Summary

Introduction

Forest land and resource management planning is a process for developing, amending, and revising land and resource management plans (forest plans) for each of the National Forests in the National Forest System. Forest plans are required by the National Forest Management Act (NFMA) of 1976. Each forest plan is intended to guide the management of a National Forest for a 10-15 year period, at the end of which a formal revision is required.

The 17-million acre Tongass National Forest, the largest forest in the National Forest System, was also the first to complete a Land and Resource Management Plan under the National Forest Management Act. The original Tongass Forest Plan was approved in 1979, and has been amended twice (in 1986 and 1991). The first revision of this plan is now being considered.

A draft environmental impact statement (DEIS) documenting the environmental analysis for this revision was released for public review in June 1990. In November 1990, the Tongass Timber Reform Act (TTRA) was passed. This Act imposed several new requirements for management of the Tongass affecting the Forest Plan and resulted in the preparation of a Supplement to the DEIS, which was released in August 1991. (This Supplement is hereinafter referred to as the "1991 SDEIS.") TTRA made permanent changes to Forest Plan land allocations and standards and guidelines which applied to all alternatives in the Supplement. The 1991 SDEIS was in turn followed by the Revised Supplement in 1996. The Revised Supplement was necessitated by new information and analysis relevant to several important issues.

The release of a final environmental impact statement (FEIS) and decision had been scheduled for early 1993, but was put on hold in order to conduct the additional analysis which ultimately led to the Revised Supplement. A 1992 draft version of this FEIS included alternatives that became the basis of some Revised Supplement and FEIS alternatives. See Chapter 2.

This FEIS analyzes in detail 10 alternatives for future management of the Tongass National Forest. A separate document, the Land and Resource Management Plan (Forest Plan), is an expansion of the Preferred Alternative (Alternative 11) contained in this FEIS.

The "purpose and need" for the Tongass Forest Plan Revision, beyond the basic NFMA requirement for periodically revising forest plans, centers on the basic elements of what constitutes a forest plan. These plan elements include: multiple-use goals and objectives, management prescriptions, standards and guidelines, timber suitability, the Allowable Sale Quantity, and monitoring and evaluation. Together these are evaluated to determine the “need for change.”

Public Issues

Ten public issues were originally identified in 1988 for the Forest Plan Revision. These were used for the 1990 DEIS, and remained the same, with some updating, for the 1991 SDEIS. Each issue statement is framed as a question. These original issues are listed here. The 1991 SDEIS added an additional concern, identifying and considering for recommendation potential Wild, Scenic, and Recreational Rivers.

Summary

The Ten Original Issues

Scenic Quality. What areas of the Tongass National Forest should be managed to emphasize scenic resources?

Recreation. What areas should be managed to emphasize recreation opportunities?

Fish Habitat. What methods should be used to protect resident and anadromous fish habitat?

Wildlife Habitat. What amount of old-growth and undeveloped habitat should be managed for the protection of wildlife?

Subsistence. What should the Forest Service do to continue providing subsistence opportunities?

Timber Harvest. What areas of the Tongass should be managed to emphasize timber harvesting?

Roads. What road system should be developed in the Tongass National Forest?

Minerals. What areas and accessibility should be emphasized for exploration, development, and production of mineral resources?

Roadless areas. What areas and what amount of roadless lands should be recommended for Wilderness designation or other types of unroaded management?

Local Economy. What ways should National Forest lands be managed to provide for the local lifestyles of Southeast Alaska communities?

The Five Focus Issues

Since the release of and comment period on the 1991 SDEIS, considerable new information bearing on the Tongass Forest Plan Revision has come to light, including additional scientific reviews and studies, new or updated resource inventories, and comments and reports from interest groups and individuals. Out of this new information emerged five issues determined by the Regional Forester to need more study and evaluation before a final Revised Forest Plan could be adopted. Some of these issues are aspects or extensions of the ten public issues previously considered (fish and wildlife habitat, and the local economy), others are new as issues (caves and karst) or were not considered as issues in themselves (alternatives to clearcutting). These issues are discussed briefly here.

Wildlife Viability. The issue concerning wildlife viability centers on questions of whether the current Forest Plan, or the alternatives considered for revising the Forest Plan (in either the 1991 SDEIS or the unpublished 1992 Tongass Forest Plan Revision Final Environmental Impact Statement (FEIS)), provide for sufficient habitat to maintain viable wildlife populations in the Tongass National Forest within the context of overall multiple use objectives (as required by 36 CFR 219.19 and related NFMA regulations).

