Tongass National Forest
Land and Resource Management Plan

Forest Plan

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Tongass National Forest
Land And Resource Management Plan

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Chapter 1

Introduction

Purpose

The Forest Plan guides all natural resource management activities and establishes management standards and guidelines for the Tongass National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for different kinds of resource management.

The Forest Plan embodies the provisions of the National Forest Management Act, the implementing regulations, and other guiding documents. The multiple-use goals and objectives, and the Land Use Prescriptions and standards and guidelines, constitute a statement of the Forest Plan's management direction. However, the projected outputs and rates of implementation are dependent on the annual budget process and other factors.

This Forest Plan is a revision of the previous Tongass Land Management Plan, which was approved in 1979 and amended in 1986 and 1991. It entirely replaces the direction in the 1979 Plan, as of the effective date of this revised Plan.

Relationship to Other Documents

This Forest Plan sets forth in detail the direction for managing the land and resources of the Tongass National Forest. The Forest Plan is a result of extensive analysis, which is addressed in the accompanying Final Environmental Impact Statement (FEIS). The FEIS discusses the planning process and the analysis procedures used to develop the Forest Plan, describes and analyzes the alternatives considered in detail, and discusses how the public issues identified during the process helped shape these alternatives. Public issues were an integral part of developing the revised Forest Plan.

Specific activities and projects will be planned and implemented to carry out the direction in this Forest Plan. Schedules of some activities and projects are included in Appendix L. These are dynamic and may be updated frequently. The Forest will perform environmental analyses on most of these projects and activities. This subsequent environmental analysis will use the data and analysis in the Forest Plan and environmental impact statement. Environmental analysis of projects will be tiered to the Forest Plan FEIS.

All future plans and administrative activities will be based on the Forest Plan (or the Plan may be amended - see Chapter 5). Most existing resource management plans for the Tongass National Forest are already a part of, and consistent with, this revised Forest Plan. Several Wilderness Plans were developed since the 1979 Forest Plan. Direction in the existing approved Wilderness plans which is consistent with this Forest Plan is hereby incorporated. Prior approved plans include those for the Stikine-LeConte, Admiralty (Kootznoowoo), South Baranof, Endicott River, and Tracy Arm-Fords Terror Wildernesses. Further direction for Wilderness management is contained in the Regional Supplement to Forest Service Manual 2320. Off-Highway Vehicle (OHV) plans are developed on an as-needed basis. The Forest is designated open to OHV's unless site-specific closures are made. The Off-Road Vehicle Management Plan for the Juneau Area (Juneau Ranger District, November 1985) is incorporated here by reference. The

Mendenhall Glacier Recreation Area Management Plan (1996) is also incorporated by reference.

Plan Organization

What is Forest Planning? Let's compare it to something that is familiar: land use zoning for a community. In a community, certain areas are zoned for commercial uses (stores), industrial uses (factories), and residential areas (where homes may be built). Each of these "zones" has certain uses that may occur there, and others that may not. Many different uses may apply to the same zone. Some zoning requirements may apply only to specific areas of a zone.

In Forest Planning, we call the zoning process *"allocation or land allocation."* Certain areas of the Forest are allocated (zoned) to *Land Use Designations* for different uses. The description of the uses to which the land may be put and the activities which may occur there is called a *management prescription*. Each management prescription gives general direction on what may occur within the area allocated to the corresponding Land Use Designation, the standards for accomplishing each activity, and the guidelines on how to go about accomplishing the standards. These are called the "*Land Use Designation Standards and Guidelines*." Some of these standards and guidelines may be common to many areas of the Forest. These are called *Forest-wide Standards & Guidelines*.

Standards and guidelines are designed so that all activities are integrated to meet land allocation objectives. Standards and guidelines represent minimum achievement levels, but do not limit achievements: higher objectives may always be attained. For instance, if a land use prescription allows activities to visually dominate the landscape (*Visual Quality Objective: Modification*), then activities which do not visually dominate are always acceptable (*Visual Quality Objectives: Retention* and *Partial retention*). Standards and guidelines are also intended to be used in conjunction with National and Regional policies, standards and guidelines contained in Forest Service manuals and handbooks, and the Alaska Regional Guide.

The locations of Land Use Designation boundaries (as indicated on the Forest Plan map) are approximate due to the map scale used, and the programmatic nature of the allocations. Some boundary adjustments may be necessary as specific projects are implemented under the Forest Plan. These adjustments will normally be made through insignificant Forest Plan amendments.

The Forest Plan is organized into several chapters. Following this introduction, Chapter 1 explains the components of Forest Plan management direction, and the priority amongst this direction, gives a brief description of the Tongass, and summarizes the current management situation. Chapters 2, 3 and 4 present the major components of management direction for the Forest. These are described below.

Chapter 5 discusses Forest Plan implementation, and the process used to amend or revise a Forest Plan. Chapter 6 is the monitoring and evaluation plan. Chapter 7 is a glossary.

Several appendices are also included, including the timber suitability determination (Appendix A) and a discussion of research and information needs (Appendix B).

A discussion of how the Forest Plan revision process addressed the public issues, and the management concerns ("need for change"), is included in Chapter 2 of the FEIS.

Forest Plan Management Direction

Chapters 2, 3 and 4 of the Forest Plan present the majority of the direction for managing the Tongass National Forest. The management direction of this plan conforms with applicable laws, regulations, policies, and the Alaska Regional Guide. The Monitoring and Evaluation Plan (Chapter 6), and the determination of Timber Resource Land Suitability (Appendix A), also provide important direction.

The primary management direction for the Forest consists of the following integrated components:

Forest Multiple-Use Goals (Chapter 2) - The multiple-use and other goals established during the planning process to guide Forest management.

Forest Management Objectives (Chapter 2) - These include narrative objectives for specific resources and the levels of goods and services (resource outputs) that are anticipated during the first decade of Forest Plan implementation.

Management prescriptions (Chapter 3) - Each Land Use Designation has a management prescription. Each prescription includes goals, objectives, and a desired future condition, and management practices, standards, and guidelines by resource. The geographic areas allocated to each Land Use Designation for the Forest Plan are displayed on the Forest Plan map.

Forest-wide Standards and Guidelines (Chapter 4) - These are the standards and guidelines that apply to all, or most, areas of the Forest. Each management prescription includes a list of those that apply to that Land Use Designation.

Together, these components of Forest direction, along with the Land Use Designation map, establish a management framework that governs the location, design, and scheduling of all Forest management activities. Within the management framework, project-level planning is undertaken to achieve Forest Plan implementation.

Priority of Direction

Every effort has been made to achieve consistency between the components of management direction just described, and between Forest Plan direction and higher-level direction (e.g., law). However, conflicting or contradictory direction is still possible. If a conflict or discrepancy between direction should occur, the following priority among direction will apply:

1. Higher-level direction.

2. Within the components of Forest Plan management direction, the management prescription standards and guidelines for each Land Use Designation take precedence over the Forest-wide Standards and Guidelines applied to that same designation, should any conflicts occur. Any summaries of these standards and guidelines (such as in the map legends) are not considered direction.

3. For all projects and activities considered, the standards and guidelines for each management prescription will be used, regardless of the levels of outputs or numbers of projects achieved, and regardless of actual budget allocations. Standards, which can usually be identified by words such as

"must" or "will," are mandatory requirements or minimums which must be met. Project-level analysis may determine that additional requirements beyond these minimum are necessary. Guidelines, the majority of the direction, are not absolute requirements, but ways of achieving the standards or meeting other needs of the resource.

One purpose of monitoring and evaluation (see Chapter 6) is to assure that management direction is being carried out, and that the outputs and schedules are being achieved. If monitoring shows continued conflicts or problems in implementing the management direction, then a Forest Plan amendment may be necessary.

Forest Location and Description

The 17-million acre Tongass National Forest is located in Southeast Alaska, a part of the Alexander Archipelago, and encompasses about seven percent of the State's total land area. The Tongass extends from Dixon Entrance in the south to Yakutat in the North, and is bordered on the east by Canada and on the west by the Gulf of Alaska. It extends approximately 500 miles north to south, and approximately 120 miles east to west at its widest point. Figure 1-1 is a vicinity map of the Tongass.

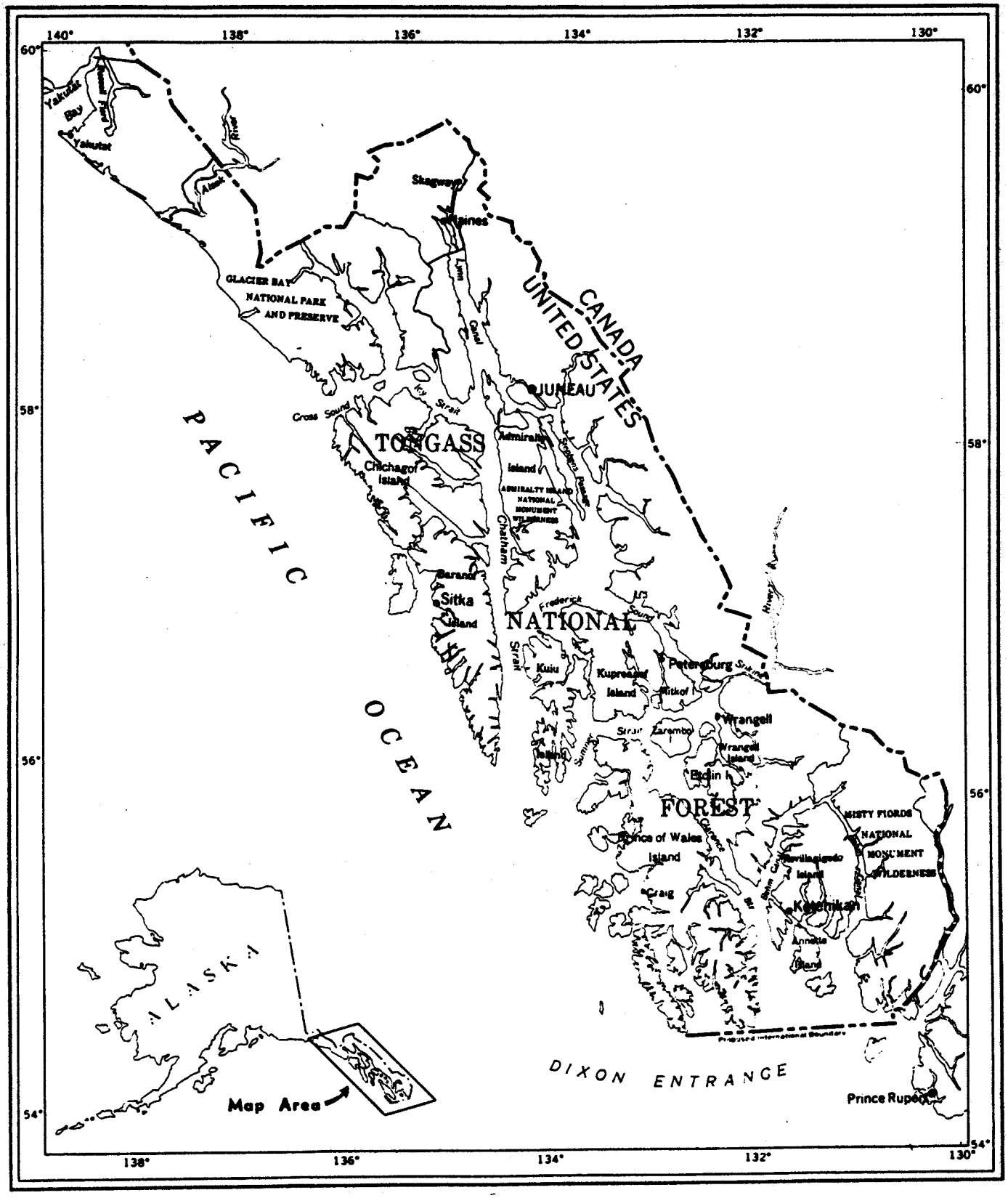
The Tongass includes a narrow mainland strip of steep, rugged mountains and icefields, and over 1,000 offshore islands. Together, the islands and mainland equal nearly 11,000 miles of meandering shoreline, with numerous bays and coves. A system of seaways separate the many islands and provides a protected waterway called the Inside Passage. Federal lands comprise about 95 percent of Southeast Alaska, with about 80 percent in the Tongass National Forest (and most of the rest in Glacier Bay National Park and Preserve). The remaining land is held in State, Native and local community private ownerships.

Most of the area of the Tongass is wild and undeveloped. About 70,000 people inhabit Southeast Alaska, most living in 33 communities located on island or mainland coasts. Only eight of the communities have populations greater than 1,000 persons. Most of these communities are surrounded by, or adjacent to, National Forest land. Just three towns are connected to other parts of the mainland by road: Haines and Skagway to the north, and Hyder to the south.

The economies of Southeast Alaska's communities are largely dependent on the Tongass National Forest to provide natural resources for uses such as fishing, timber harvesting, recreation, tourism, mining and subsistence. Maintaining the abundant natural resources of the Forest while also providing opportunities for their use is a major concern of Southeast Alaska residents.

Because of its immense size, the Tongass National Forest is divided into three Administrative Areas, each with its own Forest Supervisor: the Chatham Area with its Supervisor's Office at Sitka, the Stikine Area with its Supervisor's Office at Petersburg, and the Ketchikan Area with its Supervisor's Office in Ketchikan. There are nine Ranger Districts, with offices in Yakutat, Juneau, Hoonah, Sitka, Petersburg, Wrangell, Thorne Bay, Craig, and Ketchikan. There are also two National Monuments, Admiralty Island and Misty Fiords, with offices in Juneau and Ketchikan.

Figure 1-1
Tongass National Forest Vicinity Map



Summary of the "AMS"

The supply and demand conditions for major resources of the Forest was evaluated during the "analysis of the management situation" (AMS) in 1988 and 1989, and reevaluated after passage of the Tongass Timber Reform Act (TTRA) (November 1990. The maximum potentials for supplying selected major resources, the actual supplies available under the previous (1979, as amended) Forest Plan, and the anticipated demands for these resources, were determined. These resources are timber (first-decade timber harvest), fish (anadromous fish), recreation, wildlife (old-growth habitat), and wilderness (potential from existing unroaded areas). Chapter 3 of the FEIS presents an in-depth evaluation of supply and demand for these and other resources, and also discusses opportunities for the use and development of resources. Following is a brief summary.

Supply

Resource potential (supply) is a general indication of how much of a particular resource might be available. The maximum resource supply potentials, subject only to meeting resource protection requirements, were determined for each resource separately (since they could not all be achieved simultaneously).

a. A maximum first-decade average annual timber harvest level of approximately 700 million board feet.
b. A commercial fish habitat capability increased to about 115 million pounds per year during the first decade.
c. A recreation capacity (including tourism) of about 4.9 million Recreation Visitor Days annually.
d. A maximum of 8.7 million acres of old-growth forest retained.
e. A maximum of 9.45 million acres of unroaded lands that could be designated as wilderness.

The production potentials for these same resources under the previous plan (after TTRA) were:

a. A maximum average annual timber harvest level of 450 million board feet.
b. A commercial fish habitat capability of about 115 million pounds per year.
c. A recreation capacity (including tourism) of 4.9 million Recreation Visitor Days annually.
d. A maximum of 8.7 million acres of old-growth forest that could be retained.
e. A maximum of 9.45 million acres of unroaded lands that could be designated as wilderness.

Demand

Projections of resource demand give an indication of how much of a resource might be needed or desired. A few key points are summarized here.

a. Fish - The demand for commercial fish (about 95 percent of total demand) is expected to generally exceed current potentials for all species.
b. Recreation - Recreation use, including tourism, is predicted to increase over the next decade, but will remain well below the Forest's current capacity of 4.9 million Recreation Visitor Days.
c. Wildlife - Hunting demand for old-growth-related game species is expected to increase over the next decade.
d. Timber - Market demand is expected to be lower than in the previous planning period, particularly during the first part of the planning period as

the timber industry adjusts to the closure of the pulp mills in Southeast Alaska.

e. Wilderness - Additional Wilderness was considered during debate on the Tongass Timber Reform Act, which added 0.3 million acres of Wilderness to the Tongass (for a total of 5.8 million acres). No additional Wilderness needs are anticipated for the next decade.

Use and Development Opportunities

a. Fish - Opportunities to increase anadromous fish production through habitat improvement (both rehabilitation and enhancement) exist throughout the Forest.
b. Recreation - Opportunities to increase roaded recreation and tourism use, and access to both developed and dispersed recreation areas, exist primarily in areas with suitable and available timber lands. Opportunities to provide for unroaded recreation and tourism through non-timber designations exist in the 9.45 million acres of unroaded lands outside Wilderness. Opportunities to increase semi-primitive motorized uses are limited. There are many opportunities for developing new recreation facilities or improving existing ones.
c. Wildlife - Opportunities to improve wildlife habitat associated with old-growth forests are limited to the management of second-growth timber to achieve old-growth characteristics. Opportunities to maintain existing old-growth forest exist on approximately 8.7 million acres.
d. Timber - Opportunities for the management of the timber resource for wood production are limited to the 2.4 million acres of suitable and available timber lands outside Wilderness or other legislated areas. Opportunities to increase wood production on these lands through thinnings or related practices are limited, since nearly all the suitable forest land is currently in an old-growth condition. Future production may increase where second-growth is managed for periodic harvests.
e. Wilderness - Additional Wilderness for the Tongass could be designated from the 9.45 million acres of currently unroaded land outside Wilderness.

Chapter 2

Goals and Objectives

Introduction

The management direction for the Forest is described under the section titled "Forest Plan Management Direction" in Chapter 1. This chapter presents the Plan's desired conditions for the Forest and the Forest-wide goals and objectives. Achievement of the goals and objectives is subject to all applicable management standards and guidelines, as are presented in Chapters 3 and 4, and will be strongly influenced by annual budget direction and fiscal limitations.

Forest Desired Conditions

Desired landscape attributes describe the mosaic of land and resource conditions envisioned for the Forest in the future. They are attained through Forest-wide multiple-use goals and objectives, and through the cumulative achievement of the goals, objectives, and desired conditions for each of the 19 individual Land Use Designations (LUD's) described in Chapter 3. Desired landscape attributes include:

- The Forest is managed to produce desired resource values, products, services, and conditions in ways that also sustain the diversity and productivity of ecosystems.
- The Forest is characterized by extensive, unmodified natural environments. Old growth is the predominant vegetative structure on the Tongass. Large areas of previously harvested young-growth is trending towards mature, old-growth forest conditions. Connections between patches of old-growth are evident. On those portions of the Forest available for harvest activities, stands contain a variety of tree ages ranging from 0 to 300+ years. Some stands contain trees of uniform height and sizes, while other stands contain a variety of sizes and heights. Endemic levels of insect and disease perform their natural role in the ecosystem.
- Viable populations of native and desired non-native species and their habitat are maintained. There are no threatened or endangered species on the Forest.
- Opportunities for hunting, trapping, and viewing game species are being provided. World class wildlife resources such as brown bears, wolves and eagles, considered threatened or endangered in the lower 48 states, are relatively abundant and available for human use and enjoyment.
- Overall aquatic habitat quality is considered good to excellent. Fish thrive in the Forest's lakes and streams due to good water quality and other habitat features, and provide world class fisheries.
- Rural residents have opportunities to participate in subsistence activities and to harvest subsistence resources.
- The outstanding scenery of the Forest is a major attraction for visitors; a full range of recreation opportunities are present. In some cases, scenic values from certain travel routes, trails, high vista points or aerial observations are affected by timber harvest or mining activities. Users have the opportunity to experience independence, closeness to nature, solitude and remoteness.

- Occasional natural catastrophic events occur; however, the improved condition of watersheds and riparian areas, and careful design and location of roads, minimize resource degradation due to such events.

Forest-wide Multiple-use Goals and Objectives

Forest plan goals are responsive to identified public issues and resource use opportunities, and collectively describe the desired conditions sought to be attained in the long run. Consistent with the NFMA planning regulations, goals are expressed in broad, general terms and specify no date by which they are to be accomplished. Complementary goals are listed under the Management prescriptions in Chapter 3 for each Land Use Designation. Taken and considered together, goals represent management from an "ecosystem" perspective, where ecosystems are considered from the "site" to the "Forest" level.

Goals are achieved through the allocations of lands to the set of Land Use Designations (LUD's), through implementation of the Standards and Guidelines specified for the LUD's, and through other activities conducted on the Forest. The management objectives are expected to be achieved during the 10-15 year life of this Plan to help accomplish Plan goals. Additional objectives to help accomplish the goals are listed under the Management prescriptions presented in Chapter 3, and in the Resource Schedules contained in Appendix L.

Resource	*Goal*	*Objective*
Air	Maintain the current air resource condition to protect the Forest's ecosystems from on- and off-Forest air emission sources.	Attain national and state ambient air quality standards forest-wide.
Biodiversity	Maintain healthy forest ecosystems; maintain a mix of habitats at different spatial scales (i.e., site, watershed, island, province and forest) capable of supporting the full range of naturally occurring flora, fauna, and ecological processes native to Southeast Alaska.	Maintain a Forest-wide system of old-growth forest habitat (includes reserves, non-development LUD's, and beach, estuary and riparian corridors) to sustain old-growth associated species and resources. a) Ensure that the reserve system meets the minimum size, spacing and composition criteria described in Appendix K. b) Provide sufficient habitat to preclude the need for listing species under the Endangered Species Act due to National Forest habitat conditions.
Fish	Maintain or restore the natural range and frequency of aquatic habitat conditions on the Tongass National Forest to sustain the diversity and production of fish and other freshwater organisms.	Use baseline fish habitat objectives (identified in Fish Forest-wide Standards & Guidelines) to evaluate the relative health or condition of riparian and aquatic habitat. Design and implement an average of 16 fish habitat improvement projects annually across the Forest.

Resource	*Goal*	*Objective*
Heritage Resources	Identify, evaluate, preserve, and protect heritage resources.	Protect heritage resources (as described in the Heritage Resources Forest-wide Standards & Guidelines).
Karst & Cave Resources	Maintain and protect significant caves and karst ecosystems Forest-wide.	Allow for the continuation of natural karst processes. Maintain the productivity of the karst landscape while providing for other lands uses where appropriate. Manage lands in a manner which protects significant caves (see Appendix I) and their associated resources.
Local and Regional Economies	Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.	Work with local communities to identify rural community assistance opportunities and provide technical assistance in their implementation. Support a wide range of natural-resource employment opportunities within Southeast Alaska's communities.
Minerals and Geology	Provide for environmentally sound mineral exploration, development, and reclamation in areas open to mineral entry and in areas with valid existing rights that are otherwise closed to mineral entry. Seek withdrawal of specific locations where mineral development may not meet Land Use Designation objectives.	Implement the Minerals and Geology Forest-wide Standards & Guidelines.
Recreation & Tourism	Provide a range of recreation opportunities consistent with public demand, emphasizing locally popular recreation places and those important to the tourism industry.	Manage the Forest's recreation settings in accordance with the Recreation Opportunity Spectrum (ROS) standards and guidelines for each Land Use Designation. Construct or reconstruct at least an average of 7 miles of hiking trails per year. Construct or reconstruct enough developed recreation sites to annually increase or improve the developed site capacity for 190 People At One Time (PAOT's), on average.
Research	Continue to seek out and promote research opportunities that are consistent with identified information needs.	Cooperate with PNW in pursuing the high priority information needs identified in Appendix B, through the intra-agency agreement entitled "Joint Studies for Improved Future Tongass National Forest Planning" and other means.

Resource	*Goal*	*Objective*
Scenery	Provide Forest visitors with visually appealing scenery, with emphasis on areas seen along the Alaska Marine Highway, State highways, major Forest roads, and from popular recreation places; recognize that in other areas where landscapes are altered by management activities, the activity may visually dominate the characteristic landscape.	Manage the scenery of the Forest in order to achieve the following Visual Quality Objectives on the following acreage (lying outside of established Wildernesses) (in millions of acres): Retention 4.8 Partial retention 3.2 Modification 0.4 Max. Modification 2.8
Soil and Water	Maintain soil productivity Forest-wide and minimize soil erosion resulting from land-disturbing activities. Minimize sediment transported to streams from land-disturbing activities. Maintain and restore the biological, physical, and chemical integrity of Tongass National Forest waters.	Meet Alaska Regional soil quality standards. Attain State of Alaska water quality standards forest-wide. Perform watershed restoration projects in at least two large watersheds (over a ten-year period). Perform an average of 3 single-year-type watershed improvement projects annually across the Forest.
Subsistence	Provide for the continuation of subsistence uses and resources by all rural Alaskan residents.	Evaluate and consider the needs of subsistence users in making project land management decisions.
Timber	Manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner.	Pre-commercial thin an average of 2,130 acres annually of previously harvested suitable timber land. Evaluate non-clearcutting silvicultural systems (see Priority Research Needs in Appendix B). Conduct a systematic inventory of all vegetation for Southeast Alaska by completing the installation and measurement of the permanent plot inventory grid. Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle, up to a ceiling of this Plan's allowable sale quantity, which is 653 million CF or 2.67 billion BF per decade.

Resource	*Goal*	*Objective*
Transportation	Develop and manage roads and utility systems to support resource management activities; recognize the potential for future development of major Transportation and Utility Systems.	Provide access for forest users. In support of forest resource management activities, design and construct up to an average of 110 miles of roads annually. Manage and maintain roads to protect water, soil, fish, and wildlife resources.
Wetlands	Minimize the destruction, loss or degradation of wetlands, and preserve and enhance wetland functions and values.	Avoid alteration of, or new construction on wetlands, wherever there is a practicable, environmentally preferred alternative. Implement best management practices (BMP's) and estuary, riparian, soil, and water standards and guidelines specific to wetlands.
Wild and Scenic Rivers	Maintain the outstandingly remarkable values and the free flowing conditions of rivers designated or recommended for designation as components of the National Wild and Scenic Rivers System.	Manage the 32 rivers (or segments) recommended for designation as Wild, Scenic and Recreational (see Appendix E), pending designation by Congress, to maintain the eligibility of the total miles of river for the following recommended classifications: Wild 364.5 miles Scenic 87.5 miles Recreational 89.0 miles
Wilderness	Manage designated Wilderness to maintain an enduring wilderness resource while providing for public access and uses consistent with the Wilderness Act of 1964 and the Alaska National Interest Lands Conservation Act of 1980 (ANILCA).	In Wilderness, manage for the adopted ROS class. Where ROS has not been adopted, manage for no greater development than semi-primitive motorized (with certain localized exceptions due to the effects of activities outside wilderness and ANILCA exceptions).
Wildlife	Maintain the abundance and distribution of habitats, especially old-growth forests, to sustain viable populations in the planning area. Maintain habitat capability sufficient to produce wildlife populations that support the use of wildlife resources for sport, subsistence, and recreational activities.	See biodiversity objectives. Design and implement non-structural wildlife habitat improvement projects to improve an average of 8,000 acres annually across the Forest. Include a young-growth management program to maintain, prolong, and/or improve understory forage production and to increase future old growth characteristics in young-growth timber stands for wildlife (e.g., deer, moose, black bear, and other species). Design and implement an average of 75 structural wildlife habitat improvement projects annually across the Forest.

Chapter 3

Management Prescriptions

Introduction

Chapters 2, 3 and 4 of the Forest Plan present the direction for managing the Tongass National Forest. The components and priority of this direction are explained in Chapter 1. This chapter includes the complete management prescription for each of the 19 Land Use Designations used in the Forest Plan. The areas allocated to each Land Use Designation are shown on the Forest Plan map (and also the Alternative 11 map in the FEIS map packet).

To use this management prescription section, first find the area of the Forest you are interested in on the map. The map legend shows the name and corresponding color of each Land Use Designation. Then locate the management prescription for that designation (they have the same name) in the table of contents of this Plan.

Each management prescription has the following components:

1. Goals, objectives and desired condition.

2. *A table which refers, by resource, to the Forest-wide Standards & Guidelines* that apply. The Forest-wide Standards & Guidelines are included in Chapter 4. If a reference is not made in this table to a specific Forest-wide Standard & Guideline, then that Standard & Guideline is not applicable.

3. *The specific direction, called Land Use Designation Standards & Guidelines*. The Land Use Designation Standards & Guidelines are grouped by resource, following the order established for the Forest-wide Standards & Guidelines. Resource codes are the same for both sets of standards and guidelines. Some resources are not included in the Land Use Designation Standards & Guidelines; in that case, resource direction entirely defaults to the table as described above (#2).

Land Use Designation Acreage

The following table shows the number of acres allocated to each of the 19 Land Use Designations (LUD's). However, in some cases, more than one LUD can be applied to the same area (such as a Special Interest Area within Wilderness) therefore, totaling the acres will exceed the total National Forest acreage. For LUD's that allow timber harvest (e.g., Timber production), many of the acres are unsuitable for commercial timber production. Table A-1 in Appendix A shows the actual number of suitable acres on the Forest.

Land Use Designation Allocations[1]

Land Use Designation	Acres Allocated
Wilderness	2,622,913
Wilderness National Monument	3,098,820
Nonwilderness National Monument	163,654
Research Natural Area	59,545
Special Interest Area	297,173
Remote Recreation	2,129,169
Enacted Municipal Watershed	45,776
Old-growth Habitat	1,131,059
Semi-remote Recreation	2,941,350
Land Use Designation II	719,000
Wild River	129,650
Scenic River	36,460
Recreational River	36,470
Experimental Forest	17,260
Scenic Viewshed	496,613
Modified Landscape	622,387
Timber production	2,580,821
Minerals	166,215

[1] In this table, the total area within each LUD is included. However, in some cases, more than one Land Use Designation can be applied to the same area (such as a Special Interest Area within Wilderness). Therefore, totaling the acres of the LUD's will exceed the total National Forest acreage. No acreage has been calculated for the Transportation and Utility Systems LUD.

Special Designations or Classifications

The following listing shows, by name, the areas of the Forest identified as Congressionally designated Wilderness and LUD II's; Wild, Scenic and Recreational Rivers (recommended); Research Natural Areas; Special Interest Areas; and Experimental Forests.

Congressionally designated Wilderness and LUD II's

Wilderness established December 2, 1980 by ANILCA

Kootznoowoo Wilderness (Admiralty Island Nat. Monument)
Coronation Island Wilderness
Endicott River Wilderness
Maurelle Islands Wilderness
Misty Fiords National Monument Wilderness
Petersburg Creek-Duncan Salt Chuck Wilderness
Russell Fiord Wilderness
South Baranof Wilderness
South Prince of Wales Wilderness
Stikine-LeConte Wilderness
Tebenkof Bay Wilderness
Tracy Arm-Fords Terror Wilderness
Warren Island Wilderness
West Chichagof-Yakobi Wilderness

Wilderness established November 28, 1990 by TTRA

Chuck River Wilderness
Karta Wilderness
Kuiu Wilderness
Pleasant-Lemesurier-Inian Islands Wilderness
South Etolin Wilderness
Young Lake Addition to Kootznoowoo Wilderness

LUD II's established November 28, 1990 by TTRA

Anan Creek
Berners Bay
Kadashan
Lisianski River/Upper Hoonah Sound
Mt. Calder/Mt. Holbrook
Naha
Nutkwa
Outside Islands
Point Adolphus/Mud Bay
Salmon Bay
Trap Bay
Yakutat Forelands

Wild, Scenic and Recreational Rivers

The following rivers or river segments, as described in Appendix E of the FEIS for Alternative 11, including the segment classifications, will be recommended to Congress for inclusion in the National Wild and Scenic Rivers System:

Aaron, Oerns and Berg Creeks
Anan Creek
Blind River
Blue River
Chickamin River
Essowah Lakes and Streams
Fall Dog Creek
Farragut River
Gilkey River
Glacial River
Gokachin, Mirror, Fish, and Low Creeks
Harding River
Hasselborg River
Kadake Creek
Kadashan River
Kah Sheets Creek and Lake
Katzehin River
Kegan Lake and Streams
King Salmon River
Kutlaku Creek and Lake
LeConte Glacier
Lisianski River
Niblack Lakes and Streams
Naha River
Orchard Creek and Lake
Petersburg Creek
Salmon Bay Lake and Stream

Santa Anna Creek and Lake Helen
Sarkar Lakes
Thorne River and Hatchery Creek
Virginia Lake and Creek
Wolverine Creek and McDonald Lake

Research Natural Areas

The following will continue to be managed as established Research Natural Areas:

Cape Fanshaw Research Natural Area
Dog Island Research Natural Area
Limestone Inlet Research Natural Area
Old Tom Creek Research Natural Area
Red River Research Natural Area

The existing Pack Creek Research Natural Area is recommended to the Chief, Forest Service for declassification as a Research Natural Area.

