III. AFFECTED ENVIRONMENT

A. Introduction

This chapter describes the environment which would be affected by the implementation of the alternatives in Chapter II. The general physical and biological conditions existing on the forest are described, including geology, topography, climate, and plant and animal life. Also described are the economic and social aspects of the human environment related to the forest. Current use, management, and demand trends for the forest's resources and protection are also reviewed.

B. Physical and Biological Setting

The Salmon National Forest administers 1.8 million acres in east central Idaho.

The main drainage system of the forest is the Salmon River and its tributaries. The extreme southeast portion of the forest south of Gilmore Summit is drained by Birch Creek, which sinks in the upper Snake River plain.

A portion of the Salmon River and a principal tributary, the Middle Fork of the Salmon River, are congressionally designated Wild and Scenic Rivers. Over 426,000 acres of the 2.2 million acre Frank Church--River of No Return Wilderness are located on the Salmon National Forest.

The forest is located within the Northern Rocky Mountain Physiographic Province. Principal physiographic features are the Salmon River Mountains on the west, the Beaverhead Mountains on the east, the Lemhi Range on the south, and the Bitterroot Mountains on the north. These mountain ranges are strongly dissected by dendritic, narrow, steep-sided stream courses. The higher elevations in the forest display many glacial features. Elevations range from 11,350 feet at Big Creek Peak to 2,800 feet on the Salmon River.

Major geologic units on the forest include gneisses, quartzites, sedimentaries, granites, and volcanics. General soil erosion and stability problems are normally associated with soils derived from granitic and volcanic rocks. The most fragile granitic soils are those found on the Idaho Batholith, whereas the harder, slightly more stable, granitics are found in the border zone between the Idaho Batholith and the quartzites.

Both Western Desert and Pacific Maritime weather air masses influence the climate of the forest. Annual precipitation ranges from 10 inches in the valley bottoms, to 50 inches in the mountains. Roughly half of the annual precipitation is snow. Summer thunder storms are common. High temperatures reach over 100°F. in the valleys, with lows dropping to -35°F or lower.

The forest's vegetation is diverse because of climate and the variations caused by deep valleys and dissected landforms. Typically, the north-facing mountain slopes receive less direct sunlight in the summer, have cooler soil temperatures resulting in higher moisture content, and can support tree vegetation. South-facing slopes have warmer soil temperatures, and are drier; south-facing slopes support forbs, grasses, and brush with stands of trees in the moister areas. Sagebrush and native grass vegetation occur in the foothills to about 5000 feet in elevation. Immediately above the grass-brush zone is a narrow band of large, open, park-like stands of ponderosa pine trees. Mixed conifer vegetation lies directly above the ponderosa pine zone, and in some cases contacts the grass-brush zone. The upper range of the mixed conifer zone is around 7000 feet. The sub-alpine zone is above the mixed conifer zone and is vegetated by large stands of lodgepole pine, with some sub-alpine fir. Above the sub-alpine zone, white-bark pine is present in very open, scattered stands.

The various vegetative types and land forms provide habitat for a variety of game and nongame wildlife species. The more commonly known species are bighorn sheep, mountain goats, elk, black bears, and mule deer. Anadromous fish species found in the waters of the forest include chinook salmon, sockeye salmon, and steelhead trout.

C. Economic and Social Setting

1. Area of Influence, Geographic Unit of Analysis

a. Local Area of Influence

The area of socio-economic influence of the Salmon National Forest is primarily focused in the tri-county area of Lemhi and Custer Counties in Idaho and Ravalli County in Montana with the immediate vicinity near the forest being the area where most of the impacts (positive and negative) are likely to occur.

b. Regional Areas of Influence

The regional area of influence generally encompasses south-eastern Idaho and southwestern Montana. Regional people who use and/or have an interest in the forest resources do not necessarily follow a systematic, concentric pattern because of the diverse activities available on the Salmon National Forest and because of the availability of some of these activities in other areas. Therefore, the regional zone of influence varies somewhat depending upon the resource (i.e., timber, range, recreation, anadromous fish, etc.).

c. National Influence

Many people nationwide know of and are attracted to the Salmon National Forest because of its reputation for river

floating, wilderness areas, and hunting and fishing opportunities, along with the general scenic beauty of the area. Also, the natural resources attract other people for the economic and/or lifestyle purposes (i.e., mining, logging, recreation businesses, etc.).

2. Social Units of Analysis

The social units of analysis describe a very important segment of society; those who will most likely be affected by management decisions of the Forest. The following eight social categories or groups of people were identified as those who would most likely be positively or negatively impacted by resource decisions of the Forest.

a. Ranchers/Farmers

Ranchers are a dominant group, generally respected by area residents. Ranchers are involved in many activities and are very influential in local and State politics.

Many ranchers living near the forest (Leadore, Salmon, Pahsimeroi, and Challis areas) are well established residents of the area. Some are second, third, or fourth generation descendants of the original landowners of the area. Most area ranchers/farmers are viewed as having a value system similar to the early pioneer/settlers of the intermountain west. Some of the perceived values of area ranchers are conservative and very independent ("they like to do things their way," is a common statement about local ranchers), show concern for neighbors, respect the land and nature in general, and have a strong desire to maintain a status quo living situation.

The ranching influence, (i.e., clothing, values, manner of speech, etc.), is an important part of the life of Lemhi, Custer, and parts of Ravalli Counties. Many decry the development or possible development of ranches into subdivisions of smaller parcels of land, since the traditional ownership of larger "spreads" tends to perpetuate the ranching lifestyle which is ingrained locally.

Corporate owners and wealthy nontraditional owners (those who made their money in other pursuits, but may be looking for some tax advantages from ranch ownership) may have a completely different orientation to life than typical ranchers of the primary zone of influence. These non-traditional and/or absentee owners may have diverse land use philosophies, depending on the recreational value placed upon the land.

Ranchers have a high regard for the resources of the forest. They are especially interested in activities which

enhance range conditions. Amenity values of the forest, such as wilderness and dispersed recreation, are not very important to ranchers as compared to range and water outputs. Ranchers do enjoy the amenity values obtained from hunting and fishing activities, along with general outdoor recreation pursuits.

b. Miners

Miners are often referred to as being eternally optimistic. If they have not yet located a rich claim, they will tomorrow. Also, they are a hard living/hard working group. Miners are independent and desire to take care of themselves. They prefer to be free from outside interference.

Miners generally view the utility of forest resources from a consumptive approach rather than from an amenities perspective. Minerals, water, and timber are the resources most important to them, with minerals their paramount concern.

Amenity resources of some importance to miners are hunting, fishing, and general recreation activities. Commodity and consumptive recreational activities have the greatest appeal to this social category. Backcountry and/or wilderness experiences are viewed as unimportant activities.

c. Loggers

Values of the woodworkers appear consistent with traditional intermountain west philosophy: independence, toughness, concern for neighbors, and desire to control the future. Local control is a real issue. They feel very strongly against classifying forest land as wilderness. This action is seen as outside interference, influencing the possibilities of jobs and ways of life. In some cases, the timber industry has become a symbolic value which underscores economic importance. Symbolic meaning gives strong support to the idea that the way of life is often more important than the monetary remuneration of an occupation.

Loggers definitely have a commodity philosophy as far as management of resources is concerned. They are especially interested in management activities which yield high timber productivity. They are vocal about, and in favor of, increasing the amount of timber available for sale.

Recreational interests of loggers generally include consumptive activities like hunting and fishing. Other uses of the forest are outdoor recreation in general, viewing scenery, etc. Wilderness and other backcountry

experiences (except hunting) are generally not important to loggers.

d. Big Game Guides and Outfitters

There have been big game guides and outfitters in the general Salmon River area for some time because of the beauty and remoteness of the country and because of big game herds and extended big game seasons in some hunting units.

Outfitters and guides are often ranchers in the off season. Therefore, they are seen as having many of the characteristics of ranchers. Guides and outfitters are independent and self-sufficient. They like to have control over their lifes' situation and they are accustomed to doing things their way.

There are some distinct differences between general ranchers and guides and outfitters. The latter are very much concerned about and appreciative of the amenity values of the forest. Wildlife, wilderness areas, and enjoying an experience in a natural setting are examples of resource outputs which have paramount importance to guides and outfitters; whereas, these same amenity values of the forest are not significant to the average rancher.

In the general way of life as far as manner of speech, type of clothing worn, and values are concerned, both groups appear to be very similar. The main difference is that guides and outfitters appear to be cowboys/ranchers who have a monetary stake in, a great deal of concern for, and appreciation of the amenity values of the forest.

e. Business People

Business people are another major social group. They are often interested in community activities and involved in the political process. They are influential people with strong community ties. Many are "conservative" and independent. This is especially true of the more established "main street" business people in Leadore, Salmon, and Gibbonsville. However, other business people, particularly younger move-ins and/or the recreation oriented, are quite varied in their philosophy, beliefs, and values.

Business people like to live where they can find cooperation, a sense of belonging, and good friends. They are civic-minded and involved in many service oriented projects. This is true of many business people in all areas of the primary zone of influence. Business people are affected, as are all of the groups, because of the conflict associated with commodity/amenity issues. The

management of the natural resources is a situation or issue which can cause conflict and, in turn, can reduce the degree of community cohesion. Amenity oriented forest users and commodity-based constituents are often diametrically opposed, as far as the "correct" management of the forest is concerned. These disagreements have caused a certain amount of community or area conflict.

Business people in this area are more consumptively than environmentally inclined. This would not be true of many business people involved in recreation enterprises or some small shop owners (usually newcomers), however.

f. Government Employees and Educators

This somewhat diverse category of people includes Federal, State, County, local governmental workers, and school teachers.

These people are more environmentally oriented than miners, loggers, ranchers, and business people. This varies with different individuals, but especially applies to newcomers and/or professional workers.

People from these groups are interested in the amenity values of the forest and exhibit more interest in the arts and humanities. These factors set them apart at times from others. Government worker/educators are concerned about self-sufficiency and independence, but not to the extent that most of the other (especially resource-dependent) groups are.

g. River Guides and Outfitters

River guides and outfitters are not a major group in terms of numbers. However, they represent an important group, because they are often different in outlook from many of the other groups.

While some are long time residents, many of these people come to the Salmon and North Fork areas from other parts of the country. Because of their background differences, newcomers of the group are not always easily assimilated into the local culture which is rather traditional and conservative.

People in this category are more environmentally oriented than most of the other groups. This can cause conflict since they often are more vocal in stating their opinions than are other groups. Conflict has arisen between these newcomers and ranchers, miners, and loggers over wilderness and timber issues.

h. Retired People

This varied group consists of people from many walks of life. The interests and values of this group depend upon former areas of residence and occupation. Because of their station in life (not involved in full-time work), they are interested in amenity values, especially fishing, camping, or viewing scenery.

Those who move in from other areas are especially attracted to the recreational opportunities in the area. Most of the retired are located in the Salmon, North Fork, and Gibbonsville areas.

3. Social Variables

The following discussion will focus on how people are affected, or potentially affected, by defining the social variables used in analyzing the alternatives, as presented in Chapter IV.

a. Sense of Control/Self-Sufficiency

This variable refers to the feeling and/or belief that one has control over one's life direction, is not subject to control by others, such as outside interference, and has a sense of freedom in one's life. Many people feel that their ability to control their own destiny is directly associated with their ability to control decisions influencing their lives.

Sense of control/self-sufficiency also refers to not having to rely on others, living one's life in one's own way, and having the ability and native skills to use whatever resources are necessary to get along without any, or a minimum of, outside help. Ranchers, loggers and miners in the primary zone of influence are good examples of people who are, and want to remain, self-sufficient and in control of their lives.

b. Certainty/Uncertainty

This variable refers to the continuity of certain resources, conditions, etc., counted on in living a desired life direction. Ranchers, loggers, miners, guides and outfitters, and some recreational businesses in the Salmon National Forest zone of influence are directly or indirectly dependent upon the resources for their livelihood. A decrease or change in resources available can greatly diminish the degree of certainty these people have about their jobs/income and the prospects of living at their present locations. On the other hand, a sufficient supply of the natural resources would indicate a greater degree of certainty about the future. Loggers who have a

sufficient supply of logs, miners with sufficient minerals, and recreationists with sufficient recreation opportunities have a measure of certainty about their future as it relates to the resources.

c. Community Cohesion/Stability

Community cohesion refers to a sense of loyalty to and interpersonal cooperation within a community. Additionally, community cohesion refers to a sense of importance of "belonging" in one community as opposed to another, and the importance of living near others who have similar interests and values.

d. Lifestyle and Job Dependence

This concept, in part, refers to using the forest resources to maintain a way of living that is financially dependent upon a particular resource-related occupation. Ranching, logging, mining, guides and outfitters and related jobs are, of course, the major concern on the Salmon National Forest. Without the resources, these people would have a difficult time maintaining their preferred life-styles. Changes in management direction can also have a negative or positive impact on these groups. A significant reduction of resource outputs may cause people to move to a new area where the occupation/lifestyle could be perpetuated, but such a move is not likely to be desired.

Another aspect of this variable refers to the more amenity oriented activities in which people frequently participate, such as hunting, fishing, backpacking, picnicking, berry picking, etc. These activities are also dependent upon the resources, although the impact may be more subtle and less quantifiable than jobs/income. These activities, however, are an important aspect of many people's lifestyles, although the economic dependence is not much, if any, of a factor.

e. Symbolic Meaning

This refers to the emotional (yet cognitive) attachment people have for the places and resources on, or from, the forests. People, locally and especially regionally or nationally, often use the Salmon National Forest on a symbolic level. Although they may not be economically dependent upon the Salmon, they receive psychological benefit from resources. Steelhead fishing on the Salmon River, backpacking into the Bighorn Crags, or skiing at Lost Trail Ski Area provides an important outlet for these people.

See "Social Assessment of the Present Situation and Social Analysis of the Current Management Direction (No Action

Alternative)," Salmon National Forest, March 1982 for a detailed description and analysis of the socio-economic conditions.

4. Population, Job, and Income in Primary Impact Area

a. Population

Population in Lemhi County increased from 5,566 in 1970 to 7,460 in 1980, an increase of 34 percent. The increase of the 1970's was in contrast to a stable or declining population from 1940-1970.

Ravalli County's population grew 17 percent in the 1960's and 56 percent in the 1970's. The State of Montana, as a whole, had growth rates of 3 and 13 percent during the same period.

Custer County was stable to declining from 1950 to 1970 with population being 3,318 in 1950, 2,996 in 1960, and 2,967 in 1970. There was an increase of 14.1 percent in population during the 1970's, as the population increased to 3,385 in 1980.

TABLE III-1

Population Trends, 1960 to 2000

County	1960	1970	1980	1990	2000
Custer	2,996	2,967	3,385	4,296	4,581
Lemhi	5,816	5,566	7,460	8,591	9,027
Ravalli	12,300	14,400	22,400	25,400	29,200

All three counties are projected to have increasing populations until at least the end of the century. The possibility of substantial fluctuations are possible in Custer and Lemhi Counties because of mining activities. The tri-county area will likely continue to have about a 98 percent white racial composition.

b. Income and Jobs

Lemhi County has historically been an agricultural producing area (mainly ranching) although the importance of agriculture has dropped since 1960 and is projected to decrease in overall economic importance during the next 20 years.

Government (local, State, and Federal) is the largest employer in Lemhi County, employing over 25 percent of the work force. Growth in government jobs is not expected to be high, although there will continue to be a large number employed by government agencies in the future.

The timber industry is very important to the economy of Lemhi County, especially in the Salmon/North Fork area. There were 279 employees in the wood products industry in 1979, an increase of 80 percent since 1967. However, there have been some marked fluctuations in the number of employees since 1977 because of mills closing, high interest rates, and a sluggish national economy.

Tourism and retail trade contribute significantly to the local economy, producing 25 percent of the jobs and income in Lemhi County. This trend will continue, depending upon external influences including the National economy and availability and/or price of gasoline.

Mining has historically played an important part in the lifestyle and economic development of Lemhi County. This economic influence was minor from 1967 to 1978. Some additional jobs/income were produced by the opening of the Blackbird Mine near Cobalt. A significant economic impetus in the area would occur should the mine be developed to full capacity.

The communities of Salmon, North Fork, Gibbonsville, and Leadore are economically and/or lifestyle dependent on the resources of the forest. Timber, Government, and recreation outputs are important to Salmon, North Fork, and Gibbonsville. Government 1/ and range outputs are significant to the economy of the Leadore area.

1/ Forest Service Employment

TABLE III-2

Employment - Lemhi County

Sectors	1967	1970	1973	1979
Agriculture	609	522	454	443
Logging and Sawmills	155	182	160	279
Wholesale and Retail Trade	259	294	449	500
Service	183	187	207	244
Mining	90	17	10	86

Government was the largest employer in Custer County in 1979, accounting for 30.7 percent of the jobs. This sector is projected to be a major contributor of jobs and income to County residents; however, its relative importance should decrease somewhat because of the recent trend of less Government and because of increased mining activities.

Agriculture is still a significant employer in the County, although there has been a steady decline in the number of owners and employees.

Wholesale and retail trade and service workers contribute significantly to the economy of Custer County. Tourism and related recreation jobs are important contributors to jobs and income in the area. With the abundant natural attractions and general scenic beauty of the area, travel and recreation will continue to be an important segment of the local economy.

None of the communities in Custer County are dependent on outputs of the Salmon National Forest, although some ranchers are dependent on grazing from the forest.

TABLE III-3

Employment - Custer County

Sectors	1967	1970	1973	1979
Agriculture	443	387	352	348
Logging and Sawmills	16	---	---	---
Wholesale and Retail Trade	95	107	116	122
Service	73	94	113	158
Mining	64	84	64	60

Ravalli County, Montana, is considered part of the economic impact area of the Salmon National Forest because of the timber flow into (mainly) Darby and because of the number of recreationists (primarily skiers) who use the forest. The local economy has become more service and trade oriented because the relative importance of agriculture and timber sectors is declining while the tourism and recreation sectors are increasing in terms of jobs and income.

The agriculture sector accounted for about 14 percent of the employment in 1979. The relative importance of this

segment has been declining due to competing land users, poor market conditions, etc.

The wood products industry (when in full operation) is very important to the economy of Ravalli County. In 1979, 8 percent of the jobs and 11 percent of the income were generated by timber related jobs and businesses. Although the jobs in this sector are well paying, they are seasonal and cyclical.

The trade sector is the largest single employment sector in Ravalli County. In 1979, 14.5 percent of employment and 13.8 percent of income were accounted for by the retail trade sector. In addition, the wholesale trade sector accounted for 1.1 percent of the employment and 2.5 percent of the income. These sectors should continue to provide a similar number/amount of jobs/income in the County.

Darby is somewhat economically dependent on the timber from the Salmon National Forest. Timber is available from other sources, but trees from the Salmon are necessary for the wood products industries in the Darby area.

TABLE III-4

Employment - Ravalli County

Sectors	1970	1973	1979
Agriculture	1183	1159	970
Logging and Sawmill	368	399	544
Wholesale and Retail Trade	599	798	1062
Service	403	455	753

D. Resource Elements

1. Recreation

Recreation is one of the major uses of the Salmon National Forest. Total use in 1983 was approximately 438,500 Recreation Visitor Days (RVD's). Of this total, there were 84,200 RVD's at developed sites (19%), 261,700 RVD's in dispersed areas (60%), and 92,600 RVD's in wilderness (21%).

Forest lands can be classified according to the types of recreation opportunities they can provide. The means for doing this is called the Recreation Opportunity Spectrum (ROS). The Salmon Forest has been inventoried using ROS guidelines and currently has the following mix of opportunity classes available:

ROS Class	Total Acres	% of Total Forest Acres
Primitive	266,473	15
Semi-primitive Nonmotorized	463,998	26
Semi-primitive Motorized	329,457	19
Roaded Natural Appearing	717,066	40

Dispersed Recreation

Dispersed recreation occurs outside of developed sites and outside of designated wilderness. Most of this use occurs on, or adjacent to, forest roads and trails. Popular activities include hiking, fishing, hunting, horseback riding, trail bike riding, camping, boating, rafting, picnicking, firewood gathering, snowmobiling, and cross country skiing.

There are currently 54 outfitter and guide permits on the forest. Thirty-nine are river related, 14 are hunting and fishing related and 1 is for cross country skiing.

The ROS class breakdown for dispersed areas follows:

ROS Class	Acres	% of Non-Wilderness Acres
Semi-primitive Nonmotorized	335,702	25
Semi-primitive Motorized	320,744	24
Roaded Natural Appearing	698,304	51

These acres are capable of providing over 5-1/2 million RVD's annually. This capacity far exceeds current and projected future demand on a forestwide basis. Particularly popular locations, however, such as the Salmon River canyon, will be used to near capacity in the foreseeable future. Factors that will affect the projected increases in dispersed recreation include population growth, more leisure time, and energy costs.

TABLE III-5

Current Dispersed Use by ROS Class

ROS Class	MRVD's	Percent of Dispersed Use
Semi-primitive Nonmotorized	9.4	3
Semi-primitive Motorized	54.0	21
Roaded Natural Appearing	198.3	76

TABLE III-6

Dispersed Recreation
Average Annual Dispersed
Use Demand and Capacity
(in MRVD's: Thousands of recreation visitor days)

	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Demand Trend	294.2	300.2	318.1	342.5	367.3	392.0
Supply Potential	5758.0	5758.0	5758.0	5758.0	5758.0	5758.0

Developed Recreation

Recreation use at developed sites was 84,200 RVD's in 1983. The Salmon Forest has 53 developed sites categorized as follows: 18 campgrounds, 4 picnic grounds, 4 boating sites, and 27 others such as recreation residences, lodges, and interpretive sites.

These sites have a combined capacity of 1,627 persons at one time (PAOT) or 237,516 RVD's for a season.

Six of the campgrounds are designated fee sites.

On the average, developed sites are used at 35 percent of capacity on a year-long basis. Averages, however, tend to hide the times when a site may be filled to capacity on weekends or holidays, or when the Salmon River canyon sites are overcrowded during steelhead season.

TABLE III-7

Developed Recreation
Average Annual Developed
Use Demand and Capacity
(in MRVD's: Thousands of recreation visitor days)

	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Demand Trend	111.6	121.1	149.2	187.4	226.4	265.2
Supply Potential (Assumes no new construction and no closures)	237.5	237.5	237.5	237.5	237.5	237.5

a. Cultural Resources

The cultural history of the area presently occupied by the Salmon Forest began with the prehistoric occupation by ancestors of the Nez Perce and Shoshoni Indians. Lewis and Clark's expedition in 1804-1806 heralded the arrival of the white man on the scene. From that time, until the

discovery of gold in Leesburg Basin in 1864, the culture of the area revolved around the mountain trappers and their contact with the Indians. The arrival of the miners in the 1860's signaled a radical change in the cultural fabric of the entire county. Mining remained the principal cultural influence through the early 1900's. Since the early 1900's, agriculture has provided a dominant and stabilizing base for the cultural development of the area. The CCC camps of the Depression Era, though temporary in nature, left lasting monuments throughout the area. Cultural resources, or evidence of past development of the area culture, are widespread throughout the forest.

Cultural resource surveys have been conducted on 17,700 acres, or less than one percent of the forest. Most of the forest's 388 recorded sites are prehistoric. Most surveys have been conducted in advance of timber harvest, road construction, and other land management activities. Once discovered, cultural resources are protected from adverse effects by project redesign or other measures such as salvage.

Efforts to interpret cultural resources for the public have been extremely limited. Abundant opportunities exist for future study and interpretation of cultural history on the Salmon Forest.

Three sites on the Salmon National Forest are currently listed on the National Register of Historic Places. Lemhi Pass is the place where Lewis and Clark crossed the Continental Divide into what later became Idaho. Further, Lemhi Pass is also a National Landmark. The Shoup Rockshelters along the Salmon River are prehistoric sites at which the oldest levels date to 8,000 years ago. Leesburg Townsite is a historic mining town that marks the location of the first gold strike in Lemhi County. In addition, eight other historic sites have been determined to be eligible for inclusion on the National Register of Historic Places. These are: Sagebrush Lookout, California Bar Ranger Station, Indianola Field Station Old Residence, Shoup School House, Long Tom Outhouse, Oreana Lookout, Granite Mountain storage garage, and Granite Mountain Lookout.

Ground disturbing activities on the Salmon Forest will continue and may increase, creating a greater demand for the cultural surveys required for these projects. The thrust of future cultural resource management will be to keep pace with development activities, increase emphasis on recording historic sites, protect against increasing incidents of vandalism, and work toward the goal of a complete inventory of the forest.

b. Visual Resource

A visual management system is used on National Forests to establish the visual importance of various landscapes. This system uses variety, sensitivity, and seen area to arrive at a Visual Objective for any given landscape.

Variety is based on natural features such as vegetation, water, rock, and terrain, and identifies landscapes as having outstanding (A), average (B), or minimal (C) variety.

Sensitivity is based on the number of viewers and the length of time an area is seen.

Seen area is an inventory of lands seen from travel routes and recreation areas. It is divided into three distance zones; foreground, middleground, and background.

The Inventoried Visual Quality Objectives are derived from the combination of these three elements and indicate recommended levels of visual quality which are expected to be acceptable to the public.

Visual Resource Management includes reducing undesirable contrast and retaining or creating natural-appearing variety in the landscape. To accomplish this requires that particular attention be paid to the form, line, color, texture, and scale associated with management activities.

Inventoried Visual Quality Objectives
(Approximate Distribution)

Preservation - Visual resources reflect only natural processes. 427,258 Acres 24 percent

Retention - Existing natural quality retained. 189,814 Acres 11 percent

Partial Retention - Man-made changes noticeable. 496,269 Acres 28 percent

Modification - Natural appearance subordinate to man-made changes. 587,321 Acres 33 percent

Maximum Modification - Landscape extensively modified. 76,332 Acres 4 percent

A comparison of the Inventoried Visual Quality Objectives with the existing visual condition indicates about 99 percent of the landscape meets or exceeds the inventory visual quality objective.

Five percent of the forest has been altered by man to the extent that it is visually evident to the forest visitor. Ninety-five percent of the forest has had very minor to no alteration. One percent of the forest visually dominates and contrasts with the natural appearing landscape. Examples of this are developments such as roads, powerline corridors, mineral activity, timber clearcutting and developed recreation sites.

Demands for, and concerns about, scenic quality are increasing. The visual quality of Salmon National Forest land viewed from recreation use areas and major travelways will become increasingly important. Visual resource management techniques will continue to be applied to all projects in the future, with specific emphasis on those area identified in the Forest Plan as high in scenic quality or recreation visitor use.

c. Wild and Scenic Rivers

There are two designated Wild and Scenic Rivers that flow through the forest. The Salmon River, from North Fork to Long Tom Bar, and the Middle Fork of the Salmon River. The Salmon Forest administers the corridor from North Fork to Salmon Falls and the Challis Forest administers recreation use on the Middle Fork. Management of both these rivers is covered in the comprehensive management plan for the Frank Church--River of No Return Wilderness.

An additional segment of the Salmon River, from its headwaters to North Fork, has been listed as a potential Wild and Scenic River by the Heritage Conservation and Recreation Service in their nation-wide rivers inventory. Since only approximately 9 miles of that 177 mile segment are located adjacent to the Salmon National Forest (from North Fork upstream to the forest boundary in the vicinity of Tower Creek), the Bureau of Land Management will lead the detailed study of this segment to determine its suitability for designation. In the meantime, the Salmon Forest's portion of this river segment and corridor will be managed to preserve the special values and qualities which make it eligible.

The forest planning process included an evaluation of the remaining free flowing streams on the Salmon Forest to determine their eligibility for further consideration for inclusion in the Wild and Scenic River System. The evaluation concluded that no other streams are eligible for further consideration.

2. Wilderness

The Frank Church--River of No Return Wilderness was designated by Congress in July 1980. This wilderness contains

over 2,200,000 acres administered by six National Forests. The Salmon Forest administers approximately 426,114 of these acres.

Most of the Salmon's portion of the wilderness was previously administered as part of the Idaho Primitive Area.

The Frank Church--River of No Return Wilderness is noted for its steep, rugged mountains and deep canyons. Elevations range from 2,200 feet above sea level at the mouth of the South Fork of the Salmon River, to over 10,000 feet in the Bighorn Crags. Elk, mule deer, whitetail deer, bighorn sheep, mountain goats, moose, black bear, and cougar are big game species present. Resident game fish include cutthroat, bull trout, and rainbow trout, whitefish, and sturgeon. Runs of anadromous rainbow trout (steelhead) and Chinook Salmon are increasing annually and will approach historical levels in the years to come.

Fishing, backpacking, horseback riding, and hunting are major attractions. Whitewater boating on the Middle Fork and Salmon Rivers, both designated Wild and Scenic Rivers, is a unique and increasingly popular attraction. Several outfitters and guides operate in the wilderness area serving the boating, hunting, and fishing public.

There is moderate interest in mineral exploration in the area, particularly in the Special Mining Management Zone, where potential reserves of cobalt have been indicated. Effective January 1, 1984, mineral location terminated in the wilderness with the exception of the Special Mining Management Zone where exploration for, and extraction of, cobalt will remain a dominant use. In the remainder of the wilderness, mining claims located and filed before the closing date will be available for mineral extraction.

An assessment of undeveloped areas called Roadless Area Review and Evaluation (RARE I) was conducted in 1972 which resulted in the establishment of candidate wilderness study areas. Roadless areas were again evaluated in Land Use Plans and in a nationwide assessment called RARE II. Prior to the Ninth Circuit Court decision which voided decisions made in RARE II, one roadless area had been recommended to Congress for designation as wilderness. This was the Lemhi Range (76,749 acres).

The forest has 30 Inventoried Roadless Areas totaling 830,469 acres. These areas are being evaluated within the context of this Forest Plan. See Appendix C Final Environmental Impact Statement for individual roadless area evaluations.

TABLE III-8

Frank Church--River of No Return Wilderness
Average Annual Wilderness
Use Demand and Capacity
(in MRVD's: Thousands of recreation visitor days)

	1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Demand Trend	96.9	97.3	98.4	100.0	101.6	103.2
Supply Potential	310.0	310.0	310.0	310.0	310.0	310.0

3. Fish and Wildlife

The entire Salmon National Forest contains many diverse habitat types capable of supporting wildlife and fish populations. A total of 337 vertebrate species are found on the forest at some time of the year. The wildlife and fishery resources of the forest have two basic components which will be influenced by decisions made during the planning process. The fishery compoent includes 2 migrant species which annually return to forest habitats to complete one or more life processes, and 18 resident species which remain in forest environments during their entire life cycle. An additional anadromous species (sockeye salmon) travels through main stem Salmon River habitat enroute headwater tributaries.

The wildlife component includes mammals, birds, reptiles, and amphibians. Of these, 156 species reside on the forest year-long, 89 species are present during the nesting season only, 57 migrate across the forest, and 11 spend the winter months. A complete list of all species found on the forest is in the planning records.

Management Indicator Species

In order to assess the influence of forest management on habitat and species diversity and individual species well being, management indicator species have been selected. These indicator species represent organisms for which population levels and habitat objectives can be established and which represent a number of species in estimating effects and influences from management alternative.

Management indicators proposed for use in the forest planning process include species with special habitat needs that may be influenced significantly by planned management programs, species that are commonly fished, hunted or trapped, species that reflect effects of management activities on other species and water quality. Selection was based on input provided by a team of Forest Biologists with review by Idaho Department of Fish and Game Biologists. A final listing was reviewed and approved by the Forest Management Team (Table III-9).

TABLE III - 9

Salmon National Forest Wildlife and Fish Management
Indicator Species, and the Rationale Used for Their Selection

A = Hunted
B = Fished
C = Trapped
D = Restricted Habitat Niche
E = Diverse Habitat Conditions
F = Resident Species
G = Migrant or Summer Resident
H = Wide Distribution Over Forest
I = Easily Monitored

	A	B	C	D	E	F	G	H	I	
Elk	X				X	X		X	X	High elevation. Sub-alpine fir and Douglas-fir habitats. Many openings in canopy.
Mule Deer	X				X	X		X	X	Mid-elevation. Douglas-fir habitats. Many openings in canopy.
Bighorn Sheep	X				X	X			X	Open to partially timbered. Rock outcrops.
Mountain Goat	X				X	X			X	Open to partially timbered. Cliffs.
Pine Marten			X	X		X		X	X	Old growth sub-alpine fir and lodgepole pine.
Pileated Woodpecker				X		X			X	Cavity nester. Old growth Douglas-fir.
Vesper Sparrow				X			X		X	Sagebrush
Yellow Warbler				X			X		X	Riparian zones (willows).
Ruby-crowned Kinglet				X			X	X	X	Mature/immature Douglas-fir.
Goshawk				X		X		X		Mature/old growth Douglas-fir.
Great Grey Owl				X		X				Mature Sub-alpine fir and Douglas-fir.
Yellow-bellied Sapsucker				X			X		X	Cavity nester. Quaking aspen.
Pygmy Nuthatch				X		X			X	Cavity nester. Old growth ponderosa pine.
Brown Creeper				X			X		X	Cavity nester. Mature Sub-alpine fir and lodgepole pine.
Mountain Bluebird						X		X	X	Cavity nester. Ecotones.
Anadromous Fish (Chinook, Salmon, and Steelhead trout)	X			X		X			X	Stream habitats with sediment-free spawning gravels, and channels free of migration blocks.
Trout (All species combined)		X		X		X		X	X	Cool, clean sediment-free stream and lake habitats, ample instream flow and streamside cover.

Projections of anticipated population levels based on habitat capability under four management levels is shown in Table III-10 for the 15 MIS and 4 T&E species found on the Salmon National Forest. The definition for these levels is shown in Table III-11.

TABLE III-10

Population Capacity Levels and Habitat at Four Management Levels

	Minimum Viable Population	Existing	State Objectives	Potential
Elk	1,500 (1,060,000A)	7,400* (1,767,000A)	8,800 (1,767,000A)	10,300 (1,767,000A)
Mule Deer	5,000 (1,000,000A)	18,000 (1,767,000A)	32,000 (1,767,000A)	41,400 (1,767,000A)
Bighorn Sheep	325 (250,000A)	1,000 (487,000A)	2,000 (903,000A)	4,000 (903,000A)
Mountain Goat	300 (370,000A)	300 (307,000A)	350 (307,000A)	700 (307,000A)
Pine Marten	200 (100,000A)	600 (192,000A)	---	1,090 (360,000A)
Pileated Woodpecker	46 (37,000)	172 (140,000A)	---	456 (370,000A)
Vesper Sparrow	1,600 (40,000A)	3,800 (190,000A)	---	4,000 (200,000A)
Yellow Warbler	2,000 (8,700A)	10,000 (43,000A)	---	10,800 (47,000A)
Ruby-crowned Kinglet	26,000 (37,000A)	150,000 (215,000A)	---	260,000 (370,000A)
Goshawk	50 (138,000)	72 (190,000A)	---	150 (420,000A)
Great Grey Owl	30 (50,000A)	60 (100,000A)	---	244 (400,000A)
Yellow-bellied Sapsucker	480 (2,400A)	480 (2,400A)	---	600 (3,000A)
Pygmy Nuthatch	3,800 (3,800A)	9,000 (9,000A)	---	38,000 (38,000A)
Brown Creeper	1,800 (18,000A)	9,000 (90,000A)	---	35,000 (360,000A)
Mountain Bluebird	2,000 (40,000A)	10,000 (200,000A)	---	15,000 (300,000A)
Anadromous Species (pounds)				
Salmon	162,316	186,729	182,305	207,886
Steelhead	106,592	171,023	160,694	185,844
Resident Trout (lbs)	96,768	100,800	129,024	161,280

	Minimum Viable Population	Existing	Forest Service Share 1/	Potential
Threatened and Endangered Species				
Bald Eagle	4 (16,000A)	0 (16,000A)	4 (16,000A)	6 (25,000A)
Peregrine Falcon	6 (150,000A)	0 (150,000A)	6 (150,000A)	10 (250,000A)
Grey Wolf	10 (100,000A)	5 (1000,000A)	10 (100,000A)	20 (200,000A)

* Habitat potential also includes the FC--RONR Wilderness and proposed Lemhi Wilderness.

** Existing populations level below MVP in some drainages and below objective levels in others, thus supplemental stocking is required.