Early in 1993, the Alaska Regional Forester postponed a final decision on the Revised Forest Plan and requested the Forest Service's Pacific Northwest Research Station to conduct a scientific peer review of a viability strategy recommended by the Interagency Viable Population Committee, and other planning

documents related to viability, as part of the Forest Plan Revision process. The peer review concluded that a strategy like that recommended by the Committee went further in ensuring habitat to support viable wildlife populations than the Revision alternatives, but that other methods and approaches also need to be considered. It also noted a lack of information about wildlife in Southeast Alaska, and the need for more study.

Also in 1994, the Alaska Region of the U.S. Fish and Wildlife Service (USFWS) accepted two petitions for listing under the Endangered Species Act, for the Queen Charlotte goshawk (as endangered) and the Alexander Archipelago wolf (as threatened), in Southeast Alaska. Although neither species was found in need of listing at this time, USFWS stated in both cases that without substantive changes in management of the Tongass, future viability was a definite concern. Very recently legal challenges have resulted in the USFWS being required to reevaluate both these decisions.

Fish Habitat. Concurrent with the work and actions taken relative to wildlife viability, in 1994 an Alaska Anadromous Fisheries Habitat Assessment (AFHA) was conducted, at the direction of Congress, for the purposes of studying the effectiveness of current procedures for protecting anadromous fish habitat, and determining if any additional protection was needed. This assessment concluded that current measures, and their implementation, were not fully effective for preventing habitat degradation or protecting salmon and steelhead stocks in the long term. AFHA included recommendations to consider for the Tongass Plan Revision, and additional recommendations were made by the team that conducted the on-the-ground analysis for AFHA.

Karst and Caves. The extent and importance of the cave resources of the Tongass have only recently come to light. The 1991 SDEIS considered caves, and included some recognition of the "karst" geology in which they are typically found, in Forest-wide standards and guidelines, and through a proposed Karst Areas Geological Area. More recent studies and surveys have indicated a more extensive resource of world-class significance, and the need to consider improved standards and guidelines. Several recent timber sale projects in karst areas have identified a similar need.

Alternatives to Clearcutting. Commercial timber harvest in the Tongass National Forest has traditionally relied on one even-aged silvicultural system, clearcutting. This system has proven successful in Southeast Alaska in several ways: it is relatively economical; it is effective in controlling forest diseases; it eliminates blowdown; and it results in adequate natural regeneration, particularly of less shade-tolerant species such as Sitka spruce. On the other hand, clearcutting continues to be controversial in Southeast Alaska. The Forest Service's ecosystem management policy includes a strong emphasis on limiting the amount of traditional clearcutting, and on using alternative silvicultural systems.

Socioeconomic Considerations. The socioeconomic environment of Southeast Alaska and its relation to the resources and uses of the Tongass has undergone some significant changes in recent years. Since the 1991 SDEIS, the timber industry has seen the permanent closure of one of two major pulp mills (the Alaska Pulp Corporation mill in Sitka), the development of several new small mill operations, and the termination in 1994 of one of two long-term sale contracts. In October 1996 the Louisiana Pacific Corporation announced its intent to close the sole remaining pulp mill in Southeast Alaska (the Ketchikan Pulp Company mill in Ketchikan) in March 1997. The tourism industry continues to see rapid growth, indicating the need to better reflect tourism needs and concerns through specific management direction and improved inventories. An extensive update of the social

and economic settings and concerns of Southeast Alaska communities became necessary in order to have the best information on local uses of, and economic ties to, the Tongass.

Alternatives

Each alternative for the revision of the Tongass Land Management Plan is presented in the same format in Chapter 2 of the FEIS. Each alternative description includes a theme, multiple-use goals, narrative objectives, a set of Land Use Designations (a table with the acreages allocated to each LUD, and a map - included in the map packet - showing their locations), and other objectives and outputs displayed numerically. The prescriptions of each Land Use Designation are included in the Forest Plan, as are the Forest-wide standards and guidelines applying to all alternatives.