The following areas, as described in Appendix D of the FEIS, will be recommended to the Chief, Forest Service for classification as Research Natural Areas, after confirmation in the Establishment Report of the site's suitability for designation:

Kadin Island
Marten River
Rio Roberts
Robinson Lake
Tonalite Creek
Warm Pass
West Gambier Bay

Special Interest Areas

The following areas will continue under a Special Interest Area classification:

Admiralty Lakes Recreation Area
Hubbard Glacier Geological Area
Mendenhall Glacier Recreation Area
New Eddystone Rock Geological Area
Tracy Arm-Fords Terror Scenic Area
Walker Cove-Rudyerd Bay Scenic Area
Ward Lake Recreation Area

The following areas, as described in Appendix F of the FEIS, are classified as Special Interest Areas and designated as named below:

Arena Cove/Cape Felix Geological Area
Bailey Bay Hot Springs Recreation Area
Blind Slough Scenic and Zoological Area
Blue River Lava Flow Geological Area
Clear River Zoological Area
Duke Island Zoological Area
Falls Creek Windthrow Botanical Area
Fish Creek Hot Springs Recreation Area
Karst Areas Geological Area
Keku Islets Geological and Scenic Area

Mount Edgecumbe Geological Area
North Hamilton River Redcedar Cultural and Botanical Area
Patterson Glacier Geological and Botanical Area
Pike Lakes Recreation Area
Soda Springs Geological Area
Ward Lake Recreation Area (expansion)

The Pack Creek Research Natural Area, upon declassification as a Research Natural Area by the Chief, Forest Service, will be designated the Pack Creek Zoological Area.

Experimental Forests

The following will continue to be managed as Experimental Forests:

Maybeso Experimental Forest
Young Bay Experimental Forest

WILDERNESS

Land Use Designation WW

Goals

To manage all designated Wilderness to maintain an enduring wilderness resource while providing for public access and uses consistent with the Wilderness Act of 1964 and the Alaska National Interest Lands Conservation Act of 1980 (ANILCA).

To protect and perpetuate natural biophysical and ecological conditions and processes.

To provide a high degree of remoteness from the sights and sounds of humans, and opportunities for solitude and primitive recreation activities consistent with wilderness preservation.

Objectives

Manage recreation activities to meet the appropriate levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the adopted or existing Recreation Opportunity Spectrum, as appropriate.

Provide for public use of the Wilderness in accordance with ANILCA provisions for motorized and non-motorized access and travel, including reasonable traditional subsistence use by rural residents.

Provide trails and primitive facilities that are in harmony with the natural environment and that promote primitive and semi-primitive recreation experiences.

Desired Condition

All designated Wilderness on the Tongass National Forest is characterized by extensive, unmodified natural environments. Ecological processes and natural conditions are not measurably affected by past or current human uses or activities. Users have the opportunity to experience independence, closeness to nature, solitude and remoteness, and may pursue activities requiring self-reliance, challenge and risk. Motorized and mechanized use is limited to the minimum needed for the administration of the wilderness, access to state and private lands, subsistence uses, and for public access and other uses specifically allowed by ANILCA.

Wilderness Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I	4-4
Facilities	FAC	All	4-6
Fire	FIRE12	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH1	I(B:1;C)	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST CAVE	I-III All	4-18
Lands	LAND11,123,23,24,26 LAND122 LAND25	All I(A:1-13),VII,IX I(A)	4-21
Minerals And Geology	MG11 MG12	All I,III,IV,VI,VII	4-32
Recreation And Tourism	REC111 REC112 REC122	All I,II(A),III I,II,III(B),IV-VII	4-34
Riparian	RIP1 RIP2	All I,II(A-E)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1 VIS11 VIS12	All I,II(A,E) I(B,D),II	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4,B-F),II	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1 TIM114	All VIII(D)	4-93
Trail	TRAI1 TRAI2	I(A-E;F:1,3,5,6) All	4-100
Transportation	TRAN	None	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD22	I-V; VI(A,B,C,E); VII; VIII; IX(A:1-3,5-8,11,B); X; XI(A:1); XII-XIV; XVI(A:1) I(A:1,B)	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Administrative Facilities: FAC2

A. Construct no new permanent administrative facilities in Wilderness, except as consistent with ANILCA, Sections 1303, 1306, 1310, and 1315.

B. Allow the continued operation and maintenance of permanent administrative facilities for which there is an ongoing need (ANILCA, Section 1306 (b)).
   1. When reconstruction of existing permanent administrative structures is necessary, reconstruct or replace them with structures of compatible design.
   2. During reconstruction and maintenance activities:
      * Paint or stain structure to blend with the environment.
      * Keep clearing of vegetation to the minimum feasible.
      * Select materials that are natural in appearance.

C. Allow temporary facilities and crew barges for administration seasonally.
   1. Temporary administrative camps used by wilderness rangers, trail crews, or for other administrative activities should avoid areas used for camping by the general public and should be screened from view.
   2. Temporary administrative camps may remain in place only during periods required for the administrative activity. All equipment and materials will be removed or collapsed and laid flat at the end of the field season or during other extended periods of non-use.
   3. Temporary camps will seek to achieve minimum impact on the land. There will be no permanent foundations or anchors, and only minimal clearing of vegetation at campsites.
   4. Crew barges should be located in unobtrusive locations. They may be periodically moved and relocated to support administrative needs.

D. Allow administrative use of public cabins and shelters in wilderness. Scheduling should avoid conflict with public use.

E. Allow radio repeaters when necessary to provide essential communications for the health and safety of people involved in the administration of the area. Allow permanent radio repeaters currently located in Wilderness to remain.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics resulting in the least possible disturbance or evidence of human presence.
   1. Use of mechanized equipment requires approval by the Forest Service officer with delegated authority.
   2. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
   3. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, but within one year after the fire occurs.

Fuel Improvements: FIRE2

Prescribed fire

A. As a general management practice, do not use management-ignited prescribed fire. Should it become necessary to consider the use of management-ignited prescribed fire, FSM 2324 provides direction.

B. As a general management practice, do not use prescribed natural fire because there is not a history of natural ignitions in Tongass Wildernesses. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

Planning

A. Plan for fisheries in Wilderness consistent with ANILCA, Section 1315(b) which recognizes the goal of restoring and maintaining fish production in the State of Alaska to optimum sustained yield levels and in a manner which adequately assures protection, preservation, enhancement, and rehabilitation of the wilderness resource. Subject to reasonable regulations, permanent improvements and facilities such as fishways, fish weirs, fish ladders, fish hatcheries, spawning channels, stream clearance, egg planting, and other accepted means of maintaining, enhancing, and rehabilitating fish stocks may be permitted. For this purpose, optimum sustained yield levels will be considered synonymous with the long-term harvest goals documented in the State of Alaska Comprehensive Salmon Plans and other state fisheries plans. Consult R-10 supplements to FSM 2632 and FSM 2320 for further details.

B. Determine the need for wilderness aquaculture projects (as described in ANILCA, Section 1315(b)) on a broad basis that includes the potential of private, state, and Federal nonwilderness projects.

C. Evaluate fish habitat improvement during project planning by considering: 1) availability of suitable non-wilderness opportunities which should be used first; 2) effects on wilderness conditions, in general; 3) effects resulting from the introduction of species not indigenous to the watershed; 4) the appropriateness of structures both in type and scale to the Recreation Opportunity Spectrum Class (ROS) setting; and 5) the need to provide well-distributed fisheries that support sport and commercial fisheries, subsistence, and community stability.

D. In planning, stress protection of fish habitat to prevent the need for mitigation.

Fish Habitat Improvement: FISH22

A. Construct facilities in a rustic manner to blend into the natural character of the area and limit facilities to those essential to the project (ANILCA, 1315(b)).

B. Permit reasonable access, including the temporary use of motorized equipment, subject to reasonable regulation to maintain the wilderness character, water quality, and fish and wildlife values of the area.

FOREST HEALTH

Forest health Management: HEALTH1

A. Allow natural occurrences to play their normal role in ecological succession.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Enhancement

A. Heritage Resources are available for scientific study to the extent that the study is consistent with: 1) the preservation of Wilderness; 2) the intent of the Wilderness Act; and, 3) heritage resource management objectives.

B. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses, consistent with management of Wilderness.

1. Provide interpretive information concerning Heritage Resources to users in the form of exhibits and publications outside of the wilderness.

Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, and protection within the Wilderness.

1. Identify heritage properties to be nominated to the National Register of Historic Places.
2. Identify, classify, and evaluate known Heritage Resources.
3. Identify heritage properties that require stabilization or other protective measures.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation will generally occur outside this Land Use Designation.

B. Manage caves as Class 1 (Sensitive) or Class 3 (Undeveloped) as described in the Karst and Cave Resources Forest-wide Standards & Guidelines.

LANDS

Special Use Administration (non-recreation): LAND122

A. Authorize only activities which are consistent with the Wilderness Act or specifically allowed by ANILCA and are otherwise in compliance with management direction of this plan. (Consult FSM 2700, FSM 2320, and Regional Supplements.)

1. Analyze proposals on a case-by-case basis.
2. Permit only activities which will not adversely affect the purposes for which the Wilderness was established.
3. Integrate special use management with the ROS so that approved uses and activities conform to adopted ROS criteria.
4. Avoid authorizing uses that are not dependent upon Wilderness resources or uses for which reasonable alternative locations exist outside the Wilderness.

B. New special use cabins and related structures may be permitted by the Forest Service officer with delegated authority in accordance with Section 1303(b)(1) of ANILCA under the following conditions:

1. The permit is nontransferable and limited to a 5-year term.
2. The determination is made that the proposed use, construction, and maintenance of the structure(s) are compatible with the purpose for which the Wilderness was established.
3. The determination is made that the proposed cabin is either directly related to the administration of the Wilderness or the continuation of an ongoing use otherwise allowed in the Wilderness, where a) the

applicant has no reasonable alternative site for constructing a cabin; and b) that the cabin is not to be used for private recreational use.

4. The United States shall retain ownership of the cabin and related structures.
5. Applicants must:
   - Agree to vacate the structure(s) and remove all personal property upon nonrenewal or revocation of the permit within a reasonable time period established by the District Ranger.
   - Acknowledge in writing that they have no interest in the real property on which the structure(s) are constructed and that any cabin or related structure constructed under the authority of the Special Use Authorization shall be the property of the United States.
   - Submit with their applications a sketch or photograph, and a map of the proposed structure(s) showing the specific geographical location.
6. Special Use Permits will contain the following provision: "Chainsaws, generators or other motorized equipment shall not be used on the permit area unless specifically approved by the Regional Forester."

C. Cabins and related structures which were in place on December 2, 1980, for which a valid authorization does not exist, may be authorized with a non-transferable renewable five-year Special Use Authorization by the Regional Forester for traditional and customary uses if the use is compatible with the purposes for which the Wilderness was established. No permits shall be issued for private recreational use. These permits shall be renewed until the death of the last immediate family member using the cabin as a dwelling. Revocation of the permit must be by the Regional Forester, after notice and hearing establish that continued use is causing, or may cause, significant harm to the principal purposes for which the Wilderness was established (ANILCA, 1303(b)).

1. To qualify for an authorization the applicant must:
   - Demonstrate by affidavit, bill of sale, or other documentation, proof of possessory interests or rights of occupancy in the cabin.
   - Submit a list of all immediate family members.
   - Submit a sketch or photograph and a map of the cabin and related structures showing its geographic location.
   - Agree to vacate all structures and remove all personal property within a reasonable time period established by the District Ranger.
   - Acknowledge, in writing, that there is no interest in the real property on which the cabin and structures are located.
2. The use of motorized ground equipment, not designed for personal transport use, is authorized in and about authorized structures and facilities on the permitted area for a period not to exceed the termination or the revocation of the authorization. Authorized ground equipment includes chainsaws, generators, power brushcutters, and other hand-held tools and appliances, but not all terrain vehicles (ATV's), motorcycles, or other types of off-road vehicles (ORV's) except snowmachines. Power lawnmowers, rototillers, and other power garden equipment may be used only on existing lawns and gardens that were established prior to the designation of the area as wilderness.
3. Cabins and associated structures which do not qualify for Special Use Authorization shall be removed by the owner unless accepted as a donation to the United States. Cabins that remain will be posted as property of the United States. Cabins which may be useful for emergency shelter may be designated by the Forest Service officer

with delegated authority as public use cabins or posted for use as emergency public shelters.

D. Renew existing valid Special Use Authorizations for cabins, homesites, or similar structures, which were in effect on December 2, 1980, unless the Forest Service officer with delegated authority finds, following notice to the permittee and after the permittee has had a reasonable opportunity to respond, that the permitted structure constitutes a direct threat or a significant impairment to the purpose for which the Wilderness was established. (ANILCA, Section 1303(d) and Section 101 (b).)
   1. Authorizations in effect on December 2, 1980 will be considered for renewal in accordance with provisions of the existing authorization and reasonable regulations which may be prescribed.
   2. The structures authorized by these authorizations may be maintained, rehabilitated, modified, replaced, or removed, but not enlarged.
   3. All modifications and replacement plans will require form, color, and materials which blend and are compatible with the immediate and surrounding wilderness landscape.
   4. In the case of conflicts which could lead to termination of the permit, the permittee will be offered reasonable opportunity to correct the conflict.
   5. The Special Use Authorization may be transferred at the election or death of the original permittee. The original permittee is the one of record on December 2, 1980. This is a transfer of the authorization in effect on December 2, 1980; not the issuance of a new special-use authorization. The transfer may be accomplished following the normal procedures except that the Special Use Authorization will be amended to change the name of the permittee instead of issuing a new authorization.
   6. The amendment will also contain the following tenure clauses:
      * This permit is nontransferable, and a new permit will not be issued to any subsequent owner of the improvements or to any person holding any interest in the improvements.
      * If the present permittee, herein named, ceases to have personal need for, or to make personal use of, the site for the purpose for which the permit is issued, this permit will terminate and the structures on the area shall be disposed of as provided in the conditions of the permit.
      * No additional improvements shall be constructed without prior written approval by the Forest Service officer with delegated authority.
      * The use of motorized ground equipment, not designed for personal transport use, is authorized in and about authorized structures and facilities on the permitted area for a period not to exceed the termination or the revocation of this authorization. Authorized ground equipment includes chainsaws, generators, power brushcutters, and other hand-held tools and appliances, but not all terrain vehicles (ATV's), motorcycles, or other types of off-road vehicles (ORV's) except snowmachines. Power lawnmowers, rototillers, and other power garden equipment may be used only on existing lawns and gardens that were established prior to the designation of the area as Wilderness.

E. Provide for the continuance of existing and future establishment and use of temporary campsites, tent platforms, shelters, and other temporary facilities and equipment directly related to and necessary for the taking of fish and wildlife in accordance with ANILCA (Section 1316). Regulate these temporary facilities as follows:

1. Permits are limited to a period not to exceed one year, but may be renewed.
2. Authorized facilities and/or equipment must be directly and necessarily related to the taking of fish and wildlife. Permits will only be issued when the following conditions are met:
   * the facilities are needed as a practical necessity to conduct legal hunting, trapping, and fishing activities that occur either within the wilderness or in adjacent waters.
   * the applicant has no feasible alternative location outside the Wilderness.
3. Does not include cabins.
4. Does not include motorized forms of transportation other than snowmachines, motorboats, or fixed-wing airplanes.
5. The specific location of temporary facilities will not cause physical resource damage, and should be located and designed to minimize conflicts with other users.
6. Tent platforms, toilets, or other constructed facilities should be located approximately one-half mile, or more, from popular beaches, lakes, recreational boat anchorages (both developed and undeveloped), or other special recreation places. Consider season of use, compatibility of activities, core use areas, ROS considerations, and other factors in assessing the 1/2 mile guideline.
7. Temporary camp facilities in wilderness will include at least the following conditions:
   * The time of occupancy will be limited to coincide with the hunting or fishing season for the species for which the temporary facility is being used.
   * At the end of the specified occupancy, tents will be taken down and tent platforms laid flat. The toilet pits will be backfilled and unnecessary equipment removed from the site.
   * Temporary structures will be built with materials which blend with and are visually compatible with the surrounding landscape.
   * Temporary facilities will be screened from the water, and located so that they are unobtrusive as seen from trails and areas of public use.
8. The Forest Service officer with delegated authority may determine, after adequate public notice, that the establishment and use of new facilities or equipment would constitute a significant expansion of existing facilities or uses which would be detrimental to the purposes for which the Wilderness was established, including its wilderness character. Upon such determination, the Forest Service officer with delegated authority may deny the use or establishment of new facilities and equipment in accordance with ANILCA, (Section 1316 (b)).

F. Allow reasonable access to, and operation and maintenance of existing air and water navigation aids, communication sites, and related facilities, as well as existing facilities for national defense purposes, weather, climate and fisheries research and monitoring. Allow the continuation of necessary motorized access at existing sites (ANILCA, Section 1310(a)). New facilities proposed for these activities and purposes, except communications sites, shall be permitted: 1) following consultation between the head of the Federal agency undertaking the establishment, operation, or maintenance, and the Forest Service officer with delegated authority; and, 2) in accordance with such terms and conditions as may be mutually agreed upon in order to minimize the adverse effects of such activities on the wilderness resources (ANILCA, Section 1310).

1. Perform environmental analysis to evaluate the effects of such proposals on wilderness resources and to provide the basis for determining the necessary terms and conditions under which the use will be permitted.
2. Mechanized transport and motorized equipment may be authorized where no other feasible alternative exists.
3. Forest Service officer(s) with delegated authority will consult with the permittees and jointly develop an operating plan, documenting procedures which will minimize impacts on the wilderness resources without unreasonably limiting the operation and maintenance of the proposed facilities.

G. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites and corridors may be located in this Land Use Designation only after an analysis of potential TUS opportunities has been completed and no feasible alternatives exist outside this Land Use Designation.

H. Onshore facilities such as waterlines, storage areas, and shoreties for mariculture shall not be permitted in Wilderness.

Landline Location and Maintenance: LAND231, LAND24

A. Provide adequate marking for the public and Forest Service employees to distinguish land ownership.
   1. Survey, mark, and post property lines of inholdings and adjacent private lands. Give highest priority to those landlines that are adjacent to private lands where activities or occupancies are likely to encroach into the Wilderness. The next priority is adjacent to trails, canoe routes, and other wilderness transportation corridors or areas of frequent human use.

B. Provide adequate marking of wilderness boundaries to prevent encroachment of non-compatible activities from adjacent public lands.

C. Determine survey, marking, and posting priorities by the degree to which adjacent land management is compatible with the Wilderness classified lands.

Land Ownership Adjustments: LAND26

A. Acquire private inholdings as opportunities arise.
   1. Acquisition of private inholdings within the Wilderness is a continuing high priority.
   2. As opportunities arise, acquire private inholdings through donation, exchange, or purchase.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Withdrawn From Mineral entry

A. Forest lands within Wilderness are withdrawn from mineral entry, subject to valid existing rights.

B. Claimants with valid claims located within the Wilderness retain valid existing rights, if such rights were established prior to the date that Wilderness lands were withdrawn from mineral entry.

C. Permit reasonable access to mining claims in accordance with the provisions of approved Plans of Operation (ANILCA, Section 1110(b)).

D. Section 1010 of ANILCA provides for the assessment of oil, gas, and other mineral potential on all public lands in Alaska. Core and test drilling for geologic information purposes, but excluding exploratory oil and gas test wells, may be authorized within Wilderness. Air access shall be permitted for such assessment activities.

Plan of operations

A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to wilderness values to the extent feasible. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.

B. The use of motorized equipment may be authorized where no other feasible alternative for access and project operation exist. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads (ANILCA, Section 1110 (b)).

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. To the degree consistent with the overall purposes of designation, provide a spectrum of wildland recreation opportunities which reflects the inherent ecological, cultural, historical, prehistorical, scientific and sociological conditions found within the Wilderness.

B. Manage for Primitive and Semi-primitive ROS settings which emphasize existing opportunities, while recognizing exceptions due to ANILCA authorizations and development activities outside of wilderness. Provide for the appropriate activities throughout the Wilderness. Protect the integrity of wilderness resources through integrated project planning and implementation within the Wilderness.

1. Manage for the adopted ROS class where established through Wilderness plans. Manage for the existing or less developed ROS class where no ROS class has been established, unless activities and practices allowed by ANILCA are authorized by the Forest Service officer with delegated authority and cause change in the ROS setting(s). Seek to minimize the changes through project design and mitigation. Manage recreation and tourism use in a manner that is compatible with the long-term objectives of the Wilderness.
2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the appropriate ROS guidelines. Seek to minimize changes to the setting through project design and mitigation. Maintain the capability of the wilderness to provide quality primitive and semi-primitive recreation on a sustained basis.

C. Manage recreation activities to meet the appropriate levels of social encounters, on-site development, methods of access, and visitor impacts indicated for the adopted or existing ROS settings (see “B” above). (Consult national and regional Handbooks.)

D. Provide for general public use of the Wilderness in accordance with ANILCA provisions for the use of snowmachines (during periods of adequate snow cover), motorboats, fixed-wing airplanes, and nonmotorized surface transportation methods for traditional activities that are legal and for travel to and from villages and homesites (ANILCA, Section 1110).

1. Traditional activities include, but are not limited to, recreation activities such as sport fishing, sport hunting, boating, sightseeing and hiking.
2. Traditional activities, which are legal, shall be allowed to continue where such use has previously occurred. No proof of pre-existing use will be required in order to use a snowmachine, motorboat, or fixed-wing airplane. No permits will be required for the general public to use these specific types of motorized transport or any nonmotorized surface transportation methods for traditional activities that are legal, unless an area is specifically closed to public use. Such use is subject

to reasonable regulation by the by the Forest Service officer with delegated authority to protect natural and other values of the Wilderness from damage.

3. Restrictions or closures of specific areas within the Wilderness to transportation methods listed in "D" above, may be invoked by the by the Forest Service officer with delegated authority following adequate public notice and public hearing, and the determination that such use would be detrimental to wilderness resource values. Closure of broad areas is not contemplated.
4. Fixed-wing airplanes will be allowed to land on all suitable lakes, beaches, and icefields without a permit unless the activity (i.e., commercial use) requires a permit.
5. The landing of helicopters for access by the general public will be limited to specific helicopter access areas by the Forest Service officer with delegated authority.

E. Maintain existing public use cabins and shelters at present or improved condition. Consider additional public use cabins and/or shelters only when needed for health and safety purposes (ANILCA, Section 1315(d)).
1. Base new cabin or shelter locations on an analysis of public health and safety needs. The analysis shall include at least the following factors:
   * Difficulty of access particularly in regard to timely pick-up of users by floatplane or boat or for emergency situations.
   * Presence of natural hazards including weather, brown bears, and dangerous tide and currents.
   * History of fatalities and life-threatening incidents in the area.
   * Natural attractions that entice people to use a particular area.
2. Design of new or replacement cabins or shelters will use drawings approved for use in Wilderness.
3. Appurtenant structures to the cabin or shelter will be limited to a toilet, a woodshed, and minimum structures necessary for resource protection and accessibility.
4. All structures shall be built of materials, which blend with, and are compatible with, the foreground and middleground landscape surrounding the site.
5. Decisions to construct new cabins or relocate or move existing cabins must be supported by an environmental analysis.
6. The Forest Supervisor will report any proposed public use cabin or shelter removal or additions in the Annual Wilderness Report for notification of the appropriate congressional committees (ANILCA, Section 1315(d)).

F. With the help of user groups, develop "Leave No Trace" camping and use programs that encourage dispersal and use of durable campsites. Where dispersal is not feasible, develop designated campsites and encourage their use.

Outfitter/Guide Operations

A. Special Use Authorizations permitting individuals or organizations to provide visitor services in Wilderness may be issued if there is demonstrated need for the service(s) and they are deemed appropriate for the area proposed. District Rangers will maintain a record of currently active authorizations.
1. In selecting persons to provide new visitor services, except for guided hunting and sport fishing, preference shall be given: 1) to the Native Corporation most directly affected by the establishment of the subject Wilderness, and 2) to local residents as will be defined by the Secretary of Agriculture (ANILCA, Section 1307).

2. Outfitter and guide permit holders may be authorized the use of assigned temporary campsites for specific dates within a use season. Assigned campsites shall not include structures such as tent platforms or equipment caches (except as in 3. below).
3. Outfitter and Guide services for the taking of fish and wildlife may be allowed certain temporary camp facilities by ANILCA, Section 1316. (See Lands Section.)
4. Generally consider a party size of no more than 12 persons for any one site or activity. Allow for case-by-case exceptions with District Ranger approval, for special circumstances such as safety concerns, youth groups, one time only guided tours, and resource protection.

Recreation Special Uses

A. Major and minor developments other than those specifically provided for in ANILCA are illegal or not consistent with agency policy and regulations. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Design activities to not be visually evident to the casual observer.
   1. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective. This objective defines the maximum limit of allowable change to the visual character of the area; less visible evidence of activities such as those compatible with the Preservation Visual Quality Objective is acceptable.
   2. Design allowed structures, campsites and constructed trails to meet the Partial retention Visual Quality Objective.

SOIL AND WATER

Watershed Resource Improvements: S&W2

A. Undertake watershed improvements only where deteriorated soil and hydrologic conditions caused by humans or their influences create a threat or loss of wilderness values or where such conditions could cause serious depreciation of important environmental qualities outside of the Wilderness. For exceptions, see the Fish section.
B. Whenever possible, use indigenous plant species and materials in implementing watershed improvements.

SUBSISTENCE

Subsistence: SUB

A. Rural residents engaged in subsistence uses shall have reasonable access to subsistence resources. Appropriate use of snowmachines, motorboats, and other means of surface transportation traditionally employed for such purposes by local residents shall be permitted, subject to reasonable regulation to protect wilderness resource values (ANILCA Section 811). The use of other mechanical/motorized equipment, such as chainsaws, is allowed by permit only.

TIMBER

Timber Resource Planning: TIM112

A. Forested land is classified as unsuitable for timber production and withdrawn from the timber base.

B. The following types of public uses may be authorized if done in a manner that minimizes impacts on the Wilderness:
   1. Commercial beach log salvage on Wilderness coastlines may be authorized in accordance with ANILCA, Section 1315(f). Require that the recovery of logs above mean high tide be conducted from the water without roads or use of vehicles on uplands. Beach log salvage is defined as the recovery of logs that have been lost in transit and washed up on beaches.
   2. Traditional personal use wood harvesting activities {primarily: 1) beach logs on coastlines which can be removed without roads or use of vehicles on uplands, and 2) firewood}, subject to reasonable regulations to protect Wilderness resources. The cutting of down trees in navigable rivers (sweepers) and removal of trees from the banks is incompatible with Wilderness objectives (the main channel of the Stikine River is an exception). Cutting of green trees (except for emergency cutting of trolling poles) will be by permit only. (Consult ANILCA, Section 1315(f) and 36 CFR 223.10.)
   3. Removal, or use of trees cut as part of some other authorized use within the Wilderness. (For example, clearing for a fish ladder.)
   4. Trees may be cut for use in construction and maintenance of authorized structures when it is not feasible to obtain the necessary material from outside the Wilderness.

TRAIL

Trail Activities: TRAI1

A. Provide for a diversity of outdoor recreation trail and waterway opportunities which are appropriate for the ROS class and management intent of the Wilderness. Emphasize nonmotorized and nonmechanized participation in activities such as hiking, mountaineering, spelunking, cross-country skiing, canoeing and kayaking.
B. Emphasize primitive and semi-primitive recreation opportunities which are in harmony with the natural environment and consistent with the intent and purposes of the Wilderness Act and ANILCA.
C. Consider trail systems that provide:
   1. Connected, multi-day trip opportunities for both land trails and water trails.
   2. Alpine trail systems with access from saltwater anchorages, cabins, local communities, and resorts.
   3. Loop trail systems in connection with public use cabins.
   4. Access from local communities to snow line where development of snow trails is feasible.

Trail Administration: TRAI2

A. Trails and associated waterways leading to and within Wilderness often become the principal management tools for achieving management objectives. Construct and maintain trails, such as bridges and signs, so they:
   1. contribute to management goals and objectives.
   2. are compatible with the ROS setting.
   3. appear to be part of the Wilderness environment and not an intrusion upon it. Consult the Forest Service Trails Management Handbook, and Alaska Region Trails Construction and Maintenance Guide.

TRANSPORTATION **Transportation Operations: TRANS1**

A. New roads and new airstrips are not permitted, except to access surrounded state and private land and valid mining claims subject to stipulations to protect the natural and other values of such lands. Any transportation development in association with minerals extraction will be in accordance with an approved Plan of operations, and subsequent annual work plans.

B. Any existing roads in the Wilderness are closed to motorized uses unless authorized under ANILCA.

C. Allow use of snowmachines, motorboats, fixed-wing airplanes and nonmotorized methods of surface transportation for traditional activities that are legal and for transportation to and from villages and homesites. (Consult ANILCA, Section 1110 and Wilderness and Recreation & Tourism Sections.)

D. Provide adequate and feasible access for economic and other purposes to owners of land, including subsurface rights to land, valid mining claims, or other valid occupancies, which are effectively surrounded by Wilderness.

1. The routes and types of access shall be practical in an economic sense; but do not necessarily have to be the most economically feasible alternative.
2. District Rangers will work with the landowner, or his/her authorized representative, to work out reasonable solutions which will meet the intent of ANILCA (Sections 1110(b) and 1323), while minimizing adverse impacts on wilderness resources and values.

WILDERNESS **Wilderness Resource Administration: WILD12**

Wilderness Resource Management

A. Manage all designated Wilderness to maintain an enduring wilderness resource as provided by the Wilderness Act of 1964, while providing for public access and uses specifically allowed by the Alaska National Interest Lands Conservation Act (ANILCA) of 1980 (P.L. 96-487). Consult Alaska Region Supplement to FSM 2320, as amended. Activities and practices authorized by ANILCA will be regulated or restricted in accordance with the special provisions of ANILCA.

B. Use available opportunities to encourage and enlist public and private sector interest groups to work together in meeting wilderness management objectives. Emphasize programs which help in educating the using public in the appropriate conduct of activities and uses within Wildernesses (for example, "Leave No Trace.").