TABLE III-11

Definitions of Minimum Viable, Existing, State Objective and Potential

Population Levels	Population Levels of Management Indicator Species			
	Big Game	T&E Species	Other Species	Fish
Minimum Viable	These levels are considered to be minimum numbers that the population could be reduced to yet still not permanently alter the distribution pattern or gene pool. With the exception of mountain goats, this level ranges from approximately 1/4 to 1/3 of the existing level Mountain goat populations are at approximately this level now.	They are the Salmon NF's estimate of what could be contributed to the recovery effort on a national scale, however, they have not officially been assigned to the Forest in any recovery plan. The existing situation for all species is below MVP levels	Population levels were judged to be met by maintenance of minimum levels of major critical habitat i e , old growth timber, quaking aspen, sagebrush and riparian zones, as well as minimum snag levels	These levels are considered to be minimum numbers needed to maintain the species in a stream These values are related to habitat quality within each environment and they express the minimum habitat quality necessary to provide adequate survival to maintain viable populations Many anadromous populations are below this level and will require supplemental stocking to re-establish self-sustaining populations
Existing	Existing population levels are sustained by available forage from National Forest and BLM winter range, and from National Forest summer range (both Salmon National Forest and adjacent National Forests). This includes existing levels of wildlife and livestock competition, and existing levels of open roads.	The existing levels are estimates of numbers felt to be occupying the Forest. This is considered to be below MVP for all species.	Existing levels are estimates of animals actually present on the Salmon National Forest, based on local data where available, or the most reliable research from similar areas	Existing population levels are estimates of population status of the present time Values represent an application of local data, information from similar areas and judgment Existing levels reflect habitat conditions presently being influenced by Forest Management (i e., logging, road building, grazng, etc) Existing popuation levels also reflect the strong inflence of off-forest activities (dam, harvest, etc)

TABLE III-11 (continued)

Definitions of Minimum Viable, Existing, State Objective and Potential

Population Levels	Population Levels of Management Indicator Species			
	Big Game	T&E Species	Other Species	Fish
State Objective	State objective population levels are from IDF&G's Species Management Plans for Elk and Mule Deer (1982) and for Bighorn Sheep and Mountain Goats (in press) This level is sustained by available forage from National Forest and BLM winter range, and from National Forest summer range (both Salmon National Forest and adjacent National Forest's) Some additional forage will be provided as a result of improved grazing practices Additional road closures will also be needed	Except for grizzly bear, the objective level is synonymous with MVP. Population increases will largely result from introductions, except for wolves, and is also the level that the Forest could contribute as their share share of the total recovery effort Increase in wolf numbers will result from natural expansion into unoccupied habitat Grizzly bear habitat is available and a few animals may exist, but the Salmon National Forest has not been requested to participate actively in a recovery effort	Objective levels are expressed as a population number, and are assumed to be met by objective level acres or each vegetative type and successional stages of National Forest lands	State objective levels reflect values intended to meet water quality objectives based on allowable reductions in habitat quality and the associated reduction in biomass Values may not at this point totally compare with State levels.
Potential	This level is the theoretical maximum carrying capacity of winter and summer range complexes on the Salmon National Forest, adjacent BLM lands and adjacent Montana Forests It excludes livestock grazing on all lands where livestock/wildlife conflicts currently exist It assumes a high level of habitat improvement, especially on winter range, and large acreages maintained with road closures It further assumes that this carrying capacity is conditional on other administrative units maintaining habitat quality equal to or better than conditions on the Salmon National Forest Without these conditions on adjacent lands, the potential level would be reduced an estimated 30-50 percent	These are theoretical maximum population levels that the Forest is capable of supporting based on available habitat and food supply No habitat improvement is needed Population increases will largely result from introductions, except for wolves Increase in wolf number will result from natural expansion into unoccupied habitat	Potential population levels are expressed as a population number, and are assumed to be met by optimum of plant successional stages within each vegetation type, including old growth timber	This level is based on anticipated habitat quality under natural conditions It also includes application of habitat improvement to mitigate for past habitat habitat disturbance.

Aquatic Habitat Management Indicator Species - At a minimum, all existing acres of inventoried aquatic habitat would be required to meet all management levels including minimum viable population direction. It is anticipated that changes in species numbers will occur between the management levels, but that reductions in distribution would not.

Qualitative components related to spawning habitat, specifically sediment levels in the spawning gravels, provide an assessment on the desired future conditions of anadromous species habitat on the forest. Spawning and rearing habitats reflect management influences occurring within a watershed, specifically changes in sediment delivery to the stream. Sediment generated within a drainage, either by natural or management-induced causes, is transported through the stream system and delivered to a critical reach. The critical reach is the point in the watershed where effects on other resources are assessed. During the sediment transport process, given amounts of sediment can be retained within stream substrate materials, influencing spawning and rearing success of associated fish populations.

Technical aspects of sediment predictions and fish habitat response are outlined in "Guidelines for Predicting Sediment Yields From Forested Watersheds" and "A Method for Predicting Fish Response to Sediment Yields."1/ The standards should be applied to drainages tracked in the planning model, as well as other drainages having anadromous fish habitat. Emphasis on spawning habitat is to be included in the Monitoring Plan.

1/ These documents reflect a coordinated effort between the Intermountain and Northern Regions, USDA-Forest Service.

Standards relative to spawning gravel conditions associated with various population levels:

Population Level	Amount of Fine Sediment	Sediment Yield From Drainage
Anadromous Minimum viable MVP	25% or less sediment 6.3 mm in spawning gravels	54% yield over natural
State Goals and/or current program objective	approximately 21.5% sediment 6.3 mm in spawning gravels	25% yield over natural
Maximum potential	approximately 18.5% sediment	0% yield over natural

Population Level	Amount of Fine Sediment	Sediment Yield From Drainage
Resident Minimum Level	approximately 37.1% sediment; 37.2% embeddedness	155% yield over natural
State goals	approximately 28.7% sediment; 30.5% embeddedness	85% yield over natural
Maximum potential	approximately 18.5% sediment; 23.23% embeddedness	0% yield over natural

The threshold limit for the minimum population level is based on available instream sediment transport energies. Other threshold limits of fine sediments in the spawning gravels are based on numerous survival studies 2/ that have been conducted on anadromous fish species. Relationships between fines in the spawning gravels and sediment yield from a drainage are based on sediment sampling and comparison of these values to sediment yield information developed by the sediment model.

A majority of perennial stream sections on the forest support populations of resident trout and other fish species. In general, resident fish habitats are characterized by moderate to high channel gradients, boulder rubble substrates, plunge pools, and narrow channels. The most productive resident trout streams have sections characterized by lower gradients, better pool habitat and abundant streamside vegetation. These streams and stream sections are also the most likely to be adversely impacted by land management activities. In addition to stream habitats, numerous lakes on the forest provide habitat for trout. Most of these waters are located at high elevations in basins formed by glacial activity. The majority of lakes are within the Wilderness.

Threatened and endangered species occurring on the forest are also shown on Table III-10. Management of these species will follow the Salmon National Forest T&E Species Management Plan and appropriate recovery plans. Critical habitats are shown in these documents. The grizzly bear has also been reported on the forest but is not covered by a recovery plan, hence not listed.

2/ Reiser, D. W. and T. C. Bjornn, 1979. Habitat Requirements of anadromous salmonids. In: Influence of Forest and Rangeland Management on Anadromous Fish Habitat in Western North America. Gen. Tech. Rept. PNW - 96 USDA-Forest Service.

Ten sensitive plants also occur on the forest: Cymopterus douglasii, Hackelia davisii, Halimolobos perplexa var. lemhiensis, Papaver kluanensis, Penstemon lemhiensis, Physaria didymocarpa var. lyrata, Phacelia lyallii, Carex straminiformis, Astragalus scaphoides, and Agoseris lackschewitzii.

In addition to MIS, seven species occur on the forest that the State of Idaho lists as Species of Special Concern. These include the wolverine, lynx, trumpeter swan, ferruginous hawk, merlin, boreal owl, and wood frog; all on the Region's sensitive wildlife and plant species list.

The hoary marmot is also proposed for inclusion on the Region's list, because it is peripheral on the State and its location on the Salmon and neighboring Beaverhead National Forest is the southernmost extension of its historic range. Its status on the forest is questionable because of indiscriminate shooting in roaded habitat.

The habitat capability was inventoried for the four big game MIS, and stratified at three levels: (1) optimum - areas that represent the most ideal habitat and will support a significantly higher density of animals than the surrounding habitat; (2) acceptable - areas that represent average habitat and will support animal densities proportionate to the total habitat; and, (3) marginal - areas that represent poorest habitat and will support a significantly lower density of animals than the surrounding habitat. These figures are Forest totals and include both classified and proposed Wilderness.

Results of the inventory are shown in Table III-12, along with the number of animals assigned to each capability class.

TABLE III-12

Big Game Summer Range Habitat Capacity Levels (1982)

	Habitat Capability Class			
	Optimum	Acceptable	Marginal	Total
Elk*				
M acres of habitat	271 (20%)	756 (56%)	267 (24%)	1,293
Animal capacity	4,595 (61%)	2,361 (35%)	104 (4%)	7,060
Mule Deer				
M acres of habitat	520 (29%)	877 (50%)	370 (21%)	1,767
Animal capacity	9,744 (53%)	8,220 (44%)	595 (3%)	18,559
Mountain Goat				
M acres of habitat	10 (3%)	248 (81%)	49 (16%)	307
Animal capacity	32 (10%)	272 (87%)	8 (3%)	312
Bighorn Sheep				
M acres of habitat (occupied)	270 (30%)	108 (12%)	109 (12%)	487
Animal capacity	842 (82%)	169 (16%)	17 (2%)	1,028
M acres of Habitat (unoccupied)	249 (28%)	135 (15%)	32 (3%)	416

* Does not include existing wilderness - Inventoried Analysis for these areas consist of habitat for 2,590 elk.

Table III-12 indicates a disproportionately high percentage of animal use is occurring on the optimum lands when compared to the amount of land available, i.e., 61 percent of the summer elk use is occurring on 20 percent of the total range, 53 percent of the summer deer use is occurring on 29 percent of the total range, and 82 percent of the summer sheep use is occurring on 30 percent of the total range. This indicates that a high level of importance be placed on the management of these lands in order to meet all management levels except MVP.

The available summer range on the Salmon National Forest and surrounding lands is capable of providing habitat for all of the big game species up to the potential level (Table III-10) with only minimal habitat improvement, some livestock adjustment and road closures. Winter range will be the major limiting factor to overcome in reaching this level. Local biologists feel that these levels can be reached through a high level of management. This includes all available technology to increase forage except for supplemental winter feeding programs. Big game winter range is summarized in Table III-13.

TABLE III-13

Big Game Winter Range (M Acres)

	Elk	Mule Deer	Bighorn Sheep	Mountain Goats	Total
Key Winter Range	97	112	43	35	121*
Normal Winter Range	194	213	70	62	246*
Total Winter Range	291	325	113	97	367*
BLM					262
State					32
Private					181

* Figures do not total horizontally because of overlap between species.

Each of the remaining 11 terrestrial MIS (10 birds and 1 mammal) represents some form of habitat niche that has to be managed for the protection of the species and others it represents. Nine of the 11 are limited to timbered, 1 to sagebrush, and 1 to riparian habitat. Four species are found largely in old growth, timbered habitats, and 5 species are cavity-nesters. Refer to Table III-9 for specifics.

Habitat Diversity

Habitat diversity is a critical element necessary for maintenance of the wildlife and fish populations on the forest. Diversity of species within forest terrestrial and aquatic communities reflect, in part, diversity in physical environments. In general, the greater the variation in the environment, the more numerous are the species. High numbers of species generally reflect complex trophic structures. Many of the species found on the forest occupy a rather specialized niche which is comprised of habitat features vital to the well being of the species. Certain species, such as the yellowbellied sapsucker or pygmy nuthatch represent populations with very restricted habitat requirements. Other species such as elk, deer, and bighorn sheep have habitat affinities and seasonal use patterns that are associated with a wide array of habitat types.

Forest habitats can be categorized into several basic types, each with a representative biotic community of naturally occurring plants and animals. The organisms within these biotic communities are limited by a number of environmental conditions, and by the interaction between conditions. The following representative habitats were selected as being indicative of specific biotic communities on the forest:

Aquatic
Riparian
Sagebrush
Mountain Mahogany
Quaking Aspen
Mature and old growth Douglas-fir
Old growth ponderosa pine
Mature and old growth subalpine fir
Mature lodgepole pine
Snags and defective trees
Rock outcrops, cliffs, and talus

Each organism within the biotic community occupies a particular functional niche, which was arrived at through natural selection and evolution. In general, more stable ecosystems have more niches to occupy and a more complex community with a greater diversity of species.

Prior to man's appearance, fire was the major event that influenced habitat diversity and the occurrence of species on the forest. Since the advent of fire control, many habitats have been allowed to progress toward climax and habitat diversity has been reduced, which has consequently reduced some wildlife species. This trend has been reversed since the mid 1950's when timber harvesting began on a moderate scale. Logging substituted for fire by creating openings which favored the majority of the wildlife species. Seventeen species dependent on old growth conditions were negatively affected by this trend.

On the Salmon National Forest, the most homogenous timbered habitats are Douglas-fir and lodgepole pine. In these areas, horizontal diversity can be improved markedly by either timber harvesting or fire. Large expanses of dense sagebrush also provide opportunities to increase horizontal diversity. In ponderosa pine and subalpine fir, there is already considerable vertical diversity and opportunities to improve diversity are limited. Except for sagebrush habitats, there are only minimal opportunities to significantly improve diversity.

Table III-14 shows diversity of forested habitats as currently found on the forest. The additional 515,791 acres of nonforest habitat includes aquatic, riparian, sagebrush, grasslands, quaking aspen, snag and defective trees, and rock outcroppings, cliff and talus environments.

TABLE III-14

Structural distribution of major forest vegetation types.

			Percent of Acreage by Structural Stage				
Plant Series	Tot Acres	%	Grass-Forbs	Seed/Sap	Poles	Immat	Mat
Douglas-fir	717,700	53	3	1	3	44	48
Lodgepole pine/ Subalpine fir	568,800	42	1	3	35	34	27
Ponderosa Pine	67,700	5	-	-	-	-	100
	1,354,200	100					
Nonforest	422,800						
Total	1,777,000						

Supply and Demand

Big Game - Over the past 10-20 years, demand for big game animals (all species) has exceeded the supply. This trend is expected to continue at all management levels. In 1976, Idaho Department of Fish and Game restricted seasons and bag limits on elk and mule deer in order to increase numbers. This effectively curtailed elk harvest but had little effect on the mule deer harvest. Demand (as evidenced by hunter use) dropped slightly, but should increase as regulations are liberalized.

Current use is estimated to be 40,000 WFUD's annually.

Other Game - Supply of upland game, waterfowl and furbearers exceeds demand over the entire forest and is expected to do so far into the future. Demand will increase slowly.

Current use is estimated to be 13,000 WFUD's annually.

Non-Consumptive Wildlife Use - This form of wildlife use is increasing slowly. Greatest demand is watching big game in the winter and spring along the Salmon River road. No user conflicts have been noted or are expected to occur.

Current use is estimated to be 40,000 WFUD's annually.

Anadromous Fish - Negative influences on anadromous species resulting from construction of dams in the Columbia and Snake Rivers and overharvest has created a situation where demand for recreation and commercial use far exceeds present supply. Locally restrictive seasons and bag limits have been instituted to provide a degree of resource protection while providing for recreational use. Recreation fishing for chinook salmon has been tightly controlled because of the very reduced number of returning adults. Recreational use demands for steelhead trout

continue to exceed supply, even though hatchery management efforts have generated a greater supply. Continuation of these hatchery efforts is expected to double the presently available supply. It is highly unlikely that supply will meet or exceed demand through the planning horizon.

For the most part, recreational use of the salmon resource has been unavailable. Future demands for recreational use of a salmon fishery will continue to exceed supply, even though supplies will be increased through development of a salmon hatchery in the upper Salmon River drainage.

Resident Trout - In general, supply exceeds demand for trout fishing on much of the forest. There are areas, however, where more restrictive harvest regulations have been enforced to protect specific populations. There also are streams and/or stream sections where demand exceeds the stream capability and supplemental stocking with catchable fish has to be instituted.

Projected Consumptive Use Demand for Recreation Fishing

Figure 1

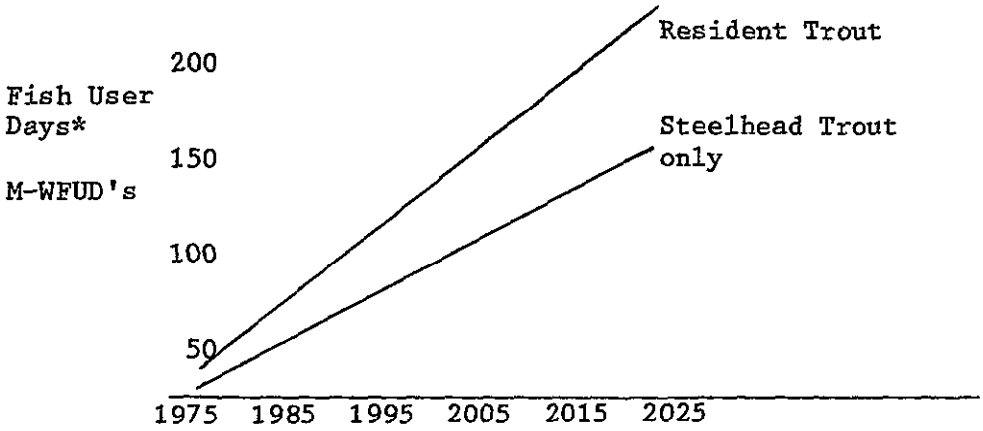
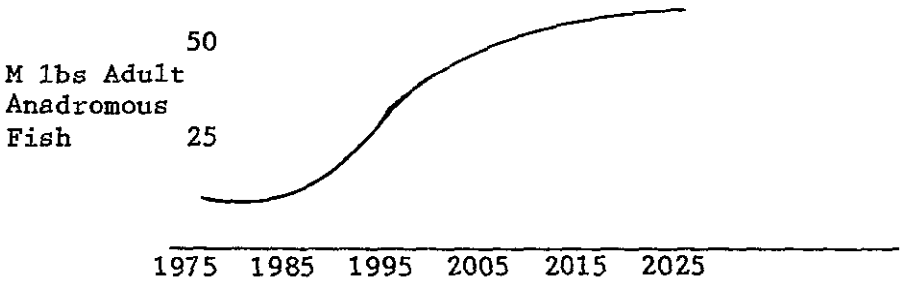


Figure 2



*WFUD's may be expressed as RVD under recreation.

Goals and Objectives of State Wildlife Agencies - There are two State agencies which have goals and objectives which will be influenced by decisions generated by the Forest Plan. These

include Idaho Department of Fish and Game and Montana Department of Fish Wildlife and Parks.

Idaho Department of Fish and Game - Goal, objectives, and policies of the Idaho Department of Fish and Game are documented in "A Plan for the Future Management of Idaho's Fish and Wildlife Resources," Volume I. In general, the Department's objectives for resident game fishes in forest lakes and streams are to increase allowable harvest and meet demand at improved success rates. Under current management levels and habitat trends, supply is predicted to meet demand through 1990. Goals and objectives for anadromous species (chinook and steelhead) are to rebuild runs to the 1960 levels.

Species Management Plans for elk, mule deer, white-tailed deer, moose, bighorn sheep, mountain goat, and pronghorn antelope, have recently been published. These give detailed information for each Game Management Unit. In general, the Department's objectives for the big game species on the forest are to increase them to above current levels.

Montana Department of Fish, Wildlife, and Parks - At least 1,000 elk and 3,000 mule deer, plus an unknown number of mountain goats, bighorn sheep, moose, black bear and pronghorns migrate back and forth between Idaho and Montana. In general, Idaho provides winter habitat and Montana provides summer habitat for these animals. Managing these inter-State herds requires close coordination between the two States and the Forest, both from the standpoint of controlling harvest and protection of the habitat.

Bureau of Land Management - Goals and objectives of the Bureau of Land Management affect Forest Service management because their lands generally border National Forest System lands at lower elevations and provide a majority of the winter range for big game species on some years. Their present policy is to protect and improve these ranges. This management is crucial to the maintenance of existing big game and other wildlife species; many use National Forest System lands during the spring, summer, and fall.

Fish and Wildlife Service - The Fish and Wildlife Service has been directly involved on the forest in formal consultations under Section 7 of the Endangered Species Act. These have all involved timber sales on gray wolf habitat. An informal consultation on the proposed Forest Plan has been conducted with the Fish and Wildlife Service. The Service expressed no concern for peregrine falcon, grizzly bear, or bald eagle, but did request formal consultation on gray wolf. A biological evaluation for gray wolf has been submitted.

The Animal Damage Control Division is also involved in controlling predators on and adjacent to sheep allotments.

Other Agencies and Organizations - Goals and objectives of the National Marine Fisheries Service, Fish and Wildlife Service, Bonneville Power Administration, Columbia River Inter-Tribal Fish Commission, Sho-Ban Tribe, and others are related to improvement of migratory access and enhancement of spawning and rearing habitats. Considerable expertise and funding has been expended in resolving migration barriers and more effort is planned.

Private Lands - Management of private lands adjacent to forest lands influences numerous wildlife and fish species. Many of the streams used for spawning and rearing originate or run through private lands. Land use objectives and goals are variable and resultant habitat condition on these lands can influence fish use of forest habitats. Much of the private lands contain historic winter ranges which are particularly important to deer and elk. The continued loss of this habitat to development has put increased pressure on the Forest Service to mitigate some of these losses by increasing carrying capacity on the National Forest System lands.

Habitat Improvement - The Forest accomplishments in habitat improvement for the past 10 years are as follows:

Prescribed burning	3,500 acres
Browse and forb planting and seeding	200 acres
Barberchair and prime mountain mahogany	100 acres
Fence riparian areas and springs	275 acres
Road closures	100 structures
Construct nest boxes	100 structures
Construct goose nesting platforms	30 structures
Construct guzzlers and springs	40 structures
Stream structures	1,000 structures
Stream and lake enhancement	500 acres

4. Range

There are approximately 188,000 acres of rangeland classified as suitable for grazing on the Salmon National Forest. Table III-15 depicts the acres of suitable range by vegetative type. Of the 188,000 acres, 21,900 (or about 17%) is considered to be in less than satisfactory ecological condition.

Of the 21,900 acres in less than satisfactory condition, an estimated 40 percent could be improved through better management or some type of vegetative treatment. Approximately 30 percent of these acres could be improved through cultural treatment. The remainder would improve slowly through implementation of better management systems and better administration of existing management plans. Current average production on these acres is about 225 pounds of available forage per acre. Increased production due to better management and vegetative manipulation is estimated at 100 percent, or a total of 450 pounds of available forage per acre.

TABLE III-15

M Acres of Suitable Range by Vegetative Type

Vegetation Type	Acres of Suitable Range
Grasslands	19.5
Dry Meadow	3.4
Wet Meadow	2.4
Perennial Forbs	4.9
Sagebrush	80.5
Browse-Shrub	2.9
Coniferous Timber (Grazable)	64.8
Aspen	2.2

Presently, about 54,000 AUM's of grazing are permitted annually to 85 individual permittees. If maintaining long-term watershed conditions and minimum viable populations of wildlife were the only coordination measures imposed, it is estimated the biological potential for existing and potential suitable range would be approximately 73,000 AUM's.

Forest program direction currently emphasizes balancing range livestock use and ecosystem stability in a cost effective manner while insuring minimal social and economic impact on dependant communities. Coordination with other resources and riparian management are also major emphasis areas. Where feasible, allotment management planning is integrated closely into coordinated resource planning with BLM, State, and privately owned rangelands. Development of plans through an interdisciplinary approach and permittee involvement along with proper follow-up and monitoring will insure that the objectives and goals are met.

Livestock grazing on National Forest administered lands is an integral component of the ranching and agricultural base of Lemhi County. It is estimated about 26 percent of the total livestock forage base for the County is obtained from National Forest grazing permits. If permitted AUM's were reduced by 36 percent, an estimated 5 percent of the livestock operations would become uneconomical on the Salmon. In addition, about 20 percent would be severely impacted economically. With total exclusion of grazing on National Forest System lands, approximately 46 percent of the operations with permits would become uneconomical, and an additional 40 percent becoming severely impacted.

Very little, if any, unobligated State or private rangeland exists in the Lemhi County area. Therefore, the only significant way to replace Forest Service grazing would be supplemental feeding.

There are several important trends affecting range use by domestic livestock on the forest. The depressed economic conditions of the range-sheep industry is probably the most

visible of these trends. Less than 40 years ago, more than half of the permitted livestock use was for sheep. Presently, only 3 of the 66 active grazing allotments are used by sheep. Permitted AUM's of sheep grazing is less than 2000.

Eighty-nine percent of the permittees on the Salmon National Forest reside and maintain their base property in Lemhi County, Idaho. Within Lemhi County, 92 percent of the land is Federally owned, leaving limited opportunity to expand base property and grazing demand on the forest. Although there are opportunities to increase grazing capacity on private ranchlands through more intensive management and investment in improvements, these opportunities are limited. Likewise, there are opportunities to increase grazing capacities on National Forest lands through improved grazing management systems and range improvement projects; however, these opportunities are also somewhat limited.

Presently, range management objectives on the Salmon National Forest are commensurate with National and Regional direction. These objectives include:

- Produce needed amounts of range forage by effectively developing National Forest ranges to their reasonably attainable potential.

- Improving and maintaining environmental quality by managing the grazing in harmony with the needs of other resources and their uses, and by exerting a favorable influence on associated private and other related lands.

- Contribute to the maintenance of viable rural communities by promoting stability of family ranches and farms.

- Identify acres of unused or underused suitable range (including transitory range) and place in production under proper management.

- Implement a level of range management on all allotments that will improve the condition of all range that is now in less than satisfactory ecological condition.

- Optimize the production and use of forage on all suitable range to the extent it is cost-effective.

- Make maximum use of a coordinated planning approach in developing all allotment management plans to better integrate improved management of National Forests, associated public lands, and privately owned lands.

- Search out and apply techniques to resolve livestock grazing problems or conflicts with other resource uses within riparian areas.

- Coordinate range improvement and management activities with wildlife habitat needs, especially on key habitat areas such as winter ranges, calving areas, riparian areas, and sage grouse strutting grounds.

- Shift livestock grazing from lands in unsatisfactory condition (poor and very poor) where neither management nor treatment will result in improvement.

- Develop management scheme to identify and better utilize available forage productivity on transitory ranges (timber harvest units, thinnings, old burns, etc.).

- Examine and execute opportunities to realign allotment boundaries for more efficient operations.

- Emphasize investment in rangeland improvements to bring forage production to optimum levels.

- Emphasize integrated pest management techniques to reduce significant losses from rangeland pests.

5. Timber

The forest contains 422,800 acres of nonforested land, including water. There are 235,100 acres of forested land for which are not capable of producing crops of industrial wood. This land is generally low site land.

The forest has 323,500 acres of land that have been withdrawn by legislative action (Frank Church--River of No Return Wilderness). An additional 50,700 acres have been withdrawn from timber production, either because timber cannot be harvested without impairing soil productivity and/or watershed condition, or because it cannot be assured that the land can be adequately restocked within five years after final harvest.

The remaining 744,900 acres are considered tentatively suitable for timber production. Table III-16 and Figure III-1 provide an accounting of acres on the forest and a graphic display of the relative amounts by classification.

From 1955 through 1982 a total of 726.6 million board feet of timber was harvested from the forest. In fiscal year 1981, 38.881 million board feet were offered and 25.218 million board feet were sold and 14.309 million board feet were cut. As of December 30, 1982, 73.5 million board feet were under contract awaiting harvest.

Logging methods used on the forest include tractor, jammer, groundlead cable, skyline, and helicopter. The majority of the timber is logged with the tractor and jammer although the skyline is being used increasingly as the steeper lands become accessed for timber management purposes. The helicopter is used to a

small extent when consideration for economics, watershed protection, wildlife, visuals, or other resources preclude the use of the more conventional, ground-based methods.

TABLE III-16

Lands Capable, Available, and Suitable for Timber Production

	Acres Thousands
National Forest System Lands (Net)	1,777.0
Lands not suitable for timber production:	
Nonforested - including water	422.8
Forest land - not capable	235.1
Productive forest land - not suitable:	
Soil or watershed damage, five year regeneration not assured	50.7
Withdrawn by legislative action	323.5
Tentatively Suitable for Timber Production:	744.9

The most commonly used silvicultural systems are the shelterwood and seed tree systems. Clearcutting is used in the lodgepole pine, and as necessary, in disease and insect infested stands of Douglas-fir. Individual tree selection is used to some extent, primarily in salvage/sanitation situations and in the xeric ponderosa pine types.

Regeneration is accomplished through both natural regeneration and planting of nursery-grown seedlings. In fiscal year 1981, 1,630 acres were planted and site preparation for natural regeneration was done on 707 acres. In fiscal year 1982, 1,518 acres were planted and natural regeneration site preparation was done on 351 acres. Thinning of young stands was done on 1,839 acres in fiscal year 1981 and on 1,568 acres in fiscal year 1982.

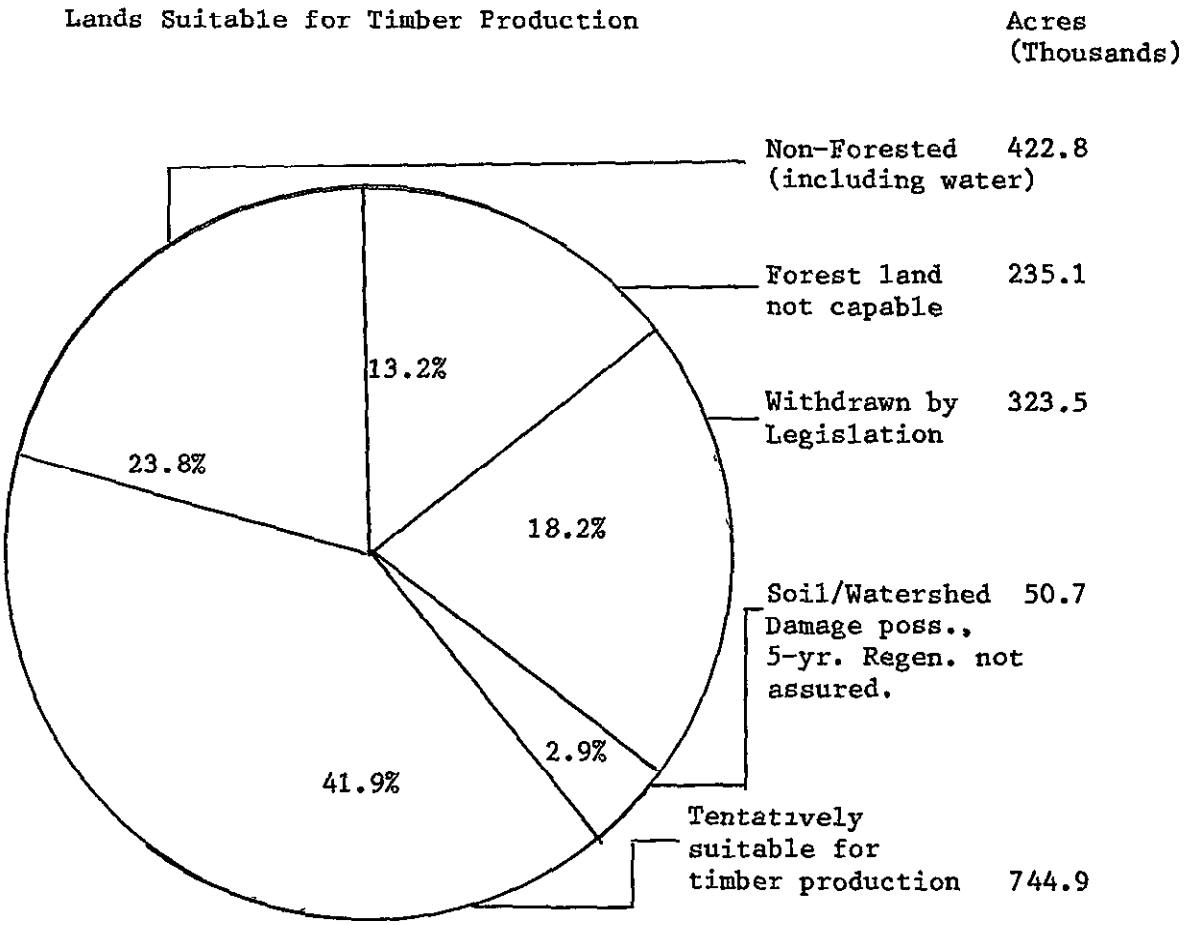


Figure III-1

The timber resources of the forest are an important component of the local economy and also contribute to the economics of several surrounding communities. The one large business mill in the local community depends almost entirely on timber from the forest for its raw material supply. Currently, the small business share of timber purchased is 29 percent and the majority of this material is processed at the small business mills in Darby and Dillon, Montana.

Since timber harvest, by its nature, creates disturbance, it is necessary to consider the impacts of the disturbance on other resources and coordinate the harvest activities with them. The coordination required for timber harvest is increasingly complex. The silvicultural system and logging method used and the layout, design, and spacing of individual harvest units must consider the impacts on wildlife habitat, visuals, livestock management, insect and disease populations, fire management,

recreation opportunities, and historical and archeological resources. In addition, mitigation measures must be included to prevent soil erosion and water quality degradation as a result of road construction and harvest activities.

Demand for firewood has increased in recent years as a result of concern over availability and rising cost of petroleum-based fuels and electricity for heating purposes. The estimate amounts (in millions of board feet) of fuel wood removed from the forest in recent years are:

1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
.384	.781	1.102	1.440	1.840	1.840	2.441	2.434	2.288	2.772

The increase in demand on the Salmon Forest has not been as dramatic as on some forests due to the distance from major population centers. The majority of firewood gathered on the Salmon Forest is used in the local area by a relatively small population.

Currently, the Forest operates under a "free-use permit" firewood policy where supply exceeds demand in remote areas. A charge is made for commercial firewood gatherers who obtain wood for resale and for personal use in readily accessible areas where demand exceeds supply.

The demand curve for timber from the forest is horizontal. That is, a change in output will have little or no effect on market price. Future demand for the timber resource will increase at a moderate rate and there will be a strong demand from outside the local area for the Forest to contribute to the national wood supply. The Forest anticipates market and nonmarket demands for forest resources will increase and that these demands will, in some cases, conflict.

Firewood demand depends a great deal on price and availability of other energy sources, distance to firewood supplies, and other influences such as local air pollution control restrictions placed on wood burning equipment. Under present conditions, it appears that firewood demand will level off or increase slightly compared to the rather rapid increase over the past few years.

6. Water

Climate

The climate on the Salmon National Forest has considerable variability since the forest covers a wide range of elevations as well as a large spatial distribution over portions of central Idaho. Elevations range from 11,350 feet in the peaks of the Lemhi Range to less than 2,800 feet along the Salmon River. This variability in elevation, along with the influence of local

topography and aspect, results in a wide variety of micro climates ranging from alpine to desert environments.

Precipitation and Storm Patterns

The majority of the annual precipitation occurs during the late fall through early spring. Major low pressure systems move in from the Pacific Ocean and across central Idaho. Often, the low pressure systems remain stationary over the Salmon National Forest and result in heavy rains and snows. Remnants of these storms often linger along the Continental Divide on the eastern border of the forest. While the predominant form of precipitation from these storms is snow, during the fall and spring months, storms originating from warm moist air out of the Gulf of Mexico produce moderate intensity, long duration rainstorms. Often soils are at or near saturation and periodically extensive mud and debris flows occur in the more unstable soils.

During the summer months, convective storms often develop along the mountains, resulting in high intensity, short duration rainstorms. These storms are especially common along the river breaks area of the forest. Associated with these high intensity storms are occasional mud flows and gullying.

On the Salmon National Forest, a wide variation in average annual precipitation exists, resulting from several factors. Elevation, topography, intervening mountain ranges and resultant rain shadows all effect the distribution of precipitation.

Annual precipitation ranges from 10 inches a year in the lower foothills (and less in the adjacent valley bottoms) to 25 to 30 inches along the ridges in the Leadore area, and as high as 50 inches in the upper headlands and peaks of the northern portion of the forest. Precipitation in the form of snow (with total snowfall greater than 150 inches in some areas) is the predominant source of precipitation on the forest. In average years, a snowpack begins developing in the mid and upper elevations by late fall and persists until early summer (late June in the highest elevations).

The majority of the annual precipitation occurs from fall through spring. Usually, the precipitation amounts in July, August, and September months are the lowest. Predominant precipitation in the summer months is in the form of high intensity, short duration rainstorms. These storms do not usually contribute significantly to the total annual precipitation.

Temperature

Elevational differences on the Salmon National Forest cause a wide variety of temperature ranges. Along the Salmon River at Shoup, the average annual temperature is 47°F, while up river in Salmon, the average annual temperature is 44°F. Other average

annual temperatures include: Leadore 38°F; Cobalt 36°F; and, Gibbonsville 42°F. In the upper elevations of the forest, such as along the Continental Divide, the average annual temperature is approximately 25°F. Growing seasons vary widely on the forest, again a function of elevation. In the lowest elevations, (along the Salmon River) the growing season ranges from 105 days to 120 days. In the lower elevations (around 5,500 feet) the growing season is 50-70 days. At the Cobalt Ranger Station, the growing season may be as short as 15 days.

Temperature extremes include lows of -20°F to -30°F at Salmon, -35°F to -45°F at Cobalt, and along the ridges temperatures as low as -50°F to -60°F have been estimated.

High temperatures at the highest elevations are in the range of 70°F to 80°F. At Cobalt, maximum temperatures reach the mid 90's. Highest temperatures have been observed in the river breaks area along the Salmon River, where on southern exposures, temperatures in excess of 110°F have been experienced.

Riparian

Riparian areas are land areas which are directly influenced by water. They usually have visible vegetative or physical characteristics showing this water influence. Streams, lakes, ponds, wetlands, flood plains, and their associated aquatic habitat, which supports distinct vegetative communities characterize the riparian areas on the forest.

Riparian Habitat: Less than 5 percent of the Salmon National Forest is characterized as riparian habitat, including:

Riparian Habitat Type	Stream Miles	Acres
Anadromous species related	390	10,522
Resident species related	1,289	34,808
Live water with no fisheries	917	24,756
Intermittent/ephemeral	1,892	22,708
Total:	4,488	92,794

Resource Influencing Riparian Areas:

a. Timber Harvest and Road Construction. In the past, harvesting in some drainages on the Salmon National Forest has been intensive. In streams such as Spring Creek, Iron Creek, Colson Creek, and Hughes Creek significant cover and canopy removal has occurred, along with associated increases in fine debris and bank instability. Road locations adjacent to stream channels have also resulted in continued, persistent sedimentation.

b. Grazing. Approximately 4,200 acres, or 6 percent of the riparian habitat, have been identified as having existing

conflicts between livestock grazing and the maintenance of riparian habitat. Habitat types most commonly afffected are low gradient perennial stream reaches which support grasses, sedges, and willows.

c. Mining. Placer mining has dramatically altered some riparian zones, resulting in permanent changes in water table levels, vegetation, and stream channel locations and characteristics. Mechanical disturbance, as well as loss of top soil, has caused some riparian areas to be nearly impossible to restore. Streams impacted significantly include: Hughes Creek; East Boulder Creek; and, Napias Creek including the upper Leesburg basin.

d. Recreation Use. To a minor extent, recreation use has influenced certain specific riparian areas. Heavy camping use and ORV traffic have changed the aesthetics, soils properties, and vegetative cover in certain site specific areas, within certain riparian zones.