While the allocation of areas to different Land Use Designations can vary by alternative, the management prescriptions for each specific Land Use Designation (LUD) do not change (except for certain timber harvest practices in some LUD's, which are specified by alternative). Chapter 3 of the Revised Forest Plan includes the full set of management prescriptions for each Land Use Designation. These are summarized in Chapter 2 of the FEIS and on the alternative maps. Except for the "no action" alternative (the 1979 Forest Plan as amended), 19 Land Use Designations are used for each alternative.

Table 1 lists the Land Use Designations by name, and groups them by similarities in management direction or potential effects. These "LUD Groups" are used in comparing alternatives in the FEIS. Table 5 later in the summary gives the acreages of the LUD Groups by alternative. One LUD, Transportation and Utility Systems, is not included in the table or LUD Groups since it does not have an acreage associated with it.

Table 1
Land Use Designations and LUD Groups

LUD Group	Land Use Designation
Wilderness	Wilderness
	Wilderness National Monument
	Non-wilderness National Monument
Natural Setting	Research Natural Area
	Remote Recreation
	Special Interest Area
	Old-growth Habitat
	Enacted Municipal Watershed
	LUD II
	Semi-Remote Recreation
	Wild River
	Scenic River
	Recreation River
Moderate Development	Experimental Forest
	Scenic Viewshed
	Modified Landscape
Intensive Development	Timber production
	Minerals

The themes of the ten alternatives are included in Table 2. (The alternatives in the FEIS are numbered 1-7 and 9-11.) The goals of each alternative listed in Chapter 2

of the FEIS are not repeated for this summary, but Tables 3 and 4 below indicate how many of these goals have been translated into objectives and outputs.

Table 2
Alternative Themes

Alternative	Theme and Purpose
1	Emphasize high-quality fish and wildlife habitat, unroaded areas, wild, scenic, and recreational rivers, scenic quality, subsistence use, and a wide range of recreation and tourism opportunities in a natural setting. Geographic areas mentioned in public comments as deserving of protection, and all identified recreation places, are assigned non-development LUD's.
2	Emphasize scenery, recreation and tourism, subsistence uses, and timber production. Many of the more important wildlife habitats, recreation and subsistence opportunities, and scenic values will be maintained in a natural setting. Resources that will contribute to the local and regional economies of Southeast Alaska are emphasized.
3, 4 and 5	Provide a mix of National Forest uses and activities similar to Alternative 2, with additional emphasis on fish and wildlife habitat protection and the karst and caves resource, and less emphasis on some resource uses contributing to the local and regional economies of Southeast Alaska.
6	Provide a mix of National Forest uses and activities similar to Alternative 2, with additional emphasis on fish and wildlife habitat protection and the karst and caves resource, and more emphasis than Alternatives 3-5 on resources contributing to the local and regional economies of Southeast Alaska.
7	Provide an economic timber supply from public lands to meet market demand in Southeast Alaska. Management of other resources will be done in an efficient manner consistent with the emphasis on timber supply, and while meeting environmental standards. Some areas with low timber volumes will be managed with an emphasis on non-commodity values.
9	This is the "No Action" alternative which represents the management direction of the current Tongass Land Management Plan (as approved in 1979, and amended in 1986 and 1991). Under this alternative, the Tongass National Forest would continue to be managed under the current land allocations reflected in the Plan's four basic Land Use Designations (the LUD's and LUD variations displayed on the enclosed map for Alternative 9), and related Plan direction.
10	Provide a mix of National Forest uses and activities similar to Alternative 2, with additional emphasis on fish and wildlife habitat protection and the karst and caves resource, and less emphasis on some resource uses contributing to the local and regional economies of Southeast Alaska. This was the Revised Supplement Preferred Alternative.
11	Provide a mix of National Forest uses and activities with an emphasis on fish and wildlife habitat protection and the karst and caves resource, and less emphasis on some resource uses contributing to the local and regional economies of Southeast Alaska. This is the FEIS Preferred Alternative.

For the Revised Supplement and this FEIS, alternatives were designed primarily to address in different ways the five focus issues. Table 3 shows how various issue-related components have been assigned to the ten FEIS alternatives.