C. To the extent feasible, minimize the impacts of administrative activities on the Wilderness resources and visitors. Administrative activities include authorized use and wilderness resource related work being done by other agencies and cooperators. In developing project plans use the following guidelines:

1. Encourage permittees and cooperators to minimize the use of mechanized vehicles and equipment to make their presence in the Wilderness as unobtrusive as possible even though authorized.
2. The use of motorized vehicles and equipment by the Forest Service and other agencies for the administration of the Wilderness is subject to the following conditions:
   - Aircraft:
     - Fixed-wing airplanes may land on all suitable lakes, rivers, beaches, and icefields.
     - The administrative use of helicopters may be allowed on a case-by-case basis after evaluation of the need and full consideration of all alternative options for access. Approval by the Forest

Service officer with delegated authority is required for administrative use.
- Established air routes will be used to the extent feasible.
- Low flights and continuous circling should be avoided.
- Work logistics will be planned to minimize the number of aircraft flights over the wilderness and landings within a specific area.

* Motorboats on Rivers:
  - Motorboats may be used on rivers for all administrative purposes under the same conditions that public use is allowed.
* Motorboats on Freshwater Lakes:
  - Outboard motors of 10 horsepower or less may be used for administering the Wilderness, gathering firewood for public use cabins, and transporting crews and equipment on lakes specified by the District Ranger.
* Chainsaws and Power Brushers:
  - Use of chainsaws and power brushers is allowed for trail and cabin maintenance and firewood cutting when authorized by the Forest Service officer with delegated authority.
  - Use of chainsaws and power brushers is allowed for trail construction and reconstruction projects when specifically authorized in writing by the Forest Service officer with delegated authority.
* Generators and Other Motorized Tools:
  - Generators and other motorized tools may be used for construction/reconstruction projects only when use has been specifically authorized in writing by the Forest Service officer with delegated authority . They may not be used for normal maintenance work or in field camps except where specifically authorized by the Forest Service officer with delegated authority.
* Snowmachines:
  - May be used to administer Wilderness under the same snow conditions that public use is allowed.
* Exceptions:
  - Aircraft and mechanized equipment may be used as needed for search and rescue purposes and law enforcement.
  - The temporary use of motorized equipment may be allowed for fisheries research, management, rehabilitation, and enhancement activities, when such use is authorized in the project environmental assessment or Decision Notice approved by the Forest Service officer with delegated authority.
  - The use of chainsaws and power winches is allowed for clearing of navigational hazards along the Stikine River. All other administrative activities must be completed using primitive nonmotorized/nonmechanized methods unless specifically authorized by the Forest Service officer with delegated authority.

Wilderness Planning

A. Update individual Wilderness plans if inconsistent with this Plan.
B. Wilderness plans may be developed or updated for an individual Wilderness in response to issues and concerns. If the direction is beyond the intent of these standards and guidelines, yet consistent with ANILCA and the Wilderness Act, it may require an amendment to the Forest Plan.
C. ROS classes may be adopted through wilderness planning.
D. Update Wilderness Implementation Schedules (WIS) as needed. Direction from this plan will be incorporated into the WIS.

E. Establish sub-unit management zones within the Wilderness to deal with unique situations, or to integrate local issues and concerns with management activities, where necessary, to better accomplish Wilderness objectives.
   1. The boundaries of sub-units should generally be located on identifiable topographic features and/or coincide with existing Recreation Opportunity Spectrum (ROS) classification areas.

WILDLIFE

Wildlife Habitat Improvement: WILD22

A. Conduct wildlife habitat improvement projects only when the principal objective is to protect or restore the wilderness resource, or to assist in the recovery of a federally-listed threatened or endangered species.

Wildlife Habitat Planning: WILD112

A. Wildlife management activities will be consistent with wilderness objectives, and will protect and maintain natural processes and wilderness values.
B. Address issues regarding management, introduction, and re-introduction of wildlife species consistent with National and Regional Policy.

WILDERNESS NATIONAL MONUMENT
Land Use Designation WM

Both National Monuments contain Congressionally-designated Wilderness and nonwilderness National Forest System lands. Management direction for the nonwilderness portion of the National Monuments is provided in the Nonwilderness National Monuments Land Use Designation.

Goals

To manage the Wilderness portions of Admiralty Island and Misty Fiords National Monuments to maintain an enduring wilderness resource while providing for public access and uses consistent with the Wilderness Act of 1964, the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) and their respective Presidential Proclamations of 1978 which designated these units as National Monuments because of their superlative combination of significant scientific and historical features.

To protect and perpetuate natural biophysical and ecological conditions and processes.

Admiralty Island, exclusive of the Mansfield Peninsula, was designated as a National Monument for the scientific purpose of preserving intact a unique coastal island ecosystem. The goal of preservation was to assure continued opportunities for study of Admiralty Island's ecology and its notable cultural, historical, and wildlife resources, within its relatively unspoiled natural ecosystem. Protection and study of Tlingit cultural resources, other historical resources, brown bear and bald eagle populations are specifically directed.

Misty Fiords was designated as a National Monument to serve the scientific purposes of preserving a unique ecosystem and the remarkable geologic and biological objects and features it contains. The goal of preservation was to assure continued opportunities for study of Misty Fiord's geology and ecology including the complete range of coastal to interior climates and ecosystems. Protection and study of the geology, plant and animal succession, historical resources, and fish and wildlife resources are specifically directed.

To provide a high degree of remoteness from the sights and sounds of humans, and opportunities for solitude and primitive recreation activities consistent with wilderness preservation.

Objectives

Inventory, research, protect, and interpret National Monument resources as directed by Monument designation consistent with wilderness management practices.

Make resource and research information about the National Monuments available to other forest units where it may be beneficial for management of multiple use lands.

Manage recreation activities to meet the appropriate levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the adopted or existing Recreation Opportunity Spectrum, as appropriate.

Provide for public use of the Wilderness in accordance with ANILCA provisions for motorized and non-motorized access and travel, including reasonable traditional subsistence use by rural residents.

Provide trails and primitive facilities that are in harmony with the natural environment and that promote primitive and semi-primitive recreation experiences.

Desired Condition

The purposes of National Monument designation are fulfilled by protecting and learning more about the special resources they contain. Appropriate research is encouraged and supported within the constraints of wilderness designation, and contributes to both the purposes of the Wilderness National Monuments and improved management of other forest lands. Appropriate interpretive and educational efforts allow the public to better understand the resources of these special areas and to appreciate how these areas fit into the local, regional, and even global context of geology, ecology, and human history.

The Wilderness portions of Admiralty Island and Misty Fiords National Monuments are characterized by extensive, unmodified natural environments. Ecological processes and natural conditions are not measurably affected by past or current human uses or activities. Users have the opportunity to experience independence, closeness to nature, solitude and remoteness, and may pursue activities requiring self-reliance, challenge and risk. Motorized and mechanized use is limited to the minimum needed for the administration of wilderness, access to state and private lands, subsistence uses, and for public access and other uses specifically allowed by ANILCA.

Wilderness National Monument Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I	4-4
Facilities	FAC	All	4-6
Fire	FIRE12	All	4-7
Fish	FISH	All	4-8
Forest health	HEALTH1	I(B:1;C)	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST CAVE	I-III All	4-18
Lands	LAND11,123,23,24,26 LAND122 LAND25	All I(A:1-13),VII,IX I(A)	4-21
Minerals And Geology	MG11 MG12	All I,III,IV,VI,VII	4-32
Recreation And Tourism	REC111 REC112 REC122	All I,II(A),III I,II,III(B),IV-VII	4-34
Riparian	RIP1 RIP2	All I,II(A-E)	4-52
Rural development	RUR	All	4-73
Scenery	VIS1 VIS11 VIS12	All I,II(A,E) I(B,D),II	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A1-4,B-F),II	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1 TIM114	All VIII(D)	4-93
Trail	TRAI1 TRAI2	I(A-E;F:1,3,5,6) All	4-100
Transportation	TRAN	None	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD22	I-V; VI(A,B,C,E); VII, VIII; IX(A:1-3,5-8,11,B); X; XI(A:1); XII-XIV; XVI(A:1) I(A:1,B)	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Administrative Facilities: FAC2

A. Construct no new permanent administrative facilities in Monument Wilderness, except as consistent with ANILCA, Sections 1303, 1306, 1310, and 1315.

B. Allow the continued operation and maintenance of permanent administrative facilities, for which there is an ongoing need (ANILCA, Section 1306 (b)).
   1. When reconstruction of existing permanent administrative structure is necessary, reconstruct or replace them with structures of compatible design.
   2. During reconstruction and maintenance activities:
      * Paint or stain structures to blend with the environment.
      * Keep clearing of vegetation to the minimum feasible.
      * Select materials that are natural in appearance.

C. Allow temporary facilities and crew barges for administration seasonally.
   1. Temporary administrative camps used by wilderness rangers, trail crews, or for other administrative activities should avoid areas used for camping by the general public and should be screened from view.
   2. Temporary administrative camps may remain in place only during periods required for the administrative activity. All equipment and materials will be removed or collapsed and laid flat the end of the field season or during other extended periods of non-use.
   3. Temporary camps will seek to achieve minimum impact on the land. There will be no permanent foundations or anchors, and only minimal clearing of vegetation at campsites.
   4. Crew barges should be located in unobtrusive locations. They may be periodically moved and relocated to support administrative needs.

D. Administrative use of public cabins and shelters in wilderness may be allowed, but should be scheduled to avoid conflict with public use.

E. Allow radio repeaters when necessary to provide essential communications for the health and safety of people involved in the administration of the area. Allow permanent radio repeaters currently located in Wilderness National Monuments to remain.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics resulting in the least possible disturbance or evidence of human presence.
   1. Use of mechanized equipment requires approval by the Forest Service officer with delegated authority.
   2. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
   3. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, but within one year after the fire occurs.

Fuel Improvements: FIRE2

Prescribed fire

A. As a general management practice, do not use management-ignited prescribed fire. Should it become necessary to consider the use of management-ignited prescribed fire, FSM 2324 provides direction.

B. As a general management practice, do not use prescribed natural fire because the Tongass does not have a history of natural ignitions. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

Planning

A. Plan for fisheries in Monument Wilderness consistent with ANILCA, Section 1315(b) which recognizes the goal of restoring and maintaining fish production in the State of Alaska to optimum sustained yield levels and in a manner which adequately assures protection, preservation, enhancement, and rehabilitation of the wilderness resource. Subject to reasonable regulations, permanent improvements and facilities such as fishways, fish weirs, fish ladders, fish hatcheries, spawning channels, stream clearance, egg planting, and other accepted means of maintaining, enhancing, and rehabilitating fish stocks may be permitted. For this purpose, optimum sustained yield levels will be considered synonymous with the long-term harvest goals documented in the State of Alaska Comprehensive Salmon Plans and other state fisheries plans. Consult R-10 supplements to FSM 2632 and FSM 2320 for further details.

B. Determine the need for wilderness aquaculture projects (as described in ANILCA, Section 1315(b)) on a broad basis that includes the potential of private, state, and Federal nonwilderness projects.

C. Evaluate fish habitat improvement during project planning by considering: 1) availability of suitable non-wilderness opportunities which should be used first; 2) effects on wilderness conditions, in general; 3) effects resulting from the introduction of species not indigenous to the watershed; 4) the appropriateness of structures both in type and scale to the Recreation Opportunity Spectrum Class (ROS) setting; and 5) the need to provide well-distributed fisheries that support sport and commercial fisheries, subsistence, and community stability.

D. In planning, stress protection of fish habitat to prevent the need for mitigation.

Fish Habitat Improvement: FISH22

A. Construct facilities in a rustic manner to blend into the natural character of the area and limit facilities to those essential to the project (ANILCA, 1315(b)).

B. Permit reasonable access, including the temporary use of motorized equipment, subject to reasonable regulation to maintain the wilderness character, water quality, and fish and wildlife values of the area.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Allow natural occurrences to play their normal role in ecological succession.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Enhancement

A. Heritage Resources are available for scientific study to the extent that the study is consistent with: 1) the preservation of Monument Wilderness; 2) the intent of the Wilderness Act; and, 3) heritage resource management objectives.

B. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses, consistent with management of Monument Wilderness.

1. Provide interpretive information concerning Heritage Resources to users in the form of exhibits and publications outside of the Monument Wilderness.

Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and allocation within the Monument Wilderness.

1. Identify heritage properties to be nominated to the National Register of Historic Places.
2. Identify, classify and evaluate known Heritage Resources.
3. Identify heritage properties that require stabilization or other protective measures.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation will generally occur outside this Land Use Designation.

B. Manage caves as Class I (Sensitive) or Class 3 (Undeveloped) as described in the Karst and Cave Resources Forest-wide Standards & Guidelines.

LANDS

Special Use Administration (non-Recreation): LAND122

A. Authorize only activities which consistent with the Wilderness Act or are specifically allowed by ANILCA and are otherwise in compliance with management direction of the Forest Plan. (Consult FSM 2700, FSM 2320, and Regional Supplements.)

1. Analyze proposals on a case-by-case basis.
2. Permit only activities which will not adversely affect the purposes for which the Monument Wilderness was established.
3. Integrate special use management with ROS so that approved uses and activities conform to adopted ROS criteria.
4. Avoid authorizing uses which are not dependent upon wilderness resources or uses for which reasonable alternative locations exist outside the Monument Wilderness.

B. New special use cabins and related structures may be permitted by the Regional Forester in accordance with Section 1303(b)(1) of ANILCA under the following conditions:

1. The permit is nontransferable and limited to a 5-year term.
2. The determination is made that the proposed use, construction, and maintenance of the structure(s) are compatible with the purpose for which the Monument Wilderness was established.

3. The determination is made that the proposed cabin is either directly related to the administration of the Monument Wilderness or the continuation of an ongoing use otherwise allowed within the Monument Wilderness; where a) the applicant has no reasonable alternative site for constructing a cabin; and b) the cabin will not be used for private recreational use.
4. The United States shall retain ownership of the cabin and related structures.
5. Applicants must:
   * Agree to vacate the structure(s) and remove all personal property upon nonrenewal or revocation of the permit within a reasonable time period established by the District Ranger.
   * Acknowledge in writing that they have no interest in the real property on which the structure(s) are constructed and that any cabin or related structure constructed under the authority of the Special Use Authorization shall be the property of the United States.
   * Submit with their applications a sketch or photograph and a map of the proposed structure(s) showing the specific geographical location.
6. Special Use Permits will contain the following provision: "Chainsaws, generators, or other motorized equipment shall not be used on the permit area unless specifically approved by the Regional Forester."

C. Cabins and related structures which were in place on December 2, 1980, for which a valid permit does not exist, may be authorized by the Regional Forester for traditional and customary uses if the use is compatible with the purposes for which the Monument Wilderness was established. No permit shall be issued for private recreational use. These permits shall be renewed until the death of the last immediate family member using the cabin as a dwelling. Revocation of the permit must be by the Regional Forester, after notice and hearing establish that continued use is causing, or may cause, significant harm to the principal purposes for which the Monument Wilderness was established.

1. To qualify for a permit the applicant must:
   * Demonstrate by affidavit, bill of sale, or other documentation, proof of possessory interests or rights of occupancy in the cabin.
   * Submit a list of all immediate family members.
   * Submit a sketch or photograph of the cabin and related structures showing its geographic location.
   * Agree to vacate all structures and remove all personal property within a reasonable time period established by the District Ranger.
   * Acknowledge, in writing, that there is no interest in the real property on which the cabin and structures are located.
2. The use of motorized ground equipment, not designed for personal transport use, is authorized in and about authorized structures and facilities on the permitted area for a period not to exceed the termination or the revocation of the authorization. Authorized ground equipment includes chainsaws, generators, power brushcutters, and other hand-held tools and appliances, but not all terrain vehicles (ATV's), motorcycles, or other types of off road vehicles (ORV's) except snowmachines. Power lawn mowers, rototillers, and other power garden equipment may be used only on existing lawns and gardens that were established prior to the designation of the area as wilderness.
3. Cabins and associated structures which do not qualify for Special Use Authorizations shall be removed by the owner unless accepted as a

donation to the United States. Cabins that remain will be posted as property of the United States. Cabins that may be useful for emergency shelter may be designated by the Forest Service officer with delegated authority as a public use cabin or posted for use as an emergency public shelter.

D. Renew existing valid Special Use Authorizations for cabins, homesites, or similar structures, which were in effect on December 2, 1980, unless the Forest Service officer with delegated authority finds, following notice to the permittee and after the permittee has had a reasonable opportunity to respond, that the permit constitutes a direct threat or a significant impairment to the purpose for which the Monument Wilderness was established (ANILCA, Section 1303(d) and Section 101 (b).)
   1. Authorizations in effect on December 2, 1980 will be considered for renewal in accordance with provisions of the existing authorization and reasonable regulations which may be prescribed.
   2. The improvements authorized by these permits may be maintained, rehabilitated, modified, replaced, or removed, but not enlarged.
   3. All modifications and replacement plans will require form, color, and materials which blend and are compatible with the immediate and surrounding wilderness landscape.
   4. In the case of conflicts which could lead to termination of the authorization, the permittee will be offered reasonable opportunity to correct the conflict.
   5. The Special Use Authorization may be transferred at the election or death of the original permittee. The original permittee is the one of record on December 2, 1980. This is a transfer of the authorization in effect on December 2, 1980; not the issuance of a new Special Use Authorization. The transfer may be accomplished following the normal procedures except that the Special Use Authorization will be amended to change the name of the permittee instead of issuing a new authorization.
   6. The amendment will also contain the following tenure clauses:
      * This permit is nontransferable, and a new permit will not be issued to any subsequent owner of the improvements or to any person holding any interest in the improvements.
      * If the present permittee, herein named, ceases to have personal need for, or to make personal use of, the site for the purpose for which the permit is issued, this permit will terminate and the structures on the area shall be disposed of as provided in the conditions of the permit.
      * No additional improvements shall be constructed without prior written approval by the Forest Service officer with delegated authority.
      * The use of motorized ground equipment, not designed for personal transport use, is authorized in and about authorized structures and facilities on the permitted area for a period not to exceed the termination or the revocation of this authorization. Authorized ground equipment includes chainsaws, generators, power brushcutters, and other hand-held tools and appliances, but not all terrain vehicles (ATV's), motorcycles, or other types of off road vehicles (ORV's) except snowmachines. Power lawnmowers, rototillers, and other power garden equipment may be used only on existing lawns and gardens that were established prior to the designation of the area as Wilderness.

E. Provide for the continuance of existing and future establishment and use of temporary campsites, tent platforms, shelters, and other temporary facilities

and equipment directly related to and necessary for the taking of fish and wildlife in accordance with ANILCA (Section 1316). Regulate these temporary facilities as follows:

1. Permits are limited to a period not to exceed one year, but may be renewed.
2. Authorized facilities and/or equipment must be directly and necessarily related to the taking of fish and wildlife. Permits will be issued only when the following conditions are met:
   * The facilities are needed as a practical necessity to conduct legal hunting and fishing activities that occur either within the wilderness or in adjacent waters.
   * The applicant has no feasible alternative location outside the Monument Wilderness.
3. Does not include cabins.
4. Does not include motorized forms of transportation other than snowmachines, motorboats, or fixed-wing airplanes.
5. The specific location of temporary facilities will not cause physical resource damage, and should be located and designed to minimize conflicts with other users.
6. Tent platforms, toilets, or other constructed facilities should be located approximately one-half mile, or more, from popular beaches, lakes, recreational boat anchorages (both developed and undeveloped), or other special recreation places. Consider season of use, compatibility of activities, core use areas, ROS considerations, and other factors in assessing the 1/2 mile guideline.
7. Temporary camp facilities in Monument Wilderness will include at least the following conditions:
   * The time of occupancy will be limited to coincide with the hunting or fishing season for the species for which the temporary facility is being used.
   * At the end of the specified occupancy, tents will be taken down and tent platforms laid flat. The toilet pits will be backfilled and unnecessary equipment removed from the site.
   * Temporary structures will be built with materials which blend with and are visually compatible with the surrounding landscape.
   * Temporary facilities will be screened from the water, and located so that they are unobtrusive as seen from trails and areas of public use.
8. The Forest Service officer with delegated authority may determine, after adequate public notice, that the establishment and use of new facilities or equipment would constitute a significant expansion of existing facilities or uses which would be detrimental to the purposes for which the Monument Wilderness was established, including its wilderness character. Upon such determination, the Forest Service officer with delegated authority may deny the use or establishment of new facilities and equipment in accordance with ANILCA (Section 1316(b)).

F. The following resorts were under permit prior to the establishment of the Monument Wildernesses. They will be administered in accordance with ANILCA provisions as follows;

1. Thayer Lake Lodge. Section 503(j) of ANILCA provides that the Special Use Permit for Thayer Lake Lodge shall be renewed as necessary for the longest of either: 1) 15 years after December 2, 1980; or 2) the lifetime of the permittee, as designated in such permit as of January 1, 1979, or the surviving spouse or child of such permittee, whoever lives longer, so long as the management of the

lodge remains consistent with the purposes of the Admiralty Island National Monument.

2. Humpback Lake Chalet. The resort Special Use Permit in existence on December 2, 1980, authorized one rental cabin and appurtenant structures on Humpback Lake within Misty Fiords National Monument Wilderness. The continuation of this use is authorized by ANILCA, Section 1307(a). The existing improvements may be maintained, rehabilitated, modified, replaced or removed, but not enlarged. New cabin construction will not be allowed. Approval of exterior color schemes, materials, and designs shall use criteria that keep the improvements unobtrusive and compatible with the surroundings. The Special Use Permit may be revised as appropriate, but the permittee must remain Sportsman Paradise Tours, the permittee on December 2, 1980. The use shall continue to be permitted so long as it remains a public recreation rental cabin, provides adequate public service, does not significantly threaten any resource, and other terms and conditions of the permit are met.

G. Allow reasonable access to, operation, and maintenance of existing air and water navigation aids, communication sites, and related facilities, as well as existing facilities for national defense purposes, weather, climate and fisheries research and monitoring. Allow the continuation of necessary motorized access at existing sites (ANILCA, Section 1310(a)). New facilities proposed for these activities and purposes, except communications sites, shall be permitted: 1) following consultation between the head of the Federal agency undertaking the establishment, operation, or maintenance, and the Forest Service officer with delegated authority; and 2) in accordance with such terms and conditions as may be mutually agreed upon in order to minimize the adverse effects of such activities on the Monument Wilderness resources.

1. Conduct environmental analysis to evaluate the effects of such proposals on Monument Wilderness resources and to provide the basis for determining the necessary terms and conditions under which the use will be permitted.
2. Mechanized transport and motorized equipment may be authorized where no other feasible alternative exists.
3. Forest Service officers with delegated authority will consult with the permittees and jointly develop Operating Plans, documenting procedures which will minimize impacts on the Monument Wilderness resources without unreasonably limiting the operation and maintenance of the proposed facilities.

H. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites and corridors may be located within this Land Use Designation only after an analysis of potential TUS opportunities has been completed and no feasible alternatives exist outside this Land Use Designation.

I. Onshore facilities such as waterlines, storage areas, and shoreties for mariculture shall not be permitted in Monument Wilderness.

Landline Location and Maintenance: LAND231, LAND24

A. Provide adequate marking for the public and Forest Service employees to distinguish land ownership.

1. Survey, mark, and post property lines of inholdings and adjacent private lands. Give highest priority to those landlines adjacent to the private lands where activities or occupancies are likely to encroach into the Wilderness. The next priority is landlines adjacent to trails, canoe

routes, and other wilderness transportation corridors or areas of frequent human use.

B. Provide adequate marking of Monument Wilderness boundaries to prevent encroachment of non-compatible activities from adjacent public lands.

C. Determine survey, marking, and posting priorities by the degree to which adjacent land management is compatible with the Monument Wilderness classified lands.

Land Ownership Adjustments: LAND26

A. Acquire private inholdings as opportunities arise.
   1. Acquisition of private inholdings within the Monument Wilderness is a continuing high priority.
   2. As opportunities permit, acquire private inholdings through donation, exchange, or purchase.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Withdrawn from Mineral entry

A. Forest lands within the Monument Wildernesses are withdrawn from mineral entry, subject to valid existing rights.

B. Claimants with valid claims located within the Monument Wilderness retain valid existing rights if such rights were established prior to the date that Monument Wilderness lands with withdrawn from mineral entry.

C. Permit reasonable access to mining claims in accordance with the provisions of approved Plans of Operation (ANILCA, Section 1110(b)).

D. Section 1010 of ANILCA provides for the assessment of oil, gas, and other mineral potential on all public lands in Alaska. Core and test drilling for geologic information purposes, but excluding exploratory oil and gas test wells, may be authorized within Monument Wilderness. Air access shall be permitted for such assessment activities.

E. Sections 503, 504, and 505 of ANILCA provide specific direction for minerals management in the National Monument.

Plan of operations

A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to wilderness values to the extent feasible. Include mitigation measures that are compatible with the sale of proposed development and commensurate with potential resource impacts.

B. The use of motorized equipment may be authorized where no other feasible alternative for access and project operation exist. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads (ANILCA, Section 1110(b)).

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. To the degree consistent with the overall purposes of designation, provide a spectrum of wildland recreation opportunities which reflects the inherent ecological, cultural, historical, prehistorical, scientific and sociological conditions found within the Monument Wilderness.

B. Manage for Primitive and Semi-primitive ROS settings which emphasize existing opportunities, while recognizing exceptions due to ANILCA authorizations and development activities outside of wilderness. Provide for the appropriate activities throughout the Monument Wilderness. Protect the integrity of National Monument Wilderness resources through integrated

project planning and implementation within the National Monument Wilderness.

1. Manage for the adopted ROS class where established through Wilderness plans. Manage for the existing or less developed ROS class where no ROS class has been established, unless activities and practices allowed by ANILCA are authorized by the Forest Service officer with delegated authority and cause change in the ROS setting(s). Seek to minimize the changes through project design and mitigation. Manage recreation and tourism use in a manner that is compatible with the long-term objectives of the Monument Wilderness.
2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the appropriate ROS guidelines. Seek to minimize changes to the setting through project design and mitigation. Maintain the capability of the Monument Wilderness to provide quality primitive and semi-primitive recreation on a sustained basis.

C. Manage recreation activities to meet the appropriate levels of social encounters, on-site development, methods of access and visitor impacts indicated for the adopted or existing ROS settings. (Consult national and regional handbooks.)

D. Provide for general public use of the National Monument Wilderness in accordance with ANILCA provisions for the use of snowmachines (during periods of adequate snow cover), motorboats, fixed-wing airplanes, and nonmotorized surface transportation methods for traditional activities that are legal and for travel to and from villages and homesites (ANILCA, Section 1110).

1. Traditional activities include, but are not limited to, recreation activities such as sport fishing, sport hunting, boating, sightseeing and hiking.
2. Traditional activities, which are legal, shall be allowed to continue where such use has previously occurred. No proof of pre-existing use will be required in order to use a snowmachine, motorboat, or fixed-wing airplane. No permits will be required for the general public to use these specific types of motorized transport or any nonmotorized surface transportation methods for traditional activities that are legal, unless an area is specifically closed to public use. Such use is subject to reasonable regulation by the by the Forest Service officer with delegated authority to protect natural and other values of the wilderness from damage.
3. Restrictions or closures of specific areas within the wilderness to transportation methods listed in "D" above, may be invoked by the Forest Service officer with delegated authority following adequate public notice and public hearing, and the determination that such use would be detrimental to wilderness resource values. Closure of broad areas is not contemplated.
4. Fixed-wing airplanes will be allowed to land on all suitable lakes, beaches, and icefields without permit unless the activity (i.e., commercial use) requires a permit.
5. The landing of helicopters for access by the general public will be limited to specific helicopter access areas designated by the Forest Service officer with delegated authority.

E. Maintain existing public use cabins and shelters at present or improved condition. Consider additional public use cabins and/or shelters only when needed for health and safety purposes (ANILCA, Section 1315(d)).

1. Base new cabin or shelter locations on an analysis of public health and safety needs. The analysis shall include at least the following factors:

- Difficulty of access particularly in regard to timely pick-up of users by floatplane or boat or for emergency situations.
- Presence of natural hazards including weather, brown bears, and dangerous tide and currents.
- History of fatalities and life-threatening incidents in the area.
- Natural attractions that entice people to use a particular area.

2. Design of new or replacement cabins or shelters will use drawings approved for use in Wilderness.
3. Appurtenant structures to the cabin or shelter will be limited to a toilet, woodshed, and minimum structures necessary for resource protection and accessibility.
4. All structures shall be built of materials, which blend with, and are compatible with, the foreground and middleground landscape surrounding the site.
5. Decisions to construct new cabins or relocate or move existing cabins must be supported by an environmental analysis.
6. The Forest Supervisor will report any proposed public use cabin or shelter removal or additions in the Annual Wilderness Report for notification of the appropriate congressional committees (ANILCA, Section 1315(d)).

F. With the help of user groups, develop "Leave No Trace" camping and use programs that encourage dispersal and use of durable campsites. Where dispersal is not feasible, develop designated campsites and encourage their use.

Outfitter/Guide Operations

A. Special-use authorizations permitting individuals or organizations to provide visitor services in Monument Wilderness may be issued if there is demonstrated need for the service(s) and they are deemed appropriate for the area proposed. Monument Rangers will maintain a record of currently active authorizations.
   1. In selecting persons to provide new visitor services, except for guided hunting and sport fishing, preference shall be given: 1) to the Native Corporation which is most directly affected by the establishment of the subject Wilderness, and 2) to local residents as will be defined by the Secretary of Agriculture (ANILCA, Section 1307).
   2. Outfitter and Guide permit holders may be authorized the use of assigned temporary campsites for specific dates within a use season. Assigned campsites shall not include structures such as tent platforms or equipment caches (except as in 3. below).
   3. Outfitter and Guide services for the taking of fish and wildlife may be allowed certain temporary camp facilities by ANILCA, Section 1316. (See Lands Section.)
   4. Generally consider a party size of no more than 12 persons for any one site or activity, allowing for case-by-case exceptions with ranger approval, for special circumstances such as safety concerns, youth groups, one time only guided tours, and resource protection.

Recreation Special Uses

A. Major and minor developments other than those specifically provided for in ANILCA are illegal or not consistent with agency policy and regulations. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Design activities to not be visually evident to the casual observer.
   1. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective. This objective defines the maximum limit of allowable change to the visual character of the area; less visible evidence of activities, such as those compatible with the Preservation VQO, is acceptable.
   2. Design allowed structures, campsites and constructed trails to meet the Partial retention Visual Quality Objective.

SOIL AND WATER

Watershed Resource Improvements: S&W2

A. Undertake watershed improvements only where deteriorated soil and hydrologic conditions caused by humans or their influences create a threat or loss of Monument Wilderness values or where such conditions could cause serious depreciation of important environmental qualities outside of the Monument Wilderness. For exceptions, see the Fish section.
B. Whenever possible, use indigenous plant species and materials in implementing watershed improvements.

SUBSISTENCE

Subsistence: SUB

A. Rural residents engaged in subsistence uses shall have reasonable access to subsistence resources. Appropriate use of snowmachines, motorboats, and other methods of surface transportation traditionally employed for such purposes by local residents shall be permitted, subject to reasonable regulation to protect Monument Wilderness resource values (ANILCA, Section 811). The use of other mechanical/motorized equipment, such as chainsaws, is allowed by permit only.