Water

Regional Perspective: The Salmon National Forest contributes an average 1,039,000 acre feet to the Pacific Northwest River Basin each year. Downstream uses include irrigation, industry, recreation, municipalities, fisheries, and power generation.

Regional demands are currently not surpassing plentiful surface and ground water supplies. While localized shortages are expected to develop as readily available water supplies are surpassed, a water yield augmentation issue has not been identified for the Salmon, Snake, and Columbia Rivers.

Local Perspective: Three municipal watersheds are located on the forest. The City of Salmon has been utilizing the Jesse Creek watershed (which consists of the Jesse Creek, Chipps Creek, and Pollard Creek drainages). While the yield from the watershed is more than adequate for current uses, the City of Salmon does not have water rights to the entire flow. Recently, water shortages have been experienced in the City of Salmon which are now being mitigated by using supplemental flows from a pump station on the Salmon River. Additional future needs are expected to be met by the use of the Salmon River as well.

The community of Gibbonsville is served by the Anderson Creek watershed. Approximately 25 individuals have been served by this water system. The source is more than adequate for all current and anticipated future uses.

The mining community of Cobalt is served by the Spring Creek municipal watershed. Past populations of 1,500-1,600 persons and current populations have been adequately served by this watershed. If the community becomes heavily populated, the watershed is expected to meet the needs.

Water Uses and Development

Consumptive Needs

Several consumptive uses of water on the Salmon National Forest are covered by Federal Reserved water rights. Examples of these uses include work centers, guard stations, and lookouts.

On the Salmon National Forest, there are approximately 850 consumptive water uses. These include 750 livestock water troughs or ponds, 23 administrative uses, 38 recreational sites as well as several miscellaneous uses. Total consumptive use within the forest boundary is 1,000 acre feet or less than 1/100 of 1 percent of the average yearly output of the forest.

In the Salmon area, off-forest use includes municipal domestic purposes, fisheries, recreation, mining, and irrigation.

Nonconsumptive Instream Flows

The Salmon National Forest also has nonconsumptive Federal Reserved water rights on the streams within the forest boundary. These reserved rights are for the purposes of securing favorable conditions of water flow and for continuous supply of timber as identified by the Organic Administration Act of 1897. Nonconsumptive instream flows are also needed for the purposes of fish and wildlife, grazing, and recreational resources as required by the Multiple Use-Sustained Yield Act of 1960. Other Federal legislation directing management of National Forest System resources may also require instream flows.

Water Storage and Impoundments

Currently, 57 diversions of water exist on the forest. These include 6 on the Cobalt District, 8 on the Salmon District, 9 on the North Fork District, and 34 on the Leadore District. The majority of these diversions are for irrigation of lands below the forest boundary within the Lemhi and Salmon River valleys. Additional diversions are currently proposed by local residents for mining and irrigation purposes.

Thirteen small impoundments are located within or immediately adjacent to the forest. Seven of these are used for irrigation, one for mining, two for domestic use, and three for recreation.

Total storage capacity within the forest boundary includes 634 acre feet for irrigation, 146 acre feet for recreation, and 650 acre feet for mining at the Blackbird Mine. Approximately 21.5 acre feet of storage is available below the Salmon City Municipal Watershed (Jesse Creek [Table III-17]).

TABLE III-17

Water Impoundment on or Below National Forest Lands

I. On-Forest - (Under Special Use Permit)

Name	Source	Use	Acre/Feet
Bohannon	Bohannon Creek	Irrigation	50
Mill Creek Lake	Mill Creek	Irrig/Domestic	210
Geertson	Geertson Creek	Irrigation	60
Basin Creek	Basin Creek	Irrigation	44
Billy Creek	Billy Creek	Irrigation	70
Dairy Lake	Dairy Creek	Irrigation	200
			634

II. Private Land Within Forest Service Boundary

Blackbird	Blackbird Cr.	Mining	650
Cummings	Hull Creek	Recreation	60
French	Rams Creek	Recreation	36
Boggeman	Silver Creek	Recreation	50
Cobalt Water Supply	Spring Creek	Domestic	1
			797

III. Storage Below Forest Service Boundary

Salmon City Wtr	Jesse Creek	Domestic	21.5
Gorley Creek	Gorley Creek	Irrigation	50

Water Quality

Generally, water quality on the Salmon National Forest is good. Water quality has been able to meet identified beneficial uses in the land management planning process. Two areas, however, have been identified as sources of water quality degradation on the forest. The most critical problem is the Blackbird Mine area, where acid mine drainage has degraded water quality. Affected streams include Blackbird Creek, Panther Creek, Bucktail Creek, and Big Deer Creek. In all, approximately 35 miles of stream have been directly affected by acid mine drainage. The high levels of toxic heavy metal and acidity have severly reduced fisheries in these streams.

Another water quality problem existed in the Dump Creek-Moose Creek drainages. A major restoration project implemented in 1979 has been reducing the sedimentation of the Salmon River from the Dump Creek drainage. Other sources of water quality degradation include short term impacts resulting from timber harvest, mining, road construction, and grazing.

Future Conditions of the Resource

Availability of Water to Meet Needs

Regional Perspective: In the Pacific Northwest, projected consumption of water from the Columbia River system is not expected to surpass abundant available surface and ground water supplies. However, as populations continue to increase, localized shortages are expected to increase. Within the Region, these shortages are expected to be addressed on a local level, and not through water yield augmentation on a Regional level.

Local Perspective: In Salmon, municipal needs have already exceeded the availability of water from the municipal watershed. The additional needs are now being met by the use of a pump station on the Salmon River. Additional needs are expected to be met with the use of this supplemental system.

The other municipal systems (Gibbonsville and Cobalt) are expected to provide a volume of water to meet future demands.

Future irrigation water demand in the Lemhi and Salmon Valleys are expected to be met by additional off-forest improvements. These include water conservation measures such as a sprinkler irrigation system, additional storage facilities, and more efficient ditch use. Additional water is being utilized by the development of ground water reservoirs in the Lemhi Valley. Since most of the economically viable croplands have been developed in these valleys, additional water needs should be met by these conservation practices.

7. Minerals and Energy

Geology - The geology of the Salmon National Forest is extremely diverse and complex. Major geologic units include Precambrian gneisses and quartzites, Paleozoic sedimentary units, Cretaceous granites, and Tertiary granites and volcanics.

General soil erosion and stability problems on the forest are normally associated with granitic and volcanic-based soils.

Historically, seismic events have not been a hazard on the forest. Two earthquakes have been reported on the forest in recent years. Both of these events were deep-seated. The first was a 4.3 Richter Scale event in 1978. Some trail and road damage occurred from the second earthquake centered near Mackay, Idaho, in 1983.

Minerals and Energy - The Forest Service manages renewable surface resources, not mineral and energy resources. Minerals Area Management programs are concerned with minimizing impacts of exploration for and development of mineral and energy resources on renewable surface resources and, ultimately, adequate reclamation.

Minerals Area Management is based on the three legal categories of minerals on public lands: locatable, leasable, and saleable.

Locatable Minerals - An estimated 229,000 acres of mining claims (lode, placer, millsite, tunnelsite) are located on lands administered by the Salmon National Forest. The forest has not been a significant producer of mineral commodities since 1966. There are currently several small gold and/or silver operations. Historic mineral production is displayed below:

TABLE III-18

Past Mineral Production 1864-1977
Salmon National Forest
(1864-1900, estimated - U.S. Geologic Survey; 1901-1977 U.S. Bureau of Mines)

Commodity	Amount
Gold	640,000 ounces
Silver	3,800,000 ounces
Copper	35,000 tons
Lead	77,000 tons
Zinc	78 tons
Fluorspar	Confidential
Cobalt	8,000 tons

The Blackbird Mine, located within the Salmon National Forest, contains the largest known reserves of high-grade cobalt ore in the United States. The Lemhi Pass thorium deposits, located partially within the Salmon National Forest, contain the largest known resources of high-grade thorium ore the United States.

Leasable Minerals - There is no historic production of leasable minerals from the Salmon National Forest. Leasable commodities of possible economic importance include oil and gas, geothermal, and phosphate. The forest also contains unevaluated lignite deposits.

There are currently 12 oil and gas leases (approximately 27,000 acres) on the forest. There has been no exploration activity on these leases, although Amoco has drilled 2 wildcat wells on nearly State and BLM lands in 1981 and 1982-83. There are also 34 pending oil and gas lease applications (approximately 155,000 acres).

Three geothermal lease applications are pending on 2,900 acres of the forest.

Nine phosphate prospecting permit applications are pending on 18,000 acres of the forest. These applications all overlap oil and gas lease applications.

Saleable - Saleable mineral resources that could be developed such as sand and gravel, are present in limited quantities within

the forest boundary. Past and current use has been light and future use is expected to remain the same.

Demand Trends

The demand for mineral commodities fluctuates with economic conditions and technologic changes. Although present trends indicate a slowdown of mineral and energy exploration and development, these activities should increase as the domestic and international economies improve.

The Forest Service does not directly satisfy mineral and energy demand, but the planning process can affect availability of these resources through land allocation decisions. Currently, the availability status is:

25.9 percent unavailable
5.9 percent constrained
68.2 percent available

Within the available 68.2 percent of the forest, specific mineral and energy potentials are:

Proven Resources:	Cobalt, Copper
Drilled Resources:	Gold, Fluorspar
Potential Resources:	Cobalt, Uranium, Molybdenum, Gold, Fluorspar, Lead, Thorium, Rare-earths, Silver, Barite, Tin
Unevaluated Resources:	Oil and Gas, Phosphate, Geothermal

8. Human and Community Development

The population living in or near the planning area shares similar needs and interests. The area's cultural and economic survival and development are tied to National Forest System (NFS) lands and resource management.

The value of human resources and the needs of the local communities and other publics are recognized in all phases of NFS land and resource management. Forest resource management is aimed at complementing local community and public needs to the extent allowed by personnel ceiling, Federal funding, and regulations.

The Salmon National Forest is committed to a nation-wide program of human and community development, with its primary objective being to help people and communities take care of themselves. The program includes activities that provide conservation work and learning experiences for youth, adult employment, training opportunities, and technical assistance.

Several human resource programs have been established by the Federal government to provide temporary employment to local individuals and to reap the benefits of their labor.

Youth Conservation Corps (YCC)

This program accomplishes needed conservation work on public lands, by providing employment for youths, 15 to 18 years old, male and female, from all social, economic, ethnic, and racial groups. The Salmon National Forest currently has a 10-person, nonresident crew of YCC youth located on the Leadore Ranger District.

Young Adult Conservation Corps (YACC)

This program was established in 1977 to provide employment for local youths, ages 16-23, and to accomplish needed conservation work on public lands. This program was terminated in 1982 due to a lack of funding.

Senior Community Service Employment Program (SCSEP)

This program provides part time work opportunities for unemployed, low income persons who are 55 years of age or older and who have poor employment prospects. The Forest Service accomplishes needed work that might otherwise not be completed due to funding and/or manpower constraints. The Salmon National Forest presently supports seven enrollees.

Volunteers

Volunteers of all ages and cultural/ethnic groups provide a wide variety of services to the public on behalf of the Forest Service. Recent emphasis has resulted in a dramatic increase in volunteer activity and corresponding savings to the taxpayer. Many volunteer groups now "adopt" a particular forest area or functional activity and provide valuable support to projects that might otherwise not be accomplished. The Salmon National Forest had 6,295 hours of work volunteered in 1983. Typical activities of volunteers include clerical assistance, archeological survey, trail construction and maintenance, stream and fish habitat improvement, fence and recreation facility construction, tree planting, vehicle and structural maintenance, insect and disease control, fuel treatment, fire control and mop-up, and wildlife habitat improvements.

High unemployment in the planning area creates a demand for jobs, particularly during off-school seasons. Recent budgetary and personnel ceiling constraints affect the Forest's ability to recruit and hire the traditional summer/seasonal workforce and to fill positions which become vacant. This situation is expected to remain for some time.

The Forest Service's goal is to utilize human resource programs to the extent possible within funding and ceiling limitations. Opportunities to provide employment and to develop employable skills in eligible individuals, both young and old, will be considered in the planning of all forest resource related projects and activities.

E. Support Elements

1. Land Ownership and Land Uses

Special Uses

Except where special uses are specifically prohibited through legislation, local zoning or administrative decisions, the Salmon National Forest may be available for occupancy if it is in the public interest and compatible with Forest Service goals and objectives. Occupancy is authorized through the issuance of special land use documents. Factors that limit authorization of occupancies are availability and suitability of land for the proposed uses and compatibility with other National Forest management purposes.

Current Use and Management

The Salmon Forest has 325 Special Use Permits ineffect. The largest number of permits are in the category of "water uses" representing some 87 situations for exclusive use of National Forest lands for reservoir and irrigation ditches, or culinary water systems servicing recreation homes or rural home sites on private lands. One hundred ninety-two miles of low standard roads, mostly as access to patented and unpatented mining claims or recreation cabins, are authorized by 80 Salmon Forest permits.

Recreation uses of the Salmon Forest include 77 permits. These inclusive recreation uses are principally for commercial outfitting/guiding/floatboating in the mountain areas west and north of Panther Creek, the Salmon River below North Fork, or the Middle Fork of the Salmon River. Over 20 permits for recreation cabins along the Salmon River below North Fork will terminate due to their nonrenewable terms and conditions during the 80's and 90's. There are 65 miles of aerial or buried power transmission and distribution line and telephone line rights-of-way across segments of the Salmon Forest, including 35 permits for utilities and communication purposes. The communication permits include 3 mountain top communication sites; a fourth site is being considered by the Leadore Ranger District.

Demand Trends

Concurrent with increased development, the total number of special use applications will increase at a rate of 3 percent per year during the foreseeable future. The application and permit issuance process will become more complex for both the applicant

and agency due to conflicts for resources and conflicts with forest management activities.

Landownership

The present forest landownership is the result of additions, transfers, donations, exchanges and purchases affecting the original Salmon River Forest Reserve, proclaimed by President Theodore Roosevelt, in 1906. Over the intervening years, 1,725 acres of private land within the forest boundary have been acquired by the United States for National Forest purposes. During the same period, U.S. Patents were granted for homesteads and mining claims, totaling 23,900 acres. These private lands are generally located as riverside lands, or along the bottomlands of the major streams within the forest.

The Salmon National Forest administers lands situated in parts of Idaho, Lemhi, and Valley Counties, in Idaho, totaling 1,800,882 gross acres. The administered lands also include parts of Challis and Payette National Forests and part of the RONR Wilderness including Wild and Scenic, and Recreational parts of the Salmon River.

The forest is comprised of several noncontiguous units of land. The largest unit lies west and north of Salmon, Idaho; straddles the Middle Fork of the Salmon River and a 50-mile segment of the Salmon River; and joins the Beaverhead, Bitterroot, Payette, Boise, and Challis National Forests on the northeast, north, west, and south, respectively. The unit includes parts of the River of No Return Wilderness, the Salmon River Wild and Scenic River, and the Middle Fork Wild River. Access to this unit is via forest roads and trails westward from U.S. Highway 93, by the Salmon River Road, and by the Morgan Creek-Panther Creek Road running northerly and southerly through the block.

The second largest unit includes the northern portion and all of the east facing slopes of the Lemhi Range, to a point south of Gilmore Summit. Access to the north part of this unit is from U.S. Highway 93, and from State Highway 28 in the Lemhi River valley. Access along the east facing slopes for the balance of the unit is from the Lemhi River valley Highway 28 area, via individual canyon roads terminating inside the forest boundary. This unit joins the Challis Forest on the west and Targhee Forest on the south.

The other two units are on the west facing slopes of the Continental Divide, Beaverhead Mountains, of the Bitterroot Range, located to the southeast of Salmon, Idaho. These units are accessed via individual canyon roads and trails from the Lemhi Valley area. The Beaverhead National Forest joins these units on the east.

To date, the objectives and goals of the forest landownership adjustment are twofold: (1) to acquire specific private tracts

within the forest that are needed to meet management project goals, and (2) to consolidate interior ownerships to ensure optimum land use.

Many of the private homesteads have a metes-and-bounds perimeter; a significant number of the private metes-and-bounds homesteads are divided into two or three separate tracts by narrow strips (usually 33 feet wide) of National Forest administered land, that were excluded when the homestead patents were granted. These narrow strips are too small to efficiently manage for National Forest purposes. Since the Forest Service does not have authority to sell lands, the only current means of disposing of them is by land exchange.

There are many patented privately owned mining claims in the Gibbonsville and Blackbird Creek areas. These claims were often located at intersecting angles, and subsequently, when the patents were granted, small isolated tracts of forest land were created. These small, isolated tracts of forest lands are nearly impossible to manage for National Forest purposes, and in some cases their exact location has not been established by on-the-ground corners and posting.

Land exchange and purchase have been moderate. Land and Water Conservation Funds (L&WCF) have been used to purchase a number of private lands that were primarily valuable for outdoor recreation purposes. This program has been the only source of funding for land resource.

Occupancy trespass involves the identification, investigation, and resolution of nonmineral related unauthorized occupancy and use of the Salmon National Forest. There are many suspected nonmineral related occupancy trespasses resulting from tracts of private land where owners have constructed improvements on adjacent National Forest System land. Where property lines are not well identified, the Forest Service has increased efforts to establish property lines through accurate boundary surveys. Ongoing surveys of township and property boundaries will probably identify more unauthorized occupancy.

There is also an increasing amount of development, especially subdivisions, adjacent to National Forest System lands. The associated impacts in forest management are increasing; for example, conflicts over responsibility for range fences along property boundaries; access to the forest; and loss of key winter habitat for wildlife.

Current Use and Management

Generally, the Forest Service may dispose of National Forest System lands only by exchange or by the newly enacted "Small Tracts Act." Owners of interior private property generally favor land exchange with the Forest Service to establish more manageable boundaries, resolve access problems, realize

investment benefits and reduce development or subdivisions costs. Exchange activity has been at a moderate to low level due to few proposed exchanges which would benefit the public. We expect moderate activity under the Small Tracts Act, when regulations are issued and implemented...principally where strips of NFS land were reserved when homestead patents were issued, and where qualified residence trespass occurs on Salmon Forest lands.

Salmon Forest landownership adjustment activities are coordinated with plans and programs of other Federal agencies, and with State and local governments. Forest personnel will also work with County organizations to encourage development of zoning ordinances and agreements.

Demand Trends

Proposals for land adjustment from private parties are expected to increase in the immediate future, primarily due to the Small Tracts Act opportunities. The potential land adjustments for the Salmon Forest under the President's Asset Management Program (800 acres) are pending legislation and further study. They also limit lands available for disposal by land exchange procedures.

Rights-of-Way

Current Use and Management

The Salmon Forest program for road and trail rights-of-way acquisition activity has been 5-6 cases/year. Legal rights-of-way access for public and administrative use to the Salmon Forest, and across private lands within the forest has been accomplished for about 1/4-1/3 of the total rights-of-way needed. Both adjacent and interior private lands are more valuable when developed, subdivided, or sold to nonlocal owners. The current estimate for needed rights-of-way easements for roads (only) is 220 easements.

Demand Trends

Because of increases in land values, and changes in ownerships, it is more difficult and expensive to acquire rights-of-way easements. The Forest will encourage Lemhi County to provide for public access where possible.

Withdrawals

Current Use and Management

At present, the Salmon Forest has 140 existing withdrawals for several purposes, including 61 administrative site withdrawals, and 71 recreation site withdrawals. Not counting the Frank Church--River of No Return Wilderness, the existing withdrawals total 40,000 acres. The FLPMA Act of 1976 requires review of all existing withdrawals to be accomplished by 1991.

Demand Trend

Except for major investment areas, or resource sites requiring protection from prospecting and/or development, new mineral withdrawals are not expected on Salmon Forest lands.

TABLE III-19

Salmon Forest Land with Limitations or Restrictions on Management (w/in Admin. Bndry)1/

Category	Units	(Total Forest Units)	Acres*
FC--RONR	1	1	427,258
Wild and Scenic River (Outside FC--RONR)	1	1	11,340
FPC Classification (Panther/Napias Cr. only)	1	3	10,300
FPC Projects	3	3	120
Roadside Zone	1	1	510
Watershed & Co-op Agreement w/Salmon City, Dump Cr. Sites	3	3	13,615**
Administrative Sites (Outside FC--RONR & Rec. Rvr.)	49	61	2,750
Recreation Sites (Outside FC--RONR & Rec. Rvr.)	34	71	1,920
Mineral Material Sites	1	1	15
Restricted Placer Mining In Drainages Outside FC--RONR (Yellowjacket-Meyers Cove)	2	2	1,610
Surface Rights Mining Claims (Located on all Districts)	180	180 (more or less)	3,965
Physical Land Occupancy Easements, Special Uses	252	328	1,090
Purchase Lands (Outside of FC--RONR and Rec. River)			905
Not Accessible Due to Lack of Legal Access			282,000
Mineral Patent Application Lands (Hearing Pending)	1	1	50
		Total Affected Lands:	757,468

1/ The table data is developed to avoid duplicating or overlapping classifications, from Forest Land Status records and various administrative reports.

* Figures rounded to the nearest 5 acres, land area 9,750 acres. Under existing roads not deducted.

** Area of Salmon City Watershed Co-op Agreement based on area of Mineral Examination for withdrawal application.

Licenses and Permits

The Federal Energy Regulatory Commission requires operators of both large and small hydroelectric power generating facilities to have a FERC license. Hydroelectric facilities located on National Forest System lands must have a Forest Service permit to install and operate facilities on National Forest lands.

Current Use and Management

At present there are a number of small (under 5 MKw) hydroelectric facility installations on Salmon National Forest lands for which the operators hold neither a FERC license or Forest Service permit. Current plans are to assist the facility owners to acquire FERC and Forest Service permits, a fairly complex procedure in each case.

Utility Corridors

Current Use and Management

The existing utility rights-of-way are considered suitable, except that the telephone right-of-way along the Salmon River between North Fork and Colson Creek should eventually be considered for phase-out. The Frank Church--River of No Return Wilderness and Classified Recreation River area are not available for new utility corridors. The Beaverhead and Lemhi Mountain ranges are not assumed available for utility corridors, except for the Bannock Pass/Railroad Canyon - Eightmile Creek (long range BPA route) and/or Tendoy - Hayden Creek areas, based on a clear showing of public need and benefit. Minor utility rights-of-way will only be considered on other areas of the forest after a clear showing of need.

Demand Trends

Continued subdivision of adjacent and interior private lands will result in increasing demand for minor distribution line and telephone rights-of-way at periodic intervals for the foreseeable future. Considering the recent North West Power Council hearings and planning results it is possible that a new major power transmission corridor across the Salmon National Forest will be proposed in the foreseeable future.

Research Natural Areas

There is one Research Natural Area currently designated on the Salmon National Forest - Gunbarrel. The forest planning process is evaluating 10 additional sites for designation as Research Natural Areas. A summary of the 10 sites follows:

Dry Gulch - Forge Creek - Douglas-fir types, grassland, aspen, sagebrush/grass types, waterfalls.
Frog Meadows - wet meadow, high elevation lodgepole pine
Allan Mountain - subalpine larch, whitebark pine
Colson Creek - grassland, sagebrush/grass types
Dome Lake - mid-elevation productive lake, Douglas-fir/subalpine fir type
Davis Canyon - Douglas-fir types, elk sedge
Deadwater - cottonwood/willow types
Bear Valley Creek - sagebrush/grass types, Engelmann spruce types, subalpine fir
Mill Lake - subalpine fir/grouse whortel berry
Kenney Creek - whitebark pine type

2. Soils

The Salmon National Forest is mapped according to a Land Type Association System. Six major land types are found on the forest: steep canyonlands, fluvial lands, cryoplanated uplands, cryoplanated basin lands, glacial trough lands, and strongly glaciated lands.

The forest is composed of four general geology types; granitics, quartzites, volcanics, and sedimentary. It also has extreme variations in slope, aspect, and elevation. These differences have a direct effect on timber management.

Soil textures in the granitics and quartzites are generally coarse textured sands to sandy loams and range in depth from shallow to deep. Rock fragments of cobbles and/or stones range from low to high. On sedimentary land types the soil depth ranges from shallow to deep, with soil textures ranging from sandy loam to clay loams. Volcanic soils have textures ranging from sandy loam to clay loams and may have a clay subsoil in some areas. Soil depth ranges from shallow to deep with low to high amounts of gravels in the profile.

The most unstable areas on the forest for creep, debris flow,mass movements, and road failures are the volcanic soils. The highest erodable soil areas are found in the granitics within the Idaho Batholith. Due to the very steep topography on most of the forest, the inherent erosion hazard is high to very high for disturbed areas such as dirt roads, skid trails, mining operations, and burned areas.

Current Use and Management

The objective of soil management on the forest is to aid in optimizing resource outputs and to ensure the protection and maintenance of soil and watershed conditions during the course of the application of management activities. This objective is achieved through the correlation of basic soil data including distribution, capability, and limitations.

Approximately 68 percent or 1,226,150 acres of the forest has been inventoried with a Land Type System.

Soil management services are provided to all projects that have an effect upon the soil resources. These projects are composed of timber sales, post sale reviews, road locations and relocations, range and wildlife management plans, mineral operating plans and recreation projects and hydroelectric operations. Management services generally include alternatives and recommendations to reduce the project impacts upon the soil.

The soil productivity ranges from low to high on the forest. Generally, the granitic landtypes have low soil productivity rates due to the coarse textures. The quartzite landtypes have a medium soil productivity. This is due to loamy soil textures and good drainage. The volcanic landtypes have a high soil productivity. The problem with the volcanic soils is that they have poor drainage. This is due to the high clay content in the subsoil which results in poor seedling establishment. The sedimentary landtypes also have a high soil productivity, but produce lower amounts of timber. This is attributed to low precipitation, shorter growing season, and high elevations.

Past timber management has been limited to relatively flat and easily accessible areas. Since most of the easily accessible timber has been harvested, the areas left are in steeper, less stable, and less productive sites. These areas will require increased support and technical expertise, due to the higher potential for erosion and mass movements.

Demand Trends

The public has a continuing concern to produce the highest yields (timber, range, minerals, recreation, etc.) and at the same time to minimize adverse environmental effects to the soil through on-site and off-site erosion which produces sediment into the streams, and to maintain the long term productivity of the soil. These concerns require the continuing management emphasis on maintaining soil productivity.

3. Facilities

On the Salmon National Forest the most important facilities are roads. Other facilities include highways, trails, buildings, air fields, dams and utility corridors.

There are 1,600 miles of permanent roads on the Forest Development System. Of these, roughly 700 miles are arterials and collectors. The remaining 900 miles are local roads. There are also many miles (approximately 1,000 miles) of primitive and temporary road that will eventually be obliterated.

New road construction averages 30 miles per year, mainly for timber harvesting. In general, new roads are closed after harvest, while established roads remain open.

Presently, there are 39 miles of Forest highway on the Salmon National Forest that are sections of State highway financed partly for Forest receipts. The Forest has proposed that 100 miles of Forest arterials be converted to Forest highways. See Table III-20.

Most Forest buildings are for general administrative use. They are sufficient in general capacity, but many are barely serviceable due to age, location, or changed use.

The 170 helispots and 2 landing strips serve primarily for fire control. Their condition is adequate.

The six dams on the forest are for irrigation of agricultural lands. They are adequate for the purpose they serve.

Two utility rights-of-way cross the Salmon National Forest; the powerline across Lemhi Pass and the powerline from Salmon to Cobalt. Three potential powerline corridors have been identified; one from Salmon north to Lost Trail Pass, (could follow U.S. 93 most of the way), another from Bannock Pass to Challis (could follow Idaho 29 part of the way), and another Lemhi Pass across the Lemhi Valley and Lemhi Mountains to Challis.

Demand Trends

The mileage of road to be built is closely related to the volume of timber to be harvested and the harvest method chosen. Road closure policy is closely related to wildlife management. Other than these, all facilities, activities, and decisions are heavily dependent on the budget available. It is unlikely that those Forest development roads that have been proposed as Forest highways will be converted during the planning period.

TABLE III-20

Forest Highways

FH No.	Route No.	Termini	Mileage Total	Mileage On-Forest	Remarks
30	U.S. 93	City of Salmon - Lost Trail Pass	46.3	28.4	Significant Forest related traffic
31	Idaho 29	City of Leadore - Montana line	13.7	9.3	Minor Forest related traffic
49	Montana 43	Lost Trail Pass - Chief Joseph Pass	1.0	1.0	Negligible Forest related traffic

Proposed as Forest Highways

FDR No.	Name	Termini	Mileage Total	Mileage On-Forest	Remarks
60030	Salmon River Rd.	North Fork - Panther Creek	26.6	26.6	17 miles - 2-lane paved
60055	Panther Creek Rd.	Salmon River - Morgan Summit	45.6	45.6	Single lane dirt
60021	Williams Cr. Rd.	U.S. 93 - Panther Creek	28.0	23.0	Possible relocation

Trails

The Salmon National Forest trail system consists of approximately 1,140 miles of trail. Of this, approximately 680 miles are located on nonwilderness lands and approximately 460 miles are in the River of No Return Wilderness. Virtually all of the system trails are used for recreation purposes. Other minor uses include stock trails and administrative use.

The need for many of these trail miles has been eliminated by road construction activities in recent years. The planning process will attempt to identify which trails no longer serve any useful purpose and delete those miles from the system. This will allow the Forest to better utilize trail maintenance funds where they are needed most.

Currently, 740 trail miles are in the routine maintenance category, 350 miles need to be reconstructed, and 50 miles need to be replaced.

Although demand for trail-related dispersed recreation opportunities is expected to increase in years to come, the existing trail system or even a reduced system provides capacity far in excess of demand for the foreseeable future.

The Salmon National Forest currently has two National Recreation Trails - Bear Valley and Divide-Twin Creek; two National Historic Trails - Lewis and Clark and Nez Perce; and a 70 mile segment of the Continental Divide National Scenic Trail corridor. Specific location of the Continental Divide Trail within the corridor is being coordinated with the Beaverhead National Forest and the Bureau of Land Management.

4. Protection

a. Fire and Fuels Management

The Salmon National Forest provides fire protection for about 1.5 million acres of land. This includes 1.3 million acres of National Forest land, with the balance BLM, State,

and private land protected under agreements. Frequent lightning storms during the dry summer months, together with steep terrain and limited access contribute to the potential for large fires.

There has been an average of 48 fires per year during the period of 1974-1983, with 95 percent being controlled under 10 acres. There were 6 fires over 300 acres during that period. Three of these were lightning caused and 3 were person caused. During that period lightning caused fires accounted for 84 percent of the fires and 73 percent of the burned acres. Wildfires burn approximately 1,800 acres per year on the Salmon National Forest.

The Forest's fuel management program is aimed at reducing the probability of large destructive wildfires by cleanup of backlog activity created fuels and by dividing high hazard fuel areas into smaller units by clearing fuel breaks. The orest does approximately 300 acres of fuel management work per year. This is a combination of fuel breaks and fuel reduction. This is in addition to slash treated as a part of the timber harvest program.

Prescribed fire is used in the fuels management program and also to accomplish such resource management objectives as wildlife habitat improvement, range improvement, and treatment of slash created by timber harvest and thinning. An average of 3,700 acres per year are treated with prescribed fire.

Fire suppression efforts require immediate action on wildfires in high risk areas and fires that have escaped initial attack. The Forest has cooperative fire suppression agreements with the Bureau of Land Management, including exchange of protection responsibility in some areas.

Fire detection is accomplished with six lookouts, one fixed wing aircraft, and the cooperation of local people.

b. Insect and Disease Control and Integrated Pest Management

The principle pests of concern of the Salmon National Forest include western spruce budworm, mountain pine beetle, western pine beetle, Douglas-fir beetle and dwarfmistletoe. These pests play a natural role in the forest environment and are usually only of major concern on this forest when man competes with them for wood products. "Integrated pest management" includes natural, biological, chemical and mechanical prevention and control measures. However, prevention and control is primarily through silvicultural methods and through natural means. Vegetation, competing with tree establishment and growth, and noxious weeds are also "pests" of primary concern.

Western spruce budworm, a forest defoliator, is a chronic problem and of primary concern on this forest in Douglas-fir. The most important damage includes the reduction in seed crops, killing understory trees and occasionally killing the tops of larger trees. Defoliated trees, trees that have lost foliage, are also more apt to be killed by Douglas-fir beetle. The Douglas-fir beetle periodically kills small groups of older, larger Douglas-fir.

As lodgepole pine trees on the forest increase in diameter there is an increasing hazard of a major mountain pine beetle epidemic similar to the early 1930's and similar to recent infestations on the nearby Targhee National Forest. Mountain pine beetle and western pine beetle have not been major problems in ponderosa pine on the forest but they do have serious potential for damage if dense second growth ponderosa pine stands become more common.

Dwarfmistletoe causes considerable growth loss in lodgepole pine and Douglas-fir. This small parasitic plant also causes significant mortality in Douglas-fir, either directly or indirectly by making the trees more susceptible to bark beetle attacks.

The amount of damage caused by all of these pests can be affected significantly by our long term management. Other insects and diseases are commonly found on the forest but they are much less affected by our long term management. The pine engraver beetle periodically kills groups of second growth ponderosa pine in areas of natural or man caused slash. However, logging practices can usually be adjusted to prevent major problems. Other pests include: ponderosa pine needle miner; pine butterfly; ponderosa pine needlecast; root diseases and stem and branch cankers; and grasshoppers.

c. Air Quality

The 1977 Amendment to the Clean Air Act specified that all existing Wilderness of record on July 7, 1977, were automatically designated as Class I areas. Since the Frank Church--River of No Return was established in July 1980, it is a Class II area along with the remainder of the forest.

As on June 1983, there are no nonattainment areas on the forest nor are there any major sources of pollutants within a 50-mile radius of the forest.

Historically, air quality over the Salmon National Forest has been good. Periodically, minor amounts of pollutants occur from: 1) Prescribed burning in the fall by the Salmon and surrounding forests; 2) fire management fires burning in areas north of the Salmon National Forest; 3) wintertime

fires from Lemhi Valley homes burning wood; and, 4) dust from roads, logging operations, and mining operations.

In the future, the Forest may be involved in natural fire management and prescribed fire for wildlife and range improvements, but slash burning may be curtailed due to the need for wood as an energy source. In any event, the Forest does not anticipate a major increase in emissions.

d. Law Enforcement

Traditionally, the Salmon's law enforcement needs have been minor. In recent years, this has been changing. People are breaking into outlying stations, lookouts, etc. There also appears to be an increase in marijuana plantings on the forest. Other problems are vehicle use on closed areas and theft of various kinds (gas, timber, etc.). The Forest works cooperatively with State and local enforcement agencies in situations of mutual concern. Violation notices have been increasing.

5. Indian Treaty Rights

The Salmon National Forest provides habitat for numerous wildlife and fish species which contribute to, and are associated with, Indian treaty rights, both on and off the forest. These treaty rights include ceremonial, subsistence, and commercial uses. A focal point of treaty rights are anadromous fish and their associated habitats. The Columbia River Intertribal Fish Commission serves as the representative for the four Indian tribes that constitute the Confederated Tribes. These tribes, which all have treaty rights to anadromous fish harvest in the Columbia River system downstream of the forest, include the Umatilla Indian Reservation, the tribes and bands of the Yakima Indian Nation, the Warm Springs Reservation, and the Nez Perce tribe. The Shoshone-Bannock and Nez Perce tribes of southeastern Idaho also have treaty rights applicable to utilization of resources on the forest.

A key component of the downstream treaties was a declared right to take fish that pass their usual and accustomed places. Recent court interpretations of the treaty rights have provided a quantification of these rights. Other legal interpretations have been associated with habitat and habitat influencing activities. Treaty rights also grant use of forest resources for subsistence purposes, such as hunting and fishing within historic tribal use areas.

The Salmon National Forest has 26 streams which currently provide habitat for anadromous species. Habitat condition, in these streams, is generally good. Some habitats have been influenced by past land management and enhancement activities have been employed to mitigate for disturbances. Existing habitat capability has been estimated to be approximately 93 percent of

potential. In most cases, these habitats are underseeded and are producing far below current habitat capability. Correction of off-forest factors influencing anadromous survival are expected to occur in the near future. Hatchery production will assist in re-establishing populations in some streams. An additional 9 streams, which historically produced anadromous fish, are being influenced by mining related pollution. All of these streams have the potential to contribute substantially to anadromous production when the pollution problems have been resolved.

All of the anadromous habitats have the potential to contribute to treaty obligations and, therefore, forest management will be sensitive to habitat condition and capability. The Salmon National Forest is committed to maintaining high water quality and high production potentials in the anadromous drainages. The Forest is also committed to the resolution of the mine pollution problem in the Panther Creek drainage and will be working with the involved parties to bring about the needed land reclamation and pollution abatement.

IV. ENVIRONMENTAL CONSEQUENCES

A. Introduction

This chapter presents the scientific and analytical basis for comparing the 12 alternatives developed for managing the Salmon National Forest and displays the environmental consequences of each alternative. Environmental consequences are based on the effects and outputs that any alternative would produce in the physical, biological, and social environment, if it was adopted. These consequences include adverse effects which cannot be avoided, short-term uses (less than 10 years) of the environment and the maintenance and enhancement of long-term productivity, and any irreversible (cannot be changed) or irretrievable (lost for a certain time) effects.

The consequences of each alternative differ as the management prescriptions change. These prescriptions include a range of resource activities such as timber harvest, campground construction and wildlife habitat improvement that could occur on an area of land, to produce a certain level of outputs over time. The alternatives were developed to cover a reasonable range of management options from wilderness to timber production. As the priorities change from alternative to alternative, the management prescriptions, hence the outputs and effects, also change.

There are certain limits to the range of alternatives and their consequences. These limits are expressed in the management prescriptions through the use of standards and guidelines and mitigation that ensure the resources will remain productive over the long run. This results in environmental consequences that fall within certain limits for each alternative. The alternatives considered in detail meet the requirements for responsible use of renewable resources, and avoid the extreme environmental consequences associated with the alternatives and benchmarks considered, but eliminated from detailed study. A detailed discussion of constraints is covered in Appendix B of the EIS. Standards and Guidelines are covered in Chapter IV of the Forest Plan.