Table 3
Alternative Component Options

Component	Alternative									
	1	2	3	4	5	6	7	9	10	11
Alternative Base	1992 A	1992 P	1992 P	1992 P	1992 P	1992 P	1992 D++	Current Plan (No Action) [2]	1992 P	Alt. 10
Reserve Strategy [1]	None	None	All	None	4 Prov.	4 Prov.	None	None	All	All
Aver. Timber Stand Rotation (Years)	200	100	100	200	200	100	100	100	100	100
Silvicultural system	UM	ES	2A	UM, 2A	UM, 2A	UM, 2A	ES	ES	ES, 2A	ES
VCU Harvest Thresholds (%)	None	None	None	25%/ 50 yr.	25%/ 50 yr.	50%/ 50 yr.	None	None	None	None
OG Retention/VCU	None	None	None	33%	33%	33%	None	Retention	None	None
Riparian Habitat:										
FHIP 1 Watershed	Opt 2	Opt 3	Opt 1	Opt 2	Opt 2	Opt 2	Opt 3	TTRA/BMP	Opt 2	Opt 2A
All others	Opt 3	Opt 3	Opt 2	Opt 3	Opt 3	Opt 3	Opt 3	TTRA/BMP	Opt 3	Opt 2A
Beach1 (0-500')	S/G	S/G	S/G	S/G	S/G	S/G	None	None	S/G	S/G
Beach2 (500-1,000')	S/G, UM	None	S/G, UM	S/G, UM	S/G, UM	S/G, UM	None	None	None	S/G
Estuary (0-1,000')	S/G	S/G	S/G	S/G	S/G	S/G	None	None	S/G	S/G
Karst/Caves	K/C S/G	92 S/G	K/C S/G	K/C S/G	K/C S/G	K/C S/G	92 S/G	Cave Act	K/C S/G	K/C S/G
Deer Winter range	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No

[1] This component refers to the use of a system of old-growth habitat reserves to address wildlife viability. Such a system is in addition to reserves that may already exist, such as within Wilderness or Legislated LUD II areas. The layout of the system is different for Alternative 11 than for Alternatives 3 and 10.

[2] Implementation of projects under the Current Plan typically goes beyond current direction in providing protection for riparian areas and karst and cave areas; the retention method provides selected recognition of deer winter range and beach fringe, and eagle nest buffers also provide beach fringe protection. This table, however, is designed to represent only what is actually direction under the Current Plan.

Definitions

Reserves:
- All = Large, Medium, and Small reserves proposed by the Interagency Viable population Committee (Suring et al. 1993).
- 4 Provinces = N. POW, Kupreanof/Mitkof, Dall Isl., NE Chichagof, + individual reserves (Meyers Chuck, Lake Eva, Wright Lake).

Silvicultural system:
- UM = Uneven-aged management (single tree/group selection).
- ES = Even-aged Short Rotation (approximately 80-150 years, depending upon site potential).
- 2A = Two-aged stand management (permanent retention of 10-20% of trees during harvest).

Riparian:*
- Option 1 (Lowest Risk) - expanded riparian corridors on Class I-III streams, exclusion of high hazard soils, etc.
- Options 2 and 2A (Lower Risk) - expanded riparian corridors on Class I-III streams (but less so than Option 1), etc.
- Option 3 (Higher Risk) - 1991 SDEIS "Stream and Lake Protection" LUD.
- TTRA/BMP (Highest Risk) - Tongass Timber Reform Act/Best Management Practices.
- FHIP = Forest Habitat Integrity Project: FHIP 1 - highest quality watersheds for sport/commercial fish.

Deer Winter range: Application of management standards to maintain important deer winter range.

Karst/Caves: K/C S/G - Lower risk standards and guidelines; 92 S/G - Moderate risk standards and guidelines; Cave Act - Protect only identified caves.*

***The levels of risk indicated are relative terms only. They do not imply absolute risk levels.**

Table 4 includes some of the key outputs of the alternatives. Table 5 summarizes the Land Use Designation allocations of the alternatives using the LUD Group combinations previously discussed. A comparison of alternatives discussion follows these tables.