TIMBER

Timber Resource Planning: TIM112

A. Forested land is classified as unsuitable for timber production and withdrawn from the timber base.
B. The following types of uses may be authorized if accomplished in a manner that minimizes impacts on the Monument Wilderness:
   1. Commercial beach log salvage on Monument Wilderness coastlines may be authorized in accordance with ANILCA, Section 1315(f). Require that the recovery of logs above mean high tide be conducted from the water without roads or use of vehicles on uplands. Beach log salvage is defined as the recovery of logs that have been lost in transit and washed up on beaches.
   2. Traditional personal use wood harvesting activities {primarily: 1) beach logs on coastlines which can be removed without roads or use of vehicles on uplands, and 2) firewood}, subject to reasonable regulations to protect Wilderness resources. The cutting of down trees in navigable rivers (sweepers) and removal of trees from the banks is incompatible with Monument Wilderness. Cutting of green trees (except for emergency cutting of trolling poles) will be by permit only. (Consult ANILCA, Section 1315(f) and 36 CFR 223.10.)
   3. Removal, or use of trees cut as part of some other authorized use within the Monument Wilderness. (For example, clearing for a fish ladder.)
   4. Trees may be cut for use in construction and maintenance of authorized structures when it is not feasible to obtain the necessary material from outside the Monument Wilderness.

TRAILS

Trail Activities: TRAI1

A. Provide for a diversity of outdoor recreation trail and waterway opportunities which are appropriate for the ROS class and management intent of the Monument Wilderness. Emphasize nonmotorized and nonmechanized participation in activities such as hiking, mountaineering, spelunking, cross-country skiing, canoeing, and kayaking.
B. Emphasize primitive and semi-primitive recreation opportunities which are in harmony with the natural environment and consistent with the intent and purposes of the Wilderness Act and ANILCA.
C. Consider trail systems that provide:
    1. Connected, multi-day trip opportunities for both land trails and water trails.
    2. Alpine trail systems with quick access from saltwater anchorages, cabins, local communities, and resorts.
    3. Loop trail systems in connection with recreation cabins.
    4. Access from local communities to snow line where development of snow trails is feasible.

Trail Administration: TRAI2

A. Trails and associated waterways leading to and within Monument Wilderness often become the principal management tools for achieving management objectives. Construct and maintain trails and related facilities, such as bridges and signs, so they:
    1. contribute to management goals and objectives.
    2. are compatible with the ROS setting.
    3. appear to be part of the Monument Wilderness environment and not an intrusion upon it. Consult the Forest Service Trails Management Handbook, and Alaska Region Trails Construction and Maintenance Guide.

TRANSPORTATION

Transportation Operations: TRAN1

A. New roads and new airstrips are not permitted, except to access surrounded state and private land and valid mining claims subject to stipulations to protect the natural and other values of such lands. Any transportation development in association with minerals extraction will be in accordance with an approved Plan of operations, and subsequent annual work plans.
B. Roads in this Land Use Designation are closed to public use.
C. Allow use of snowmachines, motorboats, fixed-wing airplanes and non-motorized methods of surface transportation for traditional activities that are legal and for transportation to and from villages and homesites. (Consult ANILCA, Section 1110 and the Wilderness and Recreation & Tourism Sections.)
D. Provide adequate and feasible access for economic and other purposes to owners of land, including subsurface rights to land, valid mining claims, or other valid occupancies, which are effectively surrounded by Monument Wilderness.
    1. The routes and types of access shall be practical in an economic sense; but do not necessarily have to be the most economically feasible alternative.
    2. Monument Rangers will work with the landowner, or his/her authorized representative, to work out reasonable solutions which will meet the intent of ANILCA (Sections 1110(b) and 1323), while minimizing adverse impacts on Monument Wilderness resources and values.

WILDERNESS **Wilderness Resource Administration: WLNS12**

Wilderness Resource Management

A. Manage all designated National Monument Wilderness to maintain an enduring wilderness resource as provided by the Wilderness Act of 1964, while providing for public access and uses specifically allowed by the Alaska National Interest Lands Conservation Act (ANILCA) of 1980 (P.L. 96-487). Consult Alaska Region Supplement to FSM 2320, as amended. Activities and practices authorized by ANILCA will be regulated or restricted in accordance with the special provisions of ANILCA.

B. Use available opportunities to encourage and enlist public and private sector interest groups to work together in meeting wilderness management objectives. Emphasize programs which help in educating the using public in the appropriate conduct of activities and uses within National Monument Wildernesses (for example, "Leave No Trace.").

C. To the extent feasible, minimize the impacts of administrative activities on the National Monument Wilderness resources and visitors. Administrative activities include authorized use and wilderness resource related work being done by other agencies and cooperators. In developing project plans use the following guidelines:

1. Encourage permittees and cooperators to minimize the use of mechanized vehicles and equipment to make their presence in the Wilderness as unobtrusive as possible even though authorized.
2. The use of motorized vehicles and equipment by the Forest Service and other agencies for the administration of the Wilderness is subject to the following conditions:
   - Aircraft:
     - Fixed-wing airplanes may land on all suitable lakes, rivers, beaches, and icefields.
     - The administrative use of helicopters may be allowed on a case-by-case basis after evaluation of the need and full consideration of all alternative options for access. Approval by the Forest Service officer with delegated authority is required for administrative use.
     - Established air routes will be used to the extent feasible.
     - Low flights and continuous circling should be avoided.
     - Work logistics will be planned to minimize the number of aircraft flights over the wilderness and landings within a specific area.
   - Motorboats on Rivers:
     - Motorboats may be used on rivers for all administrative purposes under the same conditions that public use in allowed.
   - Motorboats on Freshwater Lakes:
     - Outboard motors of 10 horsepower or less may be used for administering the Wilderness, gathering firewood for public use cabins, and transporting crews and equipment on lakes specified by the Monument Ranger.
   - Chainsaws and Power Brushers:
     - Use of chainsaws and power brushers is allowed for trail and cabin maintenance and firewood cutting when by the Forest Service officer with delegated authority.
     - Use of chainsaws and power brushers is allowed for trail construction and reconstruction projects when specifically authorized in writing by the Forest Service officer with delegated authority .
   - Generators and Other Motorized Tools:

- Generators and other motorized tools may be used for construction/reconstruction projects only when use has been specifically authorized in writing by the Forest Service officer with delegated authority. They may not be used for normal maintenance work or in field camps except where specifically authorized by the Forest Service officer with delegated authority.

* Snowmachines:
  - May be used to administer Wilderness under the same snow conditions that public use is allowed.
* Exceptions:
  - Aircraft and mechanized equipment may be used as needed for search and rescue purposes and law enforcement.
  - The temporary use of motorized equipment may be authorized for fisheries research, management, rehabilitation, and improvement activities, when such use is authorized in the project environmental assessment or Decision Notice approved by the Forest Service officer with delegated authority.
  - All other administrative activities must be completed using primitive nonmotorized/nonmechanized methods unless specifically authorized by the Forest Service officer with delegated authority.

Wilderness Planning

A. Update individual Wilderness plans if inconsistent with this Plan.
B. Wilderness plans may be developed or updated for an individual Monument Wilderness in response to issues and concerns. If the direction is beyond the intent of these standards and guidelines, yet consistent with ANILCA and the Wilderness Act, it may require an amendment to the Forest Plan.
C. ROS classes may be adopted through wilderness planning.
D. Update Wilderness Implementation Schedules (WIS) as needed. Direction from this plan will be incorporated into the WIS.
E. Establish sub-unit management zones within the Monument Wilderness to deal with unique situations, or to integrate local issues and concerns with management activities, where necessary, to better accomplish Monument Wilderness objectives.
   1. The boundaries of sub-units should generally be located on identifiable topographic features and/or coincide with existing Recreation Opportunity Spectrum (ROS) classification areas.

WILDLIFE

Wildlife Habitat Improvement: WILD22

A. Conduct wildlife habitat improvement projects only when the principal objective is to protect or restore the Monument Wilderness resource, or to assist in the recovery of a federally-listed threatened or endangered species.

Wildlife Habitat Planning: WILD112

A. Wildlife management activities will be consistent with wilderness objectives, and will protect and maintain natural processes and wilderness values.
B. Address issues regarding management, introduction, and re-introduction of wildlife species consistent with National and Regional Policy.

NONWILDERNESS NATIONAL MONUMENTS

Land Use Designation NW

Both National Monuments contain Congressionally-designated Wilderness and nonwilderness National Forest System Lands. Management direction for Wilderness portions is provided in Wilderness National Monuments Land Use Designation.

Goals

To manage Admiralty Island and Misty Fiords National for public access and uses consistent with the Wilderness Act of 1964, the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) and their respective Presidential Proclamations of 1978 which designated these units as National Monuments because of their superlative combination of significant scientific and historical features.

Admiralty Island, exclusive of the Mansfield Peninsula, was designated as a National Monument for the scientific purpose of preserving intact a unique coastal island ecosystem. The goal of preservation was to assure continued opportunities for study of Admiralty Island's ecology and its notable cultural, historical, and wildlife resources, within its relatively unspoiled natural ecosystem. Protection and study of Tlingit cultural resources, other historical resources, brown bear and bald eagle populations are specifically directed.

Misty Fiords was designated as a National Monument to serve the scientific purposes of preserving a unique ecosystem and the remarkable geologic and biological objects and features it contains. The goal of preservation was to assure continued opportunities for study of Misty Fiord's geology and ecology including the complete range of coastal to interior climates and ecosystems. Protection and study of the geology, plant and animal succession, historical resources, and fish and wildlife resources in specifically directed.

To facilitate the development of significant mineral resources located within portions of Admiralty Island and Misty Fiords National Monuments, as specified by the Alaska National Interest Lands Conservation Act (ANILCA).

To protect objects of ecological, cultural, geological, historical, prehistorical, and scientific interest, as specified by ANILCA, and in Plans of Operation, and to minimize effects on non-mineral resources to the extent feasible. In the long-term, when mining is completed, to reclaim areas disturbed by mining to a near-natural condition.

To limit mining activities to claims with valid existing rights, and to the land area actually needed to carry out mining operations.

Objectives

Inventory, research, protect, and interpret National Monument resources as directed by National Monument designations.

Make resource and research information about the National Monuments available to other forest units where it may be beneficial for management of multiple use lands.

Ensure that Plans of Operations for each mineral development specify the activities to be conducted, the location and timing of those activities, and how the environment and resources in each area will be protected through compliance with Federal and state requirements.

In areas affected by mining, manage activities to maintain the productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. Stress protection of fish habitat to prevent the need for mitigation.

In areas affected by mining, manage public recreation use as directed in the Plans of Operation. Outside these areas, manage recreation use and activities to meet the appropriate levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the adopted or existing Recreation Opportunity Spectrum, as appropriate.

Locate and manage trails to direct the public away from mining operations.

Develop rehabilitation plans following project completion. Include, as needed, rehabilitation of fish and wildlife habitats, soil resources, and the scenery.

Desired Condition

The purposes of National Monument designation are fulfilled by protecting and learning more about the special resources they contain. Appropriate research is encouraged and supported and contributes to both the purposes of the Wilderness National Monuments and improved management of other forest lands. Appropriate interpretive and educational efforts allow the public to better understand the resources of these special areas and to appreciate how these areas fit into the local, regional, and even global context of geology, ecology, and human history.

During mining operations, mining activities are localized and limited to the area necessary for their efficient and orderly development. Off-site effects to National Monument resources are minimal, and most Monument users are not aware of, or affected by, the mines. After the completion of mining, rehabilitation of the affected areas is done to minimize the evidence of past mining and to the maximum extent feasible, seek to return the area to generally natural conditions. Ultimately, the entire Nonwilderness National Monument provides the same natural settings and recreation experiences as the adjacent Wilderness National Monument areas.

Nonwilderness National Monuments Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I,II(A-D,I)	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest health	HEALTH1	I(B:1;C)	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG11 MG12	All I,III-VII	4-32
Recreation And Tourism	REC111,122 REC112	All I,II(A),III	4-34
Riparian	RIP1 RIP2	All I,II(A-E)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4;6-7,B-F),II	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1 TIM114	All VIII(D)	4-93
Trails	TRAI1 TRAI2	I(A-E;F:1,3,5) All	4-100
Transportation	TRAN111,122,212,23 TRAN214	All II-IV	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD22	All I(A:1;B)	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Allow structures needed and authorized for the extraction of mineral deposits, specially authorized activities, and for the protection of National Monument values.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics resulting in the least possible disturbance or evidence of human presence.
   1. Use of mechanized equipment will require approval by the Forest Service officer with delegated authority.
   2. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
   3. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, but within one year after the fire occurs.

Fuel Improvements: FIRE2

Prescribed fire

A. As a general management practice, do not use management-ignited prescribed fire. Should it become necessary to consider the use of management-ignited prescribed fire, consult FSM 2324.

B. Outside the active mining area, use prescribed fire only to perpetuate natural ecological processes. As a general management practice, do not use prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142).

FISH

Fish Habitat Planning: FISH112

Planning and Mitigation

A. In areas affected by mining, manage activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)

B. Stress protection of fish habitat to prevent the need for mitigation. Mitigation, rehabilitation, and monitoring of mining impacts to fish habitat or populations shall be identified in appropriate environmental documents, Plans of Operation, and updates and amendments to each. Stocking of sport fish will generally be employed only to reestablish indigenous stock depleted by human influences. Stocking of indigenous species in currently barren waters may be considered, where appropriate to the purposes of National Monument management.

C. Mining impacts to fish habitat shall be mitigated by the mining operator. (Consult ANILCA, Section 505 (b) for Quartz Hill.)

Planning Fish Enhancement

A. Provide for fisheries habitat enhancement subject to the goal of restoring and maintaining fish production in the State of Alaska (Consult ANILCA, Sections 507 and 1315(b) and the Regional Comprehensive Salmon Plans). Consider the suitability of fish habitat enhancement, during project planning, by evaluating: 1) availability of suitable non-Monument, non-wilderness opportunities; 2) effects on Monument conditions in general; 3) effects on Monument ecosystems and desired solitude level due to an enhanced fishery resulting in increased recreation use; 4) effects on ecosystems due to the introduction of species not indigenous to the watershed; and, 5) the appropriateness of structures both in type and scale to the Recreation Opportunity Spectrum Class (ROS) setting.

Fish Habitat Improvement: FISH22

A. Use construction techniques which are consistent with Monument management.
   1. Construct only those facilities essential to operations and in a rustic manner to blend into the natural character of the area. (Consult ANILCA, Section 1315 (b).)
   2. Land-disturbing activities necessary for construction will be temporary.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Allow natural occurrences to play their normal role in ecological succession.
B. Scientific study of natural populations is encouraged using research methods appropriate for the National Monument setting and goals.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory

A. Activities which have the potential to affect Heritage Resources shall be in compliance with the National Historic Preservation Act, Section 106, 110.
B. Inventory valid, existing mineral claims prior to the approval of a Plan of Operations for mineral activities.
C. Inventory and evaluation may be done at the operator's discretion and cost, provided that the inventory and evaluation is accomplished under the supervision of a qualified heritage resource specialist and authorized by a Special Use Authorization.
D. Include, as part of the Plan of Operations, specific protective and/or mitigative measures to be taken by the operator who is responsible for the cost of any such protective or mitigative measures.

Enhancement

A. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses.
   1. Provide for the scientific study and interpretation of Heritage Resources to visitors.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation will generally occur outside this Land Use Designation.
B. Manage caves as Class 1 (Sensitive) or Class 3 (Undeveloped) as described in the Karst and Cave Resources Forest-wide Standards & Guidelines.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Authorize special uses to facilitate mineral-related activities. Authorize other uses if they do not substantially conflict with mineral-related activities.
   1. Authorizations must be compatible with the purposes for which the area was established, subject to exceptions provided by the Alaska National Interest Lands Conservation Act (ANILCA).
B. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and Utility sites and corridors may be located within this Land Use Designation only after an analysis of potential TUS corridors has been completed and no feasible alternatives exist outside the Land Use Designation.

Landline Location and Maintenance: LAND23, LAND24

A. Provide adequate marking for the public and Forest Service employees to distinguish land ownership and land classification.
   1. Survey, mark, and post property lines to Wilderness or National Monument standards along trails, canoe routes, and other transportation corridors or areas of frequent human use.
   2. Determine survey, marking, and posting priorities, by the degree to which the adjacent Land Use Designation is compatible with the National Monument management objectives.

Land Ownership Adjustments: LAND26

A. Allow and assist in the process for valid mining claims embracing locatable commodities to go to patent, subject to the requirements of ANILCA.

MINERALS AND GEOLOGY

Minerals and Geology Resource Preparation: MG11

Resource Preparation

A. Prepare geologic, paleontologic, and historic mining interpretations where appropriate.

Minerals and Geology Administration: MG12

Lands Withdrawn from Mineral Entry

A. National Forest System lands within this Land Use Designation are withdrawn from additional mineral entry (ANILCA, Section 503).
B. Claimants with valid claims located in areas withdrawn from mineral entry retain valid existing rights if such rights are established prior to the date the area was withdrawn from mineral entry.
C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. The plans of operation for the Greens Creek and Quartz Hill projects describe the activities which will be conducted, the location and timing of those activities, and how the environment and resources in each area will

be protected through compliance with federal and state requirements. (Consult ANILCA, Sections 503 and 504.)

B. Issue leases and other necessary associated permits in accordance with ANILCA, Sections 503 and 504.

C. In areas affected by mining, manage activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505(a).)

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. To the degree consistent with the overall purposes of National Monument management, provide a spectrum of wildland recreation opportunities which reflect the existing ecological, historical, and sociological conditions found within the Monument.

B. Continue to manage for the established ROS opportunities and appropriate activities throughout the Land Use Designation unless specifically closed to public use. Protect the integrity of National Monument resources through integrated project planning and implementation within the National Monument.

1. Manage for the existing recreation settings and opportunities unless scheduled activities and practices cause a change in the ROS setting(s). Manage recreation use in a manner that is compatible with the long-term objectives of the Monument.
2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the appropriate ROS guidelines. Maintain the capability of the National Monument to provide appropriate quality recreation opportunities on a sustained basis.

C. Manage and regulate public recreation use within this Land Use Designation area in accordance with direction contained in the Plans of Operations for the respective mining operations. Outside the area covered by the Plans of Operations manage recreation use and activities to meet the appropriate levels of social encounters, on-site development, methods of access, and visitor impacts indicated for the established ROS settings. (Consult National and Regional Handbooks.)

D. Consider additional public use cabins and/or shelters when needed to meet recreation demand within the National Monument.

E. With the help of user groups, develop "no trace" camping and use programs to encourage the dispersal and use of durable campsites. Where dispersal is not feasible, develop designated campsites and encourage their use.

Establishment of Sub-unit Management Zones

A. Where necessary to better accomplish non-Wilderness National Monument management objectives, establish special management zones within the Monument to deal with unique situations, or to integrate local issues and concerns with management activities.

1. The boundaries of subunits should generally be located on identifiable topographic features and/or coincide with an established Recreation Opportunity Spectrum (ROS) area.

Recreation Special Uses

A. Major developments are generally not consistent with the objectives of this Land Use Designation. Development proposals require scrutiny for the magnitude and scope of conformance. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

B. Minor developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Manage the visual resource to be compatible with non-Wilderness Monument objectives.
   1. Adopted Visual Quality Objectives (VQO) will range from Retention, in those portions of the Monument without access, to Maximum Modification in those portions developed in connection with mineral activities. Site-specific VQO's and rehabilitation objectives will be identified in specific Plans of Operation for mineral operations.

SUBSISTENCE

Subsistence: SUB

A. Assess the effect of continued existing subsistence uses on the long-term condition and natural succession of National Monument ecosystems.

TIMBER

Timber Resource Planning: TIM112

A. Commercial timber sales and harvesting are prohibited in the National Monument. Forested land is classified as unsuitable for timber production and withdrawn from the timber base. Any timber removal associated with mineral access and facility development is nonchargeable to the Allowable Sale Quantity.
B. Commercial beach log salvage on coastlines may be authorized in accordance with ANILCA, Section 1315(f). Require that the recovery of logs above mean high tide be conducted from the water without roads or use of vehicles on uplands. Beach log salvage is defined as the recovery of logs that have been lost in transit and washed up on beaches
C. Allow traditional personal use wood harvesting activities {primarily: 1) beach logs on coastlines which can be removed without roads or use of vehicles on uplands, and 2) firewood} in National Monuments, subject to reasonable regulations to protect Monument resources. The cutting of down trees in navigable rivers (sweepers) and removal of trees from the banks is discouraged. Cutting of green trees (except for trolling poles) will be by permit only. (Consult ANILCA, Section 1315(f) and 36 CFR 223.10.)

Timber Resource Improvements: TIM2

A. Rehabilitation, including reforestation, will be a function of mineral development and not a timber management objective.

TRAILS

Trail Administration: TRAI2

A. During the period of mining development and operation, plan and locate trails within this Land Use Designation to direct the public away from mining operations. Construct and maintain trails and related facilities so that they contribute to desired conditions and appear to be an appropriate part of the Monument environment and not an intrusion upon it. (Consult the Forest Service Trails Management Handbook.)

TRANSPORTATION

Transportation Operations: TRAN1

A. New roads are not permitted, except for the following purposes: 1) to access valid mining claims and state or private lands not otherwise reasonably accessible; 2) for Transportation and Utility Corridors in accordance with ANILCA, Title XI.
B. Further development of transportation systems in association with minerals extraction will be in accordance with an approved Plan of operations, and subsequent annual work plans.
C. Roads in this Land Use Designation are generally closed to public use.
D. Use of snowmachines, motorboats, aircraft and non-motorized methods of surface transportation are permitted.

WILDLIFE

Wildlife Habitat Planning: WILD112

A. Mitigation, rehabilitation and monitoring of mining impacts to wildlife habitats or populations shall be identified in environmental documents, Plans of Operations, and updates and amendments to each.

Wildlife Habitat Improvement: WILD22

A. Wildlife habitat improvements must have as their principal objective the protection or restoration of the National Monument resources.
B. Scientific study of indigenous species and their habitats is encouraged with emphasis on identifying their roles in ecosystem dynamics and impacts of human uses.
C. Address issues regarding management, introduction, and re-introduction of wildlife species consistent with National and Regional Policy.

RESEARCH NATURAL AREA

Land Use Designation RA

Goals

To preserve areas of ecological importance in their natural condition for the purposes of research, monitoring, education, and/or to maintain natural diversity.

To allow natural physical and biological processes to prevail without human intervention.

Objectives

Provide opportunities for baseline monitoring of ecological processes and non-manipulative research and observation.

Maintain the natural, undisturbed character of each area by

- permitting no permanent facilities, and no roads or trails except for research purposes or as otherwise provided by law
- recommending withdrawal of the area from mineral entry when necessary, subject to valid existing rights
- limiting recreation uses to those that do not affect or alter natural biological processes
- allowing vegetative manipulation, fish enhancements, wildlife improvements, and/or soil and water improvements only if they will provide a closer approximation of natural conditions than would be possible otherwise

Desired Condition

All Research Natural Areas on the Tongass National Forest are characterized by essentially unmodified environments in which natural ecological processes prevail. They remain undisturbed by human uses or activities, and provide quality opportunities for non-manipulative scientific research, observation and study. The RNA network is representative of the predominant vegetation types, wildlife habitats, and aquatic communities of the Tongass. The "National Hierarchical Framework of Ecological Units" is used to identify sites to be represented in the RNA network. Research Natural Areas are used as monitoring reference areas to evaluate other lands where management activities are undertaken to assess the effectiveness of various standards, guidelines, and mitigation measures in reducing or preventing adverse environmental effects.

Research Natural Areas Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	None	4-4
Facilities	FAC	None	4-6
Fire	FIRE12	All	4-7
Fish	FISH	All	4-8
Forest health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST CAVE	I-III All	4-18
Lands	LAND122 LAND 23,24	VII All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC111 REC112 REC122	All I(A) I,II,III(B),VI,VII	4-34
Riparian	RIP1 RIP2	All I,II(A-E)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1 VIS11 VIS12	All I,II(A,E) II	4-74
Soil And Water	S&W1111,1112 S&W112	All I(A:1-4,B-F)	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1	All	4-93
Trails	TRAI	None	4-100
Transportation	TRAN	None	4-102
Wetlands	WET	II	4-109
Wildlife	WILD112	I, II, V, VI(A,C,E); VII-VIII; IX(A:1-3;5-7,B); X; XI(A:1); XII(A:1-2), XIII, XIV, XVI(A:1)	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. No buildings are permitted. (Consult the FSM 4063 for authorizing temporary physical improvements, which requires approval by the PNW Station Director.)

FIRE

Fire Suppression: FIRE12

Suppression Action

A. As a general guide, extinguish human-ignited fires that endanger Research Natural Areas as quickly as possible, using means that will cause minimal damage to the area. Naturally-ignited fires are generally not suppressed unless they pose a threat to adjacent lands, life and property.

Fuel Improvements: FIRE2

Prescribed fire

A. Use prescribed fire, including those ignited by management as well as natural ignitions, only if the land manager is certain that it will provide a closer approximation of natural vegetation than would be possible otherwise. In addition, prescribed natural fires can be used only if the Forest Plan is first amended to analyze, justify, and approve such a program on a specific RNA. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

A. Allow enhancement of fish habitat only if it will provide a closer approximation of natural conditions than would be possible otherwise.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Implement insect and disease management measures only if the Regional Forester and PNW Station Director deem such action necessary to protect the features for which the RNA was established or proposed, or to protect adjacent resources. More specifically: 1) If endemic, then consider no management. 2) If exotic, then consider control. 3) If past insect and disease management activities (e.g., insect and disease and/or fire suppression) have exacerbated the threat to the RNA, then consider control. 4) If insects and disease in the RNA threaten adjacent lands, then consider control.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

A. Locate, evaluate, and protect significant Heritage Resources. Interpretation may be provided when it can be done while maintaining unmodified natural conditions and processes.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation will generally occur outside this Land Use Designation.

B. Manage caves as Class 1 (Sensitive) or Class 3 (Undeveloped) as described in the Karst and Cave Resources Forest-wide Standards & Guidelines.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Except as otherwise provided by law, allow only those activities which will preserve the RNA in an unmodified condition or those activities which serve research purposes. (Consult FSM 2700 and 4063.)
   1. Coordinate all special use proposals with the PNW Station Director, to ensure compatibility with research objectives.
   2. Do not authorize activities which modify natural ecological processes.
   3. Do not permit roads, fences, or signs in a RNA, unless they contribute to the management objectives or the protection of the area.
   4. Do not authorize new buildings and remove existing unauthorized buildings when feasible.
   5. Consider authorizing temporary facilities, such as tent platforms, when directly and necessarily related to the taking of fish and wildlife, when approved by the PNW Station Director in consultation with the Forest Supervisor. (See the Lands Forest-wide Standards & Guidelines for additional information.)
   6. Only the PNW Station Director, after consultation with the Forest Supervisor, can approve plans for temporary water and atmospheric gauging stations and instrument shelters. Ensure that such plans contain provisions for tenure of the facility, actions to be taken, time limits for completion of actions, and identification of parties responsible for returning disturbed areas to a natural condition.
   7. Encourage the use of RNA's by scientists and educators. Refer research applicants to the PNW Station Director, who will approve study plans in consultation with the Forest Supervisor. Upon approval of the study plan, the District Ranger authorizes access to the area.
   8. Do not allow road or trail development or special uses of a permanent nature, except for research and education purposes, unless otherwise provided by law.

B. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites and corridors may be located within this Land Use Designation only after an analysis of potential TUS corridors has been completed and no feasible alternatives exist outside this Land Use Designation.

Landline Location and Maintenance: LAND23, LAND24

A. Ensure that the boundaries of RNA's are clearly identifiable in the field and in administrative records.

Land Ownership Adjustments: LAND26

A. Acquire private inholdings as opportunities arise.

LAW ENFORCEMENT **Law Enforcement Activities: LAW**

A. Where a special closure is necessary to protect a RNA, recommend a closure order under provisions of 36 CFR 261.50. Ensure that such orders incorporate the special closure provisions of 36 CFR 261.53. (Consult FSM 4060.)

MINERALS AND GEOLOGY **Minerals and Geology Administration: MG12**

Mineral withdrawals

A. Designated RNA's may be withdrawn from mineral entry, subject to valid existing rights.
B. Permit reasonable access to mining claims with valid existing rights in accordance with the provisions of an approved Plan of operations.

RECREATION AND TOURISM **Recreation Use Administration: REC122**

Recreation Management and Operations

A. Provide only those specific types and intensities of recreation activities and opportunities that can be accommodated without endangering or altering the natural biological processes occurring within the RNA.
B. Issue appropriate orders regulating public use within the area that are necessary to ensure non-degradation of the natural environments for which the RNA was established or proposed.

Recreation Special Uses

A. Neither major nor minor developments are allowed because they are incompatible with the objectives of this Land Use Designation. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY **Scenery Operations: VIS1**

A. Allow the visual character of the area to evolve naturally.
   1. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective.

SOIL AND WATER **Watershed Resource Improvement: S&W2**

A. Soil and water resources evolve under natural conditions. Allow improvement of soil and water resources only if it will provide a closer approximation of natural conditions than would be possible otherwise.

SUBSISTENCE **Subsistence: SUB**

A. Seek to provide customary and traditional subsistence opportunities consistent with ANILCA.

TIMBER **Timber Resource Planning: TIM112**

A. Forested lands are classified as unsuitable for timber production.
B. Vegetation is allowed to evolve in natural undisturbed conditions. Non-native plants are removed if feasible. Personal use fuel wood and Christmas tree cutting activities are incompatible with the Land Use Designation objectives.

TRAILS

Trail Activities: TRAI1

A. Locating trails in this Land Use Designation is not permitted unless they contribute to the objectives or the protection of the area, unless otherwise provided by law.

TRANSPORTATION

Transportation Operations: TRAN1

A. Unless otherwise provided by law, do not locate roads in this Land Use Designation unless they contribute to the objectives or protection of the area.

WILDLIFE

Wildlife Habitat Improvement: WILD22

A. Wildlife habitats evolve in natural conditions except that non-native plants and animals are removed if feasible. Allow wildlife habitat enhancement only if it provides a closer approximation of natural conditions than would be possible otherwise.

SPECIAL INTEREST AREA

Land Use Designation SA

Goals

To provide for the inventory, maintenance, interpretation, and protection of the existing characteristics and attributes of areas with unique cultural, geological, botanical, zoological, recreational, scenic, or other special features.

Objectives

Provide opportunities for public study, use, and enjoyment of unique natural areas that are suitable to, and do not compromise, the characteristics of each area.

Allow only facilities and recreation developments that contribute to the interpretation of natural features or provide for compatible public uses, and that blend with the natural setting.

Provide for existing Recreation Opportunity Spectrum opportunities and activities, unless public use is specifically restricted for the protection of other resources.

Consider withdrawing each area from mineral entry, subject to valid existing rights, on a case-by-case basis, if mineral development would not be consistent with protecting the unique features of the area.

Apply the Retention Visual Quality Objective except around developed interpretive facilities, and other developments or structures.

Allow fish, wildlife, and/or soil and water improvements if they are compatible with the purposes for which each Special Interest Area was established.

Develop management plans for those Special Interest Areas needing specific direction for achieving these goals and objectives.

Desired Condition

All Special Interest Areas on the Tongass National Forest are characterized by generally unmodified environments in which unique natural features are preserved. They remain largely undisturbed by human uses or activities, except for localized interpretive purposes and, in some cases, recreation developments, and provide quality opportunities for public study, use, and enjoyment. Each is an example of one or more cultural, geological, botanical, zoological, paleontological, or other special features unique within the Tongass.

- Cultural areas possess prehistoric/historic sites, buildings, or artifacts of National Register of Historic Places Significance or having special cultural associations with Native Americans.
- Scenic Areas are comprised of landscapes of outstanding beauty or natural characteristics, such as glaciers, alpine, and areas of diverse vegetative patterns/coverage. These are areas which could be viewed for a long duration from specific vantage points, such as developed recreation sites, trails, anchorages, travel routes, and communities.
- Geological Areas have unique geologic features of the earth's development including caves, volcanic features, stratigraphic and structural features, and fossilized specimens of plants and animals.