Within the constraints of maintaining long-term productivity, one goal of Forest Planning is to maximize net public benefits. Net public benefits consist of both priced and nonpriced yields. Priced yields are those which can be determined in the marketplace by actual monetary transactions or by methods which have proven reliable for estimating what persons would be willing to pay for a certain good or service. Nonpriced yields are those which cannot be readily valued, either directly or indirectly, based on market transactions. Some nonpriced yields can be expressed in numbers (wilderness use, for example) and are, therefore, considered quantitative, while others are qualitative (visual resources).

The priced yields are handled as outputs which vary with the different management prescriptions in each alternative. These outputs drive an economic efficiency analysis which is used to

display the net public benefits of each alternative. These are displayed along with the resource narratives in tabular form and in summary form for all resources and alternatives (see Table IV-2).

In all tables the alternatives are numbered in the same order as they are described in detail in Chapter II.

Alternative 1 - Current Management
Alternative 2 - Market Opportunities
Alternative 3 - Non-Market Opportunities
Alternative 4 - 1980/RPA Program
Alternative 5 - High Productivity
Alternative 6 - Constrained Budget
Alternative 7 - Capability Emphasis
Alternative 8 - Wilderness and Wildlife Emphasis
Alternative 9 - High Wildlife Production
Alternative 10 - Wilderness Alternative, Boundary Adjustments
Alternative 11 - Wilderness Alternative on Roadless Boundaries
Alternative 12 - Modified Current Alternative (Preferred)

Adjustments to the predicted consequences in future amendments to the Plan and revisions will be based on information obtained from the monitoring program. The monitoring requirements are explained in Chapter V of the Forest Plan.

The environmental consequences described in this chapter are grouped by resource element and support element. Each section includes a discussion of estimated outputs and effects. Predicted outputs and changes in Forest conditions are estimated into the future and the differences between alternatives are displayed. The predicted outputs for the 45-year planning horizon were developed using a linear programming model (FORPLAN) and associated analysis. Additional detail on analyses and detail on the predictions of estimated effects of each alternative are included in the planning records on file in the Forest Supervisor's Office for the Salmon National Forest.

This chapter displays output levels by alternative and describes the direct and indirect environmental consequences that result, assuming that mitigation measures are applied. Direct environmental effects are defined as those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity, but which are significant in the foreseeable future. Environmental interactions within alternatives can be very complex. A change in one output can have secondary or "chain-reaction" effects resulting in changes in other outputs.

B. Direct and Indirect Environmental Effects

Environmental consequences result from the application of various combinations of management prescriptions dictated by the alternatives. Table II-60 displays the acreage assigned to each management prescription for each alternative. Each alternative,

including the Modified Current, was developed on the principle of the multiple-use and sustained yield of the various renewable resources, including recreation, range, timber, water, and fish and wildlife. To prevent depletion of renewable resources, the requirements and mitigating measures are included in each alternative.

Impacts to the environment are significant when the resources are altered, depleted or changed by management activities or uses. Activities that do not have significant effects on the environment are generally related to resource inventories, planning, monitoring, and administration.

1. Recreation

a. Developed Recreation

Public Sector. Each alternative contains a developed recreation program made up of varying amounts of emphasis on maintenance of existing facilities and varying levels of new construction of facilities. The fee system at existing campgrounds is basically in place with fees charged at six campgrounds. Expansion of the fee system at existing campgrounds is not practical in any alternative at this time due to such factors as low use, remoteness and lack of minimum required services. All newly constructed campgrounds in all alternatives would be fee sites.

Table IV-REC1 displays, by alternative and by decade, the recreation visitor day (RVD) capacity of developed sites on the Forest, including campgrounds, picnic areas, boating sites and trailheads.

TABLE IV-REC1
(in thousands of RVD's)

Alternative	Decade 1	Dec. 2	Dec. 3	Dec. 4	Dec. 5
1	266	280	322	335	339
2	258	296	321	333	352
3	270	292	328	343	358
4	266	280	322	335	339
5	258	296	321	333	352
6	226	203	183	165	149
7	266	280	322	335	339
8	266	280	322	335	339
9	270	292	328	343	358
10	270	292	328	343	358
11	270	292	328	343	358
12	275	358	384	398	413

Table IV-REC2 displays, by alternative and by decade, the projected average annual amount of RVD use the Forest will receive.

TABLE IV-REC2
(in thousands of RVD's)

Alternative	Decade 1	Dec. 2	Dec. 3	Dec. 4	Dec. 5
1	89	104	115	127	139
2	88	103	114	126	138
3	91	106	117	129	141
4	88	103	114	126	138
5	88	103	114	126	138
6	90	105	116	128	140
7	90	105	116	128	140
8	91	106	117	129	141
9	91	106	117	129	141
10	89	104	115	127	139
11	91	106	117	129	141
12	89	104	115	127	139

All alternatives will provide facilities to meet projected demand throughout the 50-year planning horizon except Alternative 6. Under Alternative 6, existing sites would be closed on a site-by-site basis, forcing over-use and crowded conditions at remaining sites as well as a shift from developed to dispersed use. Further, sites remaining open would be maintained from a health and safety standpoint only, resulting in a general decline of facilities and a corresponding decline in user satisfaction.

Alternatives 1, 4, 7 and 8 would improve maintenance at designated fee sites and high use boating sites only. The condition of facililties at these sites would remain good and the quality of the setting would be maintained or improved. Maintenance of facilities at all other sites would concentrate on health and safety related items only. As a result, there would be a gradual decline in the condition of the facilities and the quality of the setting and a corresponding decline in user satisfaction.

Alternatives 2, 3, 5, 9, 10, 11 and 12 would improve maintenance at all developed sites. Over time, the condition of facilities would be improved and the natural setting would be maintained or enhanced. User satisfaction should be high.

All alternatives except 6 will emphasize management and maintenance at designated fee sites because the fee system returns money to the treasury. Alternatives 2, 3, 5, 9, 10, 11 and 12 expand this emphasis to all developed sites. In Alternatives 2 and 5 this increased emphasis will be for the opportunity to increase returns to the treasury. In Alternatives 3, 9, 10, 11 and 12 the additional emphasis will likewise increase returns to the treasury and

additionally will provide quality support to the alternatives dispersed/wilderness recreation emphasis.

Recreation site developments may adversely affect other resources in very localized areas. The area involved in actual developed recreation use is quite small (215 acres at present); however, lands immediately adjacent to such developments will be managed with appropriate mitigation measures required to abate noise and air pollution, and to meet long-term visual quality objectives.

All of the areas to be managed for developed recreation use are on landtypes capable of sustaining intensive resource management activities, in all alternatives.

Because of the investment involved and the conflicts created by most other uses, developed recreation sites will normally be single use oriented. Removal of hazard trees, implementation of silvicultural practices to encourage vegetative growth, off-season grazing to control understory growth, etc., will be done, as necessary, to enhance the recreation experience.

Private Sector. The only difference between alternatives concerning the private sector, which includes lodges, resorts and recreation residences, is that management and monitoring of permits will be restricted under Alternative 6. All alternatives would allow for expansion/ improvement of existing lodges or resorts on a case by case evaluation. There are only one or two legitimate recreation residences on the Forest which will be continued under all alternatives. The largest category falls under cabin permits on invalid mining claims. These permits will be terminated under all alternatives. Several other residences fall into the category of innocent trespass associated with private land. These are being evaluated for disposal under the Small Tracts Act on a case by case basis in all alternatives.

Developed recreation sites and adjacent use represent an irreversible commitment to a dominant use. Besides precluding other uses (timber, range), there are basic resource effects such as soil erosion and compaction, and loss of vegetation which are generally insignificant. Proper layout and maintenance of campsites are designed to minimize these effects. Other resource activities can affect the use of developed sites through changes in adjacent resources. Most of these effects, such as timber harvest, are irretrievable, but activities such as mineral extraction or access construction may irreversibly damage and/or affect use of developed sites. These effects are common to all alternatives.

b. Dispersed Recreation

The Forest land base, environment, and trail system is capable of sustaining more recreation users than projected in any alternative. However, providing adequate administration, operation and maintenance, particularly in the trails program, for the projected use would be a function of the emphasis of the alternative and its corresponding funding levels.

Each alternative has a mix of semi-primitive nonmotorized (SPNM), semi-primitive motorized (SPM), roaded natural (RN), and wilderness (P and SPNM) proposal acres. These provide for activities such as sightseeing, hiking, hunting, fishing, camping, picnicking, snowplay, ORV use, and gathering forest products. Some alternatives provide more emphasis for semi-primitive uses through varying amounts of management areas featuring semi-primitive recreation opportunities. These areas would preclude most other resource developments except mineral activities. Timber harvest and road construction would not be permitted.

In addition to the management areas featuring semi-primitive recreation opportunities, portions of the dispersed recreation opportunities on the Forest are available in areas assigned to minimum level management. These areas were often assigned based on their ability to sustain management impacts, reforestation potential, and protection of key wildlife areas.

Table IV-REC3 displays, by alternative, the acres included in management areas featuring semi-primitive motorized and semi-primitive nonmotorized recreation opportunities. This table must be viewed in conjunction with Table II-1 or Table IV-WILD2, as those tables display the acres proposed for designated wilderness.

TABLE IV-REC3

Alternative	Semi-Primitive Motorized	Semi-Primitive Nonmotorized
1	45,669	21,092
2	23,224	2,490
3	227,322	84,641
4	29,818	2,619
5	-0-	17,498
6	482,827	-0-
7	107,330	90,150
8	34,778	95,656
9	53,119	59,526
10	2,335	6,135
11	1,334	-0-
12	265,700	72,600

When proposed management areas featuring semi-primitive recreation opportunities are viewed in conjunction with the various alternative wilderness proposals, Alternatives 3, 6, 7, 8, 9, 10, 11 and 12 would provide sufficient quality areas to meet projected demand for semi-primitive settings. Alternatives 1, 2, 4 and 5 would not provide sufficient areas featuring semi-primitive recreation opportunities to meet projected demand for these types of experiences and settings.

All alternatives except 6 would provide sufficient funding to allow minimum administration to meet the dispersed recreation objectives and projected uses, and would allow some level of mitigation of resource damage. The funding level associated with Alternative 6 would make it difficult to administer the dispersed recreation program and protect other resources from damage.

Table IV-REC4 displays, by alternative and by decade, the projected average annual Forest dispersed recreation use (excluding wilderness use and wildlife and fish use) for the 50-year planning horizon.

TABLE IV-REC4
(in thousands of RVD's)

Alternative	Decade 1	Dec. 2	Dec. 3	Dec. 4	Dec. 5
1	201	237	263	292	320
2	184	218	242	269	295
3	199	231	254	279	304
4	186	220	244	272	297
5	198	234	260	289	317
6	217	253	279	308	336
7	199	233	257	285	310
8	197	229	252	277	302
9	196	228	251	276	301
10	163	190	210	232	253
11	172	199	219	241	262
12	210	246	272	301	329

Adverse effects to soil productivity, vegetative cover, and water quality may occur in areas of concentrated use, such as campsites, trails, and trailheads. These impacts are, however, localized, not considered significant, and can be mitigated by site hardening, location and capacity controls, and user education.

The general quality of the recreational experience will be maintained overall on the Forest under most of the alternatives. However, Alternatives 2, 4, 5 and 10 may reduce the quality of the visual resources in intensively managed areas to visual quality objectives of modification and maximum modification to the extent that it will reduce

the quality of the experience and the spectrum of opportunities available for use.

ORV Use and Restrictions. Regardless of alternatives, no major increase in Forest ORV use is anticipated; therefore, the current Travel Plan direction and development will be incorporated into the selected alternative.

Alternatives containing large wilderness proposals such as 9, 10 and 11 would reduce the amount of area available for ORV use. All other alternatives would contain sufficient areas suitable for ORV use.

ORV use of an area will result in unavoidable effects related to disturbance caused by the physical presence of the vehicles. In some cases, use by the ORV's may result in adverse impacts on the soil resource, but these are mostly avoidable through the proper planning and administration of these areas.

c. Cultural Resources

Cultural resources refers to both historic and prehistoric cultural remains and are nonrenewable resources. The Forest policy is to provide for identification, protection, interpretation and management of cultural resources.

To accomplish identification and protection, the Forest conducts compliance inventories prior to all undertakings which might affect significant cultural values. The preferred method of protecting sites from management activities, in all alternatives, would be to avoid impacts by redesigning the activity away from the cultural resource.

All timber harvest operations, including helicopter logging, can adversely affect historic and prehistoric sites through disturbance of the ground from felling operations, skidding and operation of heavy equipment.

Range improvement projects and maintenance projects can adversely affect cultural resources through disturbance of the ground surface by equipment, excavation, and prescribed burning.

Mineral or energy projects can adversely affect cultural resources through extensive earthwork. Likewise, new operations on abandoned claims could destroy older historic values.

Recreation use can affect sites actively through concentrated use of sites or construction of facilities. It can also affect sites passively by introducing people

into an area who may inadvertently damage sites through compaction or purposely through removal of artifacts.

Engineering has the potential to damage sites through road construction and maintenance activities. It also has the potential to destroy the historic fabric of historically significant structures through renovation or rehabilitation projects.

Cultural resources will in turn have effects on timber, range, minerals, recreation and engineering by increasing unit costs due to survey and mitigation costs and in some cases due to project redesign in order to avoid or accommodate significant resources. Further, it may require withdrawal of limited areas from other multiple uses due to particularly significant sites with no other means of mitigation.

Management standards and guidelines will provide for cultural resource protection until they are evaluated for significance. Cultural resources are protected under all alternatives. Where protection and preservation is not possible, mitigation is required. However, some alternatives put cultural resources at a greater risk. When the amount of earth disturbing activities increase, the risk is greater because there is a greater chance for:

- Forest personnel to inadvertently impact sites due to poor communication,

- Failure of the archeologist to locate 100 percent of the sites, and

- Increased public access leading to vandalism of sites.

Alternatives 1 and 6 will have about the same potential to adversely affect cultural resources. There will be no prior planning for cultural resources in project design, only survey prior to project implementation.

Sites will continue to be lost or damaged through deterioration and vandalism. There will be no Forest-wide interpretation of the resource, minimal assessment from a scientific standpoint of the data being collected through survey and minimal professional archeologist monitoring during project implementation.

Alternatives 3, 8, 9, 11, 7, 10 and 12 will provide for an increase in cultural resource emphasis over Alternatives 1 and 6. This increased emphasis will provide for the same commitment to pre-project survey but will also provide for cultural resource input prior to project design. An interpretive program would be established concentrating on sites on the National Register of Historic Places. Minor

contributions could be made to the scientific community through assessment and compilation of collected data into a more comprehensive Forest overview. Limited monitoring of ongoing projects would occur in areas identified as having high potential for cultural resources. Cultural resources would be slightly more at risk in Alternatives 7, 10 and 12 due to increased commodity project activity.

Alternatives 2, 4 and 5 will provide for a significantly more expanded cultural resources program than all other alternatives. However, this increased emphasis may be offset somewhat by the significantly higher level of commodity production projects in these alternatives. There would be a further expansion of survey activities in areas identified as having a high potential for cultural resources prior to project proposals and design. There would also be a significantly increased emphasis on interpretation, cooperation and coordination with the scientific community, and assimilation of collected data into a comprehensive Forest-wide cultural resources overview.

d. Visual Resources

Each alternative has a different mix of Visual Quality Objectives which is appropriate to the alternatives emphasis. The management goal for Alternatives 3, 6, 8, 9 and 11 is to maintain inventoried Visual Quality Objectives, with the exception of those acres that are proposed for wilderness designation which automatically are assigned an objective of preservation. Maintaining Visual Quality Objectives is secondary to attaining output targets in Alternatives 1, 2, 4, 5, 7, and 10.

The goal for Alternative 12 is to maintain the inventoried objectives in most visually sensitive areas. Areas not visually sensitive will be managed to maintain an objective equal to or greater than maximum modification. Site specific effects resulting from management activities may sustain short term impacts to the visual resource, but no long term impacts are anticipated other than those related to mineral and timber development with associated road construction. The following chart shows the Visual Quality Objectives by alternative.

TABLE IV-REC5
VISUAL QUALITY OBJECTIVE CHART
(in thousands of acres)

Alternative	Preservation	Retention	Partial Ret.	Modification	Maximum Mod.
1	503	190	419	378	287
2	610	68	104	74	921
3	774	104	358	479	62
4	584	75	115	81	922
5	426	75	129	109	1038
6	426	193	491	590	77
7	663	124	382	374	234
8	897	106	312	409	53
9	1005	103	280	346	43
10	1103	-0-	-0-	-0-	674
11	1256	49	172	267	33
12	426	192	481	452	226
Present Inventory	426	193	491	590	77

e. Wild and Scenic Rivers

The Salmon National Forest has conducted an analysis of all rivers and streams on the Forest to determine their potential for inclusion in the Wild and Scenic Rivers system. A portion of the Salmon River, from North Fork upstream to the Forest Boundary in the vicinity of Tower Creek, has been determined to be suitable for further study. All alternatives will protect Wild and Scenic River values along this portion of the river pending formal study.

2. Wilderness

Each alternative contains a wilderness proposal except 5, 6 and 12.

Table IV-WILD1 displays the average annual forest (excluding wildlife and fish) wilderness recreation use for the planning period, by decade and by alternative.

TABLE IV-WILD1
(in thousands of RVD's)

Alternative	Decade 1	Dec. 2	Dec. 3	Dec. 4	Dec. 5
1	90	101	111	120	131
2	90	103	115	126	139
3	117	132	145	158	172
4	89	102	114	124	138
5	76	87	97	106	117
6	84	95	105	114	125
7	98	111	123	133	147
8	115	130	143	156	170
9	118	133	146	159	173
10	132	152	168	184	202
11	142	162	178	194	212
12	81	92	102	111	122

The amount of area designated for wilderness recreation use and the opportunity available will be greatest under Alternative 11. The remaining alternatives, ranked by amount of area and opportunity for wilderness uses, from the highest to the least are as follows: Alternatives 10, 9, 8, 3, 7, 2, 4, and 1. Alternatives 5, 6, and 12 have no new acreage recommended for wilderness management. In all the alternatives with wilderness proposals, wilderness recreation use is subordinate to the goals that established the wilderness area. Wilderness recreation uses may be site specific, but overall, they must be compatible with or yield to the total resource management goals and values that established the areas as a classified wilderness. (See Table II-1 for the acreage designated for wilderness management). For a discussion of the wilderness attributes of each individual roadless area see Appendix C.

Wilderness designation allows uses specified in the Wilderness Act of 1964, including nonmotorized recreation, construction and maintenance of trails, livestock grazing and maintenance of existing water developments. Use of mechanized equipment is not allowed except for emergencies. Areas not designated as wilderness are open to a wide range of resource development activities.

Wilderness classification for any or all of the roadless areas would have direct and indirect environmental effects on the area's resources. Wilderness classification would change the type of recreation use in an area (shift from motorized to nonmotorized); however, no significant change in the amount of use is expected. Soil compaction and loss of vegetative cover would occur at areas of concentrated use, such as trails, trailheads, water sources, and campsites; however, not to any greater degree than would occur without Wilderness classification. Further, these impacts will be localized and can be mitigated by instituting capacity controls, use restrictions, and/or increasing public awareness of the problem.

Areas designated as wilderness would have their timber stands removed from the Forest's timber base. Livestock grazing could occur on wilderness lands, but improvements, such as burning or mechanical treatments, would not be permitted. The effect of such management restrictions would be the vegetative cover being allowed to mature to a climax condition, with dead and dying timber being left for ecological processes. Wildlife habitat conditions would follow the successional patterns set by natural, unmanaged plant growth.

Maintaining any area in an undeveloped, natural condition would limit man's encroachment on the area's wildlife population.

If wilderness classification is assigned to any or all of the roadless areas, those areas not under mineral rights agreements would be withdrawn from mineral entry.

Facility developments would be limited to those needed to protect the area's wilderness characteristics and/or assure public health and safety in designated wilderness lands.

Not designating potential wilderness areas will result in unavoidable adverse effects to the wilderness resource. Where roadless area prescriptions are for nonwilderness management, this may result in irretrievable or irreversible commitments depending on future use. Once significant site disturbing activities take place, the possibility of designating the area as wilderness is greatly diminished. Following, the alternatives are ranked by how many acres would be irretrievably lost for wilderness consideration during the first decade, listed from least roadless area acres impacted to most roadless area acres impacted: 11, 10, 9, 8, 3, 6, 7, 1, 12, 2, 4, 5. Refer to Table IV-WILD2 for a complete display of how roadless area acreage would be managed for each alternative. Refer to Appendix C for site specific effects by individual roadless areas.

TABLE IV-WILD2
ASSIGNED MANAGEMENT EMPHASIS
OF ROADLESS AREA INVENTORY BY ALTERNATIVE 1/ (ACRES)

Alternative	Semi-Primitive 2/	Recommended Wilderness	Available for Development
1	66,761	76,749	686,959
2	25,714	184,317	620,438
3	311,963	348,518	169,988
4	32,437	157,718	640,314
5	17,498	-0-	812,971
6	482,827	-0-	347,642
7	197,480	236,774	396,215
8	130,434	470,802	229,233
9	112,645	579,063	138,761
10	8,470	676,925	145,074
11	-0-	830,469	-0-
12	338,300	-0-	492,169

1/ Total Roadless Area Inventory, outside wilderness, is 830,469 acres for all alternatives.

2/ Includes both Motorized and Non-Motorized semi-primitive recreation opportunity.

3. Fish and Wildlife

a. Fisheries

The potential for Forest habitats to produce fish and provide fishing opportunities is related to both natural and management influenced characteristics. These characteristics include habitat attributes which influence the reproductive and rearing phases in the life history of a fish. In order to display the environmental consequences of the various alternatives being considered, habitat capabilities were analyzed for the appropriate indicator species and the resulting production estimates were calculated. Sediment provided the critical link between resource management activity and the resulting influence on aquatic habitat capability. Existing habitat capability conditions reflect both natural and man-induced sediment influences which presently occur. Minimum legal capability levels relate to minimum viable population interpretation. Final water quality standard interpretation relating to impacts on fish as a beneficial use of water may substantially alter legal minimum capability levels. State species management goals provide a limited quantification of production estimates associated with habitat capabilities. Habitat production capabilities necessary to provide fish numbers meeting State species goals would vary from 80 to 100 percent for anadromous species and from 70 to 100 percent for resident species.

TABLE IV WL1

HABITAT CAPABILITY ESTIMATES EXPRESSED AS A PERCENT OF POTENTIAL PRODUCTION BASED ON SEDIMENT/FISH HABITAT RELATIONSHIPS

Fish Management Indicator Species	Species	Minimum Legal Level	Maximum Legal Level	Existing Condition	State Agency Goals
Resident Fish	Cutthroat, Rainbow, brook, and bull trout	73	100	93	85
Anadromous Fish	Chinook salmon, steelhead trout	70	100	92	90

Habitat capabilities for each alternative are displayed as yearly averages for the first 50 years. Each value represents a percentage of the total natural production capability.

TABLE IV WL2

Fish Management Indicator Species	Alternatives 1	2	3	4	5	6	7	8	9	10	11	12
Resident Fish	93	92	97	91	91	95	95	97	97	91	97	94
Anadromous Fish	92	86	96	83	85	95	96	96	98	84	96	92

Habitat capabilities for smolt production associated with the percent of potential estimates are as follows:

Smolt Species	Alternatives (M Smolts) 1	2	3	4	5	6
Chinook Salmon	442.1	436.1	467.5	429.8	441.5	465.9
Steelhead Trout	241.5	231.8	273.5	220.7	235.7	270.9

Smolt Species	Alternatives (M Smolts) 7	8	9	10	11	12
Chinook Salmon	468.1	467.9	467.6	430.4	467.4	453.7
Steelhead Trout	273.9	274.6	272.5	222.2	274.0	261.0

There are other management related influences which affect habitat capability by changing habitat attributes. It was infeasible to model these influences because of the lack of appropriate information necessary to address the relationships between management activities and potential

habitat response. The effects assessment will, therefore, be directed toward an order of magnitude discussion of these influences

Habitat Capability

The smolt habitat capability estimates used in the Forest Plan were based on the best available information at the time and were coordinated with the Idaho Department of Fish and Game. The estimates can be adjusted as new and better information becomes available. During the life of the Plan, the Forest will schedule and conduct stream habitat surveys on anadromous fish-bearing streams on the forest. The smolt habitat capability estimates will be refined, based on both spawning and rearing habitat capability and density coefficients derived from site specific studies or from habitat coefficients agreed to by fisheries and land management agencies within the Columbia Basin. Future habitat assessment procedures will be coordinated among regions to provide a common method by which anadromous fish habitat capability can be evaluated and implemented in the Forest Plan.

Assessment of the effects of the various alternatives is provided by analyzing the information presented in the two previous tables. The values in each table reflect the relationship associated with sediment and fish habitat capability. Management goals for aquatic habitat capability were as follows:

Alternative	Habitat Capability Goal	Appropriate Sediment Level
Alt 1 (Current Mgmt.)	Meet State goals	25% OVN Anad; 85% OVN Res.
Alt 2 (Market Opport.)	Min. legal level	54% OVN Anad; 155% OVN Res.
Alt 3 (Non-Market)	Meet State goals	25% OVN Anad; 85% OVN Res.
Alt 4 (1980 RPA)	Min. legal level	54% OVN Anad; 155% OVN Res.
Alt 5 (High Productivity)	Min. legal level	54% OVN Anad; 155% OVN Res.
Alt 6 (Constrained Budget)	Meet State goals	25% OVN Anad; 85% OVN Res.
Alt 7 (Capability Emphasis)	State goals for Anad. Min.legal level for Res.	25% OVN Anad; 155% OVN Res.
Alt 8 (Wilderness/Wildlife)	Max.fish in wilderness State goals in other waters	0% OVN - wilder. 25% OVN Anad; 85% OVN Res.
Alt 9 (Wilderness/Wildlife - T&E)	Max.fish in wilderness State goals in other waters	0% OVN - wilder. 25% OVN Anad; 85% OVN Res.
Alt 10 (Wilderness on Manageable Lines)	Max.fish in wilderness Min.legal level in other waters	0% OVN - wilder. 54% OVN Anad; 155% OVN Res.
Alt 11 (Max. Wilderness)	Max.fish in wilderness State goals in other waters	0% OVN - wilder. 25% OVN Anad; 85% OVN Res.
Alt 12 (Preferred)	Meet State agency goals	25% OVN Anad; 85% OVN Res.

The appropriate goals were formulated as constraints associated with sediment. These constraints were applied to each alternative analyzed by the FORPLAN model.

Resident Fish - On a Forest-wide basis all alternatives associated with timber management met the fish habitat management goals. Habitat production capabilities were consistently above production levels associated with State production goals and standards. There were, however, instances where projected sediment levels within a specific drainage during some decades would be expected to exceed levels necessary to meet the management goal. These

deviations are expected to be very site specific and of short duration and will be addressed during project level analysis.

Anadromous Fish - It is anticipated that anadromous habitat capability would meet the Forest habitat management goals under all alternatives. There are several alternatives, however, that would not meet State agency management goals. Idaho Department of Fish and Game anadromous species goals should be met in the current program (Alt. 1), nonmarket opportunity (Alt. 3), constrained budget (Alt. 6), capability emphasis (Alt. 7), wilderness-wildlife (Alt. 8 and 9), wilderness (Alt. 11) and the preferred program (Alt. 12). There were, however, instances where estimated sediment based on current levels could interfere with meeting State agency goals in specific drainages during some decades. The alternatives which were basically incompatible with State agency goals were market opportunity (Alt. 2), 1980 RPA (Alt. 4), 1985 RPA (Alt. 5), and wilderness (Alt. 10). Timber resource development activities associated with these higher timber production alternatives would increase sediment levels and alter fish habitat quality.

Fishing use potentials associated with habitat capabilities for the various alternatives are presented in Table IV-WL3.

Potential fishing use expressed as the average annual MWFUD value:

Indicator Species	Alternatives 1	2	3	4	5	6	7	8	9	10	11	12
Resident Fish	37.6	37.0	39.6	36.8	37.3	38.6	38.4	39.4	39.4	38.1	39.2	37.9
Anadromous Fish	9.5	8.9	9.9	8.7	8.2	9.8	9.9	9.9	9.9	9.3	9.9	9.5

Other Resource Influences on Habitat Capability - As previously stated, there are other management related influences which would affect fish habitat capability. Under all alternatives, grazing management of livestock is expected to impact fish habitat to some degree. The resulting impacts will be reflected in the loss of cover, bank instability and sediment increases. Resolution of these conflicts will be accomplished on an allotment by allotment basis during AMP revisions and through application of intensified animal management. Mineral management, especially placer mining, is expected to have an unavoidable effect upon aquatic habitats (See the Unavoidable Effects Section under all alternatives.) The effects to fish habitat resulting from placer mineral

development can be expected to cause irretrievable losses in fish production. In many instances the effects are of such a nature that the loss in habitat capability is irreversible. Hydropower production is a new and accelerating resource use which will have significant effects on fish habitat capability under all alternatives. Development intensities and locations are not predictable for both minerals and hydropower generation; therefore, effects evaluations will have to be conducted on a project basis.

Threatened, Endangered and Sensitive Species

No threatened or endangered fish species presently occur on the Forest. Chinook salmon are being considered for the list but no formal designation has been made.

The State of Idaho Department of Fish and Game lists chinook salmon, steelhead, west slope cutthroat and white sturgeon as being species of special concern. Chinook and steelhead habitat capabilities would vary according to the previous discussion (Tables IV WL1 and IV WL2). Most west slope cutthroat populations are located within the Frank Church--River of No Return Wilderness and, therefore, would not be influenced by the alternatives. Those populations outside of the Wilderness would vary according to the previous discussion. White sturgeon inhabit only the Salmon River and are not expected to be influenced by the alternatives.

Both chinook salmon and steelhead trout are presently being considered for sensitive species status within the Forest Service. The Salmon National Forest considers sensitive species listing for chinook as appropriate.

Diversity

Aquatic habitat diversity does not vary significantly by alternative.

Habitat Enhancement

All alternatives, except the Constrained Budget (Alt.6), provide for a substantial amount of fish habitat improvement. These improvements would provide for gains in habitat capability under Alternatives 3, 8, 9, and 11. Habitat capability gains derived in Alternatives 1, 2, 4, 5, 7, 10, and 12 would partially mitigate for negative habitat influences in specific streams and, therefore, may not result in net gains in capability. Enhancement measures include bank stabilization, cover improvement, population control, erosion control, and increased holding water.

Other Agency Goals

Although not as definitive as State goals, certain other agencies, groups, and institutions have expressed a concern for maintaining a high level of fish production under all alternatives. Alternatives 2, 4, 5, and 10 may not meet most of the other agency goals which call for very high levels of production. These groups include U.S. Fish and Wildlife Service, Idaho Department of Health and Welfare, EPA, Pacific Fishery Management Council, Northwest Power Planning Council, National Marine Fisheries Service, Bonneville Power Administration, Columbia River Intertribal Fish Commission, and the Shoshone-Bannock tribe.

b. Wildlife

Habitat Diversity

Diversity, or the interspersion of community types and successional stages, is primarily provided by inherent, or naturally occuring, habitat components. These habitat components range from blocks of timber covered mountains with interspersed openings to blocks of relatively open big game winter ranges with timber "islands." In addition, the distribution of suitable and nonsuitable timber types throughout the forest also helps distribute age classes and plant communities forest-wide.

One criteria in the selection of MIS (management indicator species) was based on maintaining habitat diversity. When habitat is provided for all MIS it creates a mosaic of plant communities and successional stages. For example, pileated woodpecker habitat provides the old growth component while vesper sparrow habitat provides the open area or early successional stage of plant succession. Bluebird and yellow-bellied sapsucker habitat provides for the cavity dependent species (along with the pileated woodpecker); and, the great grey owl, pigmy nuthatch and pine marten represent wildlife species that prefer the mature forest habitat. Elk use all cover types and successional stages on the Forest. Managing for elk is, essentially, managing for all species that occupy some part of elk habitat. Managing the habitat of all the MIS should provide good habitat diversity.

Additional insight on expected diversity parameters can be found in Table IV-T3. This table displays timber age classes, by alternative, as percentages of the total suitable acres. Diversity on nonsuitable acres and in existing wilderness areas will continue to be a product of natural phenomena.

The old growth component of habitat diversity is probably the most sensitive component of Forest management

activities. Old growth is essentially a decadent stand of trees, and old growth management is an undesirable goal for timber management. When timber rotation ages are less than the length of time needed to produce old growth, a conflict results. A downward trend of old growth on suitable acres will occur under all alternatives. Consequently, 10 percent of the suitable acres have been removed from the timber base, by specie type, to ensure maintenance of habitat for minimum viable populations of old growth obligate species. These old growth areas are dispersed throughout the Forest and occur in stands of at least 80 acres.

In most cases, the current status of these acres is mature sawtimber. The areas withheld as old growth do not vary by alternative. However, old growth acres are sometimes designated as wilderness, depending on the wilderness objectives of the alternative.

The trend for young forest and openings, currently 29 percent of the Forest, would be to increase with Alternatives 2, 4, 5, 10 and 12; and to decrease with Alternatives 3, 7, 8, 9 and 11. This timber age class would not change significantly under Alternative 6.

Early and mid-successional species would benefit on the operable timber acres under each alternative, through timber management activities including natural and artificial regeneration. However, late-successional species on these acres would incur significant reductions in habitat potential. These species would essentially be reduced through time to minimum viable populations outside designated wilderness, but would be benefited by the wilderness designations in Alternatives 8, 9, 10, and 11. Early and mid-successional species would be somewhat affected under these alternatives, but natural phenomena would periodically reverse the successional processes.

Aspen stands occur on less than one percent of the land mass on this forest and, primarily due to fire prevention and control efforts, are, for the most part, very decadent. Loss, through attrition, of this vegetation type will probably continue in wilderness and nonwilderness areas under all alternatives, but regeneration projects can be conducted in nonwilderness areas. Snags will be greatly reduced through timber management activities on operable acres, under all alternatives. However, the large number of inoperable forested acres on this forest, in addition to designated old growth stands, should ensure adequate snags to maintain above minimum viable populations of cavity nesting species under all alternatives. Population levels of such species would, of course, be highest in wilderness areas with their preponderance of old growth.

Direct effects of the various alternatives on the wildlife resource are revealed in Table IV-WL3. This table displays wildlife habitat capability for all MIS. Population potentials are displayed for economically important MIS and percentages of potential are displayed for all others. Values are given for each alternative.

These effects are predicted on the basis of the vegetation parameters such as cover, forage, cutover acres, etc. that are tracked in the FORPLAN model. Road construction and management also enter in the predicted effects on big game habitat potentials. Management indicator species were chosen to represent all groups of species on the Forest and thus, are the only ones specifically tracked within this document.

Alternatives, in decreasing order, for providing maximum wildlife benefits are 3, 11, 9, 8, 1, 6, 10, 7, 12 (Preferred), 4, 2, and 5. All alternatives except 2, 4, and 5 provide for essentially current levels of consumptive recreation opportunities. Alternatives 8, 9, 10, and 11 place many additional acres under wilderness classification and thus, ensure perpetuation of roadless big game habitat (i.e., security) and backcountry hunting opportunities. Alternatives 3, 6, 7, 8, 9, 10 and 11 provide significant benefits over the current situation for almost all MIS. Alternatives 2, 4 and 5 significantly reduce habitat potentials for most MIS and alternative 12 is very similar to the current (Alt. 1) with the exception of benefits for elk.

All alternatives would provide habitat for at least minimum viable populations of all MIS. This would also mean that minimum viable populations of all native vertebrate species would be ensured.

Table IV-WL 4 displays estimates of existing, maximum potential and minimum viable population levels for all MIS. State (Idaho Department of Fish and Game) goals for these species are included for comparison purposes.

TABLE IV-WL 3 EFFECTS ON RESOURCES BY ALTERNATIVE*

Program Element and Activity	Unit of Measure	1	2	3	4	5	6	7	8	9	10	11	12
WILDLIFE AND FISHERIES													
Management Indicator Species													
Elk	Numbers	7137	6016	9643	6872	5368	8260	7747	8668	9101	7775	9141	7365
Mule Deer	Numbers	18559	14847	22271	14847	14847	18559	18559	22271	22271	18559	22271	18559
Bighorn Sheep	Numbers	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Goats	Numbers	600	600	600	600	600	600	600	600	600	600	600	600
Pine Martin	% of Max. Habitat	33	20	50	20	20	59	55	65	64	57	65	33
Pileated Woodpecker	% of Max. Habitat	23	14	46	14	14	48	40	50	50	64	59	23
Vesper Sparrow	% of Max Habitat	95	79	95	95	76	95	81	95	95	90	95	95
Yellow Warbler	% of Max. Habitat	86	74	86	74	76	81	81	96	90	90	96	83
RKK	% of Max Habitat	52	35	60	35	35	55	50	66	67	67	67	52
Goshawk	% of Max Habitat	39	38	46	37	37	49	45	55	55	55	55	38
Great Grey Owl	% of Max. Habitat	17	13	21	21	13	25	25	34	32	32	32	17
Yellow Bellied Sapsucker	% of Max Habitat	80	80	80	80	80	80	80	80	80	80	80	80
Pygmy Nuthatch	% of Max. Habitat	12	12	20	12	11	20	20	35	35	35	35	12
Brown Creeper	% of Max. Habitat	9	9	20	9	9	20	20	35	35	35	35	9
Bluebird	% of Max. Habitat	58	46	61	57	57	65	56	72	67	72	72	55

* These numbers reflect the approximate amounts of animals that can be expected to exist on the forest at any point in time during the 50-year planning period.

