1989.</b>					
	MIM	3-5 yrs.	Forest Resource Officer	Deviation from prescriptions in AMP.	

6/22/90

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST (\$)
b. Water Quality: Determine whether changes are needed in Management Practices to provide adequate protection of fish and other dependent species.	M/M	As Effectiveness Monitoring indicates need.	Forest Resource Officer	If BMP's and Riparian and Wetland Standards and Guidelines are inadequate to protect riparian areas as identified through effectiveness monitoring.	

## SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL MST (\$)
<b>WILDLIFE<sup>1</sup></b>					
<b>MONITORING OBJECTIVE:</b> Maintain species diversity and habitat capability.					
<b>1. Implementation</b>					
Ensure Minimum Management Requirements (MMR's) and S&G's are being implemented as designed in project NEPA document.	H/H	2 projects/ district/year	Forest Resource Officer	Departure from or non-compliance w/LMP S&G's and project MMR's as defined in project NEPA document.	201000 (SOP)
<b>2. Effectiveness</b>					
Use forest-wide vegetation inventory to assess status of vegetative seral stages and then utilize Wildlife Habitat Relationship program to model projected changes in Management Indicator Species.	M/M	10 years	Forest Resource Officer	Failure to meet species diversity and habitat capability objectives as specified in project NEPA document.	1,500
<b>3. Validation</b>					
Determine if assumptions used to formulate guidelines and habitat capability models achieve the goals and objectives of the FLU.	M/M	Once every 3 years after baseline Inventory is completed.	Forest Resource Officer	20% decline in species associated with 4 critical habitats as indicated by Wildlife Habitat Relationship Program.	4,000
Assess population trends for species that utilize old growth, black oak, blue oak, snag and riparian habitats with avian guild monitoring techniques developed by PSW and identified in the Three Forest Monitoring Plan.	M/M	10 years	Forest Resource Officer	Same as above.	1,000

<sup>1</sup>Inventory needs include population of each Management Indicator Species (mule deer, pileated woodpecker, gray squirrel) at cost of \$50,000 per Year for 5 years and distribution of blue oak to determine current ecological status at cost of \$4,000 per year (SOP).

FOREST SERVICE HANDBOOK  
SAN FRANCISCO, CALIFORNIA

September 1988

FSH 2509.18 - SOIL MANAGEMENT HANDBOOK

Region 5 Supplement No. 1

POSTING NOTICE.

**DRAFT**

Page Code

Superseded                      New  
(Number of Sheets)

Digest:

2 - Provides Regional soil quality standards as specified in FSH 2509.18 Section 2.2. Places responsibility with Forests to insure that prescriptions for land disturbing activities include measures for maintaining the productive capacity of the soil. Provides guidance for selecting methods that mitigate potential adverse effects, assess soil conditions, and correct soils with diminished productive capacities.

ANDREW A. LEVEN  
Assistant Regional Forester for  
Range and Watershed Management

**2.02 - OBJECTIVES.**

1. To provide soil quality standards that help ~~managers~~ to carry out soil disturbing activities without ~~significantly affecting~~ the productive capacity of the soil.

2. To provide procedures for evaluating the productive capacity of the soil, mitigating management effects, and ~~rehabilitating~~ deteriorated soil conditions.

**2.03 - POLICY.** Utilize soil quality standards in planning and conducting all soil ~~distributing~~ activities.

**2.04 - RESPONSIBILITY**

**2.04b - Forest Supervisors.** Forest Supervisors shall:

1. Provide training **in** the application of soil quality standards to appropriate Forest Service **and** non-Forest Service personnel.

2. **Assess** the extent to which soil quality **standards** are being met

3. Evaluate effectiveness of soil quality **standards** **and** procedures and recommend adjustments to **the Regional** to **the Regional Forester,**

**2.04c - District Rangers,** District Rangers shall:

1. **Insure** that prescriptions for soil **disturbing** activities include measures for ~~maintaining~~ the productive capacity of the soil.

2. Conduct ~~post~~ activity evaluations to ~~determine~~ if soil quality standards have been ~~set,~~ **and apply** ~~rehabilitation~~ **measures** as needed.

**2.05 - DEFINITIONS.**

1. Acceptable soil condition following soil **disturbing** activities occurs when soil properties **are** not altered to the extent to **cause** significant changes in the productive capacity of the soil.

2. Activity Area is the total area ~~disturbed~~ by soil disturbing activities.

3. Soil disturbing activities include (DEFINE)

4. Tillage is the mechanical treatment of compacted or puddled soils to restore desirable tilth.

**2.06 - REFERENCES.**

1. Alexander, E. B. 1980. Bulk densities of California soils in relation to other soil properties. Soil Sci. Soc. Am. J. 44: 689-692.
2. Alexander, E. B., and R. Poff. 1985. Soil disturbance and compaction in wildland management. USDA Forest Service, Pacific Southwest Region. Earth Resources Monograph 8. 157 p.
3. Duffy, P. D. and D. C. McClurkin. 1974. Difficult eroded planting sites in northern Mississippi evaluated by discriminant analysis. Soil Sci. Soc. Am., Proc. 38: 676-678.
4. Helms, J. A. 1983. Soil Compaction and Stand Growth - Final Report to USDA Forest Service. Univ. Calif.. Berkeley. 97 p.
5. Zisa, R. P., H. G. Halverson, and B. B. Stout. 1980. Establishment and early growth of conifers on compacted soil in urban areas. USDA Forest Service Rea. Paper NE-451, 8 p.



## 2.2 - SOIL QUALITY STANDARDS. - SEE TOP OF NEXT PAGE

Soil quality standards identify threshold values beyond which change in soil properties could result in significant change or impairment in the productive capacity of the soil.

These standards may not apply equally well to all sites and practices in the Region. On-site evaluations by soil scientists are used to determine if deviations from the standards are needed and if they meet soil quality objectives.

Soil quality standards are met when at least 85 percent of an activity area is in acceptable soil condition. Acceptable soil condition exists when:

1. Soil cover is present in amounts that prevent accelerated soil erosion rates from exceeding soil formation rates over time.

The kind, amount and distribution of soil cover needed to retard soil erosion is guided by the R5 Erosion Hazard Rating method and locally adapted standard erosion models and measurements.

2. Soil porosity is at least 90 percent of its natural condition.

3. Organic Matter is present in amounts sufficient to prevent significant short or long-term nutrient cycle deficits, and to avoid adverse physical soil characteristics.