- Botanical Areas contain specimens or groups of plants, plant groups, and plant communities which are significant because of form, color, occurrence, habitat location, life history, arrangement, ecology, environment, rarity and/or other features.
- Zoological Areas contain unique or significant animals, animal groups, or animal communities, habitat, location, life history, ecology, environment, rarity or other features.

Special Interest Area Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I,II(A-I,K,L)	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP1 RIP2	All I,II(A-E)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4,6-7)II,III	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1,130,140 TIM114	All VIII	4-93
Trails	TRAI	All	4-100
Transportation	TRAN111,122,212,22,23 TRAN214	All I-IV	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112,WILD23	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Allow administrative, interpretive, and information sites as needed to accomplish Special Interest Area objectives.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression action that minimizes fire suppression cost and resource damage. The action must meet the Special Interest Area objectives.
B. Suppression tactics will be compatible with Special Interest Area objectives.

Fuel Improvements: FIRE2

Prescribed fire

A. Use management-ignited prescribed fire if it is compatible with the Special Interest Area objectives.
B. As a general management practice, do not use prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

A. Provide for public interpretation of fish habitats, habitat enhancement projects, and associated special fisheries conditions in appropriate Special Interest Areas.
B. Allow fish enhancement projects if they are compatible with Special Interest Area objectives.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Implement insect and disease management measures, consistent with Land Use Designation objectives, to protect the area's special features and adjacent resources.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory

A. Identify significant heritage properties that include archaeological, historical, religious, or areas that contain specific forest resources of heritage value used for Native art and craft forms.

Evaluation and Protection

A. Heritage Resource properties which are classified as Special Interest Areas under 36 CFR 294 shall be evaluated for the National Register of Historic Places and as possible National Historic Landmarks as established in 36 CFR 63.
   1. Establish the exterior boundary of heritage resource properties on the ground if determined necessary to protect the site.

2. Protect heritage resource properties from degradation from effects of management activities occurring within adjacent Land Use Designations.
3. Manage for the availability and use of forest products for traditional native heritage activities, while maintaining the physical and scientific integrity of the heritage resource properties.
4. Provide interpretive devices to explain special features and protective regulations.
5. Provide for interpretive activities that enhance the recreation experience, while protecting the unique values for which the heritage resource property was designated.
6. Prevent the use of heritage resource property when national policy or sensitivity of unique values requires closure.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Issue only those Special Use Authorizations which will perpetuate the unique values that led to the designation or proposal to designate the Special Interest Area.
   1. Issue authorizations which will aid in the maintenance, improvement, and protection of the existing characteristics and attributes of the Special Interest Area.
   2. Analyze each proposal on a case-by-case basis, using an interdisciplinary process.

B. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites and corridors may be located within a Special Interest Area only after an analysis of potential TUS opportunities has been completed and no feasible alternatives exist outside the Land Use Designation.

Land Ownership Adjustments: LAND26

A. Acquire private inholdings as opportunities arise.

MINERALS AND GEOLOGY

Minerals and Geology Resource Preparation: MG11

Resource Preparation

A. Prepare geologic, paleontologic, and historic mining interpretations of Special Interest Areas where appropriate.

Minerals and Geology Administration: MG2

Forest Lands Withdrawn from Mineral Entry

A. Consider recommending that Special Interest Areas be withdrawn from mineral entry, subject to valid existing rights, when mining would not be compatible with the Area's objectives.

B. Permit reasonable access to mining claims with valid existing rights in accordance with the provisions of an approved Plan of Operations.

Plan of operations

A. Reduce impacts to the extent feasible when developing minerals. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. Regulate use based on studies reflecting the effect of recreation and tourism activities on the unique features for which the Special Interest Area is established. Studies need only be done where a conflict may exist.
   1. Consider providing interpretation of the unique characteristics of the Special Interest Area.
   2. If studies indicate human use adversely affects the special features, regulate use to eliminate the adverse effects or reduce use to acceptable levels.
   3. Design and locate recreation-related structures to be compatible with characteristics of the area. Regulate user-created structures to avoid degradation of the unique character of the area. (Consult FS Recreation Site Development Handbook.)
   4. Restrict public motorized travel to designated travel routes except for powerboats operating on open water channels. (Consult FS Off-Road Vehicle Management Handbook.)
B. Adopt ROS classes through project planning and manage according to the adopted ROS class. Before project planning, manage according to the existing ROS class.

Recreation Special Uses

A. Major and minor developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Manage Areas for their visual integrity, with most areas in a naturally-appearing condition.
   1. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective, except in the portions with developed recreation or interpretive facilities (such as Mendenhall Glacier, Ward Lake, and Blind Slough).
   2. In those portions with developed recreation or interpretive facilities (such as Mendenhall Glacier, Ward Lake, and Blind Slough), apply the Visual Quality Objective of Modification in the foreground and Partial Retention in the middleground and background.
   3. Design visitor facilities to blend, to the extent feasible, with the natural setting.

TIMBER

Timber Resource Planning: TIM112

A. Forested land is classified as unsuitable for timber production. Timber removal associated with development or maintenance of interpretation activities in Special Interest Areas is nonchargeable to the Allowable Sale

Quantity. Forest products are available for continued traditional Native artistic use, if not in conflict with Special Interest Area purposes,

B. Manage personal use wood harvest and Christmas tree cutting activities to be consistent with Land Use Designation objectives.

TRANSPORTATION **Transportation Operations: TRAN1**

A. Provide and manage a transportation system compatible with, or which will improve the interpretation of, the unique values of the Special Interest Area. (See exceptions under the Lands and Minerals & Geology sections of this prescription.)

WILDLIFE **Wildlife Habitat Planning: WILD112**

A. Provide for public interpretation of wildlife habitats and associated special wildlife conditions in appropriate Special Interest Areas.

B. Allow wildlife improvement projects where they are compatible with the purposes for which the Special Interest Area was established.

REMOTE RECREATION

Land Use Designation RM

Goals

To provide extensive, unmodified natural settings for primitive types of recreation and tourism.

To provide opportunities for independence, closeness to nature, and self-reliance in environments offering a high degree of challenge and risk.

To minimize the effects of human uses, including subsistence use, so that there is no permanent or long-lasting evidence.

Objectives

Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the Primitive Recreation Opportunity Spectrum class.

Provide trails and primitive facilities that are in harmony with the natural environment and that promote primitive recreation experiences.

Apply the Retention Visual Quality Objective.

Fish enhancement projects may occur. Design wildlife habitat improvements to emulate natural conditions and appearance.

Desired Condition

Areas in the Remote Recreation Land Use Designation are characterized by extensive, unmodified natural environments. Ecological processes and natural conditions are not noticeably affected by past or current human uses or activities. Users have the opportunity to experience independence, closeness to nature, solitude and remoteness, and may pursue activities requiring self-reliance in an environment that offers a high degree of challenge and risk. Interactions between users are infrequent. Motorized access is limited to traditional means: boats, aircraft and snowmachines. Facilities and structures are minimal, and rustic in appearance.

Remote Recreation Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I,II(A-G,K,L)	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP1 RIP2	All I-II(A-E,G)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1 VIS11 VIS12	All I,II(A,E) I(A,B,D),II	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4,6-7),II,III	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1,140 TIM114	All VIII(D)	4-93
Trails	TRAI	All	4-100
Transportation	TRAN	None	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD22 WILD23	I-VIII; IX(A:1-8;11,B); X; XI(A:1); XII; XIII; XIV; XVI(A:1); XVII I(A:1,B) All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Design and locate administrative and non-recreation structures to reduce adverse effects on recreation and tourism opportunities.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent Land Use Designations may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics which result in the least possible disturbance or evidence of human presence.
   1. Keep use of mechanized equipment to a minimum.
   2. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
   3. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, but within one year after the fire occurs.

Fuel Improvements: FIRE2

Prescribed fire

A. As a general management practice, do not use management-ignited prescribed fire. Should it become necessary to consider the use of management-ignited prescribed fire, FSM 2324 provides direction.

B. As a general management practice, do not use prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

Fish Enhancement

A. Evaluate fish habitat improvement during project planning by considering: 1) effects resulting from the introduction of species not indigenous to the watershed; 2) the appropriateness of structures both in type and scale to the Primitive Recreation Opportunity Spectrum (ROS) setting; and 3) the need to provide well-distributed fisheries that support sport and commercial fisheries, subsistence, and community stability.

Fish Habitat Improvement: FISH22

A. Design development to minimize impact on the primitive setting.

B. Construction techniques should be compatible with the primitive recreation setting.

C. Evidence of necessary land-disturbing activities for construction should not be visible to the casual observer after 5 years.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Implement insect and disease management practices to maintain forest health in this and adjacent Land Use Designations.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks annually.

HERITAGE

Heritage Resource Activities: HER

Enhancement

A. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses.
   1. Interpretive information concerning Heritage Resources located inside this Land Use Designation should be in the form of exhibits and publications located outside the Land Use Designation.
   2. Heritage Resources are available for scientific studies that are consistent with the primitive settings and activities, and heritage resource management objectives for the specific site.

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
   1. Identify, classify, and evaluate known Heritage Resources.
   2. Identify heritage properties to be nominated to the National Register of Historic Places.
   3. Identify heritage properties that require stabilization or other protective measures.
   4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation will generally occur outside this Land Use Designation.

B. Manage caves as Class 1 (Sensitive) or Class 3 (Undeveloped) as described in the Karst and Cave Resources Forest-wide Standards & Guidelines.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Permit only those new activities which are compatible with the Land Use Designation.
   1. Permit temporary structures and major fisheries improvement projects (such as hatcheries) only if they are widely dispersed.
   2. Permitted activities and structures should not be visually evident from a Visual Priority Route or Use Area (see Appendix F).

B. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites and corridors may be located within this Land Use Designation only after an analysis of potential TUS corridors has been completed and no feasible alternatives exist outside this Land Use Designation.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral exploration and development. Mineral activities will be compatible with objectives of this Land Use Designation to the extent feasible.
B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Minerals Regulations 36 CFR 228.
C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Work with claimants to develop a Plan of operations that adequately mitigates adverse impacts to Land Use Designation objectives. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.
C. Manage mineral exploration and development activities to be compatible with the emphasis of the Remote Recreation Land Use Designation. Apply the following management practices to reduce resource impacts.
    1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
    2. Take maximum advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
    3. Discourage use of motorized surface vehicles, except as provided in ANILCA, Section 1110(b), which assures adequate and feasible access for economic and other purposes.
    4. Locate material sites and marine transfer facilities outside this Land Use Designation if reasonable alternatives exist.
    5. Ensure that vegetation removed from the project area is hauled away, buried, burned, or scattered.
    6. Minimize the scale of spoil/disposal areas to the surrounding landscape as seen from sensitive view points.
    7. Approve use of colors that simulate those found in the characteristic landscape. Avoid use of reflective materials in project facilities.
    8. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
    9. Ensure that landform modifications simulate naturally-occurring forms.
    10. Ensure that disturbed areas are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. Manage for Primitive recreation settings, recognizing other Recreation Opportunity Settings (ROS) may be present due to authorized activities, existing use patterns, and activities in adjacent Land Use Designations. Strive to minimize these changes from the Primitive ROS objective.
B. Manage recreation and tourism use to meet the levels of social encounters, on-site development, and visitor impacts indicated by the ROS charts in the Recreation and Tourism Forest-wide & Guidelines.

Recreation Special Uses

A. Major developments are generally not consistent with the objectives of this Land Use Designation. Development proposals require scrutiny of the magnitude and scope for Land Use Designation conformance. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.
B. Minor developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Provide a visual condition in which activities are not visually evident to the casual observer.
   1. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective.
   2. Exceptions for small areas of non-conforming developments, such as recreation sites, may be considered on a case-by-case basis (see the Recreation and Tourism Standards & Guidelines in this prescription).

SOIL AND WATER

Watershed Resource Improvements: S&W2

A. Watersheds will be managed in a natural condition.
B. Use indigenous plants and materials to protect or improve the quality and/or quantity of the water resource or to stabilize soils.

TIMBER

Timber Resource Planning: TIM12

A. Forested land is classified as unsuitable for timber production.
B. Taking of personal use wood will be limited to beach logs which can be removed from coastlines without roads or use of vehicles on uplands. The cutting down of trees in navigable rivers (sweepers) and removal of trees from the banks must be compatible with the management direction for fish habitat.

TRANSPORTATION

Transportation Operations: TRAN1

A. New roads are not permitted except to access valid mining claims (or as excepted under Lands).
B. Existing roads in this Land Use Designation are closed to motorized uses subject to ANILCA provisions.
C. Use of snowmachines, motorboats, and aircraft is permitted.

WILDLIFE

Wildlife Habitat Planning: WILD112

A. Wildlife habitats are generally subject to ecological changes only.
B. Indigenous species are maintained.
C. Habitat improvement projects are acceptable if designed to emulate natural conditions and appearance.

MUNICIPAL WATERSHED

Land Use Designation MW

The emphasis of this Land Use Designation is to provide protection of municipal water supplies for the following incorporated cities and boroughs: Ketchikan, Petersburg, Sitka, Juneau, Wrangell, Kake, Klawock, Craig, and Hydaburg.

Goals

To maintain these watersheds as municipal water supply reserves, in a manner that meets State of Alaska Drinking Water Regulations and Water Quality Standards for water supply.

Objectives

Limit most management activities to the protection and maintenance of natural resources. Fish habitat enhancements, and watershed and wildlife habitat improvements, may occur if they are compatible with the municipality's watershed management objectives.

Classify forested land as unsuitable for timber production. Salvage logging will only occur after consultation with the municipality.

Recreation uses will be authorized by the Forest Service officer with delegated authority, in consultation with the municipality and will be limited to those that will protect water quality and flow.

Desired Condition

Lands managed as Municipal Watersheds are generally in a natural condition. Facilities or structures to provide municipal water supplies may be present. Uses or activities that could adversely affect water quality or supply do not occur. These watersheds provide municipal water that meets all State Drinking Water Regulations and Water Quality Standards for water supply.

Municipal Watershed Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural development	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A1-4,6-7),II	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1 TIM114	All VIII	4-93
Trails	TRAI	All	4-100
Transportation	TRAN111,122,212,22,23 TRAN214	All I-IV	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Construct no Forest Service administrative facilities. Facilities such as dams, reservoirs, and pipelines are consistent with Land Use Designation objectives.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations, with respect to private land and adjacent Land Use Designations, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics which result in the least possible disturbance or evidence of human presence.
   1. Use of mechanized equipment should be kept to a minimum.
   2. Rehabilitation of all suppression lines and other evidence of human presence will occur as soon as safe, and no more than one year after the fire occurs.

Fuel Improvements: FIRE2

Prescribed fire

A. As appropriate, normally use management-ignited prescribed fire rather than mechanical treatment to reduce the fire hazard from timber salvage. Management-ignited prescribed fire may also be used to maintain or improve watershed characteristics as long as there is no adverse impact to water quality.

B. As a general management practice, do not use prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142).

FISH

Fish Habitat Planning: FISH112

A. Plan the construction and maintenance of fish improvement projects only if they are compatible with the municipal watershed objectives.
   1. Restrict fish habitat improvements which result in reduced water quality for a municipality using the water from the affected stream.
   2. When planning fish habitat improvement projects, consider the effects of anticipated municipal water withdrawals.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Maintain or improve forest health. Implement insect and disease management measures to protect the watershed and adjacent resources.

B. Timber may be salvaged at the request of municipality.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
   1. Identify, classify, and evaluate known Heritage Resources.
   2. Identify heritage properties to be nominated to the National Register of Historic Places.
   3. Identify heritage properties that require stabilization or other protective measures.
   4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment. Interpretation will generally occur outside the municipal watershed.

KARST AND CAVE

Cave Management Program: CAVES

A. Caves may be made available for general public recreation and education uses, only when compatible with watershed objectives and in consultation with the municipality.
B. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation will generally occur outside this Land Use Designation.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Manage special uses in accordance with the legislation establishing the watershed (if any) and to safeguard the quality and quantity of municipal water supplies. Limit special uses to those which support development activities. Coordinate all proposals with affected municipalities and obtain written concurrence before issuing special-use authorizations. (Consult 36 CFR 251.9, 36 CFR 251.35, and FSM 2700.)
   1. Analyze special-use proposals on a case-by-case basis, using an interdisciplinary process, to determine probable effects.
   2. Do not permit any activities which would lead to violation of State Drinking Water Regulations or degradation of water quality below State of Alaska Water Quality Standards for water supply.
   3. Terminate or bring into conformance, existing uses which are causing violation of State Drinking Water Regulations or degradation of water quality below State of Alaska Water Quality Standards for water supply.
B. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance" Area. Transportation and utility sites and corridors may be located in this Land Use Designation only after an analysis of potential TUS corridors has been completed and no feasible alternatives exist outside this Land Use Designation.

Land Ownership Adjustments: LAND26

A. Protect municipal interests in land adjustment decisions. Unless otherwise prohibited by law, encourage actions which result in the affected municipality owning the land.
   1. Dispose of lands only when allowed to by applicable legislation.
   2. When disposal is contemplated, involve the affected municipality early in the process.
   3. Encourage state land selections under the Statehood Act for subsequent transfer to the municipal governing body.
   4. If legislation allows, consider exchange of these lands with the affected municipality.

5. Do not acquire National Forest System lands for municipal watershed purposes.

MINERALS AND GEOLOGY

Minerals and Geology Resource Preparation: MG11

Resource Preparation

A. Interpret geologic, paleontologic, and historic mining for municipal watersheds where appropriate.

Minerals and Geology Administration: MG12

Mineral withdrawals

A. Municipal watersheds may be withdrawn from mineral entry on a case-by-case basis after consultation with the municipality, subject to valid existing rights.
B. Permit reasonable access to mining claims with valid existing rights in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Work with claimants to develop a Plan of operations that adequately mitigates adverse impacts to Land Use Designation objectives. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.
C. Manage mineral exploration and development activities to be compatible with the emphasis of this Land Use Designation. Apply the following management practices to reduce resource impacts.
    1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
    2. Take maximum advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
    3. Locate material sites and marine transfer facilities outside this Land Use Designation if reasonable alternatives exist.
    4. Ensure that vegetation removed from the project area is hauled away, buried, burned, or scattered.
    5. Minimize the scale of spoil/disposal areas to the surrounding landscape as seen from sensitive view points.
    6. Approve use of colors that simulate those found in the characteristic landscape. Avoid use of reflective materials in project facilities.
    7. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
    8. Ensure that landform modifications simulate naturally-occurring forms.
    9. Ensure that disturbed areas are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operation

A. Provide only for those activities and recreation use levels that can be accommodated without detriment to water quality and flow.
B. Issue appropriate orders for regulating public use within the watershed, in cooperation with the municipality.

Recreation Special Uses

A. Major and minor developments are generally not consistent with objectives for this Land Use Designation. Proposals for development will require scrutiny of the magnitude and scope of the project to see if they meet Land Use Designation objectives. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Considerations for the visual resource will be secondary to the objectives of the municipal watershed. Visual quality conditions are the result of the municipality's watershed management objectives.
   1. Design management activities within the watershed to minimize visual impacts as seen from Visual Priority Travel Routes and Use Areas (See Appendix F).

SOIL AND WATER

Watershed Resource Planning: S&W112

A. Comply with the State of Alaska's Drinking Water Regulations and Water Quality Standards for water supply.
B. Develop written agreements with municipalities consistent with 36 CFR 251.9, 18 AAC 80.520(c)(3), and FSM 2718.4, as applicable.

Watershed Resource Improvement: S&W2

A. Soil and water protective measures are applied to protect the watersheds and water resources for municipal water use. Soil and water improvement will occur on all disturbances that threaten the watershed values.
B. Coordinate soil and water improvement projects with the affected municipality.

SUBSISTENCE

Subsistence: SUB

A. Permit subsistence activities in accordance with the Federal, state, and local laws.

TIMBER

Timber Resource Planning: TIM112

A. Forested land is classified as unsuitable for timber production.
B. No timber harvest is scheduled. Salvage may be considered on a case-by-case basis in consultation with the municipality.
C. Personal use wood and Christmas tree cutting activities are usually incompatible with Land Use Designation objectives.

TRAILS

Trails: TRAI1

A. Trail systems are limited to those that can be accommodated without detriment to water quality and flow . Trails may be considered on a case-by-case basis in consultation with the municipality. (For the Petersburg watershed, consult 36 CFR 251.35.)

TRANSPORTATION

Transportation Operations: TRAN1

A. Allow roads needed for the routine operation, maintenance, and improvement of the municipal water system and watershed. Allow roads to provide for timber salvage operations if they are permitted by the

watershed's establishing legislation (if any) and after consultation with the affected municipality. If no feasible alternative exists, roads may occur in this area.

1. Conduct a transportation analysis to determine optimum road location and design standards to ensure minimum adverse impacts to the watershed.
2. Coordinate road management with the affected municipality. Manage access in accordance with the legislation establishing the watershed (if any).
3. Road construction may occur if it is consistent with legislation establishing the watershed (if any) and it can be done without unacceptable degradation of water quality.

WILDLIFE **Wildlife Habitat Planning: WILD112**

A. Manage wildlife habitats for uses compatible with the watershed management objectives.

OLD-GROWTH HABITAT

Land Use Designation OG

Goals

Maintain areas of old-growth forests and their associated natural ecological processes to provide habitat for old-growth associated resources.

Manage early seral conifer stands to achieve old-growth forest characteristic structure and composition based upon site capability. Use *old growth definitions as outlined in Ecological Definitions for Old-growth Forest Types in Southeast Alaska* (R10-TP-28).

Objectives

Provide old-growth forest habitats, in combination with other Land Use Designations, to maintain viable populations of native and desired non-native fish and wildlife species and subspecies that may be closely associated with old-growth forests.

Contribute to the habitat capability of fish and wildlife resources to support sustainable human subsistence and recreational uses.

Maintain components of flora and fauna biodiversity and ecological processes associated with old-growth forests.

Allow existing natural or previously-harvested early seral conifer stands to evolve naturally to old-growth forest habitats, or apply silvicultural treatments to accelerate forest succession to achieve old-growth forest structural features. Consider practices such as thinning, release and weeding, pruning, and fertilization to promote accelerated development of old-growth characteristics.

To the extent feasible, limit roads, facilities, and permitted uses to those compatible with old-growth forest habitat management objectives.

Desired Condition

All forested areas within this Land Use Designation have attained old-growth forest characteristics. A diversity of old-growth habitat types and associated species and subspecies and ecological processes are represented.

Old-growth Habitat Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP1 RIP2	All I,II(A-E,G,H)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1,12 VIS11	All I,II(A,E)	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4,6-7),II,III	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111,111-1,130,140 TIM114	All VIII	4-93
Trails	TRAI	All	4-100
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD 22,23	I-VIII; IX(A:1-8,11,B); X-XVIII All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Allow administrative and recreational facilities when compatible with Land Use Designation objectives.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
B. Suppression tactics are limited only by the standards for this Land Use Designation, such as soil and watershed concerns.

Fuel Improvements: FIRE2

Prescribed fire

A. Allow management-ignited prescribed fire where its use maintains old-growth characteristics.
B. Do not use prescribed natural fire.

FISH

Fish Habitat Planning: FISH112

A. Emphasize the protection and restoration of fish habitat, fish production and aquatic biodiversity. Enhancement projects that may change the natural distribution of fish species within a watershed are consistent with Land Use Designation objectives.

FOREST HEALTH

Forest Health: HEALTH1

A. Insect and disease management measures consistent with this Land Use Designation may be implemented to protect the old-growth forest component and adjacent resources.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
    1. Identify, classify, and evaluate known Heritage Resources.
    2. Identify heritage properties to be nominated to the National Register of Historic Places.
    3. Identify heritage properties that require stabilization or other protective measures.
    4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Permit only improvements (such as tent platforms, fish weirs, minor waterlines, minor powerlines, etc.) which are compatible with Land Use Designation objectives.

B. This Land Use Designation represents a Transportation and Utility Systems (TUS) "Avoidance Area." Transportation and utility sites or corridors may be located within this Land Use Designation only after an analysis of potential TUS corridor opportunities has been completed and no feasible alternatives exist outside this Land Use Designation.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral entry.

B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Mining Regulations 36 CFR 228.

C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Work with claimants to develop a Plan of operations that minimizes, monitors, and mitigates adverse impacts to Land Use Designation objectives. Monitoring plans should specifically assess impacts to threatened, endangered or sensitive species or other significant fish and wildlife resources. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.

B. Apply Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.

C. Manage mineral exploration and development activities to be compatible with Land Use Designation objectives. Apply the following management practices to avoid or reduce impacts.

1. Manage mineral activities to maintain the present habitat capability and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
2. Take advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
3. Locate material sites and marine transfer facilities outside this Land Use Designation if reasonable alternatives exist.
4. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from sensitive viewpoints to leave a naturally-appearing condition.
5. Ensure that disturbed areas are revegetated in accordance with project plans, emphasizing the use of native vegetation and local genetic plant stocks.

6. Apply timing restrictions to minerals activities as needed to prevent or minimize disturbance to fish and wildlife during critical life stages (e.g., spawning, molting, nesting, or brood-rearing).

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. Manage recreation and tourism use to meet Land Use Designation objectives for fish and wildlife resources and habitat.
   1. Design and locate recreation-related structures to be compatible with habitat needs of old-growth associated species.
   2. Manage Off-Highway Vehicle use to prevent degradation of habitat or adverse disturbance to fish and wildlife populations.

B. Generally provide for semi-primitive ROS settings, recognizing that more developed settings may be present due to authorized activities, existing use patterns, and activities in adjacent Land Use Designations.

Recreation Special Uses

A. Minor recreation and tourism developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective. Design activities to not be visually evident to the casual observer.

B. Exceptions for small areas of non-conforming developments, such as recreational developments, transportation developments, Log Transfer Facilities, and mining development, may be considered on a case-by-case basis. Use designs and materials that are compatible with forms, colors, and textures found in the characteristic landscape.

SOIL AND WATER

Watershed Resource Improvements: S&W2

A. Undertake watershed improvements only where deteriorated soil and hydrologic conditions create a threat to the goals and objectives for which the old-growth habitat is managed. Rehabilitation or stabilization projects will seek to enable the area to retain its natural appearance.

TIMBER

Timber Resource Planning: TIM112

A. Forest land is classified as unsuitable for timber production.

B. Beach log salvage is compatible with this Land Use Designation.

C. Personal use wood harvest is allowed within locally determined areas if determined to be consistent with Land Use Designation objectives. Salvage of bridge stringer logs is permitted.

Timber Sale Preparation: TIM114

A. Salvage of dead or down material is permitted, but is limited to roadside windfall and hazard trees immediately adjacent to existing permanent roads and catastrophic windthrow events or large insect or disease outbreaks (generally exceeding 100 acres). Limited standing undamaged timber (up

to 20% of total salvage) may be removed only for safety reasons or for feasibility of salvage operations. Salvage sales must be compatible with Land Use Designation objectives as determined through the environmental analysis process. Stands once salvaged will be managed to achieve old-growth habitat characteristics. During the environmental analysis, consider the scale of the affected area salvaged. If reserve design criteria are no longer met, adjust reserve locations to better meet reserve size, spacing and composition criteria if lands are available (see Wildlife Planning, section B below, and Appendix K).

TRANSPORTATION **Transportation Operations: TRAN1**

A. New road construction is generally inconsistent with Old-growth Habitat Land Use Designation objectives, but new roads may be constructed if no feasible alternative is available.
   1. Perform integrated logging system and transportation analysis (including Access and Travel management planning) to determine if other feasible routes avoiding this Land Use Designation exist during the project environmental analysis process. If no feasible alternative routes exist, locate, design, and construct roads in a manner which minimizes adverse impact to fish and wildlife resources to the extent feasible, and will be compatible with Land Use Designation objectives. Keep clearing widths to the minimum feasible. Consider enforcement costs of road closures in the integrated logging system and transportation analysis.
   2. If reserve design criteria are no longer met, adjust reserve locations to meet reserve size, spacing and composition criteria if lands are available (see Wildlife Planning, section B below, and Appendix K).
   3. For timber salvage, use logging systems that do not require additional permanent road construction.

B. Manage existing roads to meet Land Use Designation objectives.
   1. In Old-growth Habitat Land Use Designations with existing roads, develop or update Road management objectives to meet Land Use Designation objectives (see Wildlife (brown bear and wolf) and Transportation Forest-wide Standards & Guidelines). Use of existing roads may continue pending the development or update of Road management objectives (see Appendix L).
   2. Road management objectives may include temporary or permanent road closures and may be specific to individual road specification types (e.g., keep mainlines open, close arterial and spur).
   3. Road maintenance and reconstruction may be permitted if consistent with road management objectives.

C. Sites for Log Transfer Facilities may be considered in this Land Use Designation. If no other feasible alternative sites exist, locate, design, construct, and manage these facilities in a manner which will be compatible with Land Use Designation objectives.

WILDLIFE **Wildlife Habitat Planning: WILD122**

A. Maintain contiguous blocks of old-growth forest habitat in a forest-wide system of old-growth reserves to support viable and well-distributed populations of old-growth associated species and subspecies.

B. A system of large, medium and small old-growth habitat reserves has been identified and mapped in the forest plan as part of a forest-wide old-growth habitat reserve strategy. The mapped large and medium reserves

generally achieve reserve strategy objectives, and few major modifications are anticipated. The small mapped reserves have received differing levels of ground-truthing and integration of site-specific information in their design. During project level environmental analysis, for projects areas that include or are adjacent to mapped old-growth habitat reserves, the size, spacing and habitat composition of mapped reserves may be further evaluated. (See Appendix K for mapping criteria.)

1. Adjust reserves not meeting the minimum criteria to meet or exceed the minimum criteria.
2. Reserve location, composition, and size may otherwise also be adjusted. Alternative reserves must provide comparable achievement of the Old-growth Habitat Land Use Designation Goals and Objectives. Determination as to comparability must consider the criteria listed in Appendix K.
3. Adjustments to individual reserves described in 1. and 2. above are not expected to require a significant plan amendment. Adjustments Forest-wide shall be monitored yearly to assess whether a significant plan amendment is warranted on the basis of cumulative changes.

C. Allow previously harvested or natural early seral stands to develop into old-growth habitats, or provide young-growth management to accelerate attainment of old-growth characteristics. (See WILD22, below).

Wildlife Habitat Restoration: WILD22

A. Manage early seral forest stands for purposes of wildlife habitat development. Allow techniques such as thinning, pruning, and planting to accelerate development of advanced seral stand structure including maintenance of shrub and forb understory.

SEMI-REMOTE RECREATION

Land Use Designation SM

Goals

To provide predominantly natural or natural-appearing settings for semi-primitive types of recreation and tourism and for occasional enclaves of concentrated recreation and tourism facilities.

To provide opportunities for a moderate degree of independence, closeness to nature, and self-reliance in environments requiring challenging motorized or non-motorized forms of transportation.

Objectives

Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the Semi-primitive Recreation Opportunity Spectrum classes. Enclaves of concentrated recreation and tourism developments within the Land Use Designation or management activities in adjacent Land Use Designations may cause the ROS setting to become Rural.

Determine on a case-by-case basis whether roads, trails, and other areas should be closed to motorized recreation activities. If so, incorporate into Off-Highway Vehicle (OHV) plans. If not, the use of boats, aircraft, and snowmachines for traditional activities is allowed.