Table 4
Selected Alternative Dimensions[1]

Resource/Category	Alternative 1	2	3	4	5	6	7	9	10	11
Recreation - ROS Opportunities (million RVD's)										
Primitive and Semi-primitive Non-motorized	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Semi-primitive Motorized	1.7	1.6	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6
Roaded Natural and Roaded Modified	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Scenery - VQO's [2] (million acres):										
Retention	5.9	3.6	4.4	3.6	3.9	4.0	2.0	5.2	4.4	4.8
Partial retention	4.9	3.1	2.9	3.1	3.0	3.0	1.3	1.1	2.9	3.2
Modification	<0.1	0.5	0.4	0.5	0.4	0.4	1.0	0.4	0.4	0.4
Maximum Modification	0.2	3.9	3.3	3.9	3.7	3.6	6.7	4.4	3.3	2.8
Timber:										
Suitable Lands (million acres)	0.0	1.2	0.8	0.8	0.8	1.0	1.6	1.4	0.9	0.7
Sale Quantities (MMBF): [3]										
Non-interchangeable I	0	375	210	107	100	250	520	447	245	219
Non-interchangeable II	0	87	46	23	22	59	120	102	55	48
Allowable Sale Quantity	0	463	256	130	122	309	640	549	300	267
Silvicultural Sstem (1,000 acres):										
Even-aged	0	14.7	0	0	0	0	20.3	17.4	0	6.7
Two-aged	0	0	9.4	6.3	4.6	11.4	0	0	11.2	1.9
Uneven-aged	0	0	<0.1	0	0	<0.1	0	0	0	0

1 Abbreviations used: ROS = Recreation Opportunity Spectrum; RVD = Recreation Visitor Day; VQO = Visual Quality Objective; MMBF = million board feet. RVD's, sale quantities, and silvicultural system acreages are average annual amounts.
2 Excluding Wilderness (5.7 million acres of Retention in all alternatives).
3 All timber volumes are sawlog plus utility.

Table 5
Land Use Designation Group Comparisons (million acres)[1]

Alternative	Wilderness	Natural Setting	Moderate Development	Intensive Development
1	5.9	10.8	<0.1	0.2
2	5.9	5.8	1.7	3.5
3	5.9	6.8	1.3	3.0
4	5.9	5.8	1.7	3.5
5	5.9	6.2	1.5	3.3
6	5.9	6.2	1.5	3.3
7	5.9	3.2	1.5	6.3
9	5.9	4.9	2.3	3.8
10	5.9	6.8	1.3	3.0
11	5.9	7.3	1.1	2.6

[1] LUD Group combinations are displayed in Table 1. For Alternative 9, Wilderness=LUD I; Natural Setting=LUD II; Moderate Development=LUD III; and Intensive Development=LUD IV.

Comparison of Alternatives

The alternatives will now be briefly compared based on significant environmental consequences, mainly concentrating on the focus issues.

Wildlife Habitat and Wildlife Viability

The analysis of these issues in Chapter 3 includes both short-term and long-term considerations. Potential short-term effects focus on geographic areas within the Tongass that are currently experiencing, or may experience within the next decade, significant adverse effects due to losses of old-growth habitat, and where current levels of deer harvesting (hunting) may not be sustainable. Alternative 1 schedules no additional timber harvesting. Alternatives 3, 5, 6, 10 and 11 include old-growth reserve systems in all or most of the major geographic areas of concern, and Alternatives 4 and 5 would reduce potential effects by using extended timber harvest rotations. Alternatives 3, 4, 5 and 6 also maintain important deer winter range in areas where deer harvesting is high, to provide continued deer harvesting opportunities at current levels. Alternatives 2, 7 and 9 would be expected to exacerbate existing problems.

In the long-term, the ability of several alternatives to maintain habitats adequate to sustain well distributed viable wildlife populations Forest-wide is a concern, as suggested by the ratings from six wildlife species panel assessments. In these ratings the alternatives tended to cluster in groups, with Alternatives 1, 4 and 5 generally having the least risk to viability, and Alternatives 2, 7 and 9 the greatest risk. In terms of relative likelihoods of maintaining conditions in the future that would sustain well distributed viable populations, Alternatives 2, 7 and 9 rated lowest, Alternatives 3 and 6 somewhere in-between, and Alternatives 1, 4 and 5 highest. These relative ratings were fairly consistent between species overall, and the rankings (from low risk to high risk) very similar to those given by the old-growth ecosystem panel, and arrived at in other analyses.

Alternatives 10 and 11 were not rated by the panels. Alternative 10 is estimated to have a similar relative likelihood of maintaining habitat to sustain viable populations as Alternative 6. Alternative 11 is estimated to have a higher likelihood than Alternative 3, putting it closer to Alternatives 4 and 5.