The kinds and amounts of organic matter are guided below and by local analyses.

- A. Soil organic matter is at least 85 percent of its original total in the upper 12 inches of the soil.

- B. Surface organic matter is present in the following forms and amount

- (1) Large woody material, when available in forested areas, is about 5 to 20 logs per acre in contact with the soil surface. Desired log size is greater than 16 inches in diameter and about 40 cubic feet. Volume is about 200 to 800 cubic feet per acre (includes partially decayed and unmerchantable log). Weight per unit area is highly variable due to the degree of decay, but is approximately 3 to 15 tons per acre. This guideline may be waived in strategic fuelbreak areas and small openings.

- (2) Litter and duff occurs over approximately 50 percent of the disturbed area. When present, woody material is mostly less than 3 inches in diameter and in contact with the soil surface. Weight per unit area is highly variable due to the type of material and degree of decay. Amounts are approximately 2 to 15 tons per acre. In areas lacking woody material, amounts are approximately 0.5 to 2 tons per acre.

The presence of living vegetation that contributes significant annual litter fall can be used to compensate for conditions when immediate post-disturbance litter and duff coverage is less than 50 percent.

THE NUMERIC VALUES AND RATIONALE FOR POROSITY AS AN INDEX TO THE EFFECT OF COMPACTION ON PLANT GROWTH HAVE RECEIVED INTERDISCIPLINARY REVIEW. THE VALUES FOR ORGANIC MATTER ARE PRELIMINARY AND HAVE NOT RECEIVED INTERDISCIPLINARY REVIEW.

## 2.21 - RATIONALE.

Soil is a nonrenewable resource because it takes hundreds to thousands of years to form an inch of soil. Land management activities alter the soil in varying degrees. These changes may or may not significantly affect the productive capacity of the soil. Soil quality standards are used to characterize the significance of potential soil productivity changes.

Soil productivity is maintained when soil properties are not altered to the extent to cause significant changes in the long-term productive potential of the soil. Information is provided to help managers evaluate the productive condition of the soil, and to carry out land management activities without significantly affecting soil productivity.

There are many soil characteristics that can be altered by management activities and affect soil productivity. For simplification, porosity, and organic matter are used as surrogates to represent other factors. Porosity is used to reflect changes due to compaction and puddling. Organic matter is evaluated in three different ways: as surface cover for erosion prevention and nutrient cycling, as large woody material for nutrient cycling, and as soil organic matter to reflect nutrient status. Soil moisture supply, soil displacement, and other physical and chemical properties.

61-11 - Soil Porosity. Many land management activities have the potential to adversely affect the growth of plants by compacting the soil. These activities include camping, grazing, picnicing, off-road vehicles, reforestation, timber harvest, and other forms of vegetation management.

There are enough field observations and information in the literature to demonstrate that soil compaction can adversely affect the growth of plants. Although precise quantification of changes in soil properties and plant growth is not available, enough is known to develop reasonable standards and procedures. In most cases, methods are available to avoid, mitigate, or rehabilitate the adverse effects of soil compaction.

The relationships between plant growth and soil bulk density are very complex. Generally the relationships are nonlinear: that is, incremental increases in bulk density does not necessarily cause incremental decreases in plant growth. The incremental effect is different for different plants, soils and environments. Most of the available data suggests that compaction becomes increasingly detrimental for each successive increment in a series of equal, absolute increases in bulk density. Increments of increase, based on a percentage of the initial bulk density, actually become greater in absolute value as the initial bulk density increases (exhibit 1).

To set limits of allowable bulk density increases that are responsive to effects on plant growth, the increments of allowable increase should become smaller in absolute value as bulk density increases. This is accomplished by basing the allowable increments on decreases in total soil porosity (Exhibit-1). An allowable decrease of 10 percent appears to be a reasonable fit for bulk density changes and potential significant effects on plant growth. For comparison, a 10 percent decrease in total soil porosity corresponds to a 33 percent increase in bulk density for a soil with an initial bulk density of 0.6, a 15 percent increase for a soil with an initial density of 1.06, and a 10 percent increase for a soil with an initial density of 1.3. The relationship of bulk density increases to a 10 percent decrease in soil porosity are shown in Exhibit 2.

Total porosity is used because practical methods for discriminating between different pore sizes are not available. It includes all sizes of soil pores. However, most of the porosity decrease would be attributed to a reduction in macro pores.

#### 61.12 - Organic Matter.

61.12a - Soil Cover is the soil erodibility factor commonly modified by management activities. It is also the most easily manipulated factor for reducing the potential for erosion. In addition to a growing vegetation and rock fragments; fine organic matter such as, litter, duff, and twigs less than about 3 inches in diameter in contact with the soil surface provide the most effective ground cover for preventing erosion. Conditions under which ground cover needs exceed 50 percent is guided by local application of the Region 5 Erosion Hazard Rating system. The purposes of soil cover are to provide enough protection to prevent soil loss from exceeding the rate of soil formation, to avoid sedimentation that would adversely affect water quality, and to avoid decreases in the supply of nutrients. An approximate cover of 50 percent fine organic matter over the soil surface serves as a guide for maintaining short-term nutrient supply. Microorganisms that convert organic and inorganic nutrients into forms available for plant growth and that also degrade chemical compounds are mostly located in the duff and upper few inches of soil. Litter and duff can serve to minimize microorganism population reductions in hot openings.

61.12b - Large woody material. As a factor in the nutrient cycling process, large woody material has been under study in the Pacific Northwest and Intermountain regions for about 15 years. Leaving large woody material for purposes of wildlife habitat and soil productivity has been taking place in Region 6 for about 4 years. Although specific research is lacking in California, there is enough information to form prudent guidelines for practical use. The role of large woody material in maintaining soil productivity is to provide hot summer survival habitat for microorganisms, small animals and insects that convert nutrients into available forms or spread nitrifying bacteria and other goodies. Organic debris factors may be more important in California than in other regions because of hotter summer temperatures.