Permit small-scale, rustic recreation and tourism facilities, and occasional enclaves of concentrated recreation and tourism facilities.

Apply the Partial retention Visual Quality Objective to any developments, facilities, or structures.

Fish enhancement and wildlife habitat improvement may occur.

Desired Condition

Areas in the Semi-remote Recreation Land Use Designation are characterized by generally unmodified natural environments. Ecological processes and natural conditions are only minimally affected by past or current human uses or activities. Users have the opportunity to experience a moderate degree of independence, closeness to nature, solitude and remoteness, with some areas offering motorized opportunities and others non-motorized opportunities (except for the traditional uses of boats, aircraft, and snowmachines). Interactions between users are infrequent. Facilities and structures may be minimal or occasionally may be larger in scale, but will be rustic in appearance, or in harmony with the natural setting.

Semi-remote Recreation Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I,II(A-G,K,L)	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP RIP2	All I,II(A-E,G,H)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1,12 VIS11	All I,II(A-B,E)	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4,6-7),II,III	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111,111-1,130,140 TIM114	All VIII	4-93
Trails	TRAI	All	4-100
Transportation	TRAN111,122,212,22,23 TRAN214	All I(A,B,D-F);II-IV	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD22 WILD23	I-VIII; IX(A:1-8;11,B); X-XV I(A:1;B) All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Design and locate administrative and non-recreation structures to reduce adverse effects on recreation and tourism opportunities.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent Land Use Designations, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics which result in the least possible disturbance or evidence of human presence.
   1. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
   2. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, but within one year after the fire occurs.
   3. Mechanized fireline construction will avoid important wildlife habitat areas such as meadows, bogs, and riparian areas.

Fuel Improvements: FIRE2

Prescribed fire

A. Management ignitions, although they are not presently used in this Land Use Designation, may be used as an acceptable means of fuels management and wildlife habitat improvement so long as its use is compatible with Land Use Designation objectives.

B. As a general management practice, do not use prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FOREST HEALTH

Forest Health Management: HEALTH1

A. Insect and disease management measures consistent with Land Use Designation objectives may be implemented to protect recreation and tourism opportunities, and adjacent resources.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Enhancement

A. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses.
   1. Provide interpretive information concerning Heritage Resources located within this Land Use Designation to users in the form of exhibits and publications located outside of this Land Use Designation.

2. Heritage Resources are available for scientific studies that are consistent with the semi-primitive settings and activities, and heritage resource management objectives for the specific site.

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
   1. Identify, classify, and evaluate known Heritage Resources.
   2. Identify heritage properties to be nominated to the National Register of Historic Places.
   3. Identify heritage properties that require stabilization or other protective measures.
   4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Permit only facilities and uses consistent with Semi-remote Recreation Land Use Designation objectives.
B. This Land Use Designation represents a Transportation and Utility System (TUS) "Window" and provides opportunities for the future designation and location of Transportation and Utility sites.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG2

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral exploration and development.
B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Mining Regulations 36 CFR 228.
C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to the extent feasible.
B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.
C. Manage mineral exploration and development activities to be compatible with the emphasis of this Land Use Designation. Apply the following management practices to reduce resource impacts.
   1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Sec. 505 (a).)
   2. When locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities, take maximum advantage of topographic and vegetative screening.

4. Ensure that vegetation removed from the project area is hauled away, buried, burned, or scattered when such vegetation is located adjacent to Visual Priority Travel Routes and Use Areas.
5. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from Visual Priority Travel Routes and Use Areas.
6. Approve use of colors that simulate those found in the characteristic landscape. Avoid the use of reflective materials in project facilities.
7. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
8. Ensure that landform modifications simulate naturally-occurring forms.
9. Ensure that disturbed areas are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. Generally, manage for Semi-primitive Recreation Opportunity Spectrum (ROS) settings. Enclaves of concentrated recreation and tourism developments within the Land Use Designation or management activities in adjacent Land Use Designations may cause the ROS setting to become Roaded Natural, Roaded Modified, or Rural.
B. Determine on a case-by-case basis whether roads, trails, and other areas should be closed to motorized recreation activities; incorporate determinations in Off-Highway Vehicle (OHV) Plans.
   1. Manage roads for Traffic Service Level D except when level C roads provide access to or through the Land Use Designation. Occasional enclaves of concentrated recreation and tourism developments could warrant higher service levels in those areas.
C. Where roads, trails, and other areas are closed to motorized recreation activities or vehicles, provide Semi-primitive Non-motorized recreation opportunities.
   1. Permit use of snowmachines, motorboats, and aircraft for traditional activities.
D. Permit small scale, rustic recreation and tourism facilities such as recreation cabins, shelters, docks, and enclaves of concentrated recreation and tourism development.
   1. During all construction activity:
      * Minimize site modification.
      * Minimize vegetation clearing adjacent to the site.
      * Use colors found in the natural environment.

Recreation Special Uses

A. Major and minor developments are compatible with this Land Use Designation. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Design resource activities to remain visually subordinate to the characteristic landscape. Activities may repeat form, line, color or texture common to the landscape. New form, line, color, or texture will be subordinate to the characteristic landscape.
   1. Apply Forest-wide Standards & Guidelines for the Partial retention Visual Quality Objective.
   2. There may be cases where facilities associated with a concentrated recreation or tourism development may not feasibly meet the Partial

retention objective. After analysis of the proposal and public involvement, the NEPA decision document for this project should determine the specific Visual Quality Objective for the development. The environmental analysis shall also prescribe design guidelines necessary to meet this visual objective. During the project's design phase, the Forest Service shall be closely involved in the review of design work as it evolves.

3. Design visitor facilities to blend, to the extent feasible, with the natural setting.

B. Rehabilitation techniques may be used to restore disturbed landscapes to be compatible with the semi-primitive setting.

TIMBER

Timber Resource Planning: TIM112

A. Forested land is classified as unsuitable for timber production.

B. The following types of uses may be authorized when they meet Land Use Designation objectives.

1. Removal or use of trees for improvement of recreation and tourism opportunities, such as clearing for vistas, campsites, or trails.
2. Removal, or use of trees cut as a part of some other authorized use within this Land Use Designation. For example, clearing for a fish ladder or road.
3. Trees may be cut for use in construction and maintenance of authorized structures when it is not feasible to obtain the necessary material from outside this Land Use Designation.

C. Personal use wood harvest from beach log salvage is fully compatible with this Land Use Designation. Personal use wood cutting is allowed based on local determination.

Timber Sale Preparation: TIM114

A. Salvage will be limited to dead and/or down material resulting from events such as windthrow and insect or disease mortality. Limited standing green timber may be harvested during salvage operations for safety and operational considerations.

TRANSPORTATION

Transportation Operations: TRAN1

A. Where Semi-primitive Motorized recreation opportunities are emphasized, existing low standard roads are generally managed for use by high clearance or Off-Highway Vehicles, snowmobiles or motorcycles subject to an approved Off-Highway Vehicle Management Plan. Generally, new roads are not constructed in this area, except to link existing roads or provide access to adjacent Land Use Designations.

1. Limit the design standards of Forest Development Roads to those commensurate with the intended use.
2. Maintain as necessary to provide passage of planned traffic.
3. Locate and design new roads to consider semi-primitive recreation opportunities in this Land Use Designation.

B. Where Semi-primitive Non-motorized recreation opportunities are emphasized, provide foot or cross-country ski trails. Roads and trails may be closed or seasonally restricted. Close or obliterate existing roads except for transportation system links.

LAND USE DESIGNATION II

Land Use Designation L2

Introduction

Twelve areas were permanently allocated to L2 special management in the Tongass Timber Reform Act. These areas are: Yakutat Forelands, Berners Bay, Anan Creek, Kadashan, Lisianski River/Upper Hoonah Sound, Mt. Calder/Mt. Holbrook, Nutkwa, Outside Islands, Trap Bay, Point Adolphus/Mud Bay, Naha, and Salmon Bay. Specific management criteria for Land Use Designation II areas are defined in the Tongass Land Management Plan, completed March 1979, and amended Winter 1985-1986 (pp. 8-9).

Goals

To manage the 12 areas designated in perpetuity as Land Use Designation II (LUD II) by the Tongass Timber Reform Act according to the direction for LUD II areas in the 1979 Tongass Land Management Plan, as amended.

To manage these areas in a roadless state to retain their wildland character.

Objectives

Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated by the Primitive and Semi-primitive Recreation Opportunity Spectrum classes. Apply the LUD II direction from the 1979 Tongass Land Management Plan which is summarized as follows:

- prohibit commercial timber harvest. Permit salvage logging only to prevent significant damage to other resources. Allow personal use of wood for cabin logs, fuelwood, float logs, trolling poles, etc.
- permit water and power developments if designed to be compatible with the primitive characteristics of the area
- permit roads only for access to authorized uses, for transportation needs identified by the state or for vital linkages (See the Standards & Guidelines in this prescription)
- allow mineral development
- permit boats, aircraft, and snowmachines, unless such uses become excessive
- permit fish and wildlife habitat improvements. Design structures to minimize the effects to recreation resources
- permit primitive recreational facilities
- major concentrated recreational facilities will generally be excluded

Salvage logging, personal use of wood, water and power development, fish and wildlife habitat improvement, and research facilities will be designed to be compatible with the primitive characteristics of the area.

Desired Condition

Areas in this Land Use Designation are characterized by extensive, generally unmodified natural environments, and retain their wildland character. Ecological processes and natural conditions are only minimally affected by past or current human uses or activities. Users have the opportunity to experience a high-to-moderate degree of independence, closeness to nature, solitude and remoteness and may pursue activities requiring self-reliance, challenge, and risk. Interactions between users are infrequent. Recreational facilities and structures are primitive.

Land Use Designation II
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I,II(A-G,K,L)	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP1 RIP2	All I,II(A-E,G,H)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1,12 VIS11	All I,II(A-B,E)	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4,6-7),II,III	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111,111-1,130,140 TIM114	All VIII	4-93
Trails	TRAI	All	4-100
Transportation	TRAN111,122,212,22,23 TRAN214	All I(A,B,D-F);II-V	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD22 WILD23	I-VIII; IX(A:1-8,11,B); X-XVIII I(A:1;B) All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Administrative Facilities: FAC2

A. Permanent administrative facilities may be constructed in a manner which blends with the natural character of the area.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics which result in the least possible disturbance or evidence of human presence.

   1. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
   2. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, and no longer than one year after the fire occurs.

Fuel Improvements: FIRE2

Prescribed fire

A. Allow management-ignited prescribed fire for fuels management, insect and disease protection, and wildlife habitat improvement.

B. As a general management practice, do not use prescribed natural fire, although natural ignitions may be used to perpetuate natural ecological processes. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

Fish Enhancement

A. Improvements such as fishways, fish hatcheries, or aquaculture sites may be built. Appropriate landscape management techniques will be applied in the design and construction of such improvements to reduce impacts on recreational resources and scenery.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Insect and disease management measures consistent with this Land Use Designation may be implemented to protect these and adjacent resources.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Enhancement

A. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses.
   1. Heritage Resources are available for scientific studies that are consistent with the primitive settings and activities, and heritage resource management objectives for the specific site.

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
   1. Identify, classify, and evaluate known Heritage Resources.
   2. Identify heritage properties to be nominated to the National Register of Historic Places.
   3. Identify heritage properties that require stabilization or other protective measures.
   4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Water and power developments are permitted if they can be designed to retain the overall primitive characteristics of the allocated area.
B. Except as authorized by the Tongass Timber Reform Act (TTRA), permit only those activities which are consistent with the wildland character of the area.
C. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites or corridors may be located within this Land Use Designation only after an analysis of potential TUS corridors has been completed and no feasible alternatives exist outside this Land Use Designation.

MINERAL AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral exploration and development.
B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Mining Regulations 36 CFR 228.
C. Permit reasonable access to mining exploration and development in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to the extent feasible. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.

B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads.
C. Manage mineral exploration and development activities to be compatible with the emphasis on maintaining the wildland character of the LUD II Land Use Designation. Apply the following management practices to reduce resource impacts.
   1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
   2. Manage mineral activities to maintain the present and continued productivity of wildlife habitat to the extent feasible.
   3. Take maximum advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
   4. Discourage use of motorized surface vehicles, except as provided for in ANILCA, Section 1110(b), which assures adequate and feasible access for economic and other purposes.
   5. Locate material sites and marine transfer facilities outside this Land Use Designation, if reasonable alternatives exist.
   6. Ensure that vegetation removed from the project area is hauled away, buried, burned or scattered when located adjacent to Visual Priority Travel Routes and Use Areas.
   7. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from sensitive viewpoints.
   8. Approve use of colors that simulate those found in the characteristic landscape. Avoid use of reflective materials in project facilities.
   10. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
   11. Ensure that landform modifications simulate naturally-occurring forms.
   12. Ensure that disturbed areas are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. Generally provide for semi-primitive ROS settings, recognizing that more developed settings may be present due to authorized activities, existing use patterns, and activities in adjacent Land Use Designations.
   1. Primitive recreation facilities, such as recreation cabins, boat docks, moorings and trails may be constructed and maintained.
B. Major concentrated recreation facilities, such as development scale IV and V (those heavily-modified or with a high degree of site modification) will generally be excluded.
C. If a transportation link is constructed through this Land Use Designation, recreation facilities needed to serve the traveling public, to reduce impacts of recreation use to adjacent wildlands, or to provide interpretation, may be constructed in proximity to the transportation link.

Recreation Special Uses

A. Major developments are generally not consistent with the objectives of the Land Use Designation. Development proposals require scrutiny of the magnitude and scope for Land Use Designation conformance. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.
B. Minor developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the

proposal. Each proposal will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Landscapes are managed to retain a natural-appearing visual condition, where activities are not visually evident to the casual observer.
   1. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective.
   2. Some authorized activities and improvements may not meet the Retention Visual Quality Objective, based on project analysis. However, seek to mitigate visual impacts through location, siting, design, material, and coloring of structures.

TIMBER

Timber Resource Planning: TIM112

A. Forested land is classified as unsuitable for timber production. Commercial timber harvesting is not permitted.
B. Timber can be salvaged only to prevent significant damage to other resources. Examples are removal of windfall in an important fish stream or control of epidemic insect infestations.
C. Personal use of wood is allowed for cabin logs, fuel wood, float logs, trolling poles, and other similar uses.

TRANSPORTATION

Transportation Operations: TRAN1

A. Existing roads are generally closed to highway vehicular use. Any proposed roads will use the following guidelines.
   1. Allow vital Forest transportation system linkages including roads and transfer facilities. Vital Forest transportation system linkages refer to necessary additions to the permanent road network. Such linkages may be built through LUD II areas when either: 1) no other feasible routes exist to access adjacent Land Use Designations, or 2) when it can be demonstrated that the routing through the LUD II area is clearly environmentally preferable and site-specific mitigation measures can be designed to minimize the impact of the road on the surrounding LUD II area. A clear need to build such linkages must be demonstrated through a comparative analysis of feasible transportation alternatives through the NEPA process and must be approved by the Forest Supervisor, in consultation with the other Tongass Forest Supervisors.
   2. Roads, other than vital transportation linkages, will not be built except to serve authorized activities such as mining, power and water developments, aquaculture developments, or transportation needs determined by the State of Alaska (also the Transportation and Utility Systems Land Use Designation).

WILDLIFE

Wildlife Habitat Planning: WILD112

A. Wildlife habitats will generally evolve in natural successional stages. Habitat improvement is permitted.

WILD RIVER

Land Use Designation WR

Goals

To manage designated river segments according to the "Wild and Scenic Rivers Act (Public Law 90-542), "National Wild and Scenic Rivers System; Final Revised Guidelines for Eligibility, Classification, and Management of River Areas" (Federal Register Volume 47, Number 173, 1982), and direction in Forest Service Manuals and Handbooks.

To maintain, enhance and protect the free-flowing character and outstandingly remarkable values of rivers and river segments designated as Wild Rivers and included in the National Wild and Scenic Rivers System.

To maintain Wild Rivers in a natural, free-flowing, unmodified condition, and provide recreation and tourism opportunities affording a high degree of independence, closeness to nature and self-reliance.

To manage recommended Wild River segments to maintain their outstandingly remarkable values and classification eligibility until Congress designates the segments or decides not to designate them.

Objectives

Manage Wild River segments to maintain an enduring wildland and free-flowing river resource, while providing for access and use consistent with the Wild and Scenic Rivers Act and the Alaska National Interest Lands Conservation Act (ANILCA).

Withdraw Wild River segments from mineral entry when designated by Congress, subject to valid existing rights, and classify forested lands as unsuitable for timber production.

Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the Primitive or Semi-primitive ROS classes.

Apply the Retention Visual Quality Objective within the river corridor.

Desired Condition

Wild Rivers and river segments are in a natural, free-flowing, and undisturbed condition. Ecological processes and changes predominate. The outstandingly remarkable values for which the river was designated remain outstanding and remarkable. Recreation users have the opportunity for primitive and semi-primitive experiences, solitude and remoteness in a natural setting. Interactions between users are infrequent, and evidence of human activities is minimal. Facilities and structures are rustic in appearance and promote primitive recreation and tourism experiences.

Wild River Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1 BEACH2	All I	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH1	I(B:1,C)	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC111,122 REC112	All I,II(A-C),III	4-34
Riparian	RIP1 RIP2	All I,II(A-E,G)	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1 VIS11 VIS12	All I,II(A,E) I(A,B,D),II	4-74
Soil And Water	S&W1111,1112,2 S&W112	All I(A:1-4,B-F),II	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111,111-1,140 TIM114	All VIII(D)	4-93
Trails	TRAI1 TRAI2	I(A-E;F:1,3,5,6) All	4-100
Transportation	TRAN	None	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112 WILD22	I-V;VI(A-C,E);VII,VIII; IX(A:1-3,5-8,11,B); X-XIV; XVI(A:1) I(A:1,B)	4-110

Apply the following Land Use Designation Standards & Guidelines

FACILITIES

Facilities Improvements: FAC2

A. Avoid construction of new administrative facilities unless needed for administration of river resources and users. If needed, facilities will be rustic and kept to a minimum.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent Land Use Designations, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Emphasize suppression tactics that result in the least possible disturbance or evidence of human presence.
   1. Use of mechanized equipment will be addressed in the management plan developed for each river.
   2. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
   3. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, but within one year after the fire occurs.

Fuel Improvements: FIRE2

Prescribed fire

A. Allow management-ignited prescribed fire which emulates natural ecological processes.

B. As a general management practice, do not allow prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

Fish Enhancement

A. Fish enhancement projects may be allowed after considering the following during project planning:
   1. The primitive character of the area can be maintained. Realize that an enhanced fishery could result in increased recreation and tourism use.
   2. Effects on Wild River ecosystems due to the introduction of species not indigenous to the watershed.
   3. If a naturally-appearing free-flowing condition can be maintained.
   4. Effects on the outstandingly remarkable values for which the river was designated.
   5. The appropriateness of structures both in type and scale to the primitive and natural character of the area.
   6. Ability to meet a Retention Visual Quality Objective.

Fish Habitat Improvement: FISH22

A. Use construction techniques which are consistent with the ROS setting.
   1. Land-disturbing activities necessary for construction will be temporary.

2. Design development to minimize impact on the primitive character of the corridor.

B. Weirs or other stream obstructions are not permitted.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Implement insect and disease management measures consistent with this Land Use Designation to protect the character and values of Wild Rivers.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Enhancement

A. Heritage Resources are available for scientific study to the extent that the study is consistent with the intent of the Wild and Scenic Rivers Act.

B. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses, consistent with Wild River management.

1. Generally, provide interpretive information concerning Heritage Resources to users in the form of exhibits and publications outside the Wild River corridor.

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.

1. Identify, classify, and evaluate known Heritage Resources.
2. Identify heritage properties to be nominated to the National Register of Historic Places.
3. Identify heritage properties that require stabilization or other protective measures.
4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation will generally occur outside this Land Use Designation.

B. Manage caves as Class 1 (Sensitive) or Class 3 (Undeveloped) as described in the Karst and Cave Resources Forest-wide Standards & Guidelines.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Permit only those uses consistent with management objectives. (Consult the Land and Resource Management Planning Handbook 1909.12, Chapter 8.)

1. Do not authorize water supply dams or major diversions.
2. Do not permit development of hydroelectric power facilities for 1) projects exempted from licensing by the Federal Energy Regulatory Commission or 2) projects on rivers designated through sections 2,3, and 5(a) of the Wild and Scenic Rivers Act. The Forest Service will recommend to FERC that a project on a river found eligible and suitable for inclusion in the Wild and Scenic Rivers System should not

be licensed because it is inconsistent with the purposes for which the National Forest was created or acquired and, if necessary, impose conditions on any license issued for a project on that river that fully protect its outstandingly remarkable characteristics and free-flowing nature.

3. Maintain the natural appearance and primitive character of the river area. Do not authorize flood control dams, levees, or similar structures, in the channel or river corridor.
4. Do not authorize new structures that would have a direct adverse effect on river values.
5. Transportation and utility corridors will be allowed in accordance with ANILCA, Title XI. This Land Use Designation represents a Transportation and Utility Systems (TUS) "Avoidance Area". Transportation and utility sites or corridors may be located within this Land Use Designation only after an analysis of potential TUS corridors is completed and no feasible alternative exists outside this Land Use Designation.
6. Allow motorized access in accordance with ANILCA Sections 811 and 1110(b).

Land Ownership Administration: LAND123

A. Acquire private inholdings in the river corridor as opportunities arise.

MINERALS AND GEOLOGY

Minerals and Geology Resource Administration: MG12

Wild Rivers

A. When designated by Congress, Forest lands within 1/4 mile of the river are withdrawn from mineral entry subject to valid existing rights.
B. Permit reasonable access to valid existing claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to Wild Rivers to the extent feasible. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.
C. Manage mineral activities on valid existing claims to be compatible with the emphasis of this Land Use Designation. Apply the following management practices to reduce resource impacts:
    1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505(a).)
    2. Take maximum advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
    3. Prohibit use of motorized surface vehicles, except as provided in ANILCA, Section 1110(b), which assures adequate and feasible access for economic and other purposes.
    4. Locate material sites and marine transfer facilities outside this Land Use Designation if reasonable alternatives exist.
    5. Ensure that vegetation removed from the project area is hauled away, buried, burned, or scattered when located adjacent to Visual Priority Travel Routes and Use Areas.

6. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from Visual Priority Travel Routes and Use Areas.
7. Approve use of colors that simulate those found in the characteristic landscape. Avoid use of reflective materials in project facilities.
8. Apply timing restrictions to instream activities as needed to protect fisheries habitat and mitigate adverse disturbance of stream sediments.
9. Require use of sedimentation traps as needed to mitigate adverse stream sedimentation and meet state and Federal water quality regulations.
10. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
11. Ensure that landform modifications simulate naturally-occurring forms.
12. Ensure that disturbed areas are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Management and Operations

A. To the degree consistent with the overall purposes of designation, provide primitive wildland recreation opportunities which reflect the ecological, historical, and sociological conditions found within the River corridor and adjacent lands.
B. Manage for Primitive and Semi-primitive ROS settings and activities which emphasize existing opportunities.. Protect the integrity of river resources through integrated project planning and implementation.
    1. Manage for the existing or less developed recreation settings and opportunities unless activities and practices authorized by the Forest Service officer with delegated authority causes change in the ROS setting(s). Seek to minimize the changes through project design and mitigation. Manage recreation and tourism use in a manner that is compatible with the long-term objectives of the Land Use Designation.
C. Manage recreation and tourism use and activities to meet the appropriate levels of social encounters, on-site development, methods of access, and visitor impacts indicated for the ROS settings. (Consult the ROS Forest Service Handbook and the Recreation and Tourism Forest-wide Standards & Guidelines.)
D. Minor, rustic, recreation and tourism facilities, including public recreation cabins, floatplane and boat docks, trails and trail bridges may be constructed in the river corridor.

Wild River Management

A. Manage all designated Wild River segments to maintain an enduring wildland and free-flowing river resource, while providing for access and use consistent with the purposes of the Wild and Scenic Rivers Act, as amended, and the Alaska National Interest Lands Conservation Act (ANILCA) of 1980 (P.L. 96-487). Traditional activities and practices authorized by ANILCA will be regulated or restricted only where it is determined that the effects of continued or expanded use is likely to cause one or more of the following:
    1. The degradation of the long-term successional changes in wildland and water ecosystems. Adequate determination of the cumulative effects of activities and equipment use must be demonstrated as well as site-specific or singular effects.
    2. Be detrimental to the natural dynamics of the composition or structure of wildland and water ecosystems.

3. Be detrimental to identified objects of heritage, historic, prehistoric, and scientific interest.
4. Be detrimental to the ROS setting conditions or where the cumulative effects of various activities are likely to become detrimental to those settings.
5. A specific use is not in accordance with applicable law.

B. Encourage and enlist public and private sector interest groups to work together in meeting Wild River management objectives. Emphasize programs which help to educate the public in the appropriate conduct of activities and uses within Wild River corridors.

Recreation Special Uses

A. Major developments are illegal or not consistent with agency policy and regulations. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.
B. Minor developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Landscapes are managed to retain a natural-appearing visual condition, where activities are not visually evident to the casual observer.
   1. Apply the Forest-wide Standards & Guidelines for the Retention Visual Quality Objective to all areas within the river corridor. The area adjacent to the corridor is managed according to the guidelines of the adjacent Land Use Designation.
   2. Low visual-impact recreation and tourism facilities, cabins, infrequent fish or wildlife management activities, and other authorized structures which are compatible with the primitive character of the corridor may be acceptable and should be considered on a case-by-case basis (also see the Recreation and Tourism Standards & Guidelines in this prescription).

SOIL AND WATER

Watershed Resource Improvements: S&W2

A. Undertake watershed improvements within 1/4 mile each side of the river only where deteriorated soil or hydrologic conditions create a threat to the values for which the river is managed. Use, whenever possible, indigenous plant species and materials in implementing land treatment measures to protect or improve the quality and/or quantity of the water resource or when stabilizing or improving the productivity of the soil resource. (Consult FSM 2350 and 2520.)
B. Maintain water quality and flow to protect the river's outstandingly remarkable values.

SUBSISTENCE

Subsistence: SUB

A. Allow subsistence activities in Wild River corridors, subject to reasonable regulations to protect Wild River resources.

TIMBER

Timber Resource Planning: TIM112

A. Forested land is classified as unsuitable for timber production.
B. Silvicultural treatments are limited to control of insect & disease.
C. Salvage harvest of dead or down material may occur. Removal of naturally-occurring dead trees in and along the river shoreline, including sweepers extending into the river from the bank should consider the protection of the outstandingly remarkable values and fish habitat in accordance with agreements with the state.
D. Taking of personal use wood is limited to beach logs on the portion of the river influenced by tidal action. Only beach logs which can be removed without roads or use of vehicles on uplands may be taken.

TRANSPORTATION

Transportation Operations: TRAN1

A. Permit no new roads, except to access valid mining claims or as TUS corridors in accordance with ANILCA Title XI.
B. Close roads in this Land Use Designation to motorized vehicle use.
C. Allow continued existing use of snowmachines and aircraft, however, restrictions may be imposed on a case-by-case basis to protect outstandingly remarkable river values.

WILDLIFE

Wildlife Habitat Improvement: WILD22

A. Allow wildlife habitat improvements where their principal objective is the protection or restoration of Wild River resources, and enhancement of outstandingly remarkable values.

SCENIC RIVER

Land Use Designation SR

Goals

To manage designated river segments according to the "Wild and Scenic Rivers Act (Public Law 90-542), "National Wild and Scenic Rivers System; Final Revised Guidelines for Eligibility, Classification, and Management of River Areas" (Federal Register Volume 47, Number 173, 1982), and direction in Forest Service Manuals and Handbooks.

To maintain, enhance, and protect the free-flowing character and outstandingly remarkable values of rivers and river segments designated as Scenic Rivers and included in the National Wild and Scenic Rivers System.

To maintain Scenic Rivers in a natural or naturally-appearing, free-flowing condition, and provide recreation and tourism opportunities meeting these expectations.

To manage recommended Scenic River segments to maintain their outstandingly remarkable values and classification eligibility until Congress designates the segments or decides not to designate them.

Objectives

Manage Scenic River segments to maintain an enduring wildland and free-flowing river resource, while providing for access and use consistent with the Wild and Scenic Rivers Act and the Alaska National Interest Lands Conservation Act (ANILCA).

Permit timber harvest on suitable timber lands if adjacent lands are being managed for that purpose, in accordance with the standards and guidelines for the stated Visual Quality Objectives.

Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the desired Recreation Opportunity Spectrum class -- generally Semi-primitive.

Permit roads to provide access to, and occasionally cross, the river. Roads, except for short segments, are not visually evident to river users.

Apply the Retention Visual Quality Objective to foreground areas as seen from the river, roads and trails, and Partial Retention for all other seen areas within the river corridor.

Desired Condition

Scenic Rivers and river segments are in a generally unmodified, free-flowing condition. Ecological processes and changes may be somewhat affected by human uses. The outstandingly remarkable values for which the river was designated remain outstanding and remarkable. Recreation and tourism users have the opportunity for experiences ranging from Primitive to Roaded Natural in a natural-appearing setting. Resource activities within the river corridor are not visually evident to the casual observer. Interactions between users are moderate. Facilities and structures are rustic in appearance, and promote semi-primitive recreation experiences and/or public safety. A yield of timber may be produced which contributes to the Forest-wide sustained yield.

Scenic River Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1,12 VIS11	All I,II(A-C,E),III	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM	All	4-93
Trails	TRAI	All	4-100
Transportation	TRAN111,122,212,22,23 TRAN214	All I-IV	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Administrative and authorized non-recreation facilities should not be evident as viewed from the river and its banks.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Suppression tactics are limited only by the standards and guidelines for this Land Use Designation, such as for the soil, water, and scenery resources.

Fuel Improvements: FIRE2

Prescribed fire

A. Allow management-ignited prescribed fire which meets the Retention Visual Quality Objective and meets all soil and water quality standards.
   1. Treat all activity fuels to meet the Retention Visual Quality Objective within one year following timber harvest.

B. As a general management practice, do not allow prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

A. Provide for public interpretation of fish habitats, habitat enhancement projects, and special fisheries conditions in appropriate Scenic Rivers.

B. Evaluate fish habitat improvement during project planning by considering:
   1. Effects on the free flow of water.
   2. Effects on the outstandingly remarkable values for which the river was designated.
   3. Weirs and other stream obstructions are discouraged.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Maintain or improve forest health through insect and disease management practices.
   1. Allow sanitation and salvage of infested timber to protect the character and the outstandingly remarkable values of the Scenic River.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
   1. Identify, classify, and evaluate known Heritage Resources.

2. Identify heritage properties to be nominated to the National Register of Historic Places.
3. Identify heritage properties that require stabilization or other protective measures.
4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Permit only those uses consistent with River management objectives. (Consult the Land and Resource Management Planning Handbook.)
   1. Do not authorize water supply dams or major diversions.
   2. Do not permit development of hydroelectric power facilities for: 1) projects exempted from licensing by the Federal Energy Regulatory Commission or 2) projects on Rivers designated through sections 2,3, and 5(a) of the Wild and Scenic Rivers Act. The Forest Service will recommend to FERC that a project on a river found eligible and suitable for inclusion in the Wild and Scenic Rivers System should not be licensed because it is inconsistent with the purposes for which the National Forest was created or acquired and, if necessary, impose conditions on any license issued for a project on that river that fully protect its outstandingly remarkable characteristics and free-flowing nature.
   3. Do not authorize flood control dams and levees.
   4. Roads may occasionally bridge river areas. Permit short stretches of conspicuous, or longer stretches of inconspicuous and well-screened, roads or railroads, on a case-by-case basis, depending upon intended use.
   5. Do not authorize new structures that would have a direct adverse effect on river values.
   6. Allow transportation and utility corridors in accordance with ANILCA, Title XI. This Land Use Designation represents a Transportation and Utility Systems (TUS) "Avoidance Area." Transportation and utility sites or corridors may be located within this Land Use Designation only after an analysis of potential TUS corridors has been completed and no feasible alternatives exist outside this Land Use Designation.
   7. Allow motorized access in accordance with ANILCA, Sections 811 and 1110(b).