TABLE IV-WL 4 HABITAT GOALS FOR MANAGEMENT INDICATOR SPECIES

Management Indicator Species	Unit of Measure	Minimum Viable Population	Maximum Habitat Potential	State Goal	Existing Populations
Elk	Numbers	1500	10300	8800 1/	5500
Mule Deer	Numbers	5000	44400	25000	21700
Bighorn Sheep	Numbers	325	4000	2000	1000
Goats	Numbers	300	700	600	300
Pine Martin	Numbers (% of Max. Habitat)	200(13)	1090(100)	0 2/	2/
Pileated Woodpecker	Numbers (% of Max. Habitat)	46(10)	456(100)	0 2/	2/
Vesper Sparrow	Numbers (% of Max. Habitat)	1600(40)	4000(100)	0 2/	2/
Yellow Warbler	Numbers (% of Max. Habitat)	2000(18.5)	10800(100)	0 2/	2/
Ruby crowned Kinglet	Numbers (% of Max. Habitat)	26000(1)	260000(100)	0 2/	2/
Goshawk	Numbers (% of Max. Habitat)	50(33)	150(100)	0 2/	2/
Great Grey Owl	Numbers (% of Max. Habitat)	30(12)	244(100)	0 2/	2/
Yellow Bellied Sapsucker	Numbers (% of Max. Habitat)	480(80)	600(100)	0 2/	2/
Pygmy Nuthatch	Numbers (% of Max. Habitat)	3800(100)	3800(100)	0 2/	2/
Brown Creeper	Numbers (% of Max. Habitat)	1800(5)	35000(100)	0 2/	2/
Bluebird	Numbers (% of Max. Habitat)	2000(13)	15000(100)	0 2/	2/
Anadromous Fish	M pounds	268.9	393.7	343.0	357.7
Resident Fish	M pounds	96.8	161.3	100.8	129.0

1/ Figures for State Goals are based on total forest acreage, while the alternative output figures are based only on those acres outside the Frank Church--River of No Return Wilderness.

2/ There are no figures available for these species at this time.

Threatened, Endangered, and Sensitive Species

No known reproducing pairs or populations of Federally listed Threatened or Endangered vertebrate species occur on this forest and no critical habitats have been identified. Therefore, no direct T&E habitat improvement projects are included under any alternative for this planning period. However, bald eagles do winter along the Salmon River and its major tributaries; and, observations of peregrine falcons, gray wolves, and grizzly bears are occasionally received. Of these, only the gray wolf has been confirmed. The existing Salmon National Forest's Threatened and Endangered Species Management Plan (5/1/80) will be included in this document as management direction for these four species.

Informal and/or formal consultation with the Fish and Wildlife Service will be initiated as needed and/or requested. The Forest Service will not authorize or conduct any project or action that is judged likely to jeopardize the continued existence of any Federally listed species or that would adversely affect designated critical habitat for such species.

No known Federally listed Threatened or Endangered plant species occur on the forest.

The Forest Service list of Sensitive Plant and Animal Species includes those species identified by the Regional Forester for which continuation of population viability is a concern. These species are not protected under the Endangered Species Act. However, protection is assured under the National Policy and Guidelines for Sensitive Species Occurring on National Forest System Lands. Forest Service sensitive species occurring on this forest include the following plants: Agastache cusickii, Astragalus amblytropis, Astragalus amnisamissi, Astragalus aquilonius, Cymopterus douglasii, Hackelia davisii, Halimolobos perplexa var. lemhiensis, Papaver kluanensis, Penstemon lemhiensis, Physaria didymocarpa var. lyrata, and Physaria geyeri var. purpurea. There are no veterbrate species on the sensitive species list. The Forest Service will not authorize or conduct any project or action that is likely to jeopardize the continued existance of any sensitive species.

4. Range

The range program is managed primarily through activities such as grazing allotment planning and permit administration; controlling livestock numbers and distribution; vegetation treatment by mechanical practices, prescribed burning, and chemicals; and control of noxious weeds, plants poisonous to animals, and undesirable plants.

Intensive grazing systems such as rest rotation and deferred rotation are generally more effective than season-long extensive grazing systems in producing a greater quantity of desirable forage and improving or maintaining range condition. Approximately 85 percent of the Forest rangeland is in satisfactory condition. All rangeland in less than satisfactory condition would be improved as directed by the Federal Land Policy and Management Act of 1976. The time required to improve deteriorated (unsatisfactory) range conditions will depend on the level of authorized grazing use, the intensity of grazing management, and the priority and availability of funds to manage these rangelands. Deteriorated rangelands which cannot be improved to at least fair ecological conditions through management will be closed to livestock grazing.

Table IV-RGE1 displays the annual average permitted livestock use on the Forest for the 50-year planning period, by alternative (values are in permitted AUM's).

TABLE IV-RGE1 (AUM's)

Alternative											
1	2	3	4	5	6	7	8	9	10	11	12
54.6	57.4	48.0	54.0	64.0	45.4	57.9	48.1	48.1	57.2	54.5	55.0

With the exception of Alternative 6, all alternatives provide a sufficient level of domestic grazing to support local community stability. Alternative 6, Constrained Budget, provides stabilility in the first two decades then gradually drops to a level of outputs considered borderline. Alternatives 1, 4, 11 and 12 provide for permitted grazing at, or slightly above the current level. Grazing in existing and potential wilderness areas would be permitted at the level and intensity that currently exists. All four alternatives provide for improving rangeland in unsatisfactory condition to satisfactory condition within 20 years. All alternatives recognize the need to enhance and/or maintain riparian ecosystems; however, Alternative 12 places the greatest emphasis on coordination of grazing management with other riparian dependent resources, and should allow for the most rapid recovery of those areas which are now in a deteriorated condition.

Alternatives 2, 7, and 10 provide for approximately a seven percent increase in permitted grazing. The increase results from placing less coordination emphasis on upland wildlife habitats and from a higher level of range forage improvement and intensity of grazing management. Conflict areas with wildlife would increase. All three alternatives provide for improving range in unsatisfactory condition to satisfactory conditions within 20 years, and all three alternatives provide for the maintenance and/or enhancement of riparian ecosystems.

Alternatives 3, 8 and 9 reflect a reduction in permitted grazing of approximately 13 percent below the current level. The decrease results from placing greater coordination emphasis on upland wildlife habitats. Conflicts in key wildlife use areas would be resolved in favor of wildlife. Enhancement of riparian ecosystems would be emphasized. All three alternatives provide for improving rangeland in unsatisfactory condition to satisfactory condition within 20 years.

Alternative 6 would result in a 19 percent reduction in permitted grazing, and as previously noted, would probably result in some adverse impacts on dependent local ranchers and negatively influence local community stability. Riparian ecosystems in a degraded condition would show the slowest rate of improvement for any of the alternatives. Wildlife/grazing conflicts would be more pronounced as flexibility in grazing management systems were reduced or lost over time. It is anticipated many of the allotments currently under a deferred or rest-rotation grazing system would gradually revert back to season-long grazing.

a. Noxious Weeds

A sufficient amount of acreage will be treated under each alternative to insure the eradication of new infestations, prevent the spread of existing infestations to adjacent lands, and gradually eliminate existing infestations. It is estimated approximately 60 acres of control efforts (annually) will be necessary under Alternatives 1, 3, 6, 7, 8, and 12. Because of an increased level of management activity in some resources (such as timber and range), approximately 150 acres of noxious weed control will be undertaken in Alternatives 2, 4, 5, 10 and 11.

b. Predator Control

Predator control will be provided for through cooperation with the Animal and Plan Health Inspection Center (APHIS) and the Idaho Department of Fish and Game. Control efforts will be directed at offending individuals or local populations while minimizing harm to other wildlife and safeguarding the public. The predator control policy and the level and intensity of control efforts is not expected to vary between alternatives.

c. Wild Horses and Burros

No free-roaming horses and burros exist on the Forest, so no alternative would affect the animals' habitat or population.

d. Unavoidable Adverse Effects

Small isolated areas, such as salting locations, water developments, stream crossings and trailing routes will be degraded and adversely impacted. Generally, alternatives which have higher levels of permitted grazing and rely on more intensive grazing management systems will have a proportionately higher amount of impacted sites.

e. Short-Term Uses vs. Long-Term Productivity

Existing and future range improvements, and implementation of improved systems of grazing management will increase short-term production and help insure long-term productivity. It is anticipated rangeland in unsatisfactory condition will be improved to satisfactory condition in all alternatives. The rate at which unsatisfactory conditions are converted to satisfactory conditions would vary by alternative. (Rate in descending order would be: Alternative 3, 8, 9, 12, 7, 1, 4, 1, 11, 5 and 6).

f. Irreversible and Irretrievable Commitment of Resources

As previously mentioned, small isolated sites associated with livestock concentration areas (salt grounds, water developments, stock driveways, etc.) would be an irreversible and irretrievable commitment of soil productivity and ecological range conditions. The lost production in permitted grazing (AUM's) below biological potential would be an irretrievable commitment of resources. The reduction in annually permitted AUM's below capacity varies by alternative. (Lost Production in descending order by alternative would be: Alternatives 5, 7, 2, 10, 12, 1, 4, 11, 8, 9, 3, and 6.)

5. Timber Management

Overview

There are 744,900 acres of tentatively suitable timberland. From the tentatively suitable land-base the lands to be managed for timber production are selected and classified as suitable lands. The suitable lands acreage varies by alternative because the land to which timber management is applied is a function of the alternative goals and objectives. Table IV-T1 shows the number of suitable acres in the timber base for each alternative. The largest timber base acreage occurs in Alternative 5. The smallest timber base occurs in Alternative 9 because of the substantial number of acres dedicated to wilderness, wildlife, and nonroaded recreation prescriptions. Alternative 12 (the preferred alternative) has 406,974 acres in the suitable timber base.

Long-term sustained yield (LTSY) is the maximum sustained yield that can be expected after one rotation. LTSY varies by alternative based on the acreage of suitable timber land, the species involved and the silvicultural management intensity. Table IV-T1 shows the LTSY per year for each alternative. LTSY varies from 47.4 million board feet in Alternative 5 to a low of 12.2 million board feet in Alternative 9. The preferred alternative (Alternative 12) produces a LTSY of 29.2 million board feet.

Timber growth rate at year 2030, expressed as a percentage of long-term sustained yield, is also displayed in Table IV-T1. No alternative has a growth rate of 90 percent of long-term sustained yield at year 2030. The 90 percent growth rate is not attainable due to the long rotation lengths which result from constraints applied to the timber harvest scheduling in order to meet other resource needs. Since older, slow growing age class stands are the predominant existing condition on the forest long rotations result in fewer stands being converted to younger age classes at a fast enough rate to allow meeting the 90 percent growth rate at year 2030.

TABLE IV-T1
SUITABLE LANDS, TIMBER GROWTH RATE
AND LONG TERM SUSTAINED YIELD

ALTERNATIVE	SUITABLE ACRES*	GROWTH RATE AT 2030 (MMCF/YR)	GROWTH RATE AT 2030 (% FLTSY)	LTSY MMBF/YR	LTSY MMCF/YR
1. Current	415,894	3.3	44%	25.8	7.4
2. Market	521,172	6.5	55%	41.6	11.8
3. Non-Market	225,245	1.3	34%	13.5	3.9
4. 1980 RPA	531,588	7.1	57%	41.0	12.6
5. Productivity	567,778	7.6	55%	47.4	13.8
6. Constrained	396,305	3.9	48%	26.9	8.0
7. Capability	399,421	3.0	43%	24.6	6.9
8. Wilderness/ Wildlife	239,397	1.7	43%	13.8	4.0
9. Wildlife/ T&E	209,447	1.5	42%	12.2	3.5
10. Max Wilderness Manageability	351,311	4.6	67%	24.1	6.9
11. Max Wilderness Inventory	236,823	1.7	40%	14.8	4.3
12. Modified Current	406,974	4.3	51%	29.2	8.4

* Inventories and data used in the AMS were based upon a minimum biological potential to 20 cubic feet per acre per year. Changes in regulatory requirements to evaluate all forested lands for timber suitability have occurred since the original analysis. With the existing physical, biological, and market conditions, the probability that any of the forested land excluded under the old standards would become suitable under the new regulations is low, and reanalysis at this time is not cost effective. Timber resource land suitability will be re-evaluated at least every 10 years, and inventory and data used for the next Plan or Plan update will be based on the new standards.

Growth rates at 2030 are well below 90 percent of long term sustained yield becuse there will still be a high percentage of old, slow growing stands because of the long rotations involved.

Programmed sawtimber sales offered vary from a high of 36.8 million board feet per year in the first decade in Alternative 5 to a low of 7.7 million board feet per year in the first decadein Alternative 9. These are maximum volumes that would be offered. It is likely that due to market conditions and economic conditions within the industry the actual volume sold

will be somewhat less than volume offered. Table IV-T2 shows the maximum sawtimber volume offered in each alternative.

During preparation of the final EIS and Forest Plan, three events occurred which provided additional information about the timber supply/demand relationships for the forest in the first decade planning period. These are the import tax on Canadian lumber entering the U.S., release of "A Report on Idaho's Timber Supply," February 1987, and release of "Montana's Timber Supply: An Inquiry Into Possible Futures," March 1987. All three events/reports were reviewed to determine if any changes in the analysis and/or proposed Forest Plan were warranted.

Any increase in domestic timber demand caused by the imposition of the import tax on Canadian lumber entering the U.S., when localized to the marketing zone influenced by timber supplies from the Salmon National Forest, is considered to be negligible.

A review of "A Report on Idaho's Timber Supply" indicates that future statewide timber supplies originating from private lands may be less than in the past. The Salmon National Forest is within the Southeast Marketing Zone identified in the report. Within this zone timber supplies from private, state or other federal land are practically nonexistent. The study did not provide any new information concerning timber supply in the Southeast Zone. Therefore, the timber industry within this Zone must continue to look to National Forest System lands for their raw material needs.

Review of "Montana's Timber Supply: An Inquiry Into Possible Futures" indicates that industrial timberland owners do not appear to have sufficient inventory to maintain their harvest at the levels of the recent past much beyond the year 2000. It does appear, however, that future declines in harvest by industrial owners can be at least partially, if not totally, offset by increased harvests from other ownerships in the state. This is especially true in the subregions of the study which influence or are influenced by the Salmon National Forest.

Assumptions on timber supply and demand used in calculating allowable sale quantity (ASQ) are confirmed by the findings of the Idaho and Montana timber supply studies. The original analysis of each alternative was approached in a manner which calculated the ASQ on the entire suited land base. An analysis was then made to predict what portion of the total ASQ for that alternative would likely sell under given economic conditions. Considering how the analysis was structured and the results of the two timber supply studies, there is no reasonable opportunity for increasing the ASQ. Any increase in ASQ, beyond what has already been analyzed, would require changing other multiple-use goals and objectives in the Plan.

Based on information gained through analysis of the current situation and other alternatives, approximately 60,000 acres of

tentatively suited timber base and 1.35 MMBF/year of first decade volume were identified as being beyond economic practicality for timber harvest. These lands consist of stands of small diameter lodgepole pine and Douglas-fir, much of which occurs on steep slopes or highly erosive soils in locations which are far removed from ground transportation systems and from processing facilities. The combination of lack of access, low value species, distance from viable markets, and high-cost logging method results in costs of timber management activities that far outweigh any potential market value. This difference between costs and benefits is so great that contemplating harvesting timber from these lands is considered beyond economic justification. No scenario could be developed in which these lands would be economically operable in the first decade or in the 50-year planning horizon. Since no economic or other justification could be found for maintaining these lands in the timber base, now or in the future, they were removed from the base in the preferred alternative.

While the initial determining factor for removal of the above lands from the timber base was economics, the lands were subsequently used to provide other multiple use benefits which are not necessarily compatible with timber harvest. These other benefits include:

- maintaining vegetative diversity through old growth retention
- maintaining visual quality objectives
- providing quality big game habitat
- maintaining high water quality for anadromous fisheries
- providing semiprimitive recreational opportunities

Thus, these lands contribute significantly to other resource objectives and, therefore, would not be available for timber production even should the economic situation change to such an extent that the lands would become economically operable.

The ASQ was calculated on the entire suited land base. However, it is recognized that under present economic conditions the annual sale program will probably be less than the ASQ. The difference between ASQ and annual sale program cannot be determined until the timber is packaged into proposed sales and analyzed at the project level. The 10-year timber sale schedule outlined in the Forest Plan reflects the total ASQ. The actual sale program, if less than the ASQ, will be determined on a yearly basis after considering environmental, social, and economic factors.

The primary species harvested on the Forest are ponderosa pine, Douglas-fir, and lodgepole pine. Subalpine fir and Engelmann spruce are also harvested and are included with the lodgepole pine in a "white woods" category. Table IV-T2 shows approximately the species expected to be harvested in the first decade for each alternative by acres, volume and percent of

total volume and the harvest methods to be used by number of acres and volume for each harvest method.

Age class distribution in year 2030 is an indication of how rapidly the older, overmature stands are being replaced by younger stands. For maximum timber production it is desirable to replace the overmature stands as rapidly as possible since growth has stopped or is progressing at an extremely slow rate. In some cases, overmature stands may actually exhibit a negative net growth since volume loss to mortality is higher than volume gain through growth. It is also desirable to have approximately an equal area in each age class. A forest with such an age class mix has lower losses to insect and disease mortality and has greater vigor than a forest with large areas of overmature stands.

TABLE IV-T2

FIRST DECADE TIMBER HARVEST SCHEDULE*

HARVEST METHODS	ALTERNATIVES 1	2	3	4	5	6	7	8	9	10	11	12
Intermediate.												
- Acre (MAcres)	0 017	0.026	0 010	0 026	0 023	0.010	0 016	0 011	0 010	0.014	0.010	0.017
- Volume (MMBF)	0 089	0.146	0.054	0.139	0.124	0.053	0.085	0 062	0.057	0 067	0.049	0.092
Clearcut												
- Acre (MAcres)	2 042	3 125	0 586	3 917	4.559	2 105	1 504	0.618	0.510	2.859	0 798	2.069
- Volume (MMBF)	11.388	17 442	2 318	18.189	24 183	11 253	7 833	2.505	1.812	11 190	3 901	11 410
Shelterwood 2/												
- Acre (MAcres)	1 647	2 606	0 977	2.596	2 280	1 002	1 545	1 121	1 032	1 433	0.962	1.722
- Volume (MMBF)	8.806	14.499	5.333	13 755	12 283	5 219	8.464	6 152	5.638	6.637	4 802	9.150
Selection:												
- Acre (MAcres)	0.103	0.346	0.126	0 267	0 082	0.450	0 615	0.323	0 083	0 112	0 131	0.204
- Volume	0 252	0 856	0.306	0 611	0 196	1 061	1.530	0.788	0 203	0 237	0.311	0.494
TOTALS:												
- Acre (MAcres)	3 810	6 103	1.698	6 806	6.944	3 567	3.680	2 073	1.635	4.418	1.901	4.012
- Volume (MMBF)	20 535	32 945	8.011	32 695	36 786	17 586	17 912	9.508	7 710	18 132	9.063	21.147
Species Harvested·												
Ponderosa Pine												
- Acre (MAcres)	0 668	1 002	0 339	1.060	0.797	0.847	1 138	0 600	0.296	0.533	0 273	0.861
- Volume (MMBF)	3 242	4 545	1 237	4 254	3 748	2 941	4.202	2 218	1 239	1 762	1 015	3.867
- % of Total Volume	16%	14%	15%	13%	10%	17%	23%	23%	16%	10%	11%	18%
Douglas-fir·												
- Acre (MAcres)	2.019	3 765	1.272	2 600	2.581	1.101	1 797	1 226	1.298	1.859	1 285	2.101
- Volume (MMBF)	10 309	19 882	6 226	12.342	13.700	5 283	9.134	6 080	6 214	7.285	5 911	10 649
- % of Total Volume	50%	60%	78%	38%	37%	30%	51%	64%	81%	40%	65%	50%
White Woods·												
- Acre (MAcres)	1 122	1 336	0 087	3 145	3 566	1 619	0 745	0 246	0 041	2 028	0 342	1 050
- Volume (MMBF)	6 983	8 517	0 548	16 097	19 337	9 362	4 575	1.210	0.258	9 084	2 137	6.630
- % of Total Volume	34%	26%	7%	49%	53%	53%	26%	13%	3%	50%	24%	32%
TOTALS												
- Acre (MAcres)	3 810	6 103	1 698	6 806	6 944	3 567	3 680	2 073	1 635	4 418	1 901	4 012
- Volume (MMBF	20 535	32 945	8 011	32 695	36 786	17 586	17 912	9 508	7 710	18 132	9 063	21 147

1/ All values are annual averages for sawtimber only

2/ Includes "seed tree" silvicultural system

Table IV-T3 shows the age class distribution on suitable lands at year 2030 for all alternatives; assuming that all programmed sales will sell. Alternative 5 shows the most progress toward a balanced age class distribution with 41.1 percent of suitable land in age class 0-39 and 20.3 percent in age class 40-79. Alternative 3 shows the least progress toward balanced distribution with 21.9 percent in age class 0-39 and 10.8 percent in age class 40-79. The preferred alternative (Alternative 12) is at the approximate midpoint of the range with 31.1 percent of suitable lands in age class 0-39 and 16.8 percent in age class 40-79.

Reforestation is made necessary through timber harvest and natural catastrophies such as fire. In order to better insure regeneration of harvested conifer stands, some seedbed scarification or other site preparation is planned at the time of the regeneration cut. Natural regeneration is planned for most shelterwood areas and initially for lodgepole clearcuts. Planting is planned in most other clearcuts. The amount of reforestation activity varies with each alternative, and is a function of the number of harvested acres and the type of silvicultural treatment. Table IV-T3 summarizes the acres of reforestation made necessary by timber harvests for all alternatives. Reforestation need at any given time will be those acres recently harvested but not yet regenerated, any natural catastrophes which may occur and areas needing retreatment.

Timber stand improvement (TSI) activities are undertaken to increase the growth rate, improve the quality of timber, maintain desirable species composition, prevent insect and disease impacts, improve aesthetics, and generally maintain vigorous and healthy stand conditions. The primary activities include thinning overly dense stands and releasing young stands from overtopping cull trees.

Table IV-T3 summarizes the acres of TSI activity in each alternative. Activity varies by alternative based on the number of suitable acres in the timber base and the emphasis placed on improving timber outputs by the objectives of the alternative.

TABLE IV-T3

AGE CLASS DISTRIBUTION, REFORESTATION AND TSI

	Age Class (% of Suitable Acres) at 2030					Reforestation*	TSI*
Alt	0-39	40-79	80-119	120-159	160+	Acres	Acres
1	28.9	15.2	0.8	14.1	41.0	1446	923
2	37.0	19.1	0.9	18.2	24.8	2085	1621
3	21.9	10.8	1.4	20.2	45.7	570	360
4	40.2	20.9	0.9	14.2	23.8	2065	1598
5	41.1	20.3	0.9	17.0	20.7	2234	1783
6	30.2	13.6	1.1	19.9	35.2	840	916
7	26.4	12.8	0.8	17.5	42.5	1276	806
8	25.6	11.2	1.3	22.9	39.0	677	428
9	23.4	10.2	1.6	22.5	42.3	549	347
10	40.1	20.0	1.2	14.6	24.7	1422	920
11	26.4	10.8	1.4	17.9	43.5	648	410
12	31.1	16.8	1.0	15.9	35.2	1584	1074

* 50-year average acres/year

Fuelwood - Presently, the Forest supplies fuelwood to both individuals and commercial fuelwood cutters. This wood can be obtained from both commercial and noncommercial tree species across the Forest. Fuelwood often becomes available as a result of vegetation treatments to meet resource management objectives. Additional opportunities exist in using the fuelwood program as a tool in accomplishing sanitation harvests or timber stand improvement work.

Accessibility is a key factor when considering the availability of fuelwood for personal use. Accessible fuelwood for personal use is defined as being within 200 feet of a travelway. Acres of harvested timber is another key factor since many of these areas would be left open for fuelwood gathering.

Demand for fuelwood is not expected to increase greatly in the future. Due to the relative isolation of the Forest from concentrated population areas, the demand is primarily from local users. Table IV-T4 shows a summary of fuelwood availability by alternative. Alternatives 2, 4 and 5 provide for sizable increases in fuelwood availability.

TABLE IV-T4

AVERAGE ANNUAL FIRST DECADE
FUELWOOD AVAILABILITY (MCORDS)

ALT.	1	2	3	4	5	6	7	8	9	10	11	12
MCORDS	6.0	10.5	4.0	10.3	11.5	5.9	5.2	4.0	4.0	6.0	4.0	6.9

Road construction results in a use of the land which precludes the production of vegetation. Table IV-T5 shows a summary of the miles of road to be constructed annually per decade in each alternative.

TABLE IV-T5
TIMBER PURCHASER ROAD CONSTRUCTION SUMMARY

ALTERNATIVE	AVERAGE ANNUAL MILES PER DECADE 1	2	3	4	5
1. Current	42	31	21	21	8
2. Market	67	38	31	26	11
3. Non-Market	8	8	9	8	3
4. 1980 RPA	73	41	34	27	14
5. Productivity	75	41	33	24	15
6. Constrained	38	23	17	18	7
8. Wilderness/Wildlife	23	12	9	11	3
9. Wildlife/T&E	19	9	8	9	3
10. Max Wilderness Manageability	47	24	24	18	9
11. Max Wilderness Inventory	20	11	11	11	3
12. Modified Current	44	29	23	20	9

Probable Effects

Alternatives 2, 4 and 5 prescribe high intensities of timber management on all lands suitable for timber production. Other resource objectives in all three alternatives would be difficult to meet, especially visuals, wildlife and watershed. Firewood availability would be considerably higher with Alternative 5 being nearly double that of the current situation. Insect and disease losses would be low to moderate. These alternatives

make the fastest progress toward a balanced age class distribution on suitable lands.

Alternative 10 prescribes high intensity timber management on all suitable lands not proposed for wilderness. Other resource objectives would be difficult to meet on the lands managed for timber. Firewood availability would be the same as existing. Insect and disease loss would be low on the lands managed for timber. Progress toward a balanced age class distribution on suitable lands would be the same as Alternatives 2, 4 and 5.

Alternative 7 prescribes a high to moderate intensity of timber management on suitable lands. Coordination with other resource objectives is possible. Insect and disease loss would be moderate. Firewood availability would be slightly less than existing. Progress toward a balanced age class distribution would be moderate.

Alternatives 3, 8, 9 and 11 prescribe low to moderate intensities of timber management. Other resource objectives would be met. Firewood availability would be significantly lower than existing. Losses to insect and disease would be high with the potential for epidemic levels of insects occuring in the lodgepole pine stands. Progress toward a balanced age class distribution would be slow with over sixty percent of the suitable acres remaining in age classes of 120 years or older at the end of the fifth decade.

Alternatives 1 and 6 prescribe a moderate to high intensity of timber management on suitable lands. Other resource coordination would be possible. Fuelwood availability would be the same as existing in Alternative 1 and only slightly less in Alternative 6. Insect and disease loss would be moderate. Progress toward a balanced age class distribution would be moderate.

Alternative 12 (the preferred alternative) prescribes a high to moderate timber management intensity to suitable lands. Other resource objectives would be met. Insect and disease losses would be low to moderate on suitable lands. Fuelwood availability would be slightly higher than existing. Progress toward a balanced age class distribution would be moderate with approximately half the suitable acres being in age class less than 120 years at the end of the fifth decade.

Adverse Impacts

Timber sale road construction disturbs soil and temporarily increases sedimentation in streams. Refer to Watershed and Fisheries sections of this chapter for a discussion of sediment yield increases and effects on fisheries.

Visual quality, following timber harvest, may be degraded over the short term as a result of cutting units and road construction. This impact may improve over the long term.

Timber management, once it is implemented, would preclude future designation of the area impacted by the roads and cutting units as wilderness.

Some wildlife habitat values may be degraded or lost in the short term due to timber harvest. The degree varies by intensity of management, type of habitat, and timing of activities. Impacts can be minimized by using appropriate timing, sale design, and intensity of management. Refer to the wildlife section of this chapter for a discussion of effects on wildlife from timber management.

In all alternatives, volume will be lost from areas on which timber management is precluded. This volume loss would be a result of overmaturity, insects, and disease. The potential exists for epidemic levels of budworm and bark beetles to occur in unmanaged stands in all alternatives. This potential is especially high in unmanaged lodgepole stands. Potential for losses is much lower in managed stands of all species.

Air quality would be temporarily degraded by dust from road construction, logging, and hauling, and by smoke from slash burning in all alternatives. These effects would occur in the immediate area of the timber harvest activities.

6. Soil and Water

a. General Effects

State water quality standards will be met in all areas influenced by implementation of land management activities proposed in all alternatives. Watershed conditions are, however, currently degraded in certain areas of the Forest. Because of this, water meeting state water quality standards (in terms of percent of total Forest water yield) in Decade 1 will be approximately 95 percent for all alternatives. Approximately 5 percent of the Forest water yield is influenced by chemical contaminants and serious erosion problems. These problems include: heavy metal contamination of portions of Blackbird Creek and Big Deer Creek within the Panther Creek drainage; massive slope instability within the Dump Creek watershed; and numerous small degraded areas in need of watershed improvement work. It is anticipated that by the end of the second decade of the planning period, the quality of water from these problem areas will significantly improve. This is due in part to the new Dump Creek Project which diverts significant amounts of flow out of the Dump Creek channel and into Moose Creek. Also, proposed water quality mitigation in the Blackbird mine area may eventually return

the majority of flow to acceptable levels. In all but Alternative 6, the backlog of watershed improvement projects will have been completed. Considering the eventual changes in watershed conditions anticipated in these affected areas, water quality meeting state standards should approach nearly 100 percent by the end of the planning period for all alternatives. This increase in water meeting State Water Quality Standards can be seen in the first two decades in all alternatives in Table II-7a.

The effects of timber harvest and road construction have been cumulatively assessed for all alternatives. Estimated sediment rates are discussed in greater detail later in this section. While the high commodity output alternatives (such as Alternatives 2, 4, 5 and 10) will result in a higher density of land disturbing activities, and associated elevated sedimentation rates, long term watershed conditions will remain stable.

Water yield will be increased in certain high commodity level alternatives, as a result of timber harvest rates increasing over current levels. However, these increases will be minimal.

With the exception of Alternative 6, Constrained Budgets, watershed improvement projects will be accomplished at a rate of about 30 acres a year until the year 2000, when the existing backlog of project sites is completed. Following completion of the backlog, yearly accomplishments will include the improvement of newly identified sites, at a rate estimated at about 20 acres a year. Water quality from the treated areas will gradually improve following project completion. Implementation of Alternative 6 will not include any watershed improvement projects, and water quality from the sites will continue to degrade.

Long-term soil productivity will be maintained on the vast majority of Salmon National Forest lands, with area maintained ranging from 98 to over 99 percent (Table IV-1). Variability in this level will be a function of the amount of land committed to permanent facilities, new road construction and watershed improvement projects associated with each alternative. Levels of soil productivity maintained are shown for each decade for all alternatives below in Table IV-WS1.

TABLE IV-WS1

LONG-TERM SOIL PRODUCTIVITY MAINTAINED

ALTERNATIVE	DECADE 1	2	3	4	5
	(percent of total Forest area)				
1	99.11	99.00	98.95	98.89	98.88
2	99.03	98.90	98.82	98.75	98.72
3	99.20	99.17	99.15	99.13	99.12
4	99.02	98.88	98.79	98.71	98.68
5	99.01	98.88	98.79	98.72	98.68
6	99.16	99.10	99.03	99.00	98.98
7	99.11	99.04	99.00	98.95	98.93
8	99.18	99.15	99.13	99.09	99.08
9	99.19	99.17	99.15	99.12	99.12
10	99.10	99.02	98.96	98.91	98.88
11	99.19	99.16	99.14	99.11	99.10
12	99.12	99.06	98.99	98.94	98.57

b. Effects of Timber Harvest and Road Construction

Removal of vegetation from Forest lands through timber harvest will result in a change in water yield from these lands. Due to reduced levels of vegetative transpiration, the amount of soil-water consumed by vegetative cover will be reduced. Changes in water yield will be minimal for all alternatives, with the highest vegetative removal alternatives (such as Alternatives 2, 4, 5 and 10) increasing annual water yield by three percent or less. Timber harvesting will be evaluated for cumulative water yield effects. In areas with significant potential for channel stability problems, timber harvesting will be scheduled so that no more than 25 percent of any second order or larger stream will be in a clear cut condition at any time. This limitation will minimize increases in peak flow events following harvest, and the chances of any changes in stream stability or morphology. Downstream effects will be insignificant, with increases in peak flows as well as increases in baseflows being minimal.

Road construction and timber harvest will affect water quality in all alternatives. Typically, these activities result in a short term decrease in water quality in the immediate project area for the first few years after implementation. The most significant water quality effect of timber related land disturbance is sedimentation of streams and the influence on downstream beneficial uses, including fisheries habitat.

Stream sedimentation occuring following timber harvest and road construction associated with each alternative has been assessed and is summarized in Table IV-1. The values listed in this table are in the form of "percent over

natural" and represent the average increase over a fifty year period. Sedimentation rates by individual decades are shown in Tables IV-WS 2 and IV-WS 3.

For example, if a stream within an undisturbed watershed produces an average of 100 tons per year of sediment to the mouth of the stream, a sedimentation rate of 45 percent over natural would result in sediment levels of 145 tons per year. Also, the values shown are not averages for the decade, but are instead an estimation of the highest or peak yearly level possible resulting from a specific road entry within a watershed during that decade. During most years of each decade, the percents over natural for the watersheds would be lower than the peak percent listed in the table.

Sediment levels were constrained in all alternatives to maintain minimum viable fish populations or meet fish management goals. These levels also assure attainment of State Water Quality Standards for all alternatives. In the high commodity alternatives, all watersheds will be maintained at sediment levels which are at or below those required for minimum viable populations of fish. In all other alternatives (1, 3, 6, 7, 8, 11 and 12), maximum sedimentation rates are much lower, allowing specific fisheries management goals to be achieved (see the Fisheries Management discussion in the Wildlife section of Chapter IV for a complete description of these goals).

As shown below in Table IV-WS2, percent over natural levels are highest in high commodity Alternatives 2, 4, 5 and 10, where sedimentation rates in resident fisheries watersheds reach up to 81 percent over natural in the first decade. Generally, sediment rates decrease over time due to reduced construction of arterial and collector roads in later decades.

TABLE IV-WS2

SEDIMENTATION RATES IN RESIDENT-ONLY STREAMS

ALTERNATIVE	DECADE 1	2	3	4	5
	(percent over natural levels)				
1	48	47	35	37	20
2	75	53	38	40	16
3	22	14	11	11	8
4	80	54	45	41	28
5	81	60	42	36	28
6	43	36	31	16	21
7	48	37	29	33	19
8	28	20	16	18	10
9	23	17	14	15	9
10	52	29	31	26	16
11	24	17	17	17	14
12	53	44	34	33	20

As seen in TABLE IV-WS 3, sediment levels in anadromous watersheds will not exceed 40 percent over natural. This is due to constraining cumulative activities in these watersheds to protect anadromous fish habitat.

TABLE IV-WS3

SEDIMENTATION RATES IN ANADROMOUS STREAMS

ALTERNATIVE	DECADE 1	2	3	4	5
	(percent over natural levels)				
1	22	20	17	17	13
2	38	38	33	28	26
3	11	10	16	11	14
4	38	35	33	33	29
5	40	29	32	29	23
6	16	16	15	14	12
7	10	10	10	10	10
8	11	9	11	11	11
9	11	10	11	11	11
10	32	25	26	27	24
11	11	11	12	11	11
12	21	20	18	16	14

c. Riparian Areas

Resource management activities which occur within riparian areas are expected to produce some direct influences upon riparian dependent resources under all alternatives. These influences, with the exception of grazing, are expected to

be of short duration and within acceptable limits. Project specific coordination for activities within riparian zones is identified in Chapter IV of the Forest plan. Application of the requirement will reduce the potential for negative effects upon riparian zone dependent resources.

Timber. Timber management and harvest within riparian areas was not included within the FORPLAN analysis of timber alternatives. Riparian acres were removed from the timber base and assigned to an unregulated status. Future timber management within riparian zones will be handled on a project basis irrespective of the alternatives reviewed. Riparian timber management requirements were developed to minimize potential adverse influences and protect the unique riparian values. These requirements include slash management techniques, modified operation of heavy equipment, stream crossing restrictions and stream channel protection. However, whenever timber activities do occur in riparian areas, some short term water quality degradation and vegetative disturbance will occur. High timber output alternatives (2, 4, 5,and 10) will likely accelerate management and harvest within riparian zones and will potentially increase adverse effects to riparian dependent resources.

Grazing. It is anticipated that adverse effects to some riparian dependent resources will continue under all alternatives. Mitigation for adverse influences and increased coordination with riparian dependent resources will be accomplished by applying the Forest's management requirements. Implementation and application of these requirements will depend upon adequate time to make the necessary changes to allotment management plans and sufficient funds to install range improvement structures and to adequately administer grazing use. Increased coordination between grazing use in riparian zones and other resources is scheduled under all alternatives.

Minerals. It is anticipated that current management direction and attitudes associated with placer mining within riparian areas will create significant unavoidable adverse effects to riparian dependent resources under any alternative. In many instances the short term development and use of placer minerals will create long term influences upon productivity of other resources (i.e., fish). In some instances, the effects will be irretrievable and in certain cases the effects will be irreversible. Quantitative analysis of placer mineral development is impossible because actual development is not predictable.

Hydropower. It is not anticipated that hydropower development will significantly influence water quality or riparian vegetation under any alternative. The

quantification and claiming of Federal Water Rights associated with the Organic Administration Act and the Multiple Use Sustained Yield Act of 1960 will protect these riparian values under all alternatives. There is, however, a potential to substantially affect fish resources as a result of hydropower development (see fishery discussion). The effects of hydropower development on fishery resources will be in most cases unavoidable, producing irretrievable losses in habitat capability and fish production. Similiar to mineral development, quantification of effects on a Forest-wide basis is impossible because actual development is nonprobablistic.