61.12c - Soil Organic Matter. Soil organic matter content is associated with nutrient supply, soil water availability, soil aggregate stability.

infiltration and resilience from compression. Consequently, changes in soil organic matter content can serve as an index to the condition of a number of interrelated factors. It also is relatively easy to observe and measure. Soils vary in organic matter content and distribution. In some soils the organic matter is concentrated in the upper few inches; whereas, in other soils it gradually decreases with depth or is nearly evenly distributed. These differences in organic matter accumulation influence how a soil may or may not be adversely affected by surface soil displacement. The more soil organic matter as concentrated close to the surface, the less tolerance there is for loss of soil organic matter. For a common basis, the total soil organic matter in the upper 12 inches of soil will be used for evaluation. Over 50 percent of all tree root length occurs in the upper 12 inches of soil (Powers, 1984), the vast majority of which would be feeder roots.

Values for organic matter are preliminary. They will be revised through interdisciplinary review and field use. Research will also help to revise and validate these values.

**61.2 - ASSESSMENT.** Measurement and/or visual sampling methods are used to evaluate soil porosity and organic matter conditions. Sampling methods to guide assessments on a project or forestwide basis are contained in Earth Resources Note \_\_\_\_ (being written).

Soil compaction may be assessed visually through the use of surface condition indicators or by observation of the soil using a tile spade. Both methods need to be initially and periodically calibrated against measurements of bulk density taken with a nuclear gauge, core samples, or one of the irregular hole methods. Bulk density is converted to total porosity by formula or graph.

Soil cover and large woody material are evaluated by visual methods. Soil organic matter is evaluated by a combination of laboratory data extrapolation, field measurements, and visual methods.

In practice, visual observations are the most common form of soil compaction assessment. Measurement and detailed sampling are used mostly to calibrate visual method, and to investigate situations where visual method are inadequate.

### **61.3 - MEASUREMENT.**

**61.31 - SOIL POROSITY.** Initial bulk densities are measured where ground disturbing activities are to take place (after the fact assessments may use similar undisturbed adjacent areas). The allowable compacted bulk density can be taken from the graph in Exhibit 3, or calculated with the following formula.

$$D_{bc} = 0.1 D_p + 0.9 D_{bi}$$

where  $D_p$  is the mean particle density, and  $D_{bi}$  and  $D_{bc}$  are the initial and the compacted bulk densities, respectively.

Assuming that the particle density is 2.65 Mg/m<sup>3</sup>, the allowable compacted bulk density can be taken from the solid line in Exhibit 3. Making allowances for soil organic matter, which has a density of about 1.35 Mg/m<sup>3</sup>, has little affect

on the calculated allowable compacted bulk density of inorganic soils (dashed line in Exhibit 3).

Details for measuring bulk density and the areal extent of soil disturbances are contained in Chapter 3 of FSH 2509.18.

61.32 - Organic Matter.

61.4 - MITIGATION.

61.41 - Soil Compaction. A variety of practices and techniques are available to land managers that minimize or eliminate the risk of soil compaction and puddling. Not all practices discussed here are suitable for all sites. But quite often, some practices are used in combination to more effectively control the risk of compaction and puddling. These management practices can be grouped in three categories: (1) practices that reduce compaction effects, (2) practices that confine compactive forces to designated areas, and (3) practices that avoid compactive forces.

61.41a - Reducing Compaction Effects. These practices can help to maintain acceptable soil conditions for extensive areas (e.g., 85 percent of an activity area). Ways to reduce compaction effects include, controlling compactive forces, absorbing compactive force, and operating when soils are less susceptible to adverse compaction and puddling effects.

1. Controlling Compactive Forces. The amount of compaction is primarily related to the load applied to the soil and the number of trips equipment make over the same area.

The depth to which soil becomes compacted is primarily a function of the amount of dynamic load applied to the soil. Reducing surface pressure (e.g., saw machine weight, but larger surface area in tracks or tires) may not greatly reduce the degree of compaction in the surface soil, but the lower limit of compacted layer will be nearer to the soil surface. Thus improving amelioration possibilities. Machines of significantly different weight and surface area cause significantly different degrees of soil compaction: whereas, differences between types of machines are more subtle. Although the degree of compaction caused by similar-size crawler tractors, low ground pressure equipment, and rubber-tire tractors is about the same, crawler tractors can compact the soil to greater depths, and rubber-tire tractors can take more trips to do a comparable amount of work. The relationship of equipment size and type on soil compaction is shown in Exhibit 4.

The degree of compaction is primarily associated with the number of trips equipment makes over the same area. In tests, maximum density is achieved after about 20 trips. However, about 90 percent of the compaction is achieved

after only about the first 4 or 5 trips with large equipment and about — percent with smaller equipment (Exhibit 4). CHECK NUMBERS\*\*\*

Adjusting equipment size and/or the number of trips can be used to minimize compaction of areas where extensive ground equipment operations are planned (e.g., site preparation and clearcut skidding). Combining these practices with operating over slash further reduces the potential for soil compaction (See Section 61.41, item 2).

2. Absorbing Compactive Forces. Compactive forces can be partially or completely absorbed by operating equipment over slash or snow.

3. Operating When Soils are Most Resistant to Adverse Compaction.

61.41b - Confining Compaction Effects.

61.41c - Avoiding Compaction Forces

61.5 - Rehabilitation

## Exhibit P

### Mitigation & Restoration Requirements

Based on Project EA

I. Mitigation to be performed as integral part of project (e.g., included in timber sale contract provisions):

Action*	Respon- sible Staff	Inven- <sup>1</sup> tory	Est. Cost	Source of Funding	K-V \$ <sup>2</sup> Assured	Funds Rec'd	Projected Completion Date	Date Action Completed
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#### 11. Additional Mitigation/Restoration Measures

Action*	Respon- sible Staff	Inven- <sup>1</sup> tory	Est. Cost	Source of Funding	K-V \$ <sup>2</sup> Assured	Funds Rec'd	Projected Completion Date	Date Action Completed
---------	---------------------------	-----------------------------	--------------	-------------------------	--------------------------------	----------------	---------------------------------	-----------------------------

- 
- Indicate with an **asterisk** those actions relied upon to support a FONSI.
1. The 'Inventory' entry would indicate which project list, such as the WINI, would carry the mitigation project until completed.
  2. The 'K-V \$ Assured' column would be filled in (yes or no) when the timber sale purchase price was known.

EXHIBIT Q

## NEW PERSPECTIVES IN FORESTRY

Definitions: (Personal interpretations based on presentations at "A Conference on New Perspectives in Forestry, June 11-12, Mt. Hood Community College)

NEW PERSPECTIVES, or NEW PERSPECTIVES IN FORESTRY: Management of wildland ecosystems so that all of the natural physical and biological complexities contained within large land areas are maintained in perpetuity.