Land Ownership Administration: LAND123

A. Acquire private inholdings as opportunities arise.

MINERALS AND GEOLOGY

Minerals and Geology Resource Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral entry.
B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Mining Regulations 36 CFR 228.

C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.
D. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation, air pollution, visual impairment, and applicable State Water Quality Standards.

Plan of operations

A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to the extent reasonable.
B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.
C. Manage mineral exploration and development activities to be compatible with the emphasis of this Land Use Designation. Apply the following management practices to reduce resource impacts.
    1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505(a).)
    2. Take maximum advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
    3. Discourage use of motorized surface vehicles, except as provided in ANILCA, Section 1110(b), which assures adequate and feasible access for economic and other purposes.
    4. Locate material sites and marine transfer facilities outside this Land Use Designation if reasonable alternatives exist.
    5. Ensure that vegetation removed from the project area is hauled away, buried, burned or scattered when vegetation is located adjacent to Visual Priority Travel Routes and Use Areas.
    6. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from sensitive viewpoints.
    7. Approve use of colors that simulate those found in the characteristic landscape. Avoid use of reflective materials in project facilities.
    8. Apply timing restrictions to instream construction as needed to protect fisheries habitat and mitigate adverse disturbance of stream sediments.
    9. Require use of sedimentation traps as needed to mitigate adverse stream sedimentation and meet state and Federal water quality regulations.
    10. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
    11. Ensure that landform modifications simulate naturally-occurring forms.
    12. Ensure that disturbed areas are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Continue to provide the spectrum of outdoor recreation opportunities in accordance with the existing capabilities of this Land Use Designation as indicated by the ROS inventory.
    1. Manage for the existing recreation settings and opportunities until scheduled activities and practices cause a change in the ROS setting(s). Manage recreation use in a manner that is compatible with the long-term objectives of this Land Use Designation.
    2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the

appropriate ROS guidelines. Maintain the capability of this Land Use Designation to provide appropriate quality recreation opportunities on a sustained basis.

3. Provide recreation facilities consistent with the ROS setting. Where possible, major facilities should be screened from the river. On-site interpretation may be provided.
4. Manage use and activities for the safety and convenience of the user, and protection and interpretation of the river resources. Experiences may include those requiring moderate isolation to those influenced by humans in a modified setting. Recreation facilities may include campgrounds, picnic areas, lodges, resorts, and interpretive sites and similar facilities.

Recreation Special Uses

A. Major developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.
B. Minor developments are fully compatible with this Land Use Designation and applicants are encouraged to examine these areas first. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Maintain or improve the visual character of river segments which qualified the river as a Scenic River particularly where scenic quality is an outstandingly remarkable value. In foreground settings, design management activities to not be visually evident to the casual observer. Management activities should be visually subordinate to the characteristic landscape in the middleground distance zone. In all settings, activities should utilize existing form, line, color, and texture found in the characteristic landscape.
   1. Apply to the river corridor the Retention Visual Quality Objective (VQO) for lands in the foreground distance zone, and the Partial Retention VQO for lands in the middleground and background distance zone, as seen from the River and other Visual Priority Travel Routes and Use Areas (see Appendix F). In areas not seen from the River or Visual Priority Travel Routes and Use Areas, apply the Modification VQO. However, if scenery is listed as one of the outstandingly remarkable values, apply the partial retention VQO. These objectives define the maximum limit of allowable change to the visual character of the area; less visible evidence of activities is acceptable. Note that these standards and guidelines only apply to lands within the Scenic River Land Use Designation (LUD). The area adjacent to this LUD is managed according to the guidelines of the adjacent LUD.
   2. Exceptions to the VQO for small areas of non-conforming developments, such as recreation sites, transportation developments, and mining development, may be considered on a case-by-case basis. Use designs and materials that are compatible with forms, colors and textures found in the characteristic landscape.
B. Locate and design recreation facilities and other authorized activities within the river corridor in a manner most compatible with the Retention Visual Quality Objective. Recreation facilities visible from the river generally are limited to those providing access to water-based recreation opportunities, such as fishing access points, trails, and boat launch facilities. Other

recreation facilities, such as cabins, are generally screened from view from the river.

SOIL AND WATER

Watershed Resource Improvements: S&W2

A. Undertake watershed improvements within the river corridor only where deteriorated soil or hydrologic conditions create a threat to the values for which the river is managed. Use, whenever possible, indigenous plant species and materials in implementing land treatment measures to protect or improve the quality and/or quantity of the water resource or when stabilizing or improving the productivity of the soil resource. (Consult FSM 2350 and 2520.)

SUBSISTENCE

Subsistence: SUB

A. Allow subsistence activities in the Scenic River Land Use Designation, subject to reasonable regulations to protect Scenic River resources.

TIMBER

Timber Resource Planning: TIM112

A. Suitable forested land is available for harvest if the adjacent Land Use Designation allows timber harvest.

B. Personal use wood harvesting is compatible with this Land Use Designation provided that management objectives are met. Discourage cutting within 100 feet each side of the river (also see the Riparian Forest-wide Standards & Guidelines). The cutting of down trees in navigable rivers (sweepers) must be compatible with the management direction for fish habitat and protect the outstandingly remarkable characteristics of the river.

Timber Resource Coordination: TIM113

A. Project analysis, development of environmental documents, and design for timber activities will enhance or maintain the outstandingly remarkable values within the river corridor.

Timber Sale Preparation: TIM114

A. Timber harvest activities may include all applicable silvicultural systems. Project analysis will recognize the effects of color, tone, texture, line, slope, size, and edge on the Scenic River.

B. The following guidelines provide direction for timber harvest activities to meet Visual Quality Objectives (VQO's) and Visual Absorption Capability (VAC) settings. These conditions are approximate estimates for planning purposes and should be referred to as guidelines during project analysis. Ground conditions may indicate a need to be more restrictive or relaxed in scheduling harvest to meet the intent of the Visual Quality Objective.

1. Retention - The Retention Visual Quality Objective requires that timber harvest activities are not evident to the casual Forest visitor.
2. Partial Retention - The Partial retention Visual Quality Objective requires that, although timber harvest activities are evident, they must remain subordinate to the characteristic landscape.
3. Modification - Management activities may dominate the characteristic landscape, yet will be designed to borrow from form and line found in the naturally-occurring landscape.
4. The following describes typical regeneration methods and approximate unit sizes for landscapes of different visual absorption capabilities for the VQO's adopted in this Land Use Designation.

- VQO Retention:
  Low: Single tree or group selection (less than 2 acres)
  Intermediate: Single tree or clearcut (approx. 5 - 15 acres)
  High: Clearcut (approx. 15 - 30 acres)
- VQO Partial Retention:
  Low: Group selection or clearcut (approx. 2-10 acres)
  Intermediate: Clearcut (approx. 10 - 40 acres)
  High: Clearcut (approx. 40 - 60 acres)
- VQO Modification:
  Low: Clearcut (approx. 15 - 40 acres)
  Intermediate: Clearcut (approx. 40 - 60 acres)
  High: Clearcut (approx. 80 - 100 acres)

C. Salvage harvest of dead or down material may occur. Removal of naturally-occurring dead trees in and along the river shoreline, including "sweepers" extending into the river from the bank, should consider the protection of outstandingly remarkable values and fish habitat.

TRANSPORTATION **Transportation Operations: TRAN1**

A. Develop and manage the transportation system in a manner compatible with Scenic River classification.
   1. Allow the construction of Forest Development Roads which may provide access to the river. Roads may occasionally bridge the river.
   2. Locate and design roads which, except for short segments or at bridge crossings, are not evident to the casual observer traveling on the river. Do not allow long stretches of conspicuous and well-traveled roads paralleling the riverbank.
   3. Limit the design standards of Forest Development Roads to those necessary to accommodate single use or a controlled mix of traffic (i.e., Traffic Service Level C or D). Occasional roads will be at a higher service level but that will be an exception.
   4. Consider the recreation emphasis of this Land Use Designation during development of road management objectives.

WILDLIFE **Wildlife Habitat Improvement: WILD22**

A. Allow wildlife habitat improvement where the principal objective is the protection or restoration of River resources, and the enhancement of outstandingly remarkable values.

RECREATIONAL RIVER

Land Use Designation RR

Goals

To manage designated river segments according to the "Wild and Scenic Rivers Act (Public Law 90-542), "National Wild and Scenic Rivers System; Final Revised Guidelines for Eligibility, Classification, and Management of River Areas" (Federal Register Volume 47, Number 173, 1982), and direction in Forest Service Manuals and Handbooks.

To maintain, improve and protect the essentially free-flowing character and outstandingly remarkable values of rivers and river segments designated as Recreational Rivers and included in the National Wild and Scenic Rivers System.

To provide recreation opportunities in a pleasing, though modified, generally free-flowing river setting, while allowing timber harvest, transportation, and other developments.

To manage recommended Recreational River segments to maintain their outstandingly remarkable values and classification eligibility until Congress designates the segments or decides not to designate them.

Objectives

Manage Recreational River segments to maintain a free-flowing river resource, while providing for access and use consistent with the Wild and Scenic Rivers Act and the Alaska National Interest Lands Conservation Act (ANILCA).

Permit timber harvest on suitable timber lands if adjacent lands are being managed for that purpose, in accordance with the standards and guidelines for the stated Visual Quality Objectives.

Manage recreation use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the desired Recreation Opportunity Spectrum class -- generally Roaded Natural.

Permit roads to access, parallel, or cross the river. In general, design access roads to accommodate passenger cars, and open them to public use.

Apply the Partial Retention Visual Quality Objective to foreground areas within the corridor seen from the river, roads, and recreation facilities, and Modification to all other seen areas within the river corridor.

Desired Condition

Recreational Rivers and river segments are in a generally unmodified to modified, essentially free-flowing condition. Ecological processes and changes may be affected by human uses. The outstandingly remarkable values for which the river was designated remain outstanding and remarkable. Recreation users have the opportunity for a variety and range of experiences in a modified but pleasing setting. Resource activities and developments may be present within the river corridor, and may dominate some areas. A variety of visual conditions occur. Interactions between users may be moderate to high. A yield of timber may be produced which contributes to Forest-wide sustained yield.

Recreational River Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM	All	4-93
Trails	TRAI	All	4-100
Transportation	TRAN111,122,212,22,23 TRAN214	All I-IV	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Allow the location of administrative facilities and public information centers in the river corridor if they do not have adverse effects on the values this Land Use Designation is intended to protect.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.

B. Suppression tactics are limited only by the standards and guidelines for this Land Use Designation, such as for the soil, water, and scenery resources.

Fuel Improvements: FIRE2

Prescribed fire

A. Allow management-ignited prescribed fire which meets the Partial Retention Visual Quality Objective and meets all soil and water quality standards.
   1. Treat all activity fuels to meet the Partial Retention Visual Quality Objective within one year following timber harvest.

B. As a general management practice, do not allow prescribed natural fire. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

FISH

Fish Habitat Planning: FISH112

A. Provide for public interpretation of fish habitats, habitat enhancement projects, and associated special fisheries conditions in appropriate Recreational Rivers.

B. Evaluate fish habitat improvement during project planning by considering:
   1. Effects on the free flow of water.
   2. Effects on the outstandingly remarkable values for which the river was designated.
   3. Weirs and other stream obstructions will be discouraged.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Maintain or improve forest health through insect and disease management practices. Implement these practices in compliance with recreation objectives.
   1. Encourage hazard tree management in developed areas.
   2. Permit salvage and sanitation of infested timber.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE **Heritage Resource Activities: HER**

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, interpretation, and allocation.
   1. Identify, classify, and evaluate known Heritage Resources.
   2. Identify heritage properties to be nominated to the National Register of Historic Places.
   3. Identify heritage properties that require stabilization or other protective measures.
   4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES **Cave Management Program: CAVE**

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS **Special Use Administration (Non-Recreation): LAND122**

A. Permit only those uses consistent with River management objectives. (Consult the Land and Resource Management Planning Handbook 1909.12, Chapter 8.)
   1. Allow existing low dams, diversion works, rip rap, and other minor similar instream structures, to remain. Generally, prohibit new structures of this nature.
   2. Permit no development of hydroelectric power facilities for: 1) projects exempted from licensing by the Federal Energy Regulatory Commission or 2) projects on rivers designated through sections 2, 3, and 5(a) of the Wild and Scenic Rivers Act. The Forest Service will recommend to FERC that a project on a river found eligible and suitable for inclusion in the Wild and Scenic Rivers System should not be licensed because it is inconsistent with the purposes for which the National Forest was created or acquired and, if necessary, impose conditions on any license issued for a project on that river that fully protect its outstandingly remarkable characteristics and free-flowing nature.
   3. Permit maintenance of existing flood control structures. Do not authorize new ones.
   4. Consider authorizing construction of roads, trails, or railroads, on a case-by-case basis. They may be authorized on one, or both, river banks and there may be several bridge crossings and numerous river access points. Permit new structures as necessary and appropriate.
   5. Transportation and utility corridors will be allowed in accordance with ANILCA, Title XI. This Land Use Designation represents a Transportation and Utility Systems (TUS) "Avoidance Area." Transportation and utility sites or corridors may be located within this Land Use Designation only after an analysis of potential TUS corridors has been completed and no feasible alternatives exist outside this Land Use Designation.
   6. Allow motorized access in accordance with ANILCA, Sections 811 and 1110(b).

Land Ownership Administration: LAND123

A. Acquire private inholdings as opportunities arise.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral entry.
B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Mining Regulations 36 CFR 228.
C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Work with claimants to develop a Plan of operations that adequately mitigates adverse impacts to Land Use Designation objectives. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.
C. Manage mineral exploration and development activities to be compatible with the emphasis of this Land Use Designation. Apply the following management practices to reduce resource impacts.
    1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
    2. Take advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
    3. Ensure that vegetation removed from the project area is hauled away, buried, burned, or scattered when located adjacent to Visual Priority Routes and Use Areas.
    4. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from sensitive viewpoints.
    5. Approve use of colors that simulate those found in the characteristic landscape.
    6. Apply timing restrictions to instream construction as needed to protect fisheries habitat and mitigate adverse disturbance of stream sediments.
    7. Require use of sedimentation traps as needed to mitigate adverse stream sedimentation and meet state and Federal water quality regulations.
    8. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
    9. Ensure the disturbed areas are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Continue to provide the spectrum of outdoor recreation opportunities in accordance with the existing capabilities of this Land Use Designation as indicated by the ROS inventory.
    1. Manage for the existing recreation settings and opportunities until scheduled activities and practices cause a change in the ROS

setting(s). Manage recreation use in a manner that is compatible with the long-term objectives of this Land Use Designation.

2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the appropriate ROS guidelines. Maintain the capability of this Land Use Designation to provide appropriate quality recreation opportunities on a sustained basis.
3. Provide recreation facilities consistent with the ROS setting. Where possible, major facilities should be screened from the river. On-site interpretation may be provided.
4. Manage use and activities for the safety and convenience of the user, and protection and interpretation of the river resources. Experiences may include those requiring moderate isolation to those influenced by humans in a modified setting. Recreation facilities may include campgrounds, picnic areas, lodges, resorts, and interpretive sites and similar facilities.

Recreation Special Uses

A. Major and minor developments are compatible with this Land Use Designation, and applicants are encouraged to examine these areas first. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. In foreground settings, design management activities to be subordinate to the characteristic landscape. Management activities may dominate areas seen in the middleground distance. In all settings, activities should utilize existing form, line, color and texture found in the characteristic landscape.
   1. Apply the Partial Retention Visual Quality Objective (VQO) in the foreground distance zone, and the Modification VQO in the middleground and background distance zones, as seen from Visual Priority Travel Routes and Use Areas (see Appendix F). In areas not seen from the River or Visual Priority Travel Routes and Use Areas, apply the Maximum Modification VQO. However, if scenery is listed as one of the outstandingly remarkable values, apply the Partial Retention VQO in the middleground, background and unseen areas. These objectives define the maximum limit of allowable change to visual character of the area; less visible evidence of activities is acceptable. Note that these standards and guidelines only apply to the lands within the Recreational River Land Use Designation (LUD). The area adjacent to this LUD is managed according to the guidelines of the adjacent LUD.
   2. Exceptions for small areas of non-conforming developments, such as recreation sites, transportation developments, Log Transfer Facilities and mining development, may be considered on a case-by-case basis. Use designs and materials that are compatible with forms, colors, and textures found in the characteristic landscape.

SOIL AND WATER

Watershed Resource Improvements: S&W2

A. Undertake watershed improvements within the river corridor where deteriorated soil or hydrologic conditions exist. Use, whenever possible, indigenous plant species and materials in implementing land treatment measures to protect or improve the quality and/or quantity of the water resource or when stabilizing or improving the productivity of the soil resource. (Consult FSM 2350 and 2520.)

B. Carry out land use activities to maintain water quality.

TIMBER

Timber Resource Planning: TIM112

A. Suitable forested land is available for harvest if the adjacent Land Use Designation allows timber harvest. Silvicultural treatment is integrated with site and area development to provide healthy tree stands, vegetative diversity, and forage production for indigenous wildlife populations. Insect and disease control, and landscaping are performed to maintain the aesthetic value of both existing recreation and potential recreation sites.

B. Personal use wood harvesting is compatible with this Land Use Designation provided that management objectives are met. . Discourage cutting within 100 feet each side of the river (also see the Riparian Forest-wide Standards & Guidelines). The cutting of down trees in navigable rivers (sweepers) must be compatible with the management direction for fish habitat and the protection of the outstandingly remarkable characteristics of the river.

Timber Resource Coordination: TIM113

A. Project design, analysis, and development of environmental documents for timber activities will emphasize enhancement or maintenance of the outstandingly remarkable river values.

Timber Sale Preparation: TIM114

A. Timber harvest activities may include all applicable silvicultural systems. Project analysis will recognize the effects of color, tone, texture, line, slope, size, and edge on the scenic viewshed.

B. Salvage harvest of dead or down material may occur. Removal of dead trees in and along the river shoreline, including sweepers extending into the river from the bank, should consider the protection of the outstandingly remarkable values and fish habitat.

C. The following guidelines provide direction for timber harvest activities to meet Visual Quality Objectives (VQO) and Visual Absorption Capability (VAC) settings. These estimates are appropriate for planning purposes and should be referred to as guidelines. Ground conditions may indicate a need to be more restrictive or relaxed in scheduling harvest to meet the intent of the Visual Quality Objective.

1. Partial Retention - The Partial Retention Visual Quality Objective requires that, although timber harvest activities are evident, they must remain subordinate to the characteristic landscape.
2. Modification - Management activities may dominate the characteristic landscape, yet will be designed to borrow from form and line found in the naturally-occurring landscape.
3. Maximum Modification - Activities may visually dominate the original characteristic landscape. This VQO should be met within one year in the foreground distance zone and within five years in the middle and background distances.
4. The following describes typical regeneration methods and approximate unit sizes for landscapes of different visual absorption capabilities for the VQO's adopted in this Land Use Designation.
   * VQO Partial Retention:
     Low : Group selection or clearcut (approx. 2-10 acres)
     Intermediate : Clearcut (approx. 10 - 40 acres)
     High : Clearcut (approx. 40 - 60 acres)

* VQO Modification:
  Low : Clearcut (approx. 15 - 40 acres)
  Intermediate : Clearcut (approx. 40 - 60 acres)
  High : Clearcut (approx. 60 - 100 acres)
* VQO Maximum Modification:
  Low : Clearcut (approx. 50 - 75 acres)
  Intermediate : Clearcut (approx. 80 - 100 acres)
  High : Clearcut (approx. 80 - 100 acres)

TRANSPORTATION **Transportation Operations: TRAN1**

A. Develop and manage the transportation system in a manner compatible with Recreational River classification.
   1. Allow the construction of Forest Development Roads. The river may be readily accessible by road. Roads may parallel the river bank and be conspicuous in places when viewed from the river.
   2. If accessible for public use, design roads to accommodate passenger cars and open them to public use (consistent with road management objectives), although traffic controls may be used during periods of high use (i.e., design to Traffic Service Level C or above).

EXPERIMENTAL FOREST

Land Use Designation EF

Goals

To provide for long-term opportunities for forest research and demonstration essential to managing forest resources.

Objectives

The Director of the Pacific Northwest Experiment Station (PNW) will prepare a development plan for each experimental forest in consultation with the Forest Supervisor designed to achieve the desired research objectives. Experimental Forests are jointly administered by the Pacific Northwest Experiment Station and the Ranger District in which located.

Allow timber harvest, as specified in the development plan, for research and demonstration purposes. Timber harvest is not counted towards the Allowable Sale Quantity, and forest lands are classified as unsuitable for timber production.

Roads and trails will generally complement research and interpretation. Allow facilities necessary for ongoing research, as specified in the experimental forest's development plan.

Allow fish enhancement or wildlife improvement projects for research purposes, or if they are compatible with the establishment objectives of the experimental forest.

Desired Condition

Each experimental forest is managed for the purposes for which it was established. Ongoing research provides useful needed information for forest management. Non-research types of activities and uses may be compatible, and do not interfere with, research or demonstration objectives. Opportunities for public use of roads may be present.

Experimental Forest Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1,140	All	4-93
Trails	TRAI	All	4-100
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

BEACH AND ESTUARY FRINGE

Beach and Estuary Fringe: BEACH2

A. Management activities, more intensive than those allowed in the Beach and Estuary Fringe Forest-wide Standards & Guidelines, may be allowed to assess their impacts on beach and estuary fringe resources. Prior to these activities, appropriate NEPA analysis must be conducted by the PNW Station for decision by the Forest Service officer with delegated authority.

FACILITIES

Facilities Improvements: FAC2

A. Allow facilities necessary for ongoing research and its interpretation, as specified in the individual experimental forest's development plan.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression action that minimizes fire suppression cost and resource damage. The action must meet the objectives of the experimental forest's development plan.
B. Suppression tactics will be compatible with the Experimental Forest's objectives.

Fuel Improvements: FIRE2

Prescribed fire

A. Allow management-ignited prescribed fire if it is compatible with the experimental forest's objectives.
B. As a general management practice, do not use prescribed natural fire, although it may be needed to perpetuate natural ecological processes. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142).

FISH

Fish Habitat Planning: FISH112

A. Fish habitat may be managed differently (e.g., using more intensive timber harvest techniques) than identified in the Riparian Forest-wide Standards & Guidelines to help meet the experimental forest's research objectives. In some cases, Forest-wide direction listed under FISH112 may not apply.
B. Fish enhancement projects may occur if they are compatible with the experimental forest's establishment objectives. Fish habitat manipulation may also occur to provide research into the costs, benefits, and effects of such manipulations with appropriate NEPA analysis conducted by the PNW Stations for decision by the Forest Service officer with delegated authority.

FOREST HEALTH

Forest Health Management: Health1

A. Coordinate insect and disease management activities with the Pacific Northwest Research Station and with the Experimental Forest's Development Plan.

Forest Insect and Disease Survey and Inventory: Health2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
   1. Identify, classify, and evaluate known Heritage Resources.
   2. Identify heritage properties to be nominated to the National Register of Historic Places.
   3. Identify heritage properties that require stabilization or other protective measures.
   4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Issue only those Special Use Authorizations consistent with the Experimental Forest's research objectives.
   1. Coordinate all proposed new uses with the PNW Station Director to ensure compatibility with research objectives.

B. This Land Use Designation represents a Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites and corridors may be located within this Land Use Designation only after an analysis of potential TUS corridor opportunities has been completed and no feasible alternatives exist outside this Land Use Designation.

Land Ownership Adjustments: LAND26

A. Acquire private inholdings as opportunities arise.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Depending on the research objectives, portions or all of the Experimental Forest may be withdrawn from mineral entry. Presently, nearly 5,000 acres of the Young Bay Experimental Forest is withdrawn from mineral entry; the Maybeso Experimental Forest is not withdrawn from mineral entry.
B. Claimants with claims located within this Land Use Designation retain valid existing rights if such rights were established prior to the date the experimental forest was withdrawn.
C. Reasonable access is permitted to mining claims.

Plan of operations

A. Encourage the use of state-of-the-art techniques for developing minerals to reduce impacts to the extent feasible. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply appropriate Transportation Forest-wide Standards & Guidelines for the location and construction of mining roads and facilities.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Continue to provide the spectrum of outdoor recreation opportunities in accordance with the existing capabilities of this Land Use Designation.
   1. Manage for the existing recreation uses, settings, and opportunities that can be accommodated without adverse effect on research objectives, until scheduled activities and practices cause a change in the ROS setting(s).
   2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the appropriate ROS guidelines.
   3. Manage public use within the experimental forest to protect ongoing research activities.

Recreation Special Uses

A. Major and minor developments are generally not consistent with the objectives of the Land Use Designation. Development proposals require scrutiny of the magnitude and scope for Land Use Designation conformance.

SCENERY

Scenery Operations: VIS1

A. In the Development Plan, identify the Visual Quality Objectives which may range from Retention to Maximum Modification and will depend on the research objectives of the experimental forest. Emphasis on visual quality should be given for areas seen from Visual Priority Travel Routes and Use Areas (see Appendix F).

RIPARIAN

Riparian Habitat Planning: RIP

A. Riparian habitat may be managed differently (e.g., using more intensive timber harvest techniques) than identified in Riparian Forest-wide Standards & Guidelines to help meet the experimental forest's research objectives. In some cases, Forest-wide direction listed under RIP may not apply with appropriate NEPA analysis conducted by the PNW Station for decision by the Forest Service officer with delegated authority.

SOIL AND WATER

Watershed Resource Planning: S&W112

A. Soil and water resources may be temporarily altered by experimental activities to assess the impacts of such activities upon soil productivity, water quality and quantity, and fish populations and habitat with appropriate NEPA analysis conducted by the PNW Station for decision by the Forest Service officer with delegated authority.

Watershed Resource Improvement: S&W2

A. Soil and water treatment measures may occur if they are compatible with experimental forest's establishment objectives. Different treatments may occur to provide information on benefits, costs, and effects of such treatments.

SUBSISTENCE **Subsistence: SUB**

A. Allow subsistence activities.

THREATENED, E & S **Threatened, Endangered & Sensitive: TE&S**

Sensitive species

A. Sensitive species habitats may be manipulated with planned research activities to assess the impacts of forest management activities/programs upon sensitive species habitats and populations with appropriate NEPA analysis conducted by the PNW for decision by the Forest Service officer with delegated authority.

TIMBER **Timber Resource Planning: TIM112**

A. Forest lands are classified as unsuitable for timber production. Timber harvested for experimental and demonstration purposes will not be chargeable to the Allowable Sale Quantity. Timber activities, including harvest and cultural treatment, will only take place for demonstration and research purposes as specified in the experimental forest development plan.
B. Personal use and Christmas tree cutting activities are limited to be consistent with the provisions of the experimental forest's development plan.

TRANSPORTATION **Transportation Operations: TRAN1**

A. Provide and manage the transportation system as needed to accomplish the experimental forest objectives.
B. Roads and trails may be developed to facilitate and interpret the ongoing research.
C. Roads may be constructed through the experimental forest to access other Land Use Designations, unless the roads would interfere with research objectives.
D. During construction, operation, and maintenance of roads, test the validity of standards and guidelines and Best Management Practices, as appropriate.

WETLANDS **Wetlands: WET**

A. Wetlands may be managed differently than identified in the Wetlands and Riparian Forest-wide Standards & Guidelines to help meet the experimental forest's research objectives with appropriate NEPA analysis conducted by the PNW for decision by the Forest Service officer with delegated authority.

WILDLIFE **Wildlife Habitat Planning: WILD112**

A. Wildlife habitat management and research will be identified in the Experimental Forest's Development Plan.
B. Wildlife habitats may be treated to assess the impact of vegetation management upon wildlife populations.

SCENIC VIEWSHED

Land Use Designation SV

Goals

To provide a sustained yield of timber and a mix of resource activities while minimizing the visibility of developments as seen from Visual Priority Travel Routes and Use Areas.

To recognize the scenic values of suitable timber lands viewed from selected popular roads, trails, water travel routes, recreation sites, bays and anchorages, and to modify timber harvest practices accordingly.

To seek to provide a supply of timber from the Tongass National Forest which meets the annual and planning-cycle market demand, consistent with the standards and guidelines of this Land Use Designation.

Objectives

Within this Land Use Designation, apply the Visual Quality Objectives (VQO's) of Retention in the foreground distance zone, and Partial Retention in the middleground and background distance zones, as seen from the Visual Priority Travel Routes and Use Areas (see Appendix F). Apply the Maximum Modification VQO to all other areas.

Suitable forest lands are available for timber harvest. Utilize appropriate silvicultural systems consistent with the adopted VQO's. Other timber management considerations include:

- seek to reduce clearcutting when other methods will meet land management objectives;
- identify opportunities for diversifying the wood products industry (such as special forest products, and value-added local production);
- use forest health management to protect resource values;
- improve timber growth and productivity on commercial forest lands;
- plan, inventory, prepare, offer, sell, and administer timber sales and permits to ensure the orderly development of timber production;
- emphasize the overall reduction of costs, increase of revenues, and improvement of public service within the timber program.

Perform viewshed analysis in conjunction with project development to provide direction for retaining or creating a scenically-attractive landscape over time, and for rehabilitation of areas overly modified in the past.

Provide a spectrum of recreation and tourism opportunities consistent with the capabilities of this Land Use Designation. Semi-primitive to roaded experiences may be offered.

Design roads and trails to be compatible with the characteristic landscape.

Extend rotations, as necessary, to meet the Visual Quality Objectives.

Desired Condition

In areas managed under the Scenic Viewshed Land Use Designation, forest visitors, recreationists, and others using identified popular travel routes and use areas will view a natural-appearing landscape. Management activities in the foreground will not be evident to the casual observer. Activities in the middleground and background will be subordinate to the characteristic landscape. Areas topographically screened from Visual Priority Travel Routes and Use Areas may be heavily modified. Within these viewsheds, timber harvest units are typically small and affect only a small percentage of the seen area. At any given point in time, roads, facilities, and other structures are either not visually evident or are subordinate to the landscape. A variety of successional stages providing wildlife habitat occur, although late successional stages predominate. Recreation and tourism opportunities in a range of settings are available. In the areas managed for Retention or Partial Retention VQO's, timber yields will generally be obtained through the use of small openings or uneven-aged systems. A yield of timber is produced which contributes to Forest-wide sustained yield.

Scenic Viewshed Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM	All	4-93
Trail	TRAI	All	4-100
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation and Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Meet the Visual Quality Objectives for this Land Use Designation when siting and constructing facilities for administrative use.
   1. Retention: Structures and activities should not be visually evident to the casual observer from sensitive viewpoints.
   2. Partial Retention: Structures and activities should be subordinate to the landscape character of the area.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
B. Suppression tactics are limited only by the standards for the Land Use Designation, such as soil, water quality, and scenery.