Other Resources and Management Activities. Application of the Forest wide management requirements will reduce the potential for serious adverse effects resulting from other resource uses and management activities within riparian areas. Significant adverse effects are not anticipated under any alternative. These other resources and activities include recreation, facilities, fire protection, fish and wildlife management, etc.

d. Floodplains and Wetlands

Scattered areas of relatively small wetlands, floodplains, and other riparian areas comprise less than 4 percent of the Forest land base. Forest standards and guidelines contained in the Forest Plan give specific management direction for these areas. Forest management activities in any wetland, floodplain, or riparian area will be designed to prevent long and short term adverse impacts, in accordance with Executive Orders 11988 and 11990, and the direction outlined in the Forest Service Manual, sections 2526, 2527, and 2633.

e. Prime Farmlands

No prime farmland exists on the Forest and none of the alternatives would affect prime farmlands near the Forest.

7. Minerals and Energy

Minerals Area Management programs are directed toward minimizing the impacts of exploration and/or development on the surface renewable resources while accommodating and facilitating the development of mineral and energy resources. The effects of developing mineral and energy resources will vary with the method of exploration and/or development. Surface disturbance can vary from essentially no surface disturbance with seismic or gravity exploration methods to moving of tons of material in open pit methods of ore extraction. Chemicals used in the various methods could be toxic to animals and humans if allowed to enter streams or the ground water. Streams may be impacted by increased sedimentation from roads and disturbed areas.

Wildlife will be affected by the presence of humans and increased noise levels caused by machinery.

A major mineral or energy resource discovery can place significant stress on small adjacent communities. Housing shortages, overcrowded schools, a high percentage of new residents, and large increases in money in the community combine to change a social structure that has often been present for generations. This increase in population also places an increased demand on the Forest for recreation, fuelwood and other resources. Surface disturbing activities may impact cultural resources through disturbance of sites which cannot be avoided.

Mineral extraction results in depletion of a nonrenewable resource. Limiting the area in which exploration or development can occur may prevent discovery and utilization of a resource necessary for the welfare of the nation and may reduce the jobs and income available in dependent rural communities. The number of acres that would be withdrawn from mineral entry and leasing in each alternative are shown below.

Alternative	Thousand (M) Acres Withdrawn 1/
1	503
2	610
3	775
4	584
5	426
6	426
7	662
8	897
9	1,005
10	1,130
11	1,256
12	426

1/ Includes: 426 M acres in Frank Church--River of No Return Wilderness plus the acres for proposed wilderness by alternative. Does not include approximately 18,000 acres of administrative withdrawals scheduled for retention review in the first decade of all alternatives.

The areas proposed for wilderness in each alternative would be available for mineral entry until Congressional classification of an area as wilderness. Special stipulations would be incorporated into locatable mineral operating plans to mitigate adverse impacts on the wilderness character of the area prior to Congressional action. Mineral and energy leasing would only be recommended if development could be done without surface disturbance.

Alternatives 8, 9, 10, and 11 have the most number of acres proposed for wilderness. These alternatives would have the

least minerals and energy related impact on the surface resources. Alternatives 1, 5, 6 and 12 have the least number of acres proposed for wilderness and would have potentially the greatest impact on surface resources. Those alternatives with the largest wilderness proposals offer the least opportunity to discover and develop mineral and energy resources. Forest standards and guidelines for mineral and energy development will be included in all alternatives and are designed to mitigate the mineral and energy related impacts to the surface resources.

8. Human and Community Development

Implementation of any of the alternatives provides an opportunity to contribute to human and community development programs. These include activities that provide youth with resource conservation work and related learning experiences. Examples of these activities include the Youth Conservation Corps (YCC) and the Young Adult Conservation Corps (YACC). Adult employment and training programs, such as the Senior Community Service Employment Program and the Comprehensive Employment Training Act, are also provided. These programs help ensure equal employment opportunities for women, minorities, the elderly, and the handicapped.

These programs are affected by budgetary restrictions rather than resource management alternatives of the Forest Plan; therefore, the effects were estimated to be similar for all alternatives.

In addition to the programs that would be provided in all the alternatives, the Salmon National Forest will continue to conduct the volunteers in the National Forest program that provides opportunities for persons to contribute their talents and knowledge to enhance Forest Service activities. The Forest would also participate in cooperative programs administered by State and local governments.

9. Lands

a. Land Ownership

Some factors relating to ownership adjustment are a result of Forest Service activity and thus vary by alternative. Other factors are external to forest management but also influence the lands program. Private and other government entities have needs which require a responsive program to handle donations, exchanges and title claims.

Funding of the lands program and the amount of activity generated by resource programs (timber, grazing and recreation etc.) are two significant factors. Alternatives 1-4, 6 and 8-12 provide minimum response to external and forest management needs. Alternatives 5 and 7

have a balanced funding and provide for an adequate program.

Land ownership adjustment is directed toward resolving intermingled land management problems and improves management efficiency. Lands with moderate and high public values are retained or sought in exchanges.

Cooperation of other land owners to adopt land uses compatible with the Forest environment will help resolve conflicts. Also encouragement to zone and obtain compliance of regulations by state and local government can be done.

Effort will be made to negotiate scenic easements for privately owned lands within the Recreation Segment of the Salmon River under all alternatives. However, under Alternative 6, program activity will be at minimum level.

Processing Small Tract cases will remain constant at 4-5 cases per year for all alternatives except Alternative 6 where fund restriction will limit program activity to 1 or 2 cases per year.

b. Right-of-Way Acquisition

Forest rights-of-way acquisitions are mainly for existing roads and trails that lack recorded access rights. Rights-of-way are also needed for some new roads constructed by resource programs. The existing backlog of road and trail rights-of-way to be acquired is 272 cases.

Rights-of-way acquisition varies by alternative and program activity is limited by funding constraints except for Alternative 7.

TABLE IV-L1

ANNUAL RIGHTS-OF-WAY ACQUISITION

Alt. No.	1	2	3	4	5	6	7	8	9	10	11	12
Cases/Yr	5	8	5	10	13	1	15	5	5	5	5	5

c. Withdrawals from Mineral Entry

The Federal Land Policy and Management Act of 1976 directed evaluation of all existing administrative and recreation site withdrawals. The Forest program activity level is at 22 to 25 case reviews per year and will be constant for all alternatives. Relinquishment of unneeded withdrawal area could open around 5,000 acres to mineral entry.

Mineral prospecting and mining impacts are discussed in the Minerals section.

d. Special Uses

Requests for the use of National Forest lands for special purposes are received from private individuals and organizations and other Federal, State and local governments. Permitted uses and the rate of applications for new uses are independent of the alternatives. Differences between alternatives include the ability to administer existing permits and process new applications. Special uses would be permitted in each alternative on lands where they are compatible with the management direction for the area. Alternative 6 poses the greatest risk of adverse environment impact because of limited funding to properly administer permits.

Before a permit is issued, the proposed use is evaluated to identify and develop a solution to avoid or mitigate adverse impacts. Depending on the type and amount, the use can degrade visual quality, damage vegetation, disturb soil and displace wildlife during the construction phase. The operation phase can also have effects on the environment though they are usually minor.

The Forest is currently involved in processing hydropower proposals in the Carmen Creek, Napias-Panther Creek, and Twelvemile Creek areas. Increase of Federal Energy Regulatory Commission hydroelectric proposal applications is expected to occur. The proposals will be processed under all alternatives; however, under Alternatives 3, 6, and 8-10 some delays may occur.

e. Landline Location

The Forest landline location activity will operate at minimum level for Alternatives 1-3, and 8-12 (17 miles/year). Program activity for Alternatives 4 and 5 will increase to 25 miles per year. Alternative 7 program activity will be at 75 miles per year with a goal for completing the backlog and required boundary posting by 2020. In all alternatives the program will probably discover 2-8 encroachment/trespass situations annually.

f. Research Natural Areas

There is one established RNA on the Forest (Gunbarrel). Additionally, ten candidate areas have been identified which possess desirable attributes for inclusion in the RNA systems. The ten candidate areas are: (1) Dome Lake, (2) Frog Meadows, (3) Allan Mountain, (4) Bear Valley Creek, (5) Colson Creek (6) Dry Gulch-Forage Creek, (7) Mill Lake (8) Davis Canyon (9) Deadwater, and (10) Kenney Creek. An

additional area, Sheep Mountain, is shared by the Salmon, Challis, and Targhee National Forests. Challis National Forest is the lead Forest in the evaluation of the area.

Protection against inappropriate encroachment of existing conditions will be provided for in all alternatives for existing and candidate RNA's. Candidate areas will be protected against encroachment until they are formally established or released from further consideration as an RNA. During field analysis of selected candidate areas, the Forest will continue to assess the opportunities available to help meet National network objectives, and will formally recommend establishment of suitable RNA's.

g. National Historic Landmark

All alternatives provide equal protection for the Lemhi Pass National Historic Landmark. The area will be managed primarily for recreation use, substantially in its natural condition. Consultation for determination of effect of any proposed project will be through the State Historic Preservation Officer and the Advisory Council on Historic Preservation.

Grazing will be permitted to the extent that it does not impair the integrity of the Landmark. No permanent facilities will be constructed.

Limited timber harvest may be permitted to the extent that it does not impair the integrity of the Landmark.

The Landmark will be withdrawn from mineral entry.

The Landmark does effect the capability of classifying an existing major powerline right-of-way over Lemhi Pass as a designated utility corridor. This right-of-way has been determined suitable for designation from an engineering standpoint, but further designation would not be prudent from a cultural resources standpoint as the Landmark straddles the pass where the powerline crosses from Montana into Idaho.

10. Facilities

a. Roads

Road construction and reconstruction in support of land and resource management affects almost all Forest resources and uses.

Roads access commodity resources and recreation opportunities, and improve initial attack fire capabilities and create fuel breaks.

But roads also change the recreation setting of the area and create visual impacts. They alter natural wildlife habitat and may adversely impact wildlife. Road construction increases erosion and sedimentation and reduces water quality (The impacts vary according to soil and terrain.)

Proper road location, design, construction, and management (closures and seasonal traffic restrictions) will help mitigate the above impacts. Below is a table, by alternative, of projected average annual road construction and reconstruction for the first 20 year period.

Alternative	Construction (mi/yr)	Reconstruction (mi/yr)
1 - Current Program	36	16
2 - Market	60	23
3 - Non-Market	16	8
4 - RPA 80	63	24
5 - High Productivity	66	32
6 - Low Budget	32	0
7 - Capability	32	10
8 - Wilderness & Wildlife	18	6
9 - Wildlife T&E	16	8
10 - Wilderness on Manageable Boundaries	38	8
11 - Wilderness on Inventory Boundaries	18	8
12 - Preferred	42	16

The amount of construction and reconstruction is most closely tied to timber volume offered for sale. Other factors of some importance are budget, (Alternative 6 has no reconstruction), and emphasis on recreation in Alternatives 3 and 5. Construction miles will decrease sharply beyond the second decade while reconstruction of roads built in decades 1 and 2, along with the backlog, will keep the total miles of reconstruction nearly constant.

As in discussing potential timber sales, there is an inherent assumption that timber offered will be bought and logged, thereby resulting in the construction/ reconstruction figures shown.

b. Buildings

The Salmon National Forest owns and is responsible for the maintenance of numerous buildings and administrative facilities such as the Leadore, Cobalt, North Fork, and Salmon District compounds, Hughes Creek and Indianola work centers, Jesse Creek storage area, lookouts, guard stations, and facilities on acquired lands. In all

alternatives maintenance and/or replacement of facilities will vary based on the need for those facilities. This need is most closely tied to the intensity of management and the size of the workforce necessary to implement the objectives of the alternative. In Alternatives 1, 6, 7, 10 and 12 the facilities currently in regular use (district compounds, work centers, and some lookouts) will be maintained on a regular basis or, where outmoded, replaced in the first decade. In Alternatives 2, 4 and 5 there would likely be additional maintenance or rehabilitation of guard stations and facilities on acquired lands while in Alternatives 3, 8, 9 and 11 even certain work centers would be unused and therefore not scheduled for regular maintenance or repair. All alternatives would consider the effects of proposed management activities on the historic values of administrative structures.

c. Transportation and Utility Corridors

There are two existing utility (powerline), and two transportation (State Hwy. 28, U.S. Hwy. 93) rights-of-way on the Salmon National Forest. Under all alternatives the existing use of these rights-of-way will remain unchanged, with no planned expansion for additional use. For these reasons there are no new or different corridor-related impacts under any alternatives.

Three potential utility corridors have been identified on the forest. No proposals for the development of any of these potential corridors have been received, so the effects of such development were not evaluated. Should development proposals be made, the effects would be evaluated at that time.

11. Protection

a. Fire Management.

As an implementation process of this Plan, a detailed analysis, using FIREPLAN (FPL-IAA2) computer programs was used. These programs provided analytical capabilities needed to evaluate fire management program budget options, and how they would relate to developed Forest Plan alternatives.

The budget analysis process identified the most cost-efficient fire budget option for all alternatives, and documents the consequences in terms of expected annual Forest Fire (FFF) cost and net resource value changes.

There was no significant difference in the fire protection program as it relates to individual alternatives. A single cost-effective program mix was selected for all.

There are a variety of opportunities to use prescribed fire as a tool to accomplish multiple-use management objectives. Following is a brief discussion by alternative of these variables:

Alternatives 2, 4, and 5 - These alternatives include prescriptions with relatively high timber harvest objectives. Prompt fire suppression would be required over a large portion of the Forest to protect timber values and investments. Due to the related increase in vehicular access, the potential for man-caused fires resulting from motorized use would increase.

The use of prescribed fire would be high for the disposal of unutilized logging residues. The objectives of this disposal would be to minimize fire hazards and to prepare the site for tree regeneration. Outside of wilderness area, prescribed fire use could be considered in most coniferous vegetation types to maintain ecosystems, unless manipulated by timber harvest. Prescribed fire use could be increased to help meet livestock range improvement objectives and maintain or improve wildlife habitat.

Alternatives 1, 6, 7, and 10 - These alternatives would maintain the current mix of uses and management prescriptions. Fire suppression emphasis and prescribed fire use is described in detail in the summary analysis of the Management Situation, Chapter III, Forest Plan.

Alternatives 3, 8, and 11 - These include relatively low timber harvest levels as a result of noncommodity value emphasis and low budget. The lowest need for prompt fire suppression to protect timber values and investments would occur in these alternatives. Access would be the lowest in these alternatives and consequently the probability for man-caused fires would be the lowest. However, because of the limited amount of harvest, the probability of large intense fires would increase. The greatest need for reintroducing fire into the ecosystem outside of wilderness would be in these alternatives.

The opportunitiy for use of prescribed fire for livestock range improvement would decrease because of less emphasis on commodity uses. The opportunity for the use of prescribed fire for wildlife habitat improvement would increase because of the emphasis on amenity and wildlife habitat resources.

Alternative 12 (Preferred Alternative) - This alternative does not differ significantly from the current level of resource outputs and activities.

Fire Management Implications - There are two primary aspects of fire management to consider with respect to each

alternative. First, in each alternative the level of fire protection would be the same, as suppression cost of large wildfires would far exceed the values at risk.

The second aspect relates to using fire as a tool to accomplish resource management objectives including maintaining a healthy ecosystem in areas that are planned for roadless management. Fire could be reintroduced as a natural periodic event in these areas subject to insuring public safety and minimizing fire risk to adjacent areas where other values must be protected. Other important uses of prescribed fire include disposal of unutilized logging residues, and use for vegetative manipulation to improve wildlife habitat or livestock range.

Fuelbreak, fuel treatment (logging residue disposal), and prescribed fire use acres are displayed for each alternative in Summary Table IV-1.

Indirect and Environmental Effects of Fire Management - In general, the effect of the fire management program including wildfire suppression and the use of prescribed fire for various vegetation treatment purposes upon other resource elements is to minimize losses from wildfire, as well as to accomplish management objectives through the use of prescribed fire.

There are no significant differences between alternatives relative to the effects of wildfire.

Fire management will have minimal effects upon recreation. Prescribed fire may cause some temporary reductions of developed or dispersed use if it is used near recreation developments or popular dispersed recreation areas.

The quality of the visual resource will be temporarily reduced in local areas where prescribed fire is used to accomplish any of a variety of management objectives. Among the longer-term effects of the use of prescribed fire is to create and maintain vegetation diversity.

The effect of wildfire on the fish and wildlife resource is not significant because so little area is burned with intense fire. (Forest-wide annual burned, 1,878 acres.) The use of prescribed fire is signficant in the accomplishment of vegetation treatment necessary to reach wildlife objectives. The potential detrimental effects of prescribed fire upon fisheries will be mitigated through the careful planning and excecution of prescribed fires.

The incidence of wildfires does not have a significant effect upon the range resource under any alternative. Prescribed fire will be used to accomplish range management vegetation treatment objectives. There is a short-term

reduction in forage as a result of prescribed burning, but a long-term improvement in forage production.

Both prescribed fires and wildfires can damage or destroy cultural resources. Especially susceptible are properties made of wood, such as log cabins. In addition to fire itself, suppression or control such as fireline construction can be detrimental to cultural resources.

The potential adverse effects of prescribed fires can be significantly reduced by planning the activity to avoid sensitive cultural resources. In the case of wildfires, adverse effects on cultural resources can be mitigated by planning suppression activities in consideration of sensitive cultural resources. From a positive viewpoint, fire protection activities are ultimately in the interest of cultural resources preservation. They are required to prevent or control the outbreak of major wildfires which could have serious effects on cultural resource properties.

The effects of the fire management element upon the water, minerals, lands, soils, and facilities resource elements is local, short-term, and not significant.

b. Forest and Rangeland Pest Management

Both plant and animal populations can achieve pest status if levels pose an actual or anticipated threat to the accomplishment of resource management objectives. The term pest is used to include insects, disease organisms, terrestrial and aquatic vegetation, vertebrates, and even certain environmental stress factors. The objective of forest pest management is to reduce damage and loss caused by pests on all forest and range lands to levels consistent with management objectives, with due consideration for environmental concerns, biological effectiveness, and economic efficiency

The primary "pests" of concern on the Forest are forest insects and diseases. These play a natural and important role in the forest environment. Their effect is usually of concern where man is competing with these agents for the same resources; with timber being the most affected resource. The principal insects and diseases affecting, or with the potential to affect the Salmon National Forest are western spruce budworm, mountain pine beetle, Douglas-fir beetle and dwarfmistletoe. Other potentially important agents include western pine beetle, pine engraver beetle, pine butterfly and root rots.

Insect and disease population dynamics, weather patterns, and stand conditions interact to determine the amount of damage and whether pests will build to epidemic levels. Population levels are monitored with aerial surveys and

followup ground surveys where necessary. Priority areas are normally surveyed annually. Direct suppression is aimed at the pest population itself. The conditions necessary for a major spray project or other direct suppression project cannot be predicted and no major project is scheduled. Direct suppression of dwarfmistletoe is feasible, however. The primary emphasis for insect and disease control is prevention. Prevention is primarily through timber stand treatments and mainly in conjunction with timber harvest.

Prevention measures include clearcutting or other regeneration harvest to remove an infection source or to convert an overmature susceptible stand to a young nonsusceptible condition. Shelterwood cutting, thinnings and other treatments also reduce the susceptibility of a given stand. Once a majority of the stands in an area are in a low hazard condition the probability of a major outbreak is reduced. This is especially true with mountain pine beetle in lodgepole pine. The insect is currently at endemic levels but will build to epidemic levels in the future without logging or fire in the lodgepole type.

Forest direction provides integrated pest management standards and guidelines to be applied for all alternatives. The level of direct suppression (primarily dwarfmistletoe control) and indirect control and prevention is dependent on the amount of timber harvest and intensity of reforestation and timber stand improvement treatment. Insect and disease information is collected in conjunction with stand examination to provide information for hazard rating stands. This activity also varies with the level of timber harvest.

Alternatives 6, 7, 10, and 12 (Preferred) provide the same benefits as 1, current management. Impacts from insects and diseases are expected to gradually decline as the forest is changed to a higher percentage of young even-aged stands. Alternatives 2, 4, and 5 provide for improved insect and disease control while Alternatives 3, 8, 9, and 11 can ultimately lead to increased problems with insects and diseases. It is likely that due to market conditions and economic conditions the actual volume sold and area treated will be somewhat less than planned. Consequently the probability of a mountain pine beetle epidemic will be lessened with increased harvesting of large diameter lodgepole pine.

Predator control and noxious weed control are described in the range section. Insect and disease considerations including hazard tree surveys are important in recreation site management. This would continue in all alternatives.

c. Air Quality

Currently there are no major sources of pollutants within a 50 mile radius of the Forest, and there are no air quality nonattainment areas. State air quality standards will be met by all alternatives. The Frank Church--River of No Return Wilderness will continue to be managed as a Class II Air Shed.

Prescribed fire will producee isolated and short-term degredation of air quality. Although this will be most pronounced in the market, 1985 RPA and 1980 RPA alternatives. Prescribed fire as a management tool is provided for in all alternatives. The most significant degredation of air quality is expected to occur from uncontrolled wildfires. Conditions conducive to large uncontrolled wildfires occur about one out of ten years.

Under any alternative, smoke from wildfire will occasionally accumulate in valley bottoms.

d. Law Enforcement

Law enforcement problems will increase under all alternatives, as public use of the Forest increases. The intent of law enforcement activities will be to ensure that the Forest is available to all persons for legitimate uses with a minimum of restrictions, and to promote visitor safety and the protection for Forest resources and facilities. Cooperation with State and local law enforcement agencies will be maintained to help achieve these ends.

C. Economic Effects

A present net value (PNV) analysis was performed on each alternative to aid in evaluating and comparing the economic effects of each alternative.

PNV is defined as discounted benefits less discounted costs, including only those outputs that can be assigned monetary values. A discount rate of 4 percent was used to show the effect of inflation.

The variables included in this analysis are displayed in Table IV-2. The table not only includes the 12 Plan alternatives but also a minimum level and maximum PNV benchmark. These were taken from the analysis of the Management Situation and displayed as base level and maximum level of PNV against which the other alternatives can be compared.

The Minimum Level Benchmark represents the set of minimum unavoidable activities mandated solely by virtue of public land ownership. The only significant outputs of minimum level management are wildlife, dispersed recreation use and water yield. There are no outputs for

developed recreation, grazing use or timber production. The only costs are those associated with protecting the life, health, and safety of incidental National Forest users, preventing impairment of the productivity of the land, and protecting adjacent lands. The Minimum Level Benchmark provides a base for comparing the costs and benefits of those alternatives analyzed in detail.

The Maximum PNV Benchmark represents management which emphasizes only those outputs which generate a monetary return while relaxing any resource constraint which would reduce a dollar producing output.

As you can see, the PNV Analysis directly represents a very limited number of outputs (reference Summary Table IV-2). However, this economic analysis was also used as an indirect indicator of value for certain nonpriced outputs and costs.

For example, constraints were placed in certain alternatives which, for example, resulted in reduced timber harvest in order to reduce adverse impacts on visual quality or wildlife habitat. The resulting decrease in PNV compared to other alternatives which emphasize timber production actually represents the cost (called an opportunity cost) of protecting these resources. Taken one step further, dividing this cost by increased number of acres of wildlife habitat, or visual quality retention, one can arrive at the value of those outputs.

Certain resources were indirectly valued through their association with resources that were directly priced. For example, no specific dollar values were placed on visual resources, yet they were incorporated in the analysis by virtue of their relationship with dispersed recreation. Much of the dispersed recreation taking place is at least partially a function of the visual resources available on the Forest. Management activities which degrade this resource would be expected to cause a corresponding reduction in dispersed recreation activity at that location. The dollar value placed on a recreation visitor day of dispersed recreation can partially be attributed to the visual resource.

Other resources could not be valued either directly or indirectly through association with other resources. Examples of such benefits include research benefits of designated research natural areas, the value to future generations of protecting and preserving cultural resources, the benefits of maintaining viable populations of animal species not related to recreation use, and the vicarious satisfaction derived by some individuals who desire the establishment of designated wilderness areas yet who have no intention of visiting these areas.

In the final analysis then, the PNV comparison was viewed as one factor among many in evaluating the total benefits of a given alternative. The optimum alternative is the one that maximizes net public benefits (NPB), defined as the overall value to the nation of all benefits less all associated inputs and costs, regardless of whether or not they can be quantitatively valued. The reader should also keep in mind that the figures displayed in Table IV-2 are based

on the assumption that demand exists for the outputs being produced on the Forest. In the real world this may or may not be the case. Our national economic and trade policies as well as those of other countries often exert strong influences over demand for natural resource products which are produced locally.

D. Social Effects

The social impacts of land management planning are difficult to estimate and quantify.

The potential social impacts were analyzed in reference to groups of people (units of analysis) most likely to be impacted, how these groups may be impacted or changed (social variables), and the provisions (outputs and practices) of the alternatives. The extent to which an alternative is commodity or amenity oriented seemed to be the major factor in determining the social impacts upon the various groups of people. In other words, an alternative emphasizing Wilderness would have a greater positive impact on hikers and recreationists than on loggers, and vice versa for an alternative emphasizing timber harvest.

The groups of people (units of analysis) were:

Loggers
Ranchers/Farmers
Miners
Business people
Government workers/Educators
Retired people
Regional people
National people
Native Americans
Big game Guides and Outfitters
River Guides and Outfitters
and the communities of Salmon, North Fork, Gibbonsville, and Darby.

The following socio-economic variables were also used in the analysis.

Sense of Control/Self-Sufficiency - This variable refers to the feeling and/or belief that one has control over one's life direction; is not subject to control by others, and has a sense of freedom. Many people feel that their ability to control their own destiny is directly associated with their ability to control decisions influencing their lives.

Sense of control/self-sufficiency also means living independently; having the ability to exist with little or no outside help. Ranchers, loggers and miners in the primary zone of influence believe they are self-sufficient and in control of their lives and wish to remain so. If a rancher grazes his cattle on Forest land, he can likely maintain his sense of control/self-sufficiency if the number

of permits remains constant. A decrease in AUMs would likely cause a loss in the rancher's sense of control and an increase in AUM's would likely increase the rancher's sense of control. A significant decrease in the timber available for harvest would likely cause a decrease in a logger's sense of control and an increase in timber available would likely cause an increase in the logger's sense of control.

Certainty/Uncertainty - This variable refers to the probability that certain resources and conditions can be counted on as part of a desired life style. Ranchers, loggers, miners, guides, and outfitters, and some recreational businesses in the Forest primary zone of influence are directly or indirectly dependent upon Forest resources for their livelihood. A decrease in resource outputs would reduce their certainty about the future and their ability to earn a living at their present locations. On the other hand, a sufficient supply of the natural resources would increase their certainty about the future. Loggers with a sufficient supply of logs, miners with sufficient minerals, and recreationists with sufficient recreational opportunities are all viewed as having a measure of certainty about their future as it relates to the resources.

Community Cohesion/Stability - This variable refers to a sense of loyalty to and interpersonal cooperation within a community. It means adhering to the beliefs and goals of the community, and participating in community activities.

Community cohesion may weaken with an influx of people with differing life styles and philosophies. Partisan issues can divide a community and decrease community cohesion. One such issue of local, regional, and national interest is the classification of Forest Service administered land for amenity (Wilderness/recreation) or commodity (timber/range production) use.

Job Dependence and Lifestyle - This variable refers to occupationally depending upon Forest resources. Ranching, logging, mill working, mining, and guiding and outfitting are the primary jobs most directly dependent upon Forest resources. Without resources, these people would have a difficult time maintaining their lifestyle in this area. Changes in management direction can also have a negative or positive impact on these groups.

Another aspect of this variable refers to the more amenity oriented activities, such as hunting, fishing, backpacking, picnicking, and boating. These activities are also dependent upon the resources, although the impact may be subtle and less quantifiable than jobs/income. These activities; however, are an important aspect of many people's lifestyles.

Symbolic Meaning - This variable refers to the emotional attachment people have for the Forest and its resources. Although they may not receive economic benefit from the Forest, they do receive psychological benefit. Activities such as backpacking, snowmobiling,

skiing, and rock climbing provide an important psychological outlet for people locally, regionally, and nationally.

The following social groups were used in the analysis and are described relative to the expected alternative outputs:

Ranchers

Ranchers are generally in favor of and benefited by commodity-oriented forest plans. Many are at least somewhat dependent on the forest for grazing and pasturing of livestock. This mainstay group of people are interested in protecting their ranching way of life. Therefore, they would be benefited by alternatives which increase the current number of AUM's. The Market (2) and Productivity (5) alternatives would increase the amount of grazing and timber harvested on the Forest. The substantial increase in timber cut would result in a decrease in big game animals and other amenity values which would tend to lessen the overall positive benefits for ranchers. The Current (1), Capability (7), RPA-1980 (4), modified current (12) alternatives would also perpetuate the ranching way of life which would help to maintain the independent and self-sufficient way of life which is so typical of ranchers. The certainty of the future of the commodity outputs (especially grazing) would be increased. These factors would indicate to ranchers that their current way of life would have a good chance of continuing, establishing a climate of economic and lifestyle stability in the area near the Salmon National Forest.

The Constrained Budget (6), Wilderness/Wildlife (8, 9, 11), and Non-Market (3) alternatives would result in a negative impact on ranchers in terms of fewer jobs and/or less income, a lessening in their ability to become or remain self-sufficient, an increase in fears about the certainty of the future and their ranching operation, and a decrease in their ability to maintain their way of life.

Loggers

Loggers are one of the groups which is highly dependent on the outputs of the Forest. This dependency is currently most manifested in terms of jobs, although the real problems are past and current local, regional, national, and international economic conditions which have slowed the demand for wood products. Under a "normal" economic climate, loggers near the Forest are very dependent upon the amount of timber available for harvest. This situation puts the Forest Service in a real "Catch 22" situation, as the jobs and lifestyle of a significant number of people depend on governmental policies and action.

Loggers are dependent on timber harvest levels (and harvest methods) in terms of jobs and lifestyle. The Productivity (5), 1980 RPA (4), and Market (2) alternatives would provide loggers with a secure future (assuming market conditions improve) because of the increased availability of timber. Additional timber would result in a greater sense of self-sufficiency, and more certainty about the future of a

logging lifestyle. The modified current (12) alternative would also increase/enhance these same factors, although to a smaller degree, because of less harvest timber than the Market (2) alternatives. These four alternatives would be the best for loggers, because they would provide social-economic stability.

The Wilderness (8, 9, 10, 11), Constrained Budget (6), Non-Market (3), and Capability (7) alternatives would result in less (than present) job/income opportunities for loggers. They would also be significantly impacted (negatively) in terms of self-sufficiency, certainty, and general lifestyle.

Retired

Retired people, for the purposes of this social analysis, are those who moved here for the lifestyle or who have remained here because of the amenity values/lifestyle of the area. These people are generally attracted to the scenery, climate, recreational, rural atmosphere, and/or other amenity and lifestyle values of the area. They would, therefore, be positively impacted by the Non-Market (3) and Wilderness (8, 9, 10, 11) alternatives which would provide for significant increases in or protection of current amenity values of the Forest.

The Non-Market related (3, 8, 9, 10, 11) alternatives would also have a positive influence on the lifestyle of the retired and increase or maintain the symbolic meaning values they enjoy. Many are dependent on the symbolic/amenity values (recreation, scenery, solitude, etc.) for their way of life.

The Market related (2, 4, 5) alternatives would have a negative impact on the lifestyle and amenity values of the retired. This would be especially true of the Productivity (5) alternative which is highly commodity oriented. The 1980 RPA (4) alternative would have some minor negative impacts on this group. These comparisons are all made in reference to the Current Situation (1) alternative which, by definition, is a neutral or middle-of-the-road approach and represents (numerically) a middle or zero value in a negative/positive matrix scheme.

Miners

Miners would generally be positively impacted by commodity production types of land management action (Market-related [2, 4, 5] alternatives). Development activities usually result in better access for mining activities. These highly independent people are better able to remain self-sufficient if a commodity-oriented approach is in operation. Also their lifestyle is dependent upon mining-related work. Amenity alternatives (Non-Market, Wilderness [3, 8, 9, 10, 11]) would likely result in a decrease in self-sufficiency, a lessening of the certainty of a secure future, an impairment in life-style and a decrease in the number of available jobs and business opportunities in mining.

Big Game Guides and Outfitters

Because of their economic stake in and way of life associated with the recreation and wildlife resources of the Forest, big game guides and outfitters are definitely positively impacted by amenity (3, 8, 9, 10, 11) alternatives and negatively impacted by Commodity (2, 4, 5) alternatives. This group of resource users are directly affected by management direction of the Forest. Alternatives which protect the naturalness of an area and wildlife population are most beneficial to these resource dependent people who obtain economic (jobs, money, businesses) and lifestyle (symbolic meaning, freedom, enjoyment of the backcountry) benefits from Forest outputs.

The Non-Market (3) and Wilderness (8, 9, 10, 11) alternatives would appear to be the most beneficial Forest management approaches for this group, because the scenery and pristine values of the Forest would be protected and the number of big game animals would be significantly increased. The Current (1), Capability (7), modified current (12), and Constrained Budget (6) alternatives would provide for relatively stable social and economic conditions for big game guides and outfitters. The Market and Productivity (2, 4, 5) alternatives would be detrimental to the social and economic values of the Forest for this group of users. This is particularly true of the Productivity (5) alternative which could have a very negative and long-term impact on guides/outfitters because of the significant loss of wildlife and other amenity values of importance.

Government Workers and Educators

This diverse and somewhat varied group of Forest users is generally interested in amenity-type activities. Because of the reduction in Government-related jobs in recent years, some of these people have moved a little closer to the middle of the road on resource issues, believing resource emphasis would result in more jobs than amenity alternatives. However, most are firmly on the amenity side of the issue, although there is usually much diverse thinking among many Federal and State agency people. This is especially true of many workers in agencies which are involved in managing the resources. This places them in a precarious situation, i.e., they cannot seem to satisfy either the commodity people or the environmentalists. Hence, there can be a morale problem at times, especially for those who live in smaller towns which are primarily logging, ranching, and/or mining-oriented.

Government workers and educators are generally positively impacted by the Non-Market and Wilderness (3, 8, 9, 10, 11) alternatives because of the protection of scenery, pristine areas, etc., and an increase in the number of elk and deer over present levels. The Constrained Budget (6) alternative would likely have mixed results for this group because a reduction in Forest budget would negatively impact group economic conditions while, on the other hand, providing for some additional amenity values.

Business People

As a group, business people are somewhat near the middle of the production/preservation issue, although generally they lean in the direction of commodity-oriented land management plans. Logging, ranching, and mining business people are definitely interested in additional market outputs and commodity management philosophy from the Forest. Commodity-oriented business people would likely be positively impacted by the Market-related (2, 4, 5) alternatives and negatively impacted by the Non-Market type (3, 8, 9, 10, 11) alternatives. Commodity alternatives generally provides direct resource business people with a greater sense of self-sufficiency, a more secure future, an enhancement of lifestyle and job security.

Recreational-related business people are usually more interested in and positively affected by alternatives (i.e., Non-Market [3]) which preserve/improve the recreational and symbolic values of the Forest.

River Guides and Outfitters

These people have become an important part of the social and economic fiber of the area near the Salmon National Forest, especially during the last 15 years. They, like many others living in the area, are dependent on the natural resources for jobs, income, businesses, way of life, etc. River guides and outfitters generally benefit from recreation/amenity alternatives (i.e., Non-Market [3], Wilderness [8, 9, 10, 11]) which protect the environment and induce people to visit the area, thereby (potentially) increasing river floating business. Commodity/production (2, 4, 5) alternatives tend to make the area less attractive from an aesthetic/symbolic meaning aspect. All alternatives; however, protect the environmental quality of the Middle Fork and Salmon Wild and Scenic River corridors.

Regional People

Most regional people who have an interest in the resources and management of the Salmon National Forest are mainly concerned about the amenity aspects of the Forest. This would not be true of some of the wood products people who import or may import timber from the Salmon, however. Regional people are generally positively impacted by amenity oriented alternatives because of the importance of recreation/amenity values in their lifestyle. Symbolic meaning tends to provide a stabilizing influence on and/or enrichment in their lives. While the regional people are generally perceived as being better off by amenity alternatives (Non-Market [3], Wilderness [8, 9, 10, 11]) there remains significant differences in opinion about the weight of importance of impact on regional and national people in comparison to local people. Many feel that local people should be given a major portion or all of the consideration in making resource decisions, and some people feel that regional and national people should be given at least equal consideration.

National People

Because of the Wilderness, Primitive, Wild Rivers, and fishing and hunting attractions on or near the Salmon National Forest, there is national interest in the area. Additionally, strategic metals (i.e., cobalt) located on the Forest also have generated nationwide interest. The main interest however, is in the amenity values of the Forest, including hunting and fishing (steelhead and salmon). Consequently, national people are more favorably influenced by amenity alternatives (Non-Market [3], Wilderness [8, 9, 10, 11]) and negatively impacted by the Market-related alternatives (2, 4, 5).

Minorities

Native Americans (Shoshone-Bannock) have hunting and fishing treaty rights on the Salmon, while the Nez Perce have some grazing rights on portions of the Forest. The hunting and fishing rights and accompanying resources would be best served by amenity/wildlife alternatives. Grazing activities could be enhanced or preserved equally well with either an amenity or commodity approach depending upon specific areas. Cultural, historical, and religious sites would be better able to be preserved by amenity approaches (e.g., approaches which allow areas to remain in a natural condition). Therefore, the Non-Market (3) and Wilderness (8, 9, 10, 11) alternatives would be most beneficial to Native Americans and the market-related alternatives would have negative impacts.

SUMMARY

To summarize the estimated negative effects and benefits of the alternatives, a short scenario was developed for each of the alternatives developed to this point (March 1985). This approach has the utility of transforming rather abstract but definable social conditions/variables into more common terms and narration. The information presented is based on projections and estimates. The scenarios focus on the target year of 1995.