Fish Habitat

Most alternatives include combinations of three "Riparian Options" designed to minimize to various degrees potential adverse effects to fish habitat. Alternative 11 uses a fourth option. Options 2 and 2A incorporate recommendations from the Anadromous Fish Habitat Assessment; Option 2A with somewhat lower risk than Option 2. Option 1 goes beyond these recommendations (lower risk), and Option 3 reflects the 1991 SDEIS proposals (higher risk). Alternative 3 applies Option 1 (the most protective) to key watersheds, and is the only alternative applying Option 2 to other watersheds. Alternative 11 applies Option 2A to all watersheds. Alternatives 1, 4, 5, 6 and 10 use Option 2 for key watersheds, Option 3 for the rest. Alternatives 2, 7 and 9 use either only Option 3 or only current direction (Alternative 9).

Beyond these riparian-area measures, risks to maintaining high-quality fish habitat come primarily from the amounts and methods of timber harvesting, and the associated amount of new roads constructed. These and other factors were considered by the Fish/Riparian panel. Their overall ranking of alternatives in terms of relative long-term risk to fish habitats Forest-wide, from lowest risk to highest, was: Alternatives 1, 5, 4, 3, 6, 2, 9 and 7. Alternative 10, not rated by the panel, is estimated to be similar in risk to Alternative 6. Alternative 11, also not rated, is estimated to fall somewhere between Alternatives 1 and 3.

Noticeable short-term effects to fish habitat are most likely to occur in watersheds where past and near-term future activities are concentrated. This is most likely in alternatives with the highest levels of permissible timber harvesting. These same alternatives project the greatest amounts of road construction over the next decade, and entry into more areas with steep slopes. Alternatives 2, 7 and 9 are distinctly higher in these categories, and also have the least-protective riparian measures. Alternative 1 has no additional timber harvesting or roads, and thus a very low risk. Alternatives 3, 4, 5, 6 and 10 all include at least Riparian Option 2 for key watersheds, helping to reduce short-term risks; Alternatives 6 and 10 have more timber harvest and roading and thus the higher risks within this group. Alternative 11, although projecting more timber harvest and roading than Alternatives 4 and 5, applies Riparian Option 2A to all watersheds and has a lower short-term risk than most alternatives in this group.

Karst and Caves

All alternatives comply with the Federal Cave Resources Protection Act in protecting designated significant caves. However, the cave resources of the Tongass are a part of an extensive limestone landscape type known as karst, which has complex relationships to water flows and forested lands. Fully protecting the cave resource requires a wider recognition of these karst areas. Special Karst and Caves Forest-wide standards and guidelines are applied in Alternatives 1, 3, 4, 5, 6, 10 and 11, and these alternatives are most likely to protect sensitive karst areas and the cave resource (still largely unexplored). Alternatives 2, 7 and 9 have less protection, and also greater amounts of timber harvesting, and pose a higher risk to karst areas and caves.

Timber Harvest and Alternatives to Clearcutting

Projected timber harvest levels, as inferred from the allowable sale quantities of the alternatives, range from 0 million board feet (MMBF) in Alternative 1 to 640 MMBF in Alternative 7. The allowable sale quantities are divided into two non-interchangeable components (NIC's) based on harvest economics and available technology. The NIC I portion is the amount considered likely to be economically viable over the next decade. It can be compared to the historic average harvest (340 MMBF per year average between 1980 and 1995 approximates NIC I, contrasted to an ASQ of 450 MMBF (net sawlog) for the same period). Alternatives 2, 7 and 9 have a NIC I sale quantity higher than this amount, and would be most likely to allow the timber industry in Southeast Alaska to operate at or above historic levels. Alternatives 6 and 10 are somewhat below this average, but probably have sufficient NIC I volumes to meet long-term timber sale contract requirements and supply a viable independent timber sale program. Alternatives 3 and 11 are marginal in this regard. Alternatives 4 and 5 would probably not provide sufficient volume to meet long-term contract requirements, but could supply a viable independent sale program in the absence of such a contract. Alternative 1 has no timber harvest scheduled.