NEW FORESTRY: Physical activities, usually resulting in production of a commodity, designed to meet objectives and constraints determined by NEW PERSPECTIVES analysis.

These terms are sometimes used interchangeably, although there seems to be a consensus that NEW PERSPECTIVES implies the concept and NEW FORESTRY implies the practice.

The framework for "new perspectives" in California is described in Regional Forester Paul Barker's public announcement on February 8, 1990. He said, in part:

"...Over the next 10 years we must solve a growing list of global environmental concerns that include deforestation of tropical forests, extinction of wildlife, toxic waste, pollution of air, oceans, and rivers, global warming, and destruction of the ozone layer that protects our atmosphere...

Success in meeting the environmental challenge of the 1990's will depend on finding a balance between the needs of people and the integrity of the environment.. .

The ENVIRONMENTAL AGENDA for the National Forests in California has three major objectives--PRESERVATION, BIODIVERSITY, and SUSTAINABLE DEVELOPMENT FOR PEOPLE.. ."

The concept is old, but the emphasis on preservation and biodiversity is new. This is what is meant by "new perspectives in forestry". It is a way of looking at the natural environment as a collection of interrelated ecosystems; which, if maintained in good working order, are capable of producing commodities and amenities for the use and benefit of humans beings.

Thus the terminology "new perspectives", or "new perspectives in forestry", means that we will start with an objective of keeping the ecosystem operating in good health. Commodity and amenity benefits can only be sustained if the ecosystem remains in good health.

This is where-the terminology "new forestry" comes in. "New forestry" is the combination of physical activities designed to implement the concept of "new perspectives". There is no new technology associated with "new forestry", just



the application of existing technology to somewhat modified or different management objectives.

One practical application of "new forestry" is the practice espoused by Dr. Jerry Franklin (formerly US Forest Service, Pacific Northwest Region) designed to maintain a semblance of vertical diversity after logging in old-growth timber. Vertical diversity starts at the forest floor with organic debris, upon which certain fungi and micro-organisms are dependent, and ends in the crowns of the tallest trees, upon which certain birds and mammals depend. If components of the existing ecosystem are allowed to remain, then the newly regenerated timber stand will have a "biological legacy" upon which to build. Thus some of the larger and older trees, as well as snags, "gill pokes" and some logging slash, are allowed to remain rather than being logged or "cleaned up" in preparation for reforestation. This allows some old-growth characteristics to remain within a stand managed for timber production; and it greatly reduces the time needed to develop an overall old-growth structure within a regenerated stand.

UNITED STATES  
DEPARTMENT OF  
AGRICULTURE

FOREST  
SERVICE

SEQUOIA  
NATIONAL  
FOREST

900 West Grand Avenue  
Porterville, CA 93257-2035  
209-784-1500

REPLY To: 2470

DATE: March 1, 1989

SUBJECT: Nomenclature, Timber Stand Regeneration

To: Management Team, Sequoia National Forest

As a result of local, regional and national concern over the use of the term "clearcutting", the Sequoia National Forest will adopt the descriptive terminology "**REGENERATION MOSAIC**" when:

1. All, or nearly all, of the merchantable timber is removed from a timber stand in a single harvest cut; and
2. proper execution of the stand management prescription depends upon advanced reproduction that was established before the harvest cut.

You should be aware that there is a great deal of controversy surrounding the coining of new forest terminology. For this reason we will need to be very consistent and systematic in the use of "**REGENERATION MOSAIC**". The following rules will be strictly observed:

1. Use only when the stand is under a form of even-aged management.
2. Use only if at least 20%, but not more than 80%, of the gross regenerated stand area will be stocked with advanced reproduction having the capability of growing into mature timber crop trees.
3. Use only when aggregations of advanced reproduction are at least 1/20th acre in size, and there is an average of at least one aggregation per acre.
4. Use only when residual merchantable trees are no larger than 18" DBH; and they account for no more than 10% stocking of the gross regenerated stand area.
5. Use only when the stand management prescription depends upon artificial regeneration (tree planting) to supplement stocking by advanced reproduction.

When one or more of the above rules are violated, same terminology other than "**REGENERATION MOSAIC**" applies. For instance (rule #2): If less than 20% of the area is stocked with advanced reproduction, call it CLEARCUTTING; if more than 80%, call it the OVERSTORY REMOVAL step in the shelterwood method of regeneration,

Please note that we will continue to use standard forest terminology as appropriate. Do not avoid the term CLEARCUTTING if it applies to the conditions you wish to describe.

The terminology **"REGENERATION MOSAIC"** was chosen from a list of 25 suggestions collected from throughout Region Five of the Forest Service. Some of these have been in common use for a long time (Tahoe Clearcut, Overstory Removal), others have been used in official documents to describe the process (Clearcutting with Advanced Reproduction and Planting) and others were deliberate creations to bridge the communication difficulty between technical forestry definitions, practical application and the general public. The chosen terminology Falls into the later category.

The rationale for choosing **"REGENERATION MOSAIC"** has three components:

1. Both terms, regeneration and mosaic, are defined in "Terminology of Forest Science" (F.C. Ford-Robertson, Society of American Foresters, 1971),

**REGENERATION:** The renewal of a tree crop, whether by natural or artificial means.

**MOSAIC:** (ecology) An arrangement of plant communities in a mosaic pattern, in contrast to zonation.

Our use will be compatible with these definitions.

2. Both terms are easily recognized by the general public. With appropriate background information, the meanings are easily transferred to the technical context of reforestation.
3. **REGENERATION MOSAIC** describes the practical result of a certain type of timber harvest. At the same time it provides a convenient terminology where previously none existed.

The search for adequate terminology in this particular area has included extensive discussions within the Management Team and other peer groups on the Sequoia National Forest. It has also included soliciting opinions from other National Forests in Region Five, the Regional Office, the Washington Office and from a committee of forestry school silviculturists currently working on revisions to the "Terminology of Forest Science". I am confident that our new terminology is compatible with existing and probable future forest terminology usage and definitions.