Current Management Direction

Based on current and projected levels of "marker" (AUM's timber, wildlife) outputs, the future (1995) of the area in terms of socio-economic attributes would be approximately as described below. First some basic assumptions are discussed. It is assumed that economic conditions locally, regionally, and nationally will return to somewhat "normal" conditions. It is not expected that there will be the brisk increase in inflation, real earnings, consumption of resources, travel, etc., that transpired during the late 1960's and 1970's. It is anticipated that there will be a steady demand for commodity and amenity resources of the Forest, but it is not expected that there will be the tremendous increases as experienced in the 1960's and 1970's. As the nation's population grows older and more people flee from the cities, it is expected that cities like Salmon, Gibbonsville, North Fork and Darby (Montana) will continue to attract recreation-minded people who will want to live near the

national forests. As this happens locally, the population will become more and more recreation/amenity oriented. Establishing these external conditions, let us now return to what it "may" be like in 1995, based on the current management direction of the Forest.

Demand for hunting, fishing, and dispersed recreation, along with developed recreation (campgrounds, ski areas, etc.) will continue to be strong. The current management direction would allow the Forest to take care of camping, fishing, hunting, and general recreational needs.

The ranching community in the area near the Forest will continue to remain an important segment of society, but there will likely continue to be additional subdividing of ranch property into smaller parcels for recreation and investment property. A constant number of AUM's should provide the stability necessary to make ranching a viable economic operation for some time to come, however.

Loggers and related workers will be able to continue their way of life as presently constituted. The amount of timber harvested should provide loggers and mill workers with their current level of income/jobs, self-sufficiency, and way of life. There will not be much opportunity for expansion of operations unless there are fewer people engaged in the logging business.

In general, social and economic conditions by 1995 will not likely be changed much because of the current management plans of the Forest. There will continue to be (and probably even an increase) in contention between those who want the Forest preserved in a natural state and those who desire (or need) the products of the Forest for consumption purposes.

Market (2) and Productivity (4, 5) Alternatives

These alternatives would likely result in some significant changes from conditions under current management direction. There would be a shift in the current trends of population makeup. Presently the trend is moving toward an increase in retirees and amenity people and a stable or decreasing number of commodity-oriented (i.e., loggers, miners, ranchers) people. These alternatives would result in (a likely) increase in wood products workers and more agricultural (ranching) workers. It isn't likely that there would be an increase in the number of ranches, but there would be more cows and subsequently more workers (slight increase) to take care of them.

Big game herds will be reduced significantly. The number of roads will be greatly increased because of more logging activity. The loss of big game habitat and better access will result in fewer animals and much less demand for big game guides and outfitters. Businesses that cater to hunters will suffer financial losses (from what would be projected, based on current plan). Over a period of time, it is possible that other recreational businesses would suffer also, as the area becomes less attractive as an all-around playground.

Quality of life for amenity-oriented people will suffer, as a result of the degradation of the amenity values of the Forest. Community cohesion would become weaker, as opposing groups become further polarized and individual relations become strained.

Non-Market (3), Wilderness/Wildlife (8), Wildlife T&E (9), and Maximum Wilderness (11) Inventory Alternatives

These alternatives (like the Market [2] alternative) would likely result in some significant socio-economic changes for people living near the Salmon National Forest. There would be a reduction in the numbers and influence of people in the wood products industry. There would remain a basic core of people engaged in timber-related work and/or businesses, but there would be a significant reduction from the current level.

The reduction in AUM's would likely result in fewer ranchers, since the availability of grazing would be decreased.

In general, there would be a proliferation of the trend toward an amenity-oriented populace. More retirees and others looking for the "good life" would continue to move into the area. There would be increased contention among and further polarization of groups who have contrasting views about the "proper" management of the Forest. The Salmon River area would (and may, no matter what action the Forest Service takes) become more and more like the Bitterroot Valley of Montana. That is, a majority of people will change from production-related (logging, agricultural) to amenity-oriented (retirees, recreationist, conservationist, preservationist, etc). These alternatives could change the lifestyle of the area from a conservative, self-sufficient base to one of a more diverse social system. The results of additional people in the area (rather from mining and timber expansion or because of amenity attraction) would likely be fewer ranches, more subdivisions, water and sewage problems, people with diverse value and systems, crowding, etc.

1980 RPA Alternative (4)

There would be some change from the present projections and predictions, if this alternative was implemented. There would be more of a commodity approach to land management than is provided for by the present plan. This would lead to a reduction in wildlife number and visual quality and other amenity values. There would be additional community/area conflict because of the emotional furor created by any decision which is perceived as being either pro production or pro amenity in nature. There would be a perpetuation and enhancement of the traditional resource usage of the Forest. There would be negative impacts on the recreational/amenity people, but not as great as with the Market (2) or Productivity (5) alternatives.

Capability (7) and Maximum Wilderness Manageability (10) Alternatives

These alternatives would result in a mix of benefits and impacts. There would be some impetus for the establishment of a more dominant amenity-oriented population base; whereas there is now an agricultural, timber, and recreation/amenity base of population. The trend toward a stronger amenity population is already in motion, but it would become more pronounced if these alternatives were implemented. Overall, the ranching community would be positively impacted, since there would be an increase in AUM's. Wood products workers/businesses would be significantly impacted (negatively), suffering some economic and lifestyle losses. There would be fewer loggers and other wood products workers than there are under present conditions.

Constrained Budget Alternative (6)

There would likely be some minor social changes if this alternative were implemented. The local economy would suffer somewhat because of a reduction in the amount of timber harvested, amount of Forest budget and number of AUM's. Amenity values of the Forest would be stable or even increase in some areas, since the number of big game animals and anadromous fish would increase. The other amenity values would be increased somewhat in general over present projections, based on current management direction. These conditions would likely result in a slight increase in the rate of change from a commodity-based to an amenity-based society in the area.

Modified Current Alternative (12) (Preferred)

There would not likely be any overall major social impacts if this alternative were implemented. The number of jobs in resource-related occupations would remain constant, establishing a climate for stable social and economic conditions. Local ranching and logging operations would be provided with sufficient resource outputs to maintain their current economic and lifestyle patterns. Amenity values (big game animals, recreation in general, visual quality, etc.) would be improved by this alternative. This alternative provides for a mix of benefits and impacts which would tend to negate the likelihood of any major negative impacts.

Estimated
*Overall Social Effects

Alternatives	(1) Current	(2) Market	(3) Non-Market	(4) RPA-1980	(5) Productivity	(6) Constrained	(7) Capability	(8) Wilderness/W	(9) Wildlife T&E	(10) Max Wilderness 1	(11) Max Wilderness 2	(12) Modified Current
Social Variables												
Jobs/Income	4 0	5 0	3 2	5 0	5 2	3 8	3 8	3 3	3 1	3 8	3 3	4 1
Self-Sufficiency	4 0	4 4	3 5	4 5	4 5	3 5	3 6	3 5	3 5	3 9	3 5	4 1
Certainty/ Uncertainty	4 0	3 5	3 5	3 5	3 0	3 5	3 7	3 5	3 5	3 7	3 5	4 1
Symbolic Meaning	4 0	2 5	5 2	2 6	2 2	4 7	4 7	5 1	5 1	4 6	5 3	4 0
Community Cohesion	4 0	2 8	2 4	2 8	2 6	3 7	3 7	2 5	2 5	3 0	2 4	4 1
Lifestyle	4 0	3 0	3 2	3 3	2 8	3 8	3 8	3 2	3 2	3 8	3 2	4 1
Total	24 0	21 2	21 0	21 7	20 3	23 0	23 3	21 1	20 9	22 8	21 2	24 5

* Overall = A composite of all local, regional national, commodity, and amenity groups

Scores on this chart/table range from 1 to 7 with low scores representing negative impacts, average scores indicating little or no change, and high scores representing positive impacts. All of the social impacts by social variables and alternatives are compared to the current management direction which is numerically represented by the middle value (4) of the seven-point scale.

Total scores should be viewed as tentative and a relative measure of the overall impacts. The numerical values tend to represent, in a general way, actual positive and negative impacts. Scores near 4 represent no or very little estimated change from current conditions for each social variable. See the narrative discussion in the main body of this report for additional information.

Summary of Projected Social Impacts

Modified current (12), Current (1), Capability (7), Constrained (6), and Max Wilderness Manageability (10) alternatives appear to be the best approaches of managing the resources of the Salmon National Forest from an overall socio-economic point of view. None of these alternatives would likely result in any major negative impacts on any of the social groups. It would appear that these alternatives would provide for stable socio-economic conditions.

Market (2), 1980 RPA (4), and Productivity (5) alternatives would produce some negative results for local, regional and national amenity groups. These alternatives would reduce amenity values from current and projected levels, resulting in negative social impacts in terms of losses in symbolic amenity values, quality of preferred lifestyle, and certainty of the future of amenity resource values.

Non-Market (2), Wilderness and Wildlife (8), Wildlife T&E (9), and Max Wilderness Inventory (11) alternatives, if implemented, would result in negative impacts for local commodity groups (e.g., loggers, ranchers). A reduction in timber or AUM's would negatively impact logger or ranchers, respectively, in terms of jobs/income, way of life and certainty of the future of commodity outputs from the Forest. Alternative 10, Maximum Wilderness Manageability would have negative effects on the timber related industry while maintaining or enhancing range and amenity values.

Estimated Social Benefits**
By Groups

Commodity Groups	Amenity Groups	Overall*
1. Productivity (5)	1. Max Wilderness 1 (11)	1. Modified (12) Current
2. Market (2)	2. Wildlife T&E (9)	2. Current (1)
3. 1980 RPA (4)	3. Non-Market (3)	3. Capability (7)
4. Modified Current (12)	4. Wilderness/Wildlife (8)	4. Constrained Budget (6)
5. Current (2)	5. Capability (7)	5. Max Wilderness 1 (10)
6. Max Wilderness 1 (10)	6. Constrained Budget (6)	6. 1980 RPA (4)
7. Capability (7)	7. Max Wilderness 1 (10)	7. Max Wilderness 2 (11)
8. Constrained Budget (6)	8. Modified Current (12)	8. Market (2)
9. Max Wilderness 2 (11)	9. Current (1)	9. Wilderness/ Wildlife (8)
10. Wilderness/ Wildlife (8)	10. 1980 RPA (4)	10. Non-Market (3)
11. Non-Market (3)	11. Market (2)	11. Wildlife T&E (9)
12. Wildlife T&E (9)	12. Productivity (5)	12. Productivity (5)

* Overall = A composite of all local, regional, national commodity and amenity groups, with local people given about 60 percent of the weight in considering benefits/impacts.

** Benefits = Alternatives are arranged from most beneficial to least beneficial for various groups.

Summary of
Special Effects
Current Direction (1)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0	0	0	0	0	0
Loggers	0	0	0	0	0	0
Retired	0	0	0	0	0	0
Miners	0	0	0	0	0	0
Big Game Guides and Outfitters	0	0	0	0	0	0
Business People	0	0	0	0	0	0
Government Workers and Educators	0	0	0	0	0	0
River Guides and Outfitters	0	0	0	0	0	0
Regional People	0	X	0	X	X	0
National People	0	X	0	X	X	0
Native Americans	0	X	0	X	X	0

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
Market Opportunities Alternative (2)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0-	+	+	-	+	+
Loggers	0	+	+	-	++	+
Retired	-	0	-	-	0	-
Miners	0	0+	0+	-	0+	0+
Big Game Guides and Outfitters	--	-	--	-	--	-
Business People	0-	+-	+-	-	+-	+-
Government Workers and Educators	-	0	-	-	0	-
River Guides and Outfitters	-	-	-	-	-	-
Regional People	-	X	-	X	X	-
National People	-	X	-	X	X	-
Native Americans	-	X	-	X	X	-

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
Non-Market Opportunities Alternative (3)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0+	-	-	-	-	-
Loggers	0	---	---	-	---	-
Retired	0+	0	+	-	0	+
Miners	0	0-	0-	-	0-	0-
Big Game Guides and Outfitters	++	++	++	-	++	++
Business People	0+	+-	+-	-	+-	+-
Government Workers and Educators	+	0	+	-	0	+
River Guides and Outfitters	+	+	+	-	+	+
Regional People	+	X	+	X	X	+
National People	+	X	+	X	X	+
Native Americans	+	X	+	X	X	+

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
RPA-1980 (4)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0-	0	0	-	0	0
Loggers	0	+	+	-	+	+
Retired	0-	0+	0	-	0	0
Miners	0	0+	0	-	0	0
Big Game Guides and Outfitters	-	-	-	-	-	-
Business People	0-	+-	+-	-	+-	+-
Government Workers and Educators	0-	0	0-	-	0	0-
River Guides and Outfitters	-	0-	-	-	0-	0-
Regional People	-	X	-	X	X	0-
National People	-	X	-	X	X	0-
Native Americans	-	X	-	X	X	0-

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
Productivity Alternative (5)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0-	0+	0+	-	+	0+
Loggers	0	+	+	-	+	+
Retired	-	0	0-	-	0	-
Miners	0	0	0	-	0	0
Big Game Guides and Outfitters	--	--	--	-	--	--
Business People	0-	+-	+-	-	+-	+-
Government Workers and Educators	-	0-	0-	-	0	-
River Guides and Outfitters	--	-	-	-	-	-
Regional People	--	X	-	X	X	-
National People	--	X	-	X	X	-
Native Americans	-	X	-	X	X	-

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for other.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
Constrained Budget Alternative (6)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0	-	-	0-	-	-
Loggers	0	-	-	0-	-	-
Retired	0+	0	0	0-	0	0
Miners	0	0	0	0-	0	0
Big Game Guides and Outfitters	0+	0+	0+	0-	0+	0+
Business People	0	0-	0-	0-	0-	0-
Government Workers and Educators	0+	0	0-	0-	-	0
River Guides and Outfitters	0+	0	0+	0-	0	0+
Regional People	0+	X	0+	X	X	0+
National People	0+	X	0+	X	X	0+
Native Americans	0+	X	0+	X	X	0+

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
Capability Emphasis Alternative (7)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0	+	0-	0-	+	0-
Loggers	0	-	-	-	-	-
Retired	0+	0	0+	0-	0	0+
Miners	0	0	0	0-	0	0
Big Game Guides and Outfitters	0+	0+	0+	0-	0+	0+
Business People	0	0	0	0-	0	0
Government Workers and Educators	0+	+-	+-	0-	+-	+-
River Guides and Outfitters	0+	0	0+	0-	0	0+
Regional People	0+	X	0+	X	X	0+
National People	0+	X	0+	X	X	0+
Native Americans	0+	X	0+	X	X	0+

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Special Effects
Wilderness and Wildlife Alternative (8)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0+	-	-	-	-	-
Loggers	0	--	--	-	--	--
Retired	0+	0	0+	-	0	+
Miners	0	0-	0-	-	0-	0-
Big Game Guides and Outfitters	++	++	++	-	+	++
Business People	0+	+-	+-	-	+-	+-
Government Workers and Educators	+	0	+	-	0	+
River Guides and Outfitters	++	+	+	-	+	+
Regional People	+	X	+	X	X	+
National People	+	X	+	X	X	+
Native Americans	+	X	+	X	X	+

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
Wilderness T&E Alternative (9)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0+	0	0	-	0	0
Loggers	0	---	--	-	--	--
Retired	0+	0	0+	-	0	0+
Miners	0	0-	0-	-	0-	0-
Big Game Guides and Outfitters	+	+	+	-	+	+
Business People	0+	+-	+-	-	+-	+-
Government Workers and Educators	+	0	+	-	0	+
River Guides and Outfitters	+	+	+	-	+	+
Regional People	+	X	+	X	X	+
National People	+	X	+	X	X	+
Native Americans	+	X	+	X	X	+

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
--- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions present management direction.

Summary of
Social Effects
Max Wilderness Manageability Alternative (10)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0+	-	-	0-	-	-
Loggers	0	-	-	0-	--	--
Retired	0+	0	0+	0-	0	+
Miners	0	0-	0-	0-	0	0-
Big Game Guides and Outfitters	+	+	+	0-	+	+
Business People	0+	+-	+-	0-	+-	+-
Government Workers and Educators						
River Guides and Outfitters	+	+	+	0-	+	+
Regional People	+	X	+	X	X	+
National People	+	X	+	X	X	+
Native Americans	+	X	+	X	X	+

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Social Effects
Max Wilderness Inventory Alternative (11)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0+	0	0	-	0	0
Loggers	0	--	--	-	--	--
Retired	0-	0	0	-	0-	0-
Miners	0	0-	0-	-	0-	0-
Big Game Guides and Outfitters	++	++	++	-	++	++
Business People	0	+-	+-	-	+-	+-
Government Workers and Educators	+	+	+	+	+	+-
River Guides and Outfitters	+	+	+	+	+	+
Regional People	+	X	+	X	X	+
National People	+	X	+	X	X	+
Native Americans	+	X	+	X	X	+

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

Summary of
Special Effects
Modified Current (Preferred) (12)

Group/ Category	Symbolic Meaning	Self Sufficiency	Certainty/ Uncertainty	Community Cohesion	Job Dependency	Lifestyle
Ranchers	0	0+	0+	0+	0+	0+
Loggers	0	0+	0+	0+	0+	0+
Retired	0	0	0	0	0	0
Miners	0	0+	0+	0+	0	0
Big Game Guides and Outfitters	0+	0+	0+	0+	0+	0+
Business People	0	0	0+	0+	0+	0
Government Workers and Educators	0	0	0	0+	0	0
River Guides and Outfitters	0	0	0	0	0	0
Regional People	0+	X	0	X	X	0+
National People	0+	X	0	X	X	0+
Native American	X	X	0	X	X	0

++ Major significant positive impact
+ Minor significant positive impact
0+ Slight positive change
0 No change
X Doesn't apply
0- Slight negative change
- Minor significant negative impact
-- Major significant negative impact
+- Mixed results, positive benefits for some segments of group and negative impacts for others.

All changes and impacts are compared to change/impacts from projected conditions under present management direction.

E. Possible Conflicts

1. Other Agency Goals and Objectives.

There was an extensive effort to coordinate the planning effort on the Salmon National Forest with other Federal agencies, the State of Idaho, other forests, and the several counties and cities that would be affected by the Plan. Conflicts which were identified through this effort were evaluated in the Plan and minimized or eliminated in one or more of the alternatives.

2. RPA Program Objectives.

Table IV-3 displays a comparison of the outputs assigned in the 1980 RPA Program with the comparable values for each Plan alternative. The greatest number of differences are in those alternatives which emphasize single resources or commodity outputs (2, 10, 11, 8, 5). A number of the alternatives, including the preferred, contain nearly a 50 percent reduction in timber goals as compared to RPA. These reductions reflect adjustment of the timber base rather than a change in management emphasis.

Developed Recreation is somewhat lower overall in the Forest Plan than in the RPA Program with the largest differences occurring in Alternatives 2, 4, 5, and 6. Dispersed recreation is significantly lower under all alternatives than the assigned RPA values. Trail construction is much lower under most of the alternatives except for 3, 4, 5, and 9.

Water yield (Water Meeting State Standards-MACFT) will be significantly lower in all alternatives than what was displayed in the RPA Program. This is entirely due to an adjustment in the calculation of base water yield for the Forest, using new stream records and additional hydrologic data. Greater than 95 percent of the water yield from the Salmon National Forest will meet State of Idaho Water Quality Standards. Further discussion of this output is found in number 4 of this section.

Soil and Water Improvement Acres varied from the RPA program. A backlog of approximately 600 acres of watershed improvement needs has been identified on the Forest. All alternatives (other than Alternative 6) include improving these acres by the year 2000, at a rate of 30 acres a year. Projects identified in the future will likely be accomplished after the year 2000 at a rate of about 20 acres a year for alternatives other than Alternative 6.

Mineral cases show a dramatic increase under nearly all alternatives. As is the case in other areas this is more a reflection of implementation of a different definition of what constitutes a case than in any real increase in workload.

3. Idaho Fish and Game State Goals

The Idaho Department of Fish and Game has established game population goals for the year 1990 for certain species. The calculated values for the Forest Plan Alternatives relate to these goals in the following ways:

- Alternatives 3, 8, 9, and 11 meet or exceed the established goals. Bighorn sheep and mountain goat numbers have been projected at current levels; but the assumption was made that management activities would not significantly affect these two species under any alternatives.

- Alternatives 2, 4, and 5 would conflict with the state goals for elk and mule deer.

- Alternatives 1, 6, 7, 10, and 12 would be fairly compatible although not fully meeting the State goals.

State goals have not been set for small birds and mammals. Therefore, it is not possible to make output comparisons for the remaining indicator species.

4. Idaho State Water Quality Standards

State water quality standards will be met in all areas influenced by implementation of land management activities proposed in all alternatives. Watershed conditions are, however, currently degraded in certain areas of the Forest. Because of this, water meeting state water quality standards (in terms of percent of total Forest water yield) in decade 1, will be approximately 95 percent for all alternatives. Approximately 5 percent of the Forest water yield is influenced by chemical contaminants and serious erosion problems. These problems include: heavy metal contamination of portions of Blackbird Creek and Big Deer Creek within the Panther Creek drainage; massive slope instability within the Dump Creek watershed; and numerous small degraded areas in need of watershed improvement work. It is anticipated that by the end of the second decade of the planning period, the quality of water from these problem areas will improve somewhat. This is due in part to the new Dump Creek Project which diverts significant amounts of flow out of the Dump Creek channel and into Moose Creek and other small watershed projects. The heavy metal pollution in Blackbird, Big Deer and Panther Creek drainages is being studied for potential treatment measures, and should treatment be feasible, water quality on the Forest should fully meet state standards.

F. Energy Requirements

Evaluation of the energy effects resulting from the Forest Management Alternatives has become very significant since demands for fossil fuel and energy prices have steadily escalated. This study shows the

characteristics of the net energy balance of Forest-based resources. The net Forest energy balance (net gain) is the difference between the energy produced and the energy expended in utilizing a Forest resource or service.

The energy consumption component (energy expended) includes the energy required to produce and utilize Forest resources and to provide services and protection from natural disasters. Energy consumption includes the energy content of consumed fuels and lubricants, the energy used in fabrication of required materials, fuels, and lubricants, and the prorated energy used in manufacture of the machinery used. The energy directly consumed by people or draft animals is generally not included.

The energy yield component (energy produced) is based on present form of utilization of any Forest resource. Energy yields relate to direct fuel values, energy savings over substitute materials or energy savings due to reduced need for expenditures of energy.

The alternative that produces the best ratio of energy consumed to energy yield is the Constrained Alternative (Alternative 6). The Current Alternative (Alternative 1) has the worst ratio of energy consumed to energy yield. The alternative with the highest rate of energy consumption is "Productivity" (Alternative 5). The alternative that uses the least amount of energy is "Wildlife/Threatened and Endangered" (Alternative 9).

The files of the DEIS working papers contain detailed analyses of these yields and consumption by resource function over the same 45 years that were used to develop the summaries.[1/]

Table IV-E1 shows energy consumed for factors that show some change between alternatives. It does not reflect total consumptive use for all resource management practices or activities on the Forest. Timber, range, recreation and fire are energy input and output factors that show the most change between alternatives. Annual energy consumption and yield for each alternative is based on an average for a 45-year period. Information is in billions of BTU's.

1/ Reference Guide: Methods for Evaluating Energy Effects of Forest Management Alternatives. Volume 1. Gideon Schwarzbart and Patrick L. Schnitz, Management Sciences Staff - USDA - Forest Service, Berkeley, California, 94701, March 1982.

TABLE IV-E1

ENERGY CONSUMED AND YIELDS, BY ALTERNATIVES

ALTERNATIVE		ENERGY CONSUMED	ENERGY YIELD	RATIO CONSUMED:YIELD
Current	1	577.2	379.0	1.52
Market	2	823.1	574.7	1.43
Non-Market	3	254.0	178.2	1.43
1980 RPA	4	818.7	568.3	1.44
Productivity	5	930.1	641.1	1.45
Constrained	6	423.8	324.4	1.31
Capability	7	463.0	341.5	1.36
Wilderness/Wildlife	8	275.1	201.5	1.36
Wildlife/T&E	9	244.0	173.5	1.41
Max. Wilderness Manageability	10	487.9	343.8	1.42
Max. Wilderness Inventory	11	262.7	200.9	1.31
Modified Current	12	533.2	389.0	1.37

G. Irreversible and Irretrievable Commitment of Resources

Irreversible commitment of resources refers to resources that are renewable only after a long period of time (such as soil productivity) or to nonrenewable resources (such as cultural and mineral resources). All alternatives were formulated with sideboards to protect basic resource productivity. This serves to preserve future options even though current management may emphasize certain resources over others. The sideboards are expressed through the Forest Standards and Guidelines. Within these protective limits the irreversible effects which do occur can be categorized into access, mineral or material extraction or construction of facilities categories.

An irretrievable commitment of resources is one that results in a short-term loss of productivity, but one that does not impair the long-term productivity of the land. This represents opportunities foregone for the period of time that the resource cannot be used. Timber mortality not salvaged within "wilderness" is an example of an irretrievable commitment of a resource. The difference between the yield of any resource in an alternative and the maximum production

level of that resource is also an irretrievable commitment of a resource. This difference in production levels for that time period would be "lost" or not available for use. The purpose of land and resource management planning is to provide a mix of uses now and for the future that balances the need of both the current population and future generations. There is no separate table or display for irretrievable commitments of resource since all of the outputs, effects and activities that are displayed in this chapter and Chapter II represent such a display. For example, the differences in timber volume outputs between the highest (measured in MMBF) and lowest alternatives actually represent the varying levels of irretrievable commitments of this resource. The same is true for all other resource outputs, effects and activities. It is important to remember that such irretrievable commitments do not affect the basic productivity of the resource.

The irreversible and irretrievable commitments of resources are summarized for each resource area:

Wilderness. Extensive site-disturbing activities on lands not recommended or designated as wilderness effectively removes those lands from future consideration as wilderness. Table IV-IRR1 displays the acres containing wilderness characteristics, by alternative, that would be irretrievably altered by management activities during the first decade.

TABLE IV-IRR1

(Total Acres Currently Roadless - 830,469)

Alternative	Acres
1	221,013
2	320,449
3	108,520
4	348,345
5	385,263
6	164,791
7	208,815
8	104,088
9	71,937
10	46,037
11	-0-
12	224,245

The 1964 Wilderness Act prohibits all development except mining of existing valid claims and development allowed by Congress in individual wilderness enabling acts (such as trails). A Wilderness designation is considered a permanent condition; consequently, Wilderness designations could be said to cause irreversible and irretrievable losses of most commodity resources. However, the commodity resources are not lost, but rather the "legal opportunity" to exploit these resources is lost.

Recreation. Developed recreation sites and adjacent use represent an irretrievable commitment to a dominant use. Besides precluding other uses (timber, range), there are basic resource effects such as soil erosion and compaction and loss of vegetation which may be irreversible. Proper layout and maintenance of campsites are designed to minimize these effects, however, so that they are not expected to be significant. Other resource activities can affect the use of developed sites through changes in adjacent resources. Most of these effects, such as timber harvest, are irretrievable, but activities such as mineral extraction or access construction may irreversibly damage and/or affect use of developed sites.

Dispersed recreation use is expected to cause few irreversible commitments of resources. For the most part these areas are not permanently removed from the other resource bases like timber or range and physical improvements such as pit toilets, trails, etc. are minimal. Nevertheless, management in the short term will result in irretrievable commitments of resources. On the other hand, other resource activities may irreversibly commit dispersed recreation resources. Permanent roads, mineral extraction activities and other such disturbances are irreversible. Still other activities such as timber harvest (excluding roads) cause irretrievable commitments. The alternatives causing irreversible commitments of the semi-primitive recreation resource may be compared by referring to Table IV-IRR1 and noting the roadless acres altered by timber harvest and road construction.

Designation of certain areas to be managed for retention or partial retention of visual quality attributes represents an irretrievable commitment of resources where those areas contain resources which could otherwise contribute outputs (timber harvest, road construction, etc.). Since categorizing areas by visual quality does not affect basic land productivity, and may be changed in future Plans, it is not considered irreversible. Likewise, those alternatives allowing greater levels of visual quality modification will result in irretrievable or irreversible commitments of resource depending on the level of other resource management. Alternatives 2, 4, 5 and 10 represent the highest commitment of visual quality resource while Alternatives 3, 6, 8, 9, 11 and 12 emphasize the resource the most.

Allowing ORV use of an area is an irretrievable commitment of resources for the most part. Alternatives such as 6 may result in irreversible commitments of resources due to soil erosion and/or compaction since they do not provide strong management emphasis to minimizing such impacts. Not allowing ORV use in certain areas is an irretrievable commitment of this resource. Alternatives 1, 5 and 6 allow the greatest level of ORV use while 8, 9, 10 and 11 are the most restrictive.

Recreation related special uses can result in irretrievable or irreversible commitments depending on the nature of the use and the duration of the permit. Other resource activities, particularly

those which actually change or remove resources can likewise cause irretrievable and irreversible effects on permittees.

Research Natural Areas. Research Natural Areas (RNA) must be unaltered natural ecosystems. Any resource development would cause an irreversible loss of the RNA resource. RNA designation, since it is not necessarily permanent, would not cause any irreversible resource loss but may cause irretrievable resource loss where commodity output such as timber harvest is precluded. The acreage of potential RNA's on the Salmon Forest does not vary by alternative.

Cultural Resources. Any damage or loss of a cultural resource site is irreversible. A cultural resource site that precludes other resource development may cause irretrievable resource loss. Because of management constraints regarding the inventory evaluation and protection of these resources these impacts do not vary between alternatives and are not expected to be significant. The potential for damage or loss of sites due to natural deterioration or vandalism does vary between alternatives. The potential for loss is greatest under Alternatives 1 and 6. The potential for loss is least under Alternatives 2, 4 and 5.

Wildlife and Fish. There are no irreversible effects expected to the wildlife resource under any alternative. Irretrievable losses of habitat occur due to activities which cause direct disturbance of populations (on winter range for example), unfavorable habitat changes due to vegetative removal, and increased hunting access. Table IV-WL3 documents the degree of loss through the changes in numbers of management indicator species in each alternative.

Irretrievable commitments of other resources due to wildlife constraints are discussed under those resources, but consist primarily of losses in timber harvest due to requirements protecting critical habitats (old growth) and maintenance of adequate cover/forage ratios.

The sediment generated from road building, logging, mining, and other resource uses represents at a minimum an irretrievable commitment of resources. Impacts upon the fishery resource resulting from increased sediment levels will influence fish survivals for many years following the actual sediment generating activity.

Range. Small isolated sites associated with livestock concentration areas (salt grounds, water developments, stock driveways, etc.) would be an irreversible and irretrievable commitment of soil productivity and ecological range conditions. The last production in permitted grazing (AUM's) below biological potential would be an irretrievable commitment of resources. The reduction in annually permitted AUM's below capacity varies by alternative. (Lost Production in descending order by alternative would be: Alternatives 5, 7, 2, 10, 12, 1, 4, 11, 8, 9, 3 and 6.) Refer to Table IV-1 for the quantitative comparison. The difference between the alternative with the highest AUM output and the other alternatives represent the irretrievable loss of this resource.

Timber. A management decision not to harvest timber is an irretrievable loss of the timber resource. Building roads and harvesting timber in undeveloped areas is an irretrievable loss of the wilderness and of some facets of the recreation resource. It is an irreversible loss of the RNA resource and causes an irreversible loss of the soil resource on permanent roads, and an irretrievable loss of productivity on temporary roads, landings and skid trails. The base level for quantitative estimates of irretrievable loss of timber harvest is the maximum harvest level figure in Alternative 5. Using Table IV-1, the total harvest irretrievably lost for each alternative is the amount of reduction in the harvest level compared to Alternative 5. Quantitative estimates of other resource losses are displayed under those resources.

Soil and Water. Management activities such as timber harvest, road construction, and mining, may cause an irreversible soil resource loss. Soil and water conservation measures, however, have been developed for the various forest management activities to assure that soil loss is held to a minimum and that long-term productivity is not permanently impaired. Soils with high erosion potential and steep slopes are avoided to the extent feasible and receive special mitigation measures. However, that part of the resource which is used for access construction is irreversibly lost.

Table IV-1 displays the percent of total land base on which soil productivity is maintained. The variation between alternatives is explained, for the most part, by the different levels of timber harvest and the associated road construction. Alternative 5 results in the greatest amount of resource disturbance from access construction and represents a commitment of 1.2 percent of the total resource base. Although there are other activities which result in commitments of resources, they do not represent a significant addition to when considered on a Forest-wide basis.

Minerals. Extraction of mineral or energy resources is itself an irreversible and irretrievable commitment. Removal of mineral resources is permanent. Once removed, minerals cannot be replaced.

Designation as wilderness would foreclose future options for mineral exploration and discovery. This would be an irreversible commitment of resources. Table IV-2 displays how the alternatives compare in this respect.

Most other surface resource management decisions (grazing, timber harvest, recreation, etc.,) have little effect on mineral availability.

Major soil loss due to erosion or mass soil movement is an irreversible degradation of productivity. Soils with high erosion potential and steep slopes should be avoided or receive special mitigation practices.

Should a wildlife or fish population be lost due to cumulative impacts, the action may be irreversible. If suitable habitat can be restored, the loss may be mitigated by transplanting from other populations.

Capital improvements to communities to accommodate increased populations are irretrievable commitments.

Major mineral activity in wilderness could cause the irreversible loss of the wilderness resource. Mineral activity in undesignated roadless areas outside wilderness could destroy the wilderness character of such areas and preclude them from being considered for wilderness in the future.

Loss of a cultural resource site due to mineral activity is irreversible.

Mineral impacts to water resources, vegetation, visual conditions, and recreation opportunities are not expected to be irreversible or irretrievable; however, precautions must be taken to prevent ground waters and surface waters from being ionized with the minerals and then allowed to enter streams and contaminating the streams.

Controlling the initiation and extent of mineral extraction activities is not wholly within the administrative control of the Forest Service. For this reason no accurate prediction can be made for how much of the soil, mineral and other resources may be irreversibly lost due to these activities. There are Forest Guidelines, however, which are designed to minimize the resource damage which may occur during exploration/mining activities. In the case of locatable mineral activities these standards cannot result in complete prohibition of a mining/exploration proposal but will limit disturbance to that reasonable and necessary consistent with the legal rights of claimants to enter upon Forest lands to explore for and develop locatable mineral resources.

Lands. Commitment of National Forest land to a special use is usually irretrievable. Lands with facilities such as electronics towers are easily restored; lands with facilities such as hydropower developments are more difficult to restore. Occupancy, however, does not usually create an irreversible commitment of National Forest lands, except where road access is constructed.

Change in land ownership, land either transferred to or from USFS administration, is considered irretrievable.

Facilities. Facilities such as administrative sites (usually buildings) and roads may cause irreversible resource loss to the immediate area they occupy, although they may be removed and the land restored over time.

Admninistrative sites preclude mineral development, an irretrievable resource loss. Roads built into presently unroaded areas may destroy

an area's wilderness characteristics and cause an irreversible loss of the wilderness resource.

Fire Protection. A low level of fire protection could result in irretrievable loss of resources such as timber and irreversible losses of soil productivity. For the most part, fire protection would be relatively constant between alternatives. An inflexible policy of fire suppression would result in buildups of fuel which could result in a disastrous high intensity forest fire, and irretrievable commitments of vegetative habitat to climax communities. This is an irretrievable effect which is based on complex ecological relationships. In general, however, the comparison of the amount of fuel breaks and fuel treatment under each alternative (refer to Table IV-1) represents a quantitative basis for comparing alternatives. The higher levels of treatment result in a lower level of risk for this effect.

H. Adverse Environmental Effects That Cannot Be Avoided

The alternative formulation process considered a wide range of alternatives varying in degree of major adverse environmental effects. The implementation of any alternative will result in some adverse environmental effects that cannot be avoided.

However, the application of Forest-wide standards and guidelines and management area standards and guidelines is intended to limit the extent and the duration of these effects. Monitoring will be the measure of the implementation of the standards and guidelines to provide goods and services within the constraint of maintaining sustained-yield of the resources without impairing the long-term productivity of the land.

A summary of key adverse environment effects by resource area follows:

Recreation. Reconstruction and construction of roads and facilities for developed recreation would remove vegetation. Developed recreation sites preempt forage use by permitted livestock. Sites that receive heavy human use would suffer vegetation loss, soil compaction, and streambank damage. Construction and reconstruction of support facilities for dispersed recreation such as trailheads, parking areas, and toilets would remove vegetation, and alter natural drainage patterns. Establishment of recreation sites and management areas featuring semi-primitive recreation opportunities preempts timber harvest and other commodity production, which is perhaps the most significant adverse effect due to recreation emphasis.

Off-road vehicle use would damage vegetation and disturb the soil. Vehicle noise may cause adverse effects to wildlife. Occasionally, site rehabilitation would be necessary to protect soil and water resources.

Dispersed recreation opportunities decrease with increasing commodity production (see Table IV-WILD2 and Table IV-1).

Visuals. Visual quality changes from resource activities such as timber harvest, road construction, special uses, and mining would be unavoidable. Alternatives which emphasize development would have the most visual quality changes. Natural landscapes would decline as management activities (e.g., timber harvest, fences, buildings) increase. Commitments to retention or partial retention categories will adversely affect commodity production such as timber harvest. The reader can refer to Table IV-REC5 for a comparison of acres in the various VQO categories.

Cultural Resources. Cultural resource site damage, inadvertent disturbance, and illegal collection would increase with increased access due to resource development. Forest management activities and natural decay and erosion would continue to damage some cultural resources. Protection of cultural resource sites will cause very minor losses of commodity production. The likelihood these effects will occur increases with increased commodity production; however, the effects would be offset by a corresponding increase in cultural resource emphasis.

Wildlife and Fish. Many wildlife and fish species would be damaged by increased roading and subsequent increased human activity. Increased roading would improve access and would increase legal and illegal hunter harvest, vehicle-animal collisions, and wildlife harassment, and would interfere with big game migration routes. Wildlife habitat damage would occur from old growth timber harvest, and adverse changes in forage-cover ratios. These effects increase with increased commodity emphasis as displayed in Table IV-WL3.