Fuel Improvements: FIRE2

Prescribed fire

A. Management-ignited prescribed fire must meet the retention VQO and meet all soil and water quality standards.
   1. Treat all activity fuels to meet the Retention VQO within one year following timber harvest.
B. Do not use prescribed natural fire.

FISH

Fish Habitat Improvements: FISH22

A. Meet the Visual Quality Objectives in the design and construction of fish habitat improvements and aquaculture facilities.
   1. Construct facilities from materials which blend with, and are compatible with, the immediately surrounding landscape.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Design Timber Stand Improvement, sanitation, salvage, and insect and disease management activities to be consistent with scenery and forest health objectives.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory

A. Provide heritage resource assistance to all development proposals. Coordination includes participation and support for environmental analysis, inventory, evaluation, assessment, monitoring and protection of Heritage Resources during activities.

1. Heritage Resource inventory will be accomplished during project planning. SHPO concurrence and Forest Supervisor approval is required prior to implementation.
2. Heritage Resource Specialists shall provide input on known or predicted heritage resource site density in proposed project areas and make recommendations to manage Heritage Resources.
3. Should any Heritage Resources be discovered during project activity, all work within the vicinity of the discovery shall cease until a heritage resource specialist is able to evaluate the situation and resumption of activity is approved by the Forest Supervisor.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

LANDS

Special Use Administration (non-Recreation): LAND122

A. Allow construction of structures only when Visual Quality Objectives can be achieved.
   1. Permit only structures which will not be evident to casual observers when viewed in the foreground distance from Visual Priority Travel Routes and Use Areas. In the middle to background distance, design structures to be subordinate to the characteristic landscape.
   2. Specify that materials and fabrication techniques for all new facilities be compatible with form, color and texture found in the immediately surrounding landscape.

B. This Land Use Designation represents a Transportation and Utility Systems (TUS) "Window" and provides opportunities for the future designation and location of transportation and utility sites or corridors.

Landline Location and Maintenance: LAND231, LAND24

A. Provide adequate landline marking for Forest Service contractors.
   1. Prior to Forest Service management activities, survey, mark, and post the boundary of National Forest System lands to Forest Service Standards, where there is a risk of trespass.

MINERALS AND GEOLOGY

Minerals and Geology Resource Preparation: MG11

A. Require a visual assessment and visual resource assistance with site planning and design of minerals activities.

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral entry.
B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and Forest Service Mining Regulations 36 CFR 228.
C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to the extent reasonable. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads.
C. Manage mineral activities to be compatible with the emphasis of this Land Use Designation. Apply the following management practices to meet Visual Quality Objectives.
    1. Recognize the effects of color, tone, form, texture, line, size, and edge on the scenic viewshed.
    2. Locate material disposal sites and marine transfer facilities outside this Land Use Designation if reasonable alternatives exist.
    3. Take maximum advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
    4. Ensure that vegetation removed from the project area is hauled away, buried, burned, or scattered when such vegetation is located adjacent to sensitive viewpoints.
    5. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from sensitive viewpoints.
    6. Approve use of colors that simulate those found in the characteristic landscape. Avoid use of reflective materials in project facilities.
    7. Ensure that landform modifications simulate naturally-occurring forms.
    8. Ensure that disturbed area are revegetated in accordance with project plans.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Provide a spectrum of recreation and tourism opportunities consistent with the objectives of this Land Use Designation.
    1. Where possible, management activities should avoid change to inventoried Recreation places unless analysis indicates a need to provide a different recreation opportunity.
    2. In locations where approved activities occur, the recreation setting may change to the Semi-primitive Motorized, Roaded Natural, and Roaded Modified ROS classes.
    3. Seek to maintain recreation opportunities along existing trail corridors by minimizing road crossings and clearing directly adjacent to the trail.
    4. Seek to minimize impacts to areas directly adjacent to developed recreation and tourism facilities (such as cabins and campgrounds) through scheduling and location of timber harvest activities.
B. In those areas identified as inventoried Recreation places, seek to maintain the existing ROS setting. When scheduled activities nearby may result in a change in the ROS setting, minimize the impacts so they maintain a Roaded Natural, or more natural setting.

Recreation Special Uses

A. Major and minor developments are compatible with this Land Use Designation, and applicants are encouraged to examine these areas first. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

Management Prescriptions

SCENERY

Scenery Operations: VIS1

A. Manage areas to maintain scenic quality as seen from Visual Priority Travel Routes and Use Areas.
   1. Apply the Retention Visual Quality Objective (VQO) for lands in the foreground distance zone, and the Partial Retention VQO for lands in the middleground and background distance zones, as seen from Visual Priority Travel Routes and Use Areas (see Appendix F). In areas of this allocation not seen from the Visual Priority Travel Routes and Use Areas, apply the Maximum Modification VQO. These objectives define the maximum limit of allowable change to the visual character of the area; less visible evidence of activities is acceptable.
   2. Exceptions for small areas of non-conforming developments, such as recreation sites, transportation developments, Log Transfer Facilities and mining development, may be considered on a case-by-case basis.
   3. Perform viewshed analysis in conjunction with project development to provide guidance for retaining or creating a visually attractive landscape over time.

SOIL AND WATER

Watershed Resource Planning: S&W112

A. Delineate the location of soil and water protection areas on appropriate project maps to insure their recognition, proper consideration, and protection of the sale area.
B. Manage non-designated domestic water use watersheds for multiple use, while providing water suitable for human consumption under of State Water Quality Standards and water supply regulations.
C. Apply Best Management Practices (BMP's) to all land-disturbing activities as a process to protect the beneficial uses of water from non-point sources of pollution. (Appendix C of this plan includes a summary of Best Management Practices which are found in Chapter 10 of the Soil and Water Conservation Handbook, 2502.22). Also consult FSM 2530, Facilities and Transportation Forest-wide Standards & Guidelines, U.S. Army Corps of Engineers Regulations (33 CFR 323.4) and the Clean Water Act.

Watershed Resource Improvements: S&W2

A. Accomplish soil and water improvement projects on non-designated domestic water use watersheds to prevent degradation of water quality below the State of Alaska's Water Quality Standard for domestic use.

TIMBER

Timber Resource Planning: TIM112

A. Suitable forested land is available for harvest and is included in the Allowable Sale Quantity calculation. Tentatively suitable lands assigned to no harvest by standard or guideline are unsuitable and not included in the Allowable Sale Quantity calculation.

Timber Resource Coordination: TIM113

A. Visual objectives will be emphasized in the analysis, in the development of environmental documents, and in the design and implementation of silvicultural activities.
B. Personal use wood cutting activities are compatible with this Land Use Designation provided that management objectives are met.

Timber Sale Preparation: TIM114

A. Timber harvest activities may include all applicable silvicultural systems. Project analysis will recognize the effects of color, tone, form, texture, line, slope, size, and edge on the scenic viewshed.

B. The following guidelines provide direction for timber harvest activities to meet Visual Quality Objectives (VQO) and Visual Absorption Capability (VAC) settings.
   1. Retention - The Retention Visual Quality Objective requires that timber harvest activities are not evident to the casual Forest visitor.
   2. Partial Retention - The Partial Retention Visual Quality Objective requires that, although timber harvest activities are evident, they must remain subordinate to the characteristic landscape.
   3. Maximum Modification - Management activities may dominate the area.

C. The following guidelines provide specific visual mitigation measures appropriate to timber management.
   1. The ability to attain the adopted Visual Quality Objective is dependent on many variables. Visual Absorption Capability (VAC) is an estimate of the relative ability of a landscape to absorb management activities. VAC ratings of High, Intermediate, and Low were derived from the Revision Database for analysis purposes. A Low VAC setting generally has steep slopes, with little landscape variety, while a High VAC setting is relatively flat and/or has a high degree of variety in the landscape.
   2. The unit sizes listed below provide guidance to the project IDT. Each landscape setting is different, and should be evaluated on a case-by-case basis. There may be instances where the visual objective can be attained while the unit size is greater than the guideline, and there also may be instances where the unit size must be smaller to meet the intent of the Visual Quality Objective.
   3. The following describes typical regeneration methods and approximate unit sizes for landscapes of different visual absorption capabilities for the VQO's adopted in this Land Use Designation.
      * VQO Retention:
        Low: Single tree or group selection (less than 2 acres)
        Intermediate: Single tree or clearcut (approx. 5 - 15 acres)
        High: Clearcut (approx. 15 - 30 acres)
      * VQO Partial Retention:
        Low: Group selection or clearcut (approx. 2-10 acres)
        Intermediate: Clearcut (approx. 10 - 40 acres)
        High: Clearcut (approx. 40 - 60 acres)
      * VQO Maximum Modification:
        Low: Clearcut (approx. 50 - 75 acres)
        Intermediate: Clearcut (approx. 80 - 100 acres)
        High: Clearcut (approx. 80 - 100 acres)
   4. Tree limbs, root wads, and tree stumps may require secondary treatment to meet the Retention and Partial Retention VQO. For timber sales and road construction contracts, use appropriate clauses which address these concerns. Brush disposal funds may be appropriate to use in these settings.
   5. Seek to minimize impacts to areas directly adjacent to developed recreation facilities (such as cabins and campgrounds) through scheduling and location of harvest activities.

TRANSPORTATION

Transportation Operations: TRAN1

A. Develop and manage cost-effective transportation systems which integrate resource requirements consistent with Land Use Designation direction.
   1. To meet the Visual Quality Objectives, give special consideration to minimizing apparent landform modification (as seen from sensitive travel routes) during road and Log Transfer Facility location, design, and construction.
   2. Perform integrated logging system and transportation system analysis to determine the least cost facility (considering cost of construction, maintenance, and hauling) and design standards necessary to meet Land Use Designation objectives.
   3. Give special emphasis to maintaining fish and wildlife habitat values, especially during road location and development of road management objectives.
      * If the need to restrict access is identified during project interdisciplinary review, roads may be closed, either seasonally or yearlong. (See Transportation Forest-wide Standards & Guidelines.)
   4. Provide recreational access where appropriate.
   5. Seek to avoid road crossings on existing trails or locating roads parallel to trails. Should no other feasible alternative exist, minimize site disturbance visible from the trail. Locate rock source developments away from trails to the extent possible, while meeting the objectives of this Land Use Designation.

WILDLIFE

Wildlife Habitat Planning: WILD112

A. Use existing inventories and evaluate the need for further project-specific inventories of wildlife habitat conditions during project analysis.
   1. Select Management Indicator Species (MIS) appropriate to the project area for project analysis. (See Wildlife Forest-wide Standards & Guidelines).

B. Coordinate all activities with consideration for the needs of wildlife, within the overall objectives of this Land Use Designation.
   1. Use the habitat needs of MIS to evaluate opportunities for, and consequences on, wildlife.
   2. In project planning, consider opportunities to allow for the elevational migration of wildlife.
   3. Consider silvicultural techniques which establish and prolong understory forb and shrub production in important habitat areas. Such techniques can include prescribed burning, precommercial thinning, canopy gaps, and uneven-aged management.

C. Coordinate road management with the needs of wildlife.

Wildlife Habitat Improvement: WILD22

A. Design and implement wildlife habitat improvement projects to meet the Visual Quality Objectives.

MODIFIED LANDSCAPE

Land Use Designation ML

Goals

To provide a sustained yield of timber and a mix of resource activities while minimizing the visibility of developments in the foreground distance zone.

To recognize the scenic values of suitable timber lands viewed from identified popular roads, trails, marine travel routes, recreation sites, bays, and anchorages, and to modify timber harvest practices accordingly.

To maintain and promote industrial wood production from suitable timber lands, providing a continuous supply of wood products to meet society's needs.

To seek to provide a supply of timber from the Tongass National Forest which meets the annual and planning-cycle market demand, consistent with the standards and guidelines of this Land Use Designation.

Objectives

Within this Land Use Designation, apply the Visual Quality Objectives of Partial Retention, in the foreground distance zone, and Modification, in the middleground and background distance zones, as seen from the Visual Priority Travel Routes and Use Areas (see Appendix F). Apply the Maximum Modification VQO to all other areas.

Suitable forest lands are available for timber harvest. Utilize appropriate silvicultural systems consistent with the adopted VQO's. Other timber management considerations include:

- seek to reduce clearcutting when other methods will meet land management objectives;
- identify opportunities for diversifying the wood products industry (such as special forest products, and value-added local production);
- use forest health management to protect resource values;
- improve timber growth and productivity on commercial forest lands;
- plan, inventory, prepare, offer, sell, and administer timber sales and permits to ensure the orderly development of timber production;
- emphasize the overall reduction of costs, increase of revenues, and improvement of public service within the timber program.

Provide a spectrum of recreation and tourism opportunities consistent with the capabilities of this Land Use Designation. Semi-primitive to roaded experiences may be offered. Avoid changes to semi-primitive non-motorized settings when feasible.

Design roads and associated rock quarries to meet the applicable Visual Quality Objective.

Desired Condition

In areas managed under the Modified Landscape Land Use Designation, forest visitors, recreationists, and others using popular travel routes and use areas will view a somewhat modified landscape. Management activities in the visual foreground will be subordinate to the characteristic landscape, but may dominate the landscape in the middle and backgrounds. Within the foreground, timber harvest units are typically small and affect only a small percentage of the seen area at any one point in time. Roads, facilities, and other structures are also subordinate to the foreground landscape. Recreation opportunities associated with natural-appearing to modified settings are available. A variety of successional stages provide a range of wildlife habitat conditions. A yield of timber is produced which contributes to Forest-wide sustained yield.

Modified Landscape Land Use Designation

Apply the following Forest-wide Standards & Guidelines located in Chapter 4**:**

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST, CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM	All	4-93
Trails	TRAI	All	4-100
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Locate and construct facilities for administrative use that meet the Visual Quality Objective.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
B. Suppression tactics are limited only by the standards and guidelines for this Land Use Designation, such as soil, water quality, and visual quality.

Fuel Improvements: FIRE2

Prescribed fire

A. Management-ignited prescribed fire must meet the Partial Retention VQO and meet all soil and water quality standards and guidelines.
    1. Treat all activity fuels to meet the Partial Retention VQO within one year following timber harvest.
B. Do not use prescribed natural fire.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Forest insect and disease management activities emphasize forest health through achieving beneficial populations of insects and diseases.
    1. Encourage Timber Stand Improvement, sanitation, and salvage.
    2. Manipulate insects and diseases to desirable levels by evaluating chemical, cultural, mechanical, biological or "no action" alternatives.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory

A. Provide heritage resource assistance to all developmental proposals. Coordination includes participation and support for environmental analysis, inventory, evaluation, assessment, monitoring and protection of Heritage Resources during activities.
    1. Heritage Resource inventory will be accomplished during project planning. SHPO concurrence and Forest Supervisor approval is required prior to implementation.
    2. Heritage Resource Specialists shall provide input on known or predicted heritage resource site density in proposed project areas and make recommendations to manage Heritage Resources.
    3. Should any Heritage Resources be discovered during project activity, all work within the vicinity of the discovery shall cease until a heritage resource specialist is able to evaluate the situation and resumption of activity is approved by the Forest Supervisor.

B. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this LUD.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Authorize only those development activities compatible with LUD objectives. Avoid issuing, or limit the duration of, permits for uses which require natural surroundings.
   1. Permit only activities which can be designed to meet the Visual Quality Objectives for this LUD.

B. This Land Use Designation represents a Transportation and Utility Systems (TUS) "Window" and provides opportunities for the future designation and location of transportation and utility sites or corridors.

Landline Location and Maintenance: LAND231, LAND24

A. Provide adequate landline marking for Forest Service contractors.
   1. Prior to Forest Service management activities, survey, mark, and post the boundary of National Forest System lands to Forest Service Standards, where there is a risk of trespass.

MINERALS AND GEOLOGY

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral entry.

B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and Forest Service Mining Regulations 36 CFR 228.

C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Encourage use of state-of-the art techniques for developing minerals, to reduce impacts to the extent reasonable. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.

B. Apply Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads.

C. Manage mineral exploration and development activities to be compatible with the emphasis of this Land Use Designation. Apply the following management practices to reduce resource impacts.
   1. Manage mineral management activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
   2. Take advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
   3. Ensure that vegetation removed from the project are is hauled away, buried, burned, or scattered when such vegetation is located adjacent to Visual Priority Travel Routes and Use Areas.
   4. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from sensitive viewpoints.

5. Approve use of colors that simulate those found in the characteristic landscape.
6. Ensure that disturbed areas are revegetated in accordance with project plans.
7. Apply timing restrictions to minerals activities as needed during critical wildlife mating, calving, and migrating periods.
8. Ensure that landform modifications simulate naturally occurring forms.
9. Approve reclamation plans in which minerals activities leave a natural-appearing condition.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Provide a spectrum of outdoor recreation and tourism opportunities consistent with the objectives of the Land Use Designation.
   1. Manage for the existing recreation settings and opportunities until approved activities and practices change the ROS setting(s). Manage recreation and tourism use in a manner that is compatible with the timber harvest objectives.
   2. In locations where approved activities change the recreation setting(s), manage the new setting(s) with the appropriate ROS guidelines (generally Roaded Modified).
   3. Seek to maintain the recreation opportunity along existing trail corridors by minimizing road crossings and clearing directly adjacent to the trail.
   4. Seek to minimize impacts to areas directly adjacent to developed recreation and tourism facilities (such as cabins and campgrounds) through scheduling and location of project activities.

B. In those areas inventoried as Recreation places, seek to maintain the existing ROS setting. When approved activities nearby may result in a change to the ROS setting, minimize the impacts so they maintain a Roaded Natural or more natural ROS setting.

Recreation Special Uses

A. Major and minor developments may be compatible with the LUD objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. In foreground settings, design management activities to be subordinate to the characteristic landscape. Management activities may dominate areas seen in the middleground and background distance. In all settings, activities should utilize existing form, line, color, and texture found in the characteristic landscape.
   1. Apply the Partial Retention Visual Quality Objective (VQO) in the foreground distance zone, and the Modification VQO in the middleground and background distance zones, as seen from Visual Priority Travel Routes and Use Areas (see Appendix F). In areas of this allocation not seen from the Visual Priority Travel Routes and Use Areas, apply the Maximum Modification VQO. These objectives define the maximum limit of allowable change to visual character of the area; less visible evidence of activities is acceptable.

2. Exceptions for small areas of non-conforming developments, such as recreation sites, transportation developments, Log Transfer Facilities and mining development, may be considered on a case-by-case basis.

SOIL AND WATER

Watershed Resource Planning: S&W112

A. Delineate the location of high hazard soils, riparian, and other sensitive areas on project maps to insure their recognition, proper consideration, and protection on the sale area.

B. Manage non-designated domestic water use watersheds for multiple use, while providing water suitable for human consumption under of State Water Quality Standards and water supply regulations.

C. Apply Best Management Practices (BMP's) to all land-disturbing activities as a process to protect the beneficial uses of water from non-point sources of pollution. (Appendix C of this plan includes a summary of Best Management Practices which are found in Chapter 10 of the Soil and Water Conservation Handbook, 2502.22). Also consult FSM 2530, Facilities and Transportation Forest-wide Standards & Guidelines, U.S. Army Corps of Engineers Regulations (33 CFR 323.4) and the Clean Water Act.

Watershed Resource Improvements: S&W2

A. Accomplish soil and water improvement projects on non-designated domestic water use watersheds to prevent degradation of water quality below the State of Alaska's Water Quality Standard for domestic use.

TIMBER

Timber Resource Planning: TIM112

A. Suitable forested land is available for harvest and is included in the Allowable Sale Quantity calculation. Tentatively suitable lands assigned to no harvest by standard or guideline are unsuitable and not included in the Allowable Sale Quantity calculation.

B. Personal use wood cutting activities are compatible with this Land Use Designation provided that management objectives are met.

Timber Sale Preparation: TIM114

A. Timber harvest activities may include all applicable silvicultural systems. Recognize the effects of color, tone, texture, line, slope, size, and edge on the characteristic landscape.

B. The following guidelines provide direction for timber harvest activities to meet Visual Quality Objectives (VQO) and Visual Absorption Capability (VAC) settings. The guidelines define the maximum allowable disturbance for timber harvest. Ground conditions may indicate a need to be more or less restrictive in scheduling harvest to meet the intent of the Visual Quality Objective.

1. Partial Retention - The Partial Retention Visual Quality Objective requires that, although timber harvest activities are evident, they must remain subordinate to the characteristic landscape.
2. Modification - Management activities may dominate the characteristic landscape, yet will be designed to borrow from form and line found in the naturally-occurring landscape.
3. Maximum Modification - Activities may visually dominate the original characteristic landscape. This VQO should be met within one year in the foreground distance zone and within five years in the middle and background distance zones.

C. The following guidelines provide specific visual mitigation measures appropriate to timber management.

1. The ability to attain the adopted Visual Quality Objective is dependent on many variables. Visual Absorption Capacity (VAC) is an estimate of the relative ability of a landscape to absorb management activities. A Low VAC setting generally has steep slopes, with little landscape variety, while a High VAC setting is relatively flat and/or has a high degree of variety in the landscape.
2. The unit sizes listed below provide guidance to the project IDT. Each landscape setting is different and should be evaluated on a case-by-case basis. There may be instances where the visual objective can be attained while the unit size is greater than the guideline, and there also may be instances where the unit must be smaller to meet the intent of the Visual Quality Objective.
3. The following describes typical regeneration methods and approximate unit sizes for landscapes of different visual absorption capabilities for the VQO's adopted in this LUD.
   * VQO Partial Retention:
     Low: Group selection or clearcut (approx. 2-10 acres)
     Intermediate: Clearcut (approx. 10 - 40 acres)
     High: Clearcut (approx. 40 - 60 acres)
   * VQO Modification:
     Low: Clearcut (approx. 15 - 40 acres)
     Intermediate: Clearcut (approx. 40 - 60 acres)
     High: Clearcut (approx. 60 - 100 acres)
   * VQO Maximum Modification:
     Low: Clearcut (approx. 50 - 75 acres)
     Intermediate: Clearcut (approx. 80 - 100 acres)
     High: Clearcut (approx. 80 - 100 acres)
4. Tree limbs, root wads, and tree stumps may require secondary treatment to meet the Partial Retention VQO in the foreground distance. For timber sales and road construction contracts, use clauses which address these concerns. Brush disposal funds may be appropriate to use in these settings.

D. Seek to provide for a reasonable assurance of windfirm boundaries. To design for windfirmness, consider conditions such as soils, local wind patterns, tree height and size, and other site-specific factors.

E. Manage even-aged timber stands at rotations beyond the age of Mean Annual Increment culmination (merchantable cubic foot basis).

Timber Stand Improvement: TIM25

A. Timber Stand Improvement activities that meet the visual and timber objectives of the Land Use Designation may be used.

B. Continue evaluation of commercial thinning opportunities in second-growth stands on the Forest for enhancing timber growth and development, while improving the visual quality and habitat conditions for wildlife. Evaluation will be provided as part of the Alaska Region Second-Growth Management Program.

TRANSPORTATION

Transportation Operations: TRAN1

A. Develop and manage cost-effective transportation systems which integrate resource requirements consistent with Land Use Designation direction.
   1. To meet the Visual Quality Objectives, give special consideration to minimizing apparent landform modification (as seen from sensitive travel routes) during road and Log Transfer Facility location, design, and construction.

2. Perform integrated logging system and transportation system analysis to determine the least-cost facility (considering cost of construction, maintenance, and hauling) and design standards necessary to meet Land Use Designation objectives.
3. Give special emphasis to maintaining fish and wildlife habitat values, especially during road location and development of road management objectives.
   * If the need to restrict access is identified during project interdisciplinary review, roads may be closed, either seasonally or yearlong. (See Transportation Forest-wide Standards & Guidelines.)
4. Provide recreation access where appropriate.
5. Seek to avoid road crossings on existing trails or locating roads parallel to trails. Should no other feasible alternative exist, minimize site disturbance visible from the trail. Locate rock source developments away from trails to the extent possible, while meeting the objectives of this Land Use Designation.

WILDLIFE

Wildlife Habitat Planning: WILD112

A. Use existing inventories and evaluate the need for further project-specific inventories of wildlife habitat conditions during project analysis.
   1. Select Management Indicator Species (MIS) appropriate to the project area for project analysis. (See Wildlife Forest-wide Standards & Guidelines.)
B. Consider wildlife habitat needs during project planning and implementation.
   1. Use the habitat needs of MIS to evaluate opportunities for, and consequences on, wildlife.
   2. In project planning, consider opportunities to allow for the elevational migration of wildlife.
C. Coordinate road management with the needs of wildlife.

TIMBER PRODUCTION

Land Use Designation TM

Goals

To maintain and promote industrial wood production from suitable timber lands, providing a continuous supply of wood to meet society's needs.

To manage these lands for sustained long-term timber yields.

To seek to provide a supply of timber from the Tongass National Forest which meets the annual and planning-cycle market demand, consistent with the standards and guidelines of this Land Use Designation.

Objectives

Within this Land Use Designation, apply the Visual Quality Objectives of Modification in the foreground distance zone as seen from Visual Priority Travel Routes and Use Areas (see Appendix F). Apply the Maximum Modification VQO to all other areas.

Locate and design timber harvest activities primarily to meet timber objectives. Suitable forest lands are available for timber harvest; appropriate silvicultural systems may be used. Other timber management objectives include:

- seek to reduce clearcutting when other cutting methods will meet land management objectives;
- identify opportunities for diversifying the wood products industry (such as special forest products, and value-added local production);
- use forest health management to protect resource values;
- improve timber growth and productivity on commercial forest lands;
- plan, inventory, prepare, offer, sell and administer timber sales and permits to ensure the orderly development of timber production;
- emphasize the overall reduction of costs, increase of revenues, and improvement of public service within the timber program.

Provide a spectrum of recreation and tourism opportunities consistent with the capabilities of this Land Use Designation. Manage recreation and tourism use to be compatible with timber production objectives. Manage changed recreation settings in accordance with the appropriate Recreation Opportunity Spectrum class.

Plan a transportation network of roads and helicopter access that will eventually access most of the suitable timber lands for standard logging or helicopter yarding systems.

Desired Condition

Suitable timber lands are managed for the production of sawtimber and other wood products on an even-flow, Long-term Sustained Yield basis; the timber yield produced contributes to a Forest-wide sustained yield. An extensive road system provides access for timber management activities, recreation uses, hunting and fishing, and other public and administrative uses; some roads may be closed, either seasonally or year-long, to address resource concerns. Management activities will generally dominate most seen areas. Tree stands are healthy and in a balanced mix of age classes from young stands to trees of harvestable age, often in 40- to 100-acre stands. Recreation opportunities, associated with roaded settings from Semi-primitive to Roaded Modified, are available. A variety of wildlife habitats, predominantly in the early and middle successional stages, are present.

Timber production Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST, CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM	All	4-93
Trails	TRAI	All	4-100
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation and Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Permanent administrative facilities are constructed to be compatible with this Land Use Designation objective.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
B. Suppression tactics are limited only by the standards and guidelines for the Land Use Designation, such as soil and water.

Fuel Improvements: FIRE2

Prescribed fire

A. Management-ignited prescribed fire may be used for fuels management, insect and disease protection, silvicultural site preparation, and wildlife habitat improvement.
B. Do not use prescribed natural fire.

FOREST HEALTH

Forest health Management: HEALTH1

A. Forest insect and disease management activities emphasize forest health through manipulating insects and diseases to desirable levels.
    1. Encourage Timber Stand Improvement, sanitation, and salvage.
    2. Evaluate chemical, cultural, mechanical, biological and "no action" to manipulate insects and diseases to desirable levels.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks.

HERITAGE

Heritage Resource Activities: HER

Inventory

A. Provide heritage resource assistance to all development proposals. Coordination includes participation and support for environmental analysis, inventory, evaluation, assessment, monitoring and protection of Heritage Resources during activities.
    1. Heritage Resource inventory will be accomplished during project planning. SHPO concurrence and Forest Supervisor approval is required prior to implementation.
    2. Heritage resource specialists shall provide input on known or predicted heritage resource site density in proposed project areas and make recommendations to manage Heritage Resources.
    3. Should any Heritage Resources be discovered during project activity, all work within the vicinity of the discovery shall cease until a heritage resource specialist is able to evaluate the situation and resumption of activity is approved by the Forest Supervisor.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this LUD.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Authorize only those uses which are compatible with Land Use Designation objectives. Avoid issuing, or limit the duration of, permits for uses which require natural surroundings.
B. This Land Use Designation represents a Transportation and Utility Systems (TUS) "Window" and provides opportunities for the future designation and location of transportation and utility sites or corridors.

Landline Location and Maintenance: LAND231, LAND24

A. Provide adequate landline marking for Forest Service contractors.
   1. Prior to Forest Service management activities, survey, mark, and post the boundary of National Forest System lands, to Forest Service standards, where there is a risk of trespass.

MINERALS AND GEOLOGY

Minerals and Geology Resource Preparation: MG11

Resource Preparation

A. Coordinate the location of timber and mining transportation systems when feasible.
B. Coordinate with claimant to ensure the location of timber sale units and roads across mining claims do not interfere with mining activities, markers, and improvements.

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral entry.
B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and Forest Service Mining Regulations 36 CFR 228.
C. Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Work with claimant to develop a Plan of operations that is compatible with the emphasis of this Land Use Designation. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts. Apply the following management practices to reduce resource impacts.
   1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
   2. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads.
   3. Take advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.
   4. Ensure that disturbed area are revegetated in accordance with project plans.
   5. Approve reclamation plans in which minerals activities leave a natural-appearing condition.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Provide a spectrum of outdoor recreation and tourism opportunities consistent with the objectives of this Land Use Designation.
   1. Manage for the existing recreation settings and opportunities until approved activities change the ROS setting(s). Manage recreation and tourism use in a manner that is compatible with the timber harvest objectives.
   2. In locations where approved activities change the recreation setting(s), manage the new setting(s) with the appropriate ROS guidelines (generally Roaded Modified).
   3. Seek to maintain the recreation opportunity along existing trail corridors by minimizing road crossings and clearing directly adjacent to the trail.
   4. Seek to minimize impacts to inventoried Recreation places and to developed recreation and tourism facilities (such as cabins and campgrounds) through scheduling and location of project activities.

Recreation Special Uses

A. Major and minor developments may be compatible with the LUD objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

SCENERY

Scenery Operations: VIS1

A. Timber management activities may dominate the visual character of the landscape.
   1. Apply Forest-wide Standards & Guidelines for the Modification VQO in the foreground distance zone of Visual Priority Travel Routes and Use Areas (see Appendix F) and the Maximum Modification Visual Quality Objective for all other areas. This objective defines the maximum limit of allowable change to the visual character of the area; less visible evidence of activities is acceptable.
   2. Consider roadside clean up as a mitigation measure when recreational use is included as a road management objective for the proposed road.
   3. In areas visible from Visual Priority Travel Routes and Use Areas, incorporate landscape design techniques in the planning process to the extent that they are compatible with LUD objectives.

SOIL AND WATER

Watershed Resource Planning: S&W112

A. Delineate the location of high hazard soils, riparian, and other sensitive areas on project maps to insure their recognition, proper consideration, and protection on the sale area.

B. Manage non-designated domestic water use watersheds for multiple use while providing water suitable for human consumption under of State Water Quality Standards and water supply regulations.

C. Apply Best Management Practices (BMP's) to all land-disturbing activities as a process to protect the beneficial uses of water from non-point sources of pollution. (Note: Appendix C of this plan includes a summary of Best Management Practices which are found in Chapter 10 of the Soil and Water

Conservation Handbook, 2502.22). Also consult