AMES A  
Forest Supervisor  
Sequoia National Forest

cc: Ray Weinmann, ARF Timber Management  
John Helms, University of California, Berkeley

THE DEVELOPMENT OF A POLICY  
AND GUIDELINES FOR THE  
MANAGEMENT OF TRUE FIR FOREST  
COVER ON THE SEQUOIA NATIONAL FOREST

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THE DEVELOPMENT OF A POLICY AND GUIDELINES  
FOR THE MANAGEMENT OF TRUE FIR FOREST COVER  
ON THE SEQUOIA NATIONAL FOREST

NEED FOR POLICY AND GUIDELINES

The timber management plan under which the Sequoia N.F. is now operating was written in 1961, before any significant amount of research or experience was accumulated on the management of the true fir forest type. It provides only very general direction to manage the type under Unit Area Control harvest methods, which implies that regeneration will be required. (This is in contrast to the eastside pine type in which insect risk selection was directed.) No specific guidelines for reforestation and cultural treatments are given, although planting is mentioned.

Since 1961 both research and experience have shown that the management of the true fir type is considerably different from the mixed conifer and westside pine, in which context it was originally considered. By the early 1970's it became apparent that the regeneration practice of "clearcut, pile and burn" used more or less routinely within other forest types was not routinely successful in the true fir. Because of this, other R-5 Forests have recognized specific harvest and silvicultural prescriptions for the true fir type in their more recent timber management plans. At this time the Sequoia has no such plan, and it is expected to be at least another year or more before the new Land Management Plan is operational. However, timber sales are being prepared within the true fir type and District planners have recurring questions on what kind of cutting and long term management prescriptions are appropriate.

WHAT WE KNOW ABOUT TRUE FIR MANAGEMENT 1/

1. From a growth and yield point of view, the fir species are very desirable. Red fir in particular is capable of maintaining spectacular growth rates for very long periods of time when compared to other Sierra conifer species.
2. The true fir type is found at higher elevations and on frigid soils, generally above 7500 feet in the southern Sierras. Snowpack is heavy and access is difficult during the critical spring planting season.
3. Gophers are endemic and nearly always present chronic problems in stand establishment.
4. Natural regeneration under shelterwood, seed tree, strip clearcutting and very small patch cutting has been shown to be reasonably successful in the short run. It remains to be seen if subsequent steps in the prescriptions will be successful. These include overstory-removal from shelterwood and seed tree cuts, and expanding strips and small patches so that the complete stand is finally regenerated in the clearcutting methods.

1/ Refer to Appendix 1 for a sample of references used in this discussion.

5. Stocking of naturally established fir seedlings tends to improve over a span of several years, probably reflecting the need for a fortuitous combination of seed crop and weather conditions as much as adequate seedbed preparation.
6. Planted fir have show very erratic survival rates. Not all of the reasons for this are known, but the following factors either have been demonstrated or are strongly suspected:
  - a. Nursery practices influence the capacity of a seedling to regenerate roots after planting. Until very recently the relationship between nursery "lifting" date, storage and root growth capacity was only suspected. Work is still continuing in this area, but enough is now known to be pretty well assured that we made some horrible mistakes in the past.
  - b. Unlike ponderosa pine, root growth of fir species begins very quickly after exposure to temperatures above 38°F. If root growth is initiated before planting the seedling is almost certain to die. Poor cold storage facilities or failure to plant within a few hours after removing from storage is sure to result in poor survival.
  - c. Also unlike ponderosa pine the fir species have very little ability to control transpiration of water. Unless the seedling is in good vigor when planted, it can very easily dehydrate before root growth is sufficient to supply the water demanded.
  - d. Mortality beyond the first growing season is much more a problem than with pine species. This is thought to be related to site adaptation. If so, then present seed collection zones may be inappropriate, and a certain randomness of survival is inevitable.
  - e. The planting "window" for most fir sites is extremely short, often a matter of a few days. The object is to get the seedling in the ground after the snow melts, but before weather warms to the point of creating severe moisture stress. In some years when there is an exceptionally late spring followed by a hot summer, there may not be an acceptable window at all. In other years with an early spring and mild summer, unusually high seedling survival can be expected.
  - f. A nursery disease, charcoal root rot, has been known to infect otherwise healthy looking seedlings. When planted out in relatively warm soil, the root rot quickly kills the seedling; but when planted in colder soils the rot is inhibited and has little effect on survival.
7. White fir is the natural climax species in the mixed conifer forest type, but it also mixes with red fir on colder soils at higher elevations.

## CRITICAL DEFICITS IN SCIENTIFIC KNOWLEDGE

The predictability of management decisions on the long term productivity in the true **fir** forest type is restricted by voids in the body of current scientific knowledge. Namely:

### 1. EFFECTS OF HARVEST AND CULTURAL ACTIVITIES ON ECOSYSTEM NUTRIENT BALANCE

Because of the low temperatures and skeletal soils usually found in the true **fir** type, a large proportion of total nutrients on the site (N, P, K, etc.) are held by vegetation and litter. **If** these nutrients are removed, as in logging; or lost, as in site preparation; then the productivity for timber growth can be reduced. There are **some** disturbing indications that artificial fertilization may be required on many true **fir** sites **if** productivity is not to be reduced significantly.

### 2. SPECIES CONVERSION

Jeffrey pine has been planted on sites formerly **occupied** by red **fir** because of a higher initial survival rate. In some cases snow has severely damaged these plantations, and in other cases not. Even **if** this phenomenon were explained there still has been no analysis of long term growth and yield or **economic** implications. In fact, yield tables do not exist for Jeffrey pine per se. Performance has been assumed to be similar to the eastside pine type described by Meyer (Technical Bulletin No. 630). The inclination to plant mixtures of other conifers on sites **formerly** occupied by pure red **fir** is strictly intuitive at this time.

### 3. THE NEED FOR SHELTERWOOD

**What** we know is that shelterwood cutting is an effective way to regenerate **fir** species; **what** we don't know is **why**. Conventional **wisdom assumes** shelterwood provides needed shade. But **some** researchers think that a ready seed source and/or **protection from** drying wind may be even more important factors. *+ frost protection*

Research and administrative studies in these areas are to be encouraged.

## MANAGEMENT IMPLICATIONS

Natural regeneration of the true fir type is reasonably well assured if:

1. Seed producing trees are available and properly distributed.
2. Time is not a criterion.
3. Seed or shelter trees do not blow down or die before seedlings are established.
4. Seedbed preparation and overstory removal methods are feasible within physical and administrative constraints.

On the other hand artificial regeneration is not well assured, even when these well recognized necessary steps are taken:

1. Adequate site preparation and control of competing vegetation.
2. Careful administration of nursery practices.
3. Continuous refrigeration of planting stock after lifting.
4. Gopher control.
5. Good planting technique.