Three alternative silvicultural systems were available as options for timber harvest in the forest plan alternatives: even-aged management (clearcutting), two-aged management, and uneven-aged management. Two harvest rotation ages were also available: an average 100-year rotation ("short" rotation), and an average 200-year rotation ("extended" rotation). The combination of even-aged management with 100-year rotations is the practice used currently, and forms the primary harvest system selected for Alternatives 2, 7, 9 and 11 (in 11 in combination with two-aged systems). Other combinations would be considered the "alternatives" to clearcutting. Two-aged systems are used in Alternatives 3, 4, 5, 6, 10 and 11; in

Alternatives 3, 6 and 10 using 100-year rotations, in Alternatives 4 and 5 using 200-year rotations, and in Alternative 11 in combination with even-aged systems and using 100-year rotations. The differences in acres scheduled for harvest and sale quantities among these combinations can be seen in Table 4.

Socioeconomic Considerations

The analysis of social and economic effects includes an examination of regional (Southeast Alaska) industry and employment impacts, and a more qualitative look at potential effects to each of Southeast Alaska's 30+ communities (including effects on the availability of subsistence resources). The regional analysis concluded that only two employment sectors - timber and recreation/tourism - would show direct or indirect effects from Tongass management over the next decade. There is a fairly direct, linear relationship between the Allowable Sale Quantity of an alternative and the timber jobs that would result from the harvest of that quantity - down to a certain point. For alternatives with sale quantities - either ASQ or the NIC I portion of ASQ - insufficient to keep a known mill operation in business, offering sales below that amount would not necessarily provide employment. Alternatives 7, 9 and 2 all have allowable sale quantities adequate to support an increase in Tongass timber-related employment over the next decade. Alternatives 6 and 10 show a slight decrease, and the other alternatives progressively more of a decrease (Alternative 3, followed by 11, 4 and 5, followed by 1).

Employment in the recreation and tourism sectors (considered together in the analysis) increases moderately, and about the same amount, under all alternatives during the first decade.

Recreation and Tourism

Table 4 displays first-decade annual Recreation Visitor Day capacity under the alternatives. The differences result from changes in Recreation Opportunity Spectrum classes, which will occur slowly over several decades, and thus appear relatively minor for the first decade. On a longer-term basis, Alternatives 7 and 9 would result in a greater shift towards the roaded types of opportunities than the other alternatives.

LUD group allocations (Table 5) are another way to generally identify recreation opportunities. Outside of Wilderness (which is the same for all alternatives), "roadless" recreation availability can be equated to acres within the Natural Setting LUD group. Alternative 1 has a considerably larger acreage in this category (10.8 million) than the other alternatives. Alternative 11 has over 7 million acres, Alternatives 3, 5, 6 and 10 all have over 6 million acres, and Alternatives 2 and 4 have 5.8 million. Alternatives 7 and 9 each have less than 5 million acres, with Alternative 7 the lowest at 3.2 million. "Roaded" recreation opportunities in the Moderate and Intensive Development groups are offered in the reverse of this order.

For the analysis of recreation and tourism, various types of "recreation places" - areas popular for specific types of recreation and for tourism - have been identified. In most cases, relatively undeveloped or natural settings for these places are preferred. Forest-wide, for all types of recreation places, Alternative 1 has the most recreation place acres in Natural Setting LUD's, followed by Alternatives 3, 10 and 11, then Alternatives 5 and 6, and then 2 and 4, all with fairly comparable recognition of recreation places. Alternatives 7 and 9 have the fewest recreation place acres in natural settings. Tourism recreation places are recognized in generally the same order and relative amount.

Scenery

Recognition of scenic quality through application of Visual Quality Objectives is indicated Forest-wide in Table 4. Outside of Wilderness, the Retention and Partial retention categories would be considered capable of maintaining natural or natural-appearing scenery. Acres in these combined categories are highest in Alternative 1. Alternatives 3, 6, 10 and 11 each have 7 million or more acres, closely followed by Alternatives 2, 4 and 5, then Alternative 9. Alternative 7 has considerably fewer acres in retention and partial retention objectives.

A list of "visual priority routes and use areas" has been developed to help recognize the areas most important for scenic values. Apart from Alternative 1 (which has essentially no future alterations affecting scenic quality), Alternatives 2-6, 10 and 11 all include the majority of these routes and areas either in natural setting LUD's, or in the Scenic Viewshed and Modified Landscape LUD's. Many are included in Alternative 9 in the LUD II and LUD III categories, but many are also allocated to LUD IV. Alternative 7 did not allocate LUD's based on these routes or areas, and did not use the Scenic Viewshed LUD.