Wilderness. Wilderness designation results in adverse effects which occur due to the management restrictions mandated by law and required to protect the wilderness resource. Prohibitions on motorized use, timber harvest, and mineral entry represent adverse effects on these resources. Use of the wilderness may result in resource damage due to soil compaction, trail construction, and vegetation loss. Not designating potential wilderness areas will also result in unavoidable adverse effects to that resource. Once significant site disturbing activities take place, the possibility of designating an area for wilderness is greatly diminished. The reader is referred to Table IV-IRR1 and Table IV-WILD2 for a comparison of wilderness acreage under each alternative.

Range. Small isolated areas, such as salting locations, water developments, stream crossings and trailing routes will be degraded and adversely impacted. Generally, alternatives which have higher levels of permitted grazing and rely on more intensive grazing management systems will have a proportionately higher amount of impacted sites.

Timber. Timber sale road construction and reconstruction would temporarily increase stream sedimentation. Timber harvest would degrade the scenic quality and temporarily degrade air quality (dust) and disturb wildlife. Harvest would alter favorable cover/forage

relationships in some areas. Associated access would remove a certain amount of acreage from resource production and eliminate the potential for inclusion in management areas featuring semi-primitive recreation areas or wilderness designation. Table IV-1 displays the varying levels of timber harvest which determines the degree to which these effects would occur.

Soil and Water. Management activities such as timber harvest, access and facility construction, and mineral extraction cause soil disturbance, sedimentation, and loss of resource productivity in some cases. A comparison of the alternatives in relation to these effects can be made by referring to Table IV-1 under the Soil and Water heading.

Minerals. Designation as Wilderness would foreclose future options for mineral exploration and discovery. The relative ranking of alternatives in this regard can be seen in Table IV-WILD2 by comparing the acreage going to wilderness under each alternative.

Toxic materials used during mineral processing, and metallic elements released in the mining certain pyritic ores could damage adjacent surface resources as well as water quality if not properly handled and treated. Excavation and associated access construction would remove soil and vegetation, alter drainage patterns, and increase sedimentation of area streams if properly designed and executed. Some mining activities would disturb riparian habitat and stream channel integrity.

Wildlife habitat could be directly affected by excavation, construction and the introduction of human presence into previously undisturbed areas. Recreation and visual quality experiences would be degraded where excavation or access construction occurs. Semi-primitive and wilderness values could be lost. The exact degree to which these effects may occur is not predictable, although those alternatives with acreage going to wilderness lessen the potential that mineral exploration or mining would occur.

Lands. Utility and special use construction and operation would disturb vegetation and soils and may alter scenic quality. Special uses could interfere with other Forest uses and may reduce recreation opportunities. Hydropower projects could cause loss of aquatic life and stream channel instability. These effects vary between alternatives because of management emphasis on wilderness or semi-primitive values.

Fire Protection. Wildfires could cause loss of soil, improvements, wildlife habitat, and timber, and increase the potential for flooding. Proper treatment of fuels could minimize the damage potential. Indiscriminate suppression of all fire could result in adverse vegetative habitat changes and a buildup of fire fuels.

Air Quality. Management activities and wildfire would temporarily reduce air quality, mainly from increased dust and smoke. The reduction would not violate State Air Quality Standards.

The adverse effects that cannot be avoided will be limited as a result of the mitigation measures included in the Forest direction, management area direction, and standards and guidelines.

I. Short-Term Uses of Man's Environment and the Maintenance of Long-Term Productivity.

Short-term uses are those that generally occur on a yearly basis, such as livestock grazing as a use of forage resources, timber harvest as a use of the wood resource, and recreation site irrigation as use of the water resource.

Long-term productivity is used to describe the basic capability of the land to produce over a period greater than 50 years. The challenge of wise land use is to produce the maximum outputs in the short-term in a way that maintains long-term productivity as in the long term yield of timber.

Short-term use vs. long-term productivity complements the concepts of irretrievable and irreversible effects. Short-term uses, such as grazing, timber harvest, etc., which do maintain long-term productivity may be said to represent irretrievable commitments of resources. For example, a clearcut harvest of timber certainly "prevents" the vegetative resource affected from serving as hiding cover for wildlife for a certain period of time. So for that period of time loss of hiding cover is "irretrievably" lost. However, after a period of time which will vary from site to site based on productivity, trees and other vegetation will again become re-established and can serve as cover for wildlife. This occurs because basic site (long-term) productivity was not damaged by the short term use, and so no irreversible damage occurred.

As discussed under Section G of this chapter, all alternatives incorporate standards and guidelines designed to allow a sustained-yield of resource outputs while maintaining productivity of the resources. The specific direction and mitigation measures included in the Forest direction ensure that long-term productivity will not be impaired by the application of short-term practices. The exceptions are those outputs associated with nonrenewable resource developments. The areas where these kinds of irreversible commitments are expected are in the areas of access construction, mineral extraction, and facility construction. These items were fully discussed under G. Irreversible and Irretrievable Commitments of Resources. Alternative 5 has the highest level of short-term uses as reflected by the acres of vegetative treatment. The following alternatives are shown in decreasing order of short-term uses: 5, 2, 4, 1, 10, 6, 12, 7, 8, 11, 3, and 9. The most inclusive indicator of long-term productivity maintenance is the percent soil productivity maintained. This figure increases as the short-term uses decrease (less disturbance less roads). See Table IV-1 for a summary of soil productivity.

The bottom line is that all alternatives including the Preferred, result in short-term uses which irretrievably commit certain resources for this generation. However, given the standards and guidelines, very little (1% to 1.2%) of the land base will be committed for future generations. On this acreage the irreversible loss results from access and facilities which are deemed necessary for the greater good of managing the land; or from removal of nonrenewable resources such as minerals over which we do not have full discretionary control.

J. Natural or Depletable Resource Requirements

Natural resource requirements for implementing the Proposed Action or any of the other alternatives considered in detail require the basic soil and water resources and associated plant and animal communities that comprise the forest and rangeland ecosystems. Lands allocated to various management prescriptions in this planning effort considered the multiple-use benefits and coordinating requirements necessary to conserve these resources. Mitigation measures to insure resource conservation are included in the Forest and Management Area Direction of the Forest Plan.

Depletable resource requirements included the removal of nonrenewable resources such as minerals or the depletion of a basic resource such as soils. In the case of the mineral resources, once the mineral has been extracted it is gone. Conservation of these resources might be defined as the planned rate of removal. Mitigating measures involved in the location, developement and removal of these resources are considered and may be found in the Forest Plan. Soil depletion through natural or man-made disturbances is also considered and rehabilitation/conservation activities associated with the potential depletion of this resource is planned for in each alternative.

In addition, the extinction of a plant or animal species may also be thought of as depletion of a resource. Protection and improvement of threatened and endangered species habitat has been considered in all alternatives and management direction included in the Proposed Forest Plan.

K. Urban Quality, Historic and Cultural Resources; The Design of the Built Environment.

1. Urban Quality

Section D. Social Effects, describes in great detail the socio-economic effects not only on rural communities in the Salmon National Forest zone of influence but on the regional and local social groups as well. These are very representative of the typical or average urban dweller and the reader is referred to that discussion. In general, management on the Salmon Forest under all alternatives maintains basic resource productivity while producing a balanced mix of commodity and amenity outputs.

Based on the levels of outputs, Alternatives 2, 4, and 5 would favor lifestyles which emphasize utilization of natural resources for commodity production and values associated with rural lifestyles. Alternatives 3, 8, 9, and 11 would emphasize protection and enhancement of nonconsumptive uses supporting lifestyles based on recreation-retirement oriented values. The other alternatives would not significantly change the current mix of resource outputs.

2. Historic and Cultural Resources

The goal of the Forest Service's cultural resources management program is two-fold: 1) To inventory and evaluate prehistoric and historic sites and structures, thereby providing management with information suitable to make decisions within a multiple resource framework; and 2) To conduct appropriate data recovery programs that lead to enhanced public enjoyment of the forest environment through various interpretive and other facilities. The Forest Service's cultural resource program is both resource consumptive and preservation oriented in that through management decisions cultural resources will be allocated to different uses. This goal will ensure that such resources remain available on a long-term basis for such uses as research, recreation, education, and social and cultural purposes. Forest Plan alternatives can be evaluated as to their direct and indirect effects on cultural resources based primarily on the amount of land disturbing activity which would occur under a given alternative. This variation in amounts of land disturbing activity is tied primarily to various levels of timber harvest and associated road construction proposed in different alternatives. Other ground disturbing activities such as those related to range and mining activities remain relatively constant throughout the alternatives. Based on surveys conducted to date, many of the areas proposed for timber harvest have a relatively low likelihood of encountering prehistoric cultural resources; however, to date less than 2 percent of the Forest has been surveyed, making predictions of site occurance less than totally reliable. Historic cultural resources have been encountered during timber related project work but usually can be quite easily avoided. Management actions other than ground disturbing, such as modification or rehabilitation of administrative structures, likewise can have an effect on cultural resources and these proposals are evaluated and assessed on a case by case basis. Therefore, we can generally say that those alternatives that allow for a high degree of land disturbing or altering activities can be considered to have a relatively higher potential for adversely affecting cultural resources, directly or indirectly, than alternatives that minimize such activities. However, the adverse effects potential of even a high disturbance alternative will be significantly reduced, and often totally eliminated, by planning activities to avoid areas of high cultural resource sensitivity, and compliance with standards and guidelines contained in the management direction. Further, coordination with the State

Historic Preservation Officer is conducted on every project proposal that may affect an identified site, ensuring agreement on the effects of that project on cultural resources.

The alternatives where roadless areas are recommended suitable for wilderness would help preserve archaeological or historical resources against potentially damaging management projects which could otherwise take place. There is the possibility that unless these areas are surveyed, however, undiscovered cultural resources could deteriorate or be destroyed through neglect, vandalism or natural forces.

The management direction of the Forest Plan ensures that all of the alternatives would be compatible with the cultural resource management program goals. However, Alternative 9 has the highest compatibility with the goal as it requires the least amount of ground disturbing actions. Conversely, Alternative 5 would have the lowest compatibility.

3. The Design of the Built Environment

All alternatives considered in detail in this planning process are designed to provide multiple-use resource management in the various ecosystems that comprise the Forest environment. The affected environment includes both natural and human resources of the planning areas as described in Chapter III of this document. Comparison of alternatives and the effects on the environment have been presented in this chapter and in Chapter II.

In general, the design of the built environment for each alternative is the composite of the goals, objectives and expected future conditions that describe that alternative. It is the response to issues and concerns, resource management needs, community stability requirements, and the laws and regulations under which the Forest Service operates. The management, utilization, and conservation of resources in a multiple use framework is the overall design of each alternative. Because there were constraints placed on every alternative to protect basic resource productivity, the design of the built environment is not significantly impacted under any alternative.

TABLE IV-1 EFFECTS ON RESOURCES BY ALTERNATIVE 1/

Program Element and Activity	Unit of Measure	1	2	3	4	5	6	7	8	9	10	11	12
TIMBER OFFERED													
Sawtimber	MMBF	20.5	35.9	8 0	35 5	39 6	20 4	17.9	9.5	7 7	20.4	9 1	23 86
Fuelwood	MCDS	6.0	10.5	4	10 3	11.5	5.9	5 2	4	4	6	4	6.9
Roundwood	MCF	164	288.6	64	284.8	316.8	163 2	143	76	62	163 6	72	191.2
TSI	Acres	980	1724	380	1698	1898	972	860	450	370	978	430	1142
REFORESTATION	Acres	2540	4296	950	4232	4732	2430	2140	1120	920	2440	1080	2850
SUITABLE ACRES	MAcres	415.9	521 2	225 2	531 5	567 8	396.3	399.4	239.4	209 4	351 3	236 8	407 0
Age Class Distribution at 2030													
0-39	% of Suitable Acres	28 9	37 0	21.9	40.2	41.1	30.2	26 4	25.6	23.4	40.1	26 4	31 1
40-79	% of Suitable Acres	15 2	19.1	10.8	20.9	20 3	13 6	12 8	11 2	10.2	20.0	10.8	16.8
80-119	% of Suitable Acres	0 8	0 9	1.4	0.9	0 9	1 1	0.8	1 3	1 6	1.2	1 4	1 0
120-159	% of Suitable Acres	14.1	18.2	20.2	14 2	17.0	19.9	17 5	22.9	22.5	14 6	17 9	15 9
160+	% of Suitable Acres	41 0	24.8	45.7	23.8	20 7	35 2	42 5	39.0	42 3	24 7	43 5	35.2
HARVEST METHOD SUMMARY													
Clearcut	MAcres	2.0	3.1	0 6	3 9	4 6	2 1	1.5	0 6	0.5	2 9	0 8	2 1
Shelterwood	MAcres	1.67	2.6	1.0	2 6	2.3	1.0	1 6	1 1	1 0	1 4	1 0	1.7
Selection	MAcres	0 1	0 3	0.1	0.3	0.1	0 45	0 6	0.3	0 1	0 1	0 1	0 2
SPECIES HARVESTED													
Ponderosa Pine	% of Total	16	14	15	13	10	17	23	23	16	10	11	18
Douglas-fir	% of Total	50	60	78	38	37	30	51	64	81	40	65	50
White Wood	% of Total	34	26	7	49	53	53	26	13	3	50	24	32
Long Term Sustained Yield (LTSY)	MMBFT/YR	25.8	41 6	13 5	41.0	47 4	26.9	24.6	13 8	12 2	24 1	14 8	29 2
Growth Rate (% of LTSY)		44	55	34	57	55	48	43	43	42	67	40	51
SOIL AND WATER													
Level of Soil Productivity Maintained	%	98.9	98.8	99.1	98.8	98 8	99.0	99.0	99 1	99 1	98.9	99 1	98 9
Soil and Water Improvement Acres	Acres	24	24	24	24	24	0	24	24	24	24	24	24
Sediment over Natural Resident/Anadromous	%	37/18	44/33	13/12	50/34	49/31	29/15	33/10	18/11	16/11	31/37	18/11	37/18
Meeting Water Quality Goals	MACPT	1046	1051	1038	1053	1053	1043	1044	1039	1038	1046	1039	1046

1/ All figures are average yearly values, for the 50-year planning horizon

TABLE IV-1 EFFECTS ON RESOURCES BY ALTERNATIVE

Program Element and Activity	Unit of Measure	1	2	3	4	5	6	7	8	9	10	11	12
RANGE													
Livestock													
(Permitted Use)	MAUM	54.6	57 4	48 0	54.6	64	45 4	57 9	48 1	48 1	57 2	54 5	55
WILDERNESS													
Wilderness Acres	MACRES	503	610	774	584	426	426	663	897	1005	1103	1256	426
Wilderness Use Primitive	MRVD	54	52	58	52	52	55	55	57	57	54	57	54
Wilderness Use Semi-													
Primitive Non-Motorized	MRVD	22	30	49	29	12	14	32	49	51	78	83	13
Wilderness Use Semi-													
Primitive Motorized	MRVD	35	33	38	33	33	36	36	37	38	36	38	35
VISUAL QUALITY OBJECTIVES													
Retention	MACRES	190	68	104	75	75	193	124	106	103	0	49	192
Partial Retention	MACRES	419	104	358	115	129	491	382	312	280	0	172	481
Modification	MACRES	378	74	479	81	109	590	374	409	346	0	267	452
Maximum Modification	MACRES	287	921	62	922	1038	77	234	53	43	674	33	226
PROTECTION													
Fuel Breaks and Fuel													
Treatment	Acres	4910	7991	2025	8865	8934	4830	4302	2428	2037	5674	2338	5648
MINERALS													
Leases and Permits	Cases	180	171	171	171	183	183	171	171	171	171	171	183
Access Constraints													
Locatable Minerals													
Totally Restricted	MACRES	530	637	802	611	453	453	689	924	1032	1130	1283	453
Leasable Minerals													
Totally Restricted	MACRES	503	616	775	584	426	426	662	897	1005	1103	1256	426
RECREATION													
Developed Recreation Use	MRVD Total	115	114	117	114	114	116	116	117	117	115	117	115
Dispersed Recreation Use	MRVD·												
Semi-Primitive													
Non-Motorized	MRVD	10	6	11	6	10	12	7	11	10	0	0	11
Semi-Primitive													
Motorized	MRVD	46	38	23	39	52	55	40	23	22	0	0	54
Roaded Natural	MRVD	207	198	220	199	198	212	210	218	219	210	219	207

TABLE IV-1 EFFECTS ON RESOURCES BY ALTERNATIVE

Program Element and Activity	Unit of Measure	1	2	3	4	5	6	7	8	9	10	11	12
FACILITIES													
Collector Road Const	Miles	1.8	2 4	0 6	1 8	3 0	0	1.4	1 0	1 0	1 0	0 8	2 0
Collector/Reconst	Miles	6 0	8 0	3.0	9 0	12 0	0	5 0	1 0	3 0	3 0	3.0	6.0
Local Road Construction	Miles	1	1	1	1	1	1	1	1	1	1	1	1
Timber Purch Road Construction	Miles	24 0	38.4	10 6	42 0	41 8	21 0	19 8	10 4	10.4	25.4	12 4	27 2
Timber Purch. Road Reconstruction	Miles	10	15	5	15	20	0	5	5	5	5	5	10
Trail Const /Reconst	Miles	2	2	10	10	10	0	2	2	10	2	2	2
LANDS													
Land Purchase and Acquisition	Acres	68	68	68	68	68	13 6	68	68	68	68	68	68
SOCIAL													
Human Resource Programs	ENRYR	4	4	4	4	4	4	4	4	4	4	4	4
ECONOMIC													
PNV	M$	16,563	-26,033	48,529	-26,033	-31,638	35 416	26,138	62,489	49,875	19,358	63,911	4,010
WILDLIFE AND FISHERIES													
Management Indicator Species													
Elk	Numbers	7137	6016	9643	6872	5368	8260	7747	8668	9101	7775	9141	7365
Mule Deer	Numbers	18559	14847	22271	14847	14847	18559	18559	22271	22271	18559	22271	18559
Bighorn Sheep	Numbers	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Goats	Numbers	600	600	600	600	600	600	600	600	600	600	600	600
Pine Martin	% of Max Habitat	33	20	50	20	20	59	55	65	64	57	65	33
Pileated Woodpecker	% of Max Habitat	23	14	46	14	14	48	40	50	50	64	59	23
Vesper Sparrow	% of Max Habitat	95	79	95	95	76	95	81	95	95	90	95	95
Yellow Warbler	% of Max Habitat	86	74	86	74	76	81	81	96	90	90	96	83
RKK	% of Max Habitat	52	35	60	35	35	55	70	66	67	67	67	52
Goshawk	% of Max Habitat	39	38	46	37	37	49	5	55	55	55	55	38
Great Grey Owl	% of Max Habitat	17	13	21	21	13	25	25	34	32	32	32	17
Yellow Bellied Sapsucker	% of Max. Habitat	80	80	80	80	80	80	80	80	80	80	80	80
Pygmy Nuthatch	% of Max Habitat	12	12	20	12	11	20	20	35	35	35	35	12
Brown Creeper	% of Max Habitat	9	9	20	9	9	20	20	35	35	35	35	9
Bluebird	% of Max Habitat	58	46	61	57	57	65	56	72	67	72	72	55
Anadromous Fish	M lbs	357.7	332 0	372 5	321 8	330 1	368 7	372 9	373 2	372 8	323 4	372 6	357 9
Resident Fish	M lbs	87 9	86 5	92 2	86 0	87.1	90 1	89 9	91.7	91 9	85.9	91 6	88 5
Chinook Salmon	M Smolts	442.1	436.1	467 5	429 8	441 5	465 9	468 1	467 9	467 6	430 4	467 4	453 7
Steelhead Trout	M Smolts	241 5	231 8	273 5	220 7	235 7	270 9	273 9	274 6	272 5	222 2	274 0	261 0

Table IV-2--Discounted Benefits and Costs, 4% Discount Rate
(1985 dollars, deflated to 1/1/82)

	Benchmarks		Alternatives											
	Min. Level(1)	Max. PNV Assn.(3)	1	2	3	4	5	6	7	8	9	10	11	12
Present Net Value, PNV	73,404	44,860	16,563	-26,033	48,529	-26,033	-31,638	35,416	26,138	62,489	49,875	19,358	63,911	4,010
Present Value of Benefits, PVB	141,610	157,802	162,289	161,747	169,936	162,961	163,949	162,568	165,984	180,303	170,589	166,886	185,883	161,914
Present Value of Costs, PVC	68,206	112,942	145,725	187,780	121,407	188,993	195,587	127,152	139,846	117,813	120,714	147,529	121,972	157,904
Present Value of Receipts, PVR	1,482	15,728	17,467	27,599	10,872	27,191	30,343	16,479	16,355	12,784	10,936	16,858	10,700	19,095
PVB, by output:														
Recreation	30,935	32,220	31,431	29,649	31,087	29,327	31,040	32,960	31,105	30,783	30,717	26,828	28,477	32,233
Wilderness	24,659	20,805	22,939	23,594	30,607	23,311	19,587	21,525	26,303	29,857	32,634	35,222	37,875	20,797
Range	0	10,533	10,472	11,009	9,227	10,552	12,268	9,490	11,084	9,253	9,253	10,996	10,459	10,743
Timber	0	12,534	14,286	24,255	7,868	24,000	26,844	13,442	13,083	9,714	7,927	13,612	7,519	15,891
Wildlife/Fish	85,821	81,340	82,809	72,887	90,801	75,418	73,857	84,798	84,056	100,283	89,706	79,875	101,202	82,088
PVC, by resource program														
Recreation	4,335	8,160	8,160	10,160	10,645	9,491	10,560	5,989	8,502	7,609	10,207	8,596	7,679	11,265
Wilderness	2,205	3,670	3,670	3,821	7,399	4,939	4,526	2,053	5,638	5,914	8,445	9,295	9,319	5,213
Range	76	5,664	3,821	5,418	5,228	3,916	5,589	2,928	4,011	5,342	5,342	4,411	4,126	4,049
Timber	8,365	27,198	56,729	91,717	27,267	91,802	95,381	44,476	48,002	27,823	26,887	53,186	29,830	63,856
Wildlife/Fish	2,129	3,115	4,588	4,444	5,589	5,589	5,589	3,587	5,589	5,589	4,502	3,587	5,589	4,588
Other	68,206	65,135	68,757	72,219	65,279	73,257	73,943	68,118	68,103	65,537	65,331	68,453	65,430	68,933
PVR, by resource program														
Recreation	0	317	317	402	317	326	402	305	317	317	317	317	317	326
Wilderness	1,288	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074
Range	0	1,452	1,439	1,517	1,267	1,439	1,673	1,306	1,530	1,267	1,267	1,504	1,439	1,453
Timber	0	12,534	14,286	24,255	7,862	24,000	26,844	13,442	13,083	9,774	7,927	13,612	7,519	15,891
Wildlife/Fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	193	351	351	351	351	351	351	351	351	351	351	351	351	351

Table IV-3 --Effects on Economic Indicators· Population, Income, Employment, and Payments to Counties at year 1990

The Salmon National Forest's Zone of Influence:

Variable	Alternative 1 Current Direction	Other Alternatives #2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	MaxPNV BM#3	MinLvl BM#1
Total Income (1978 dollars inflated to 1/1/82 in M$)	9215	11607	6862	11542	12505	8709	8791	7116	6765	8731	7142	9340	6502	4343
Sawtimber	4284	6876	1672	6834	7691	3678	3741	1986	1609	3783	1902	4410	1588	0
Grazing	760	799	676	760	882	731	801	676	676	794	760	767	760	0
Dispersed Recreation	790	880	910	880	880	900	900	910	910	890	910	890	890	0
Developed Recreation	3281	3052	3604	3068	3052	3400	3349	3544	3570	3264	3570	3273	3264	4343
Total Employment, number of persons	599	701	501	698	744	580	582	510	495	575	513	605	470	378
Sawtimber	201	322	78	320	361	172	175	93	75	177	89	207	74	0
Grazing	36	38	32	36	42	35	38	32	32	38	36	37	36	0
Dispersed Recreation	76	75	77	75	75	77	77	77	77	76	77	76	76	0
Developed Recreation	286	266	314	267	266	296	292	308	311	284	311	285	284	378
Payments under the [1] 25% fund (1982 dollars)														
1981	93.4	93.4	93 4	93 4	93.4	93.4	93.4	93.4	93.4	93.4	93.4	93.4	93.4	93.4
Decade 1	170.6	206.3	127.7	203.6	228 1	126.0	174.5	152.8	129 8	129.3	117 6	144.7	205.6	2.1
Decade 2	171.6	207.7	128.6	204.8	229.8	126 5	175 7	153.6	130.6	130.4	118.6	145.9	206.8	2 1

[1] 1981 dollars are actual and listed under each alternative for comparison only.

Table IV-4 --RPA Objectives and Alternative Outputs

Program Element and Activity	Measure	Unit of Targets	RPA Alternatives 1	2	3	4	5	6	7	8	9	10	11	12
Timber (Sales Offered)	MMBFT	39	20.5	32.9	8 0	32.7	36.8	17 6	17.9	9 5	7.7	18.1	9.1	21.1
		40	20 5	32 9	8 0	32 7	36.8	17.6	17.9	9.5	7.7	22 0	9.1	21 1
		40	20 5	38 1	8.0	37.4	41 5	22 2	17.9	9 5	7.7	22 0	9 1	25 7
		40	20 5	38 1	8 0	37 4	41.5	22.2	17 9	9.5	7.7	22.0	9.1	25 7
		40	20 5	38 1	8 0	37.4	41 5	22 2	17.9	9.5	7.7	22 0	9 1	25 7
Reforestation	Acres	2000	2450	3930	950	3890	4390	2100	2140	1120	920	2170	1080	2520
		1700	2450	3930	950	3890	4390	2100	2140	1120	920	2170	1080	2520
		1700	2450	4540	950	4460	4960	2650	2140	1120	920	2620	1080	3070
		1700	2450	4540	950	4460	4960	2650	2140	1120	920	2620	1080	3070
		1700	2450	4540	950	4460	4960	2650	2140	1120	920	2620	1080	3070
Timber Stand Improvement	Acres	1700	980	1580	380	1560	1760	840	860	450	370	870	430	1010
		1500	980	1580	380	1560	1760	840	860	450	370	870	430	1010
		1500	980	1820	380	1790	1990	1060	860	450	370	1050	430	1230
		1500	980	1820	380	1790	1990	1060	860	450	370	1050	430	1230
		1500	980	1820	380	1790	1990	1060	860	450	370	1050	430	1230
Water Meeting Standards	MACFT	1433	1012	1015	1010	1016	1016	1012	1011	1010	1010	1013	1010	1012
		1433	1052	1060	1044	1061	1062	1050	1050	1045	1044	1053	1045	1054
		1433	1054	1060	1045	1062	1062	1052	1051	1046	1045	1054	1045	1054
		1433	1056	1063	1046	1065	1063	1053	1053	1047	1046	1057	1047	1057
		1433	1055	1059	1045	1063	1060	1049	1053	1047	1046	1054	1047	1055
Minerals	Cases	70	160	160	160	160	160	160	160	160	160	160	160	160
		80	170	170	170	170	175	175	170	170	170	170	170	175
		88	185	170	170	170	185	185	170	170	170	170	170	185
		97	190	175	175	175	195	195	175	175	175	175	175	195
		105	195	180	180	180	200	200	180	180	180	180	180	200
Soil-Water Resource Improvement	ACRES	117	30	30	30	30	30	0	30	30	30	30	30	30
		92	30	30	30	30	30	0	30	30	30	30	30	30
		92	20	20	20	20	20	0	20	20	20	20	20	20
		91	20	20	20	20	20	0	20	20	20	20	20	20
		91	20	20	20	20	20	0	20	20	20	20	20	20

Table IV-4 --RPA Objectives and Alternative Outputs

Program Element and Activity	Unit of Measure	RPA Targets	1	2	3	4	5	6	7	8	9	10	11	12
Developed Recreation	MRVD													
Use 1986-1990		95	89	88	91	88	88	90	90	91	91	89	91	89
1991-2000		100	104	103	106	103	103	105	105	106	106	104	106	104
2000-2010		120	115	114	117	114	114	116	116	117	117	115	117	115
2011-2020		140	127	126	129	126	126	128	128	129	129	127	129	127
2021-2030		160	139	138	141	138	138	140	140	141	141	139	141	139
Dispersed	MRVD	345	291	274	316	275	274	301	297	312	314	295	314	291
Recreation Use		380	338	321	363	322	321	348	344	359	361	342	361	338
(including Wilderness,		410	374	357	399	358	357	384	380	395	397	378	397	374
excluding Wildlife		440	412	395	437	396	395	422	418	433	435	416	435	412
and Fish)		470	451	434	476	435	434	461	457	472	474	455	474	451
Trail	Miles	9	2	2	10	10	10	0	2	2	10	2	2	2
Construction		8	2	2	10	10	10	0	2	2	10	2	2	2
		8	2	2	10	10	10	0	2	2	10	2	2	2
		8	2	2	10	10	10	0	2	2	10	2	2	2
		8	2	2	10	10	10	0	2	2	10	2	2	2
Range (Grazing	MAUM	51	54 3	57 1	48 3	54.3	63 0	52.2	57 2	48 3	48 3	57.6	54.3	54.8
Use)		51	54.7	57.5	47 9	54 7	64 4	51 0	58 1	48.1	48 1	57 1	54.6	55.0
		51	54 7	57.5	47 9	54 7	64 4	51 0	58 1	48 1	48.1	57 1	54.6	55.0
		51	54.7	57.5	47.9	54 7	64.4	51.0	58.1	48 1	48.1	57.1	54 6	55 0
		51	54.7	57 5	47.9	54 7	64.4	51.0	58.1	48 1	48.1	57.1	54 6	55 0
Total Forest	Thousand $	7188	6816	8791	5682	8888	9101	5744	6631	5523	5642	6721	5702	7495
Budget		8228	6803	8595	5637	8628	8837	5702	6458	5499	5602	6641	5676	7322
		8278	6714	9025	5644	9013	9390	6160	6400	5429	5584	7153	5666	7690
		8441	6758	8635	5635	8658	9254	6193	6434	5456	5582	7074	5661	7319
		8441	6675	8514	5598	8556	9184	6437	6145	5412	5538	6989	5621	7225

V. LIST OF PREPARERS

The Salmon National Forest used an Interdisciplinary approach as directed by 36 CFR 219.5. The Forest's Interdisciplinary approach is based on the use of the Management Team providing direction and a small Core Team and several Support Teams providing specialized expertise. The individuals on these teams are listed as follows:

Management Team

Richard T. Hauff--Forest Supervisor
James Baker--Branch Chief of Engineering
James Guest--Branch Chief of Range, Watershed, and Wildlife
James Moorhead--Branch Chief of Fire, Recreation, and Lands
Ernest Schneider--Branch Chief of Timber
Roy S. Verner--Branch Chief of Planning
Clinton Groll--Cobalt District Ranger
Carlton Guillette--Salmon District Ranger
Clark Tucker--Leadore District Ranger
Robert Martin--Acting North Fork District Ranger

Core Team

Roy Verner--Forest Planner, Team Leader
BS Forestry; 30 years with the Forest Service as Timber Forester, District Ranger, and Forest Planner.

Richard Apple--Operations Research Analyst
BA Zoology; MS Forest Management; two years experience in forest economics and operations research.

Gene Jensen--Timber Management Planning Forester/Acting Forest Planner; BS Forestry (Range Management); 17 years Forest Service experience as Timber Inventory Forester, Timber Management Assistant, Resource Assistant, and Timber Planner.

Bruce May--Fisheries Biologist
BS Zoology/Chemistry; MS Fisheries Science; seven years Forest Service experience with staff responsibilities in range, wildlife, and watershed.

LaVerne Nelson--Assistant Land Management Planner
BS Geology; 21 years Forest Service experience in materials engineering, road location and design, and land management planning.

Ken Stauffer--Landscape Architect
BS Landscape Architecture; six years experience as Landscape Architect in Intermountain Region of the Forest Service.

Ernest Schneider--Timber Branch Chief
BS Civil Engineering; MF Forestry; 15 years federal service.

Issue Identification and Analysis Team

Bruce May--Fisheries Biologist, Team Leader
BS Zoology/Chemistry; MS Fisheries Science; seven years Forest Service experience with staff responsibilities in range, wildlife, and watershed.

Clifford Keene--Silvicultural Forester
BS Forestry; 15 years experience in timber sale preparation and administration, and silviculture.

Robert N. Taylor--Supervisory Forester
BS Forest Management; 20 years experience as a forester with primary responsibilities in timber management and silviculture.

Analysis of the Management Situation Team

Gene Jensen--Timber Management Planning Forester, Team Leader
BS Forestry (Range Management); 17 years Forest Service experience as Timber Inventory Forester, Timber Management Assistant, Resource Assistant, and Timber Planner.

LaVerne Nelson--Assistant Land Management Planner
BS Geology; 21 years Forest Service experience in materials engineering, road location and design, and land management planning.

Formulation of Alternatives Team

Ernest Schneider--Timber Branch Chief, Team Leader
BS Civil Engineering; MF Forestry; 15 years federal service.

Effects Assessment Team

Ken Stauffer--Landscape Architect, Team Leader
BS Landscape Architecture; six years experience as Landscape Architect in the Intermountain Region of the Forest Service.

Phil Bogen--Forester
BS Forest Resources Development; nine years experience with the Forest Service in timber management.

Tom Buchta--Soils Scientist, (Assistant Leader)
BS Forestry; seven years with the Forest Service as a Resource Specialist in soils and minerals area management.

Dick Wenger--Wildlife Biologist (terrestrial)
BS Biology; MS Wildlife Biology; nine years of professional experience including six with the Forest Service.

Public Involvement Team

James Stone--Public Affairs Specialist, Team Leader
BA Communications; AAA Forestry Technology; AAS; eight years federal service, three in Public Information with the Forest Service.

Jackie Caivano--Clerk/Typist; Receptionist
Seventeen years of public contact work, including five with the Forest Service.

Belva Garner--Business Management Assistant
Seventeen years Forest Service experience as Clerk and Business Management Assistant on the Leadore Ranger District.

James Wiley--Supervisory Forestry Technician
Twenty-two years experience with Forest Service in recreation and river management with duties in law enforcement and fire information.

Documentation Team

Esther Mund--Lead Support Services Supervisor, Team Leader
Business College graduate; 17 years federal experience, in addition to six years with private industry.

Kathleen Zanutto--Mail and File Clerk
Twenty years of clerical experience, five of which were with the Forest Service.

Transportation Analysis Team

Ultan P. Johnson--Civil Engineer, Team Leader
BS Civil Engineering; 18 years Forest Service experience, including six years in transportation planning.

Douglas Basford--Timber Management Assistant
BS Range; Certified Silviculturist; 18 years experience as a forester with responsibilities in timber, silviculture, and planning.

Bert Gould--Civil Engineering Technician
Nineteen years experience with the Forest Service in engineering, with responsibility in project level transportation systems layout and construction.

Special Area Assessment Team

Ken Stauffer--Landscape Architect, Team Leader
BS Landscape Architecture; six years experience as Landscape Architect in the Intermountain Region of the Forest Service.

John Hammond--Range Conservationist
BS Range Management; 26 years experience with responsibilities in range, watershed, wildlife, recreation, special uses, minerals management, fire, fuels, and facilities.

Robert Martin--Forester
BS Forest Engineering; 18 years Forest Service experience with staff responsibilities in recreation, range, watershed, minerals, wildlife, land uses.

Management Plan Development Team

Clark Tucker--Leadore District Ranger; Team Leader
BS Forest Management, 16 years Forest Service experience with primary responsibilities in timber, range, soil and water, and wildlife management, and National Forest Administration.

John Hammond--Range Conservationist
BS Range Management; 20 years experience with responsibilities in range, watershed, wildlife, recreation, special uses, minerals management, fire, fuels, and facilities.

Steve Kratville--Forester
BS Forestry; seven years experience with the Forest Service, with responsibilities in timber sale preparation and silviculture.

Robert N. Taylor--Supervisory Forester
BS Forest Management; 20 years experience as a forester in the Pacific Northwest and Intermountain Regions, primary responsibilities in timber management and silviculture.

Management Plan Budget Linkage Team

Robert E. Christenson--Budget Analyst
Twenty-two years in Forest Service working in Forestry, engineering, human resources, and business management.

Frank Church--River of No Return Wilderness Planning Team

The Wilderness Planning Team members--Frank Elder and John Hoagland transferred from the Salmon National Forest, and Lewis Campbell retired.

Support Personnel

Kurt Cuneo--Range Conservationist
D. Ty Garechana--Computer Assistant
Craig Grother--Forestry Technician
Karen Harvey--Wildlife Biologist
Robert Hennes--Hydrologist
Robert Jacobsen--Forester
Gary Jackson--Soil Scientist
Clinton Shaw--Civil Engineering Technician
Eugene Sundberg--Forester
Randy Welsh--Forester

Major Contributors no Longer with the Salmon National Forest

Nancy Bailey--Public Information Specialist
Lewis Campbell--Range, Watershed, and Wildlife Branch Chief
Don Goodrich--Timber Branch Chief
Charles L. "Hoey" Graham--Timber Management Assistant
James Lancaster--Cobalt District Ranger
Dr. Gary Leonardson--Social Scientist
John Oien--Landscape Architect
Donald "Pete" Peters--Forest Mining Engineer
Mark Rasmussen--Operations Research Analyst
Elizabeth "Betsy" Rieffenberger--Hydrologist
James Riley--Operations Research Analyst
Hadley Roberts--Wildlife Biologist
Stuart "Cliff" Stewart--Range Conservationist
Richard Bacon--North Fork District Ranger
Franklin S. Elder--Wilderness Planning Team Leader
John Hoagland--Land Use Planning Specialist
Elizabeth Ballard--Forester
Gordon Daniels--Forestry Technician
Lamar Taylor--Range Conservationist

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