Obviously, neither natural nor artificial regeneration can guarantee successful stand re-establishment within five years of harvest as required by the 1976 National Forest Management Act, and anticipated by FORPLAN in setting harvest levels for long term sustained yield.

It is for this reason that other National Forests in the Sierras are entering the era of intensive fir management with plans to combine natural and artificial techniques (see Appendix 2). All have backup plans for anticipated failures. The most conservative is represented by the Sierra N.F. that intends to plant immediately after site preparation, even though the harvest method is designed to favor natural regeneration. The most daring is expressed by the Tahoe, where in many cases artificial regeneration will be relied on entirely. In case red fir planting fails, that forest is prepared to convert to other, and presumably more reliable, species such as western white pine, Jeffrey pine, and white fir.



## SEQUOIA INTERIM DIRECTION

Until the Forest LMP is approved and directs differently, the following guidelines will be applied to timber-intensive management of the true fir forest type. 1/

### A. HARVEST PRESCRIPTIONS 2/

1. On terrain where mechanical site preparation is feasible and stand structure allows, seed step is the preferred regeneration harvest prescription.
2. On steep ground where prescribed fire is the most feasible site preparation method, and/or logging methods cannot assure seed tree protection, strip clearcutting is the preferred regeneration method. Strip clearcutting is the second preference on other terrain.
3. When neither seed tree nor strip cutting are applicable, then small (1/2 to 1 1/2 acres) patch cutting is preferred.
4. When none of the above are feasible, then small clearcut blocks (5 to 10 acres) are acceptable. North and east exposures are preferred over south and west.
5. Prescriptions should take advantage of thinning and sanitation harvests where appropriate. Legitimate intermediate harvests are expected only rarely, especially when cable yarding is employed.
6. Also rarely expected is the overstory removal prescription. To qualify as overstory removal, the residual stand must contain "desired" stocking (3/) of releasable (4/) understory on at least 70% of the area after harvest and fuel treatment. A harvest that resembles an overstory removal, but does not meet the stocking criteria, is in reality a clearcut with some salvable understory.
7. Shelterwood and shelterwood preparatory prescriptions will be allowed only if the need is fully analyzed in the timber sale environmental assessment.

1/ True fir sites are those that qualify for a stratum label of RXX.

2/ Refer to Appendix 3 for a rationale in choosing these guidelines.

3/ FSM 2472 R5 Supp. 232.

4/ Helms, J.A. and Standiford, R.B. 1982. Release of Advance Growth Mixed Conifer Species in California Following Overstory Removal.

### R3P

Clearcut harvest volume = 23.8 MBF/ac  
Seed tree harvest volume =  $(23.8 - 12.0) = 11.8$  MBF/ac  
Average regeneration harvest =  $(23.8 + 11.8)/2 = 17.8$  MBF/ac  
Acres to regenerate =  $8.3\% \times 5847 = 485$  ac  
Volume of regeneration harvest =  $17.8 \times 485 = 8633$  MBF

### R4G

Clearcut harvest volume = 56.2 MBF/ac  
Seed tree harvest volume =  $(56.2 - 12.0) = 44.2$  MBF/ac  
Average regeneration harvest =  $(56.2 + 44.2)/2 = 50.2$  MBF/ac  
Acres to regenerate =  $8.3\% \times 7463 = 619$  ac  
Volume of regeneration harvest =  $50.2 \times 619 = 31,074$  MBF

### R4P

Clearcut harvest volume = 23.8 MBF/ac  
Seed tree harvest volume =  $(23.8 - 12.0) = 11.8$  MBF/ac  
Average harvest volume =  $(23.6 + 11.8) / 2 = 17.8$  MBF/ac  
Acres to regenerate =  $8.3\% \times 16242 = 1348$  ac  
Volume of regeneration harvest =  $17.8 \times 1348 = 23,994$  MBF

Using acreage figures from Appendix 5, District and compartment targets are likewise calculated. The results are listed in Appendix 6. These targets provide a starting point for the timber sale planning process. They are to be refined in the Position Statement by use of compartment analysis procedures.

### C. OTHER

1. No targets are assigned for intermediate harvesting. These are to be derived using compartment analysis procedures in the Position Statement.
2. When prescribed natural regeneration is not yet present three years after harvest, planting is required.
3. Planted trees should be a mixture of species, at least 50% being red fir.
4. Refrigerated storage is required for planting stock. Planting stock should not be exposed to temperatures in excess of  $35^{\circ}\text{F}$  for more than four hours before planting.
5. The starting date for allocations of the "present" decade is 1976. This is the year in which the photography upon which land base is calculated was taken. Stratum changes that have occurred since 1976, and affect compartment allocations, should be explained in the timber sale Position Statement or Environmental Assessment.

## APPENDIX 1

### REFERENCES

- Ferrell, G.T. 1980. Risk-Rating Systems for Mature Red Fir and White Fir in Northern California. **PSW-39.**
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- Jenkinson, James. 1/4/83. Personal Communication. **PSW**, Berkeley.
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- Stangenberger, A.G. 1979. A simulations of Nutrient Cycling in Red Fir and Douglas-fir Forests. **PhD** dissertation, University of California. Berkeley.

## APPENDIX 2

### TRUE FIR MANAGEMENT PHILOSOPHY ON SELECTED CALIFORNIA SIERRA NEVADAN NATIONAL FORESTS

#### PLUMS

Regenerate by strip clearcutting and "small" openings per Don Gordons recommendations, will supplemet natural with planted stock where necessary. Encourage soil nutrient assessment to determine need and prescription for fertilization based on Al Stangenbergers 1979 PhD dissertation.

#### TAHOE

Regenerate by any method dictated by site and vegetation. Clearcutting is acceptable up to about 20 acres in size. Shelterwood/seed tree cutting will remain an important portion of regeneration method. In case of RF plantation failures, Tahoe is prepared to convert to WF, WWP, and JP.

#### ELDORADO

Natural regeneration is favored. If not regenerated within two years RF seedlings will be planted.

#### STANISLAUS

Regenerate SOX by shelterwood, SOX by "small" clearcuts and strips. All land above 8400 feet elevation will be designated special management area with low intensity of timber management, therefore RF performance is less important than at lower elevations.

#### SIERRA

Regenerate with shelterwood or strips and small (approx. 5 acres) clearcuts. Underplant immediately after site prep, don't wait for natural regeneration to fail.

All of the above plan to require the true fir land base to provide its "fair share" of regeneration acres and volune. In other words allocations will be made in the next decade to put the RF component on the path toward regulation. All plan even-age management except where resources other than timber control.

## APPENDIX 3

### HARVEST PRESCRIPTIONS

#### 1. SEED TREE (5-10 trees/ac)

Preferred because of demonstrated reliability for natural regeneration. Silvicultural treatments apply to whole stands rather than aggregations, making logistics somewhat more simple than strip and small patch cutting. Usually not applicable to steep ground because of difficulty in protecting seed trees during logging and site preparation. Also steep ground follow-up cultural treatments are expensive because of constraints on the use of machinery.

#### 2. STRIP CLEARCUTTING (2-3 chains wide)

Demonstrated reliability for natural regeneration, but complex in design. Initial strip must be coordinated with plans for subsequent strips, approximately five, to be cut over a period of 50 to 100 years. Usually the only harvest method applicable to steep ground.

#### 3. SMALL PATCH CUTS (1/2 to 1 1/2 acres)

Demonstrated reliability for natural regeneration if maximum width is kept to four chains or less. Similar to strip cutting in design complexity. Usually not applicable to steep ground because of damage to uncut blocks during logging and cultural treatments.

#### 4. CLEARCUT (5 acres or larger)

This is the least desirable of regeneration harvest methods, even though it is the easiest to execute, because it relies entirely on artificial regeneration with demonstrated erratic results. Sometimes unavoidable because of stand structure or condition.

#### 5. SHELTERWOOD (10-30 trees/ac)

Has not been shown to have any advantage over seed tree prescriptions for natural seedling establishment, and it has greater risk for seedling damage during overstory removal. Theoretically useful when seed trees are not present, but some shade and wind protection is desirable for planted trees. The need for this kind of protection is debatable.

#### 6. SHELTERWOOD PREP

The value of this prescription is highly theoretical. Growth is reduced because the stand is deliberately left in an understocked condition for a long period of time while windfirmness and seed bearing capacity is developed in future seed trees. Rarely applicable to intensively managed Forest land.

APPENDIX 3 (CONTINUED)

7. **COMMERCIAL THINNING**

Appropriate in those stands or aggregations where basal area approaches or exceeds "normal." Usually insignificant in terms of total compartment volume. Layout must take into account means for minimizing damage to the residual stand.

8. **SANITATION**

Occasionally applicable on tractor ground, rarely so on cable. When there is sufficient bona fide "risk" volume (per Ferrell, PSW-39) there is usually enough decadance to justify a high priority for regeneration.

9. **OVERSTORY REMOVAL**

Generally applies only to future seed tree removal harvests. In natural stands the understory is often inadequate in density or distribution, diseased, suppressed or likely to be damaged in logging.

APPENDIX 4

TRUE FIR ANA SYSTEM

Even-age management is the most probable final LMP direction for productive timber lands other than those scheduled for special management emphasis. The rationale for this conclusion is contained in all current R5 timber management plans and will not be justified further here.

Even-age management usually implies that entire stands, five acres or larger in size, will be regenerated all at the same time. But true fir strip and small patch cutting can create units of regeneration less than five acres. The final regenerated stand may therefore contain several aggregations of even, but unequal, age. True fir even-age management, then, can deviate from the classical concept in response to ecology of the species.

As an approximation to final management direction, a rotation age of 120 years will be used. This rotation is about 20 years shorter than that required for maximum mean annual increment under intensive management. (1/) It is also about 20 years longer than that needed to maximize present net worth at a reasonably high interest rate.

A rotation age of 120 years results in a regeneration harvest, on the area regulated Forest, of 8.3% of the productive land base per decade. Present constraints in FORPLAN prevent more than 14% of the land base from being regenerated because of watershed and other resource values. Regenerating at the minimum rate (8.3%) necessary to regulate in the shortest time (120 years) is well within anticipated LMP constraints. In fact the rate of regeneration harvest could nearly be doubled with no adverse environmental consequences. Accelerating the regeneration harvest beyond that needed for regulation (at least for a few decades) is actually desirable for economic efficiency. However, because of uncertainties in obtaining regeneration, and complexities in executing silviculture prescriptions, it is not prudent to attempt more regeneration than necessary to start the true fir forest type on a path toward regulation. When experience proves that risks are acceptable this conclusion should be reviewed and revised if necessary to increase net values from forest management.

1/ RAM-PREP, 12 April 1982 run date, R5 site class 3. Maximum of:  
(Intermediate + final harvest volume) ÷ rotation age.

APPENDIX 5

RED FIR TIMBER MANAGEMENT DATA BASE

ACRES IN LEVEL 1 "OTHER"

Dist.	Compart.	R1X	R2X	R3G	R3P	R4G	R4P	TOTAL
HL	1				213		<b>681</b>	a94
	2			<b>218</b>	166	330	<b>58</b>	772
	3			96	132	456	1240	1924
	4				<b>48</b>	7	615	670
	5				94	291	561	<b>946</b>
	6					19	<b>105</b>	124
	7					24	<b>386</b>	622
	<b>Total</b>	<b>0</b>	<b>0</b>	314	677	1315	3645	5952
TR	6			320	194	<b>538</b>	77	1229
	8			1004	1070	<b>282</b>	302	<b>2658</b>
	9		70	<b>285</b>	47	415	147	964
	10		9	<b>1416</b>	<b>1675</b>	<b>2781</b>	688	6569
	12				<b>90</b>	23	33	146
	14				190			190
	<b>Total</b>	<b>0</b>	79	3215	3076	4239	1247	11656
HS	1		15	49	52		16	132
	2			442	30		131	603
	3			72				72
	12			<b>59</b>		37	60	156
	15				<b>18</b>	34	144	196
	16					68		68
	<b>Total</b>	<b>0</b>	15	622	100	139	351	1227
GH		0	0	0	0	0	0	0



APPENDIX 5

RED FIR TIMBER MANAGEMENT DATA BASE

ACRES IN LEVEL 1 "OTHER"

Mst.	Compart.	R1X	R2X	R3G	R3P	R4G	R4P	TOTAL
CM	2			214	725	165	1003	2107
	3			56	38	760	607	1461
	4		21				331	352
	6				27	36	104	167
	7			513	382	176	1707	2778
	8			138	406	97	1716	2357
	9						89	89
	12			64	146	29	741	980
	13						31	31
	14			137	77	434	1696	2344
	15			87	34	31	328	480
	17		13		134	91	506	744
	18		10				1293	1303
	19						37	37
	29				10	54	494	558
	30				15	97		112
	37						316	316
	Total	0	44	1209	1994	1970	10999	16216
Grand Total Acres		0	138	5360	5847	7463	16242	35050
Cunits/Ac		---	20.1	77.5	38.2	88.6	37.7	---
MBF/Ac		---	12.6	49.0	23.8	56.2	23.8	---

APPENDIX 6

10-YEAR COMPARTMENT REGENERATION TARGETS

DIST.	COMPT.	R36		R3P		R4G		R4P		TOTAL	
		ACRES	MBF	ACRES	MBF	ACRES	MBF	ACRES	MBF	ACRES	MBF
INL	I			18	320			67	1015	75	1335
	2	18	774	14	249	27	1355	5	89	64	2467
	3	b	347	11	1%	38	1908	103	1833	160	4284
	4			4	71	1	50	51	908	56	1029
	5			8	142	24	1205	47	837	79	2184
	6					2	100	8	142	10	242
	7			2	36	18	904	32	570	52	1510
	<b>Total</b>		26	1118	57	1015	110	5522	303	5393	496
TR	6	27	1161	16	265	45	2259	6	107	94	3812
	8	83	3569	89	1584	23	1155	25	445	220	6753
	9	24	1032	4	71	34	1707	12	213	74	3023
	10	118	5074	139	2474	231	11596	57	1015	545	20159
	12			7	125	2	100	3	53	12	278
	14	14	688							16	688
<b>Total</b>		268	11524	255	4539	335	16817	103	1833	961	34713
HS	I	4	172	4	71			I	18	9	261
	2	37	1551	2	36			11	1%	50	1823
	3	6	258			3	151	5	89	6	258
	12	5	216			3	151	12	213	13	455
	15			1	18	6	301			16	382
	16									6	301
<b>Total</b>		52	2236	7	125	12	603	29	516	100	3480
GH	--	0	0	0	0	0	0	0	0	0	0
CH	2	18	774	60	1068	14	702	83	1477	175	4021
	3	5	215	3	53	63	3163	50	890	121	4321
	4							27	481	27	481
	6			2	36	3	151	9	160	14	347
	7	43	1849	32	570	15	753	142	2528	232	5700
	8	11	473	34	605	8	402	142	2528	195	4008
	9							7	125	7	125
	12	5	215	12	214	2	1a0	62	1104	81	1633
	13							3	53	3	53
	14	11	473	6	107	36	1807	141	2510	194	4897
	15	7	301	3	53	3	151	27	481	40	986
	17			11	1%	8	402	42	748	61	1346
	18							107	1905	107	1905
	19							3	53	3	53
	29			1	18	4	201	41	130	46	949
	30			1	18	8	402	26	463	35	883
	37										
<b>Total</b>		100	4300	165	2937	164	8233	912	16234	1341	31708
<b>FOREST</b>		446	19178	484	8615	621	31174	1347	23977	2898	82944



United States  
Department of  
Agriculture

Forest  
Service

Sequoia  
National  
Forest

*Ken*  
900 West Grand Avenue  
Porterville, CA 93257-2035  
209-784-1500

Reply To: 2410 (2470)

Date: November 21, 1989

Subject: Sugar Pine Management

To: Management Team

ROUTED TO	_____
TRIP	_____
MAIL	_____
FILE	_____
DATE	_____
SERIAL	_____

As you are all aware, an increasing number of sugar pine trees are being infected with white pine blister rust. Region 5 Tree Improvement and PSW, in cooperation with their counterparts elsewhere, have identified at least two genetically transmitted mechanisms of rust resistance. There are probably other mechanisms that remain to be identified. The understanding and application of these resistance mechanisms is progressing rapidly; and we can help ensure that this progress continues.

I want to be sure that the Sequoia National Forest will continue to contribute its maximum potential to the on-going research. We can do this by maintaining a good selection of sugar pine to support research needs. For this reason I am establishing the following policy in regard to the management of sugar pine:

1. Silviculture prescriptions are to consider means of maintaining the widest possible base of sugar pine genes. Generally this means protecting as many sugar pine trees as possible while meeting Land Management Plan objectives and being compatible with timber harvest and related activities.
2. Continue to plant a modest mix (5-10%) of sugar pine along with other mixed conifer species, even though major gene resistant stock is not now available. This may mean collecting seed from non-tested trees in order to maintain a sugar pine seedbank. With resistant stock, this percentage could be increased.
3. Intensify the effort to collect sample cones from candidate resistant trees. We have financial support from Tree Improvement on this. It is a high priority for us.
4. Continue to protect trees that are known to carry resistance. Collect seed from these trees for our seedbank.

The logic in #1, above, is that even trees showing signs of blister rust infections may harbor the so-called "slow-rusting," or unknown genes of value to resistance. The slow-rusting mechanism may well provide a better long term solution to resistance than the major gene effort that is being emphasized now.

If a tree is about to die, we should capture its commercial value at this time. If a tree is likely to live until the next harvest entry, we will assume that it may have value to research. We should not harvest the tree at this time.

### APPENDIX 3

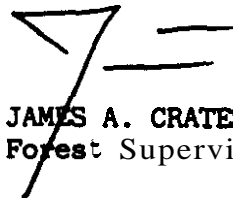


Caring for the Land and Serving People

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**The** reason for planting untested stock, **as** in #2, **is** that some of the stock **may** indeed **be** resistant. Presumably seed was collected from non-infected trees, which increases the chances **of** resistant progeny. Also, **we** don't want to accidentally encourage the "virulent" strain of rust that is thus far confined to the Happy Camp area on the Klamath Forest. **One** explanation for the occurrence **of** the virulent strain relates to the hypothesis that a mutation of the disease **may** have developed **in**, **or** **been** sustained by the presence of, a major gene resistant plantation. **So**, there **may** **be** **good** reasons for keeping some rust susceptible sugar pine in the forest.

This policy **is** to take effect **immediately**. **Do** not, **however**, apply **it** in situations where **it** would either change previously documented decisions (**eg**: require a change in **a** Decision Notice) **or** would cause loss of previous investments (**eg**: timber already marked **or** under contract).



**JAMES A. CRATES**  
Forest Supervisor

**END  
OF  
PHYSICAL  
FILE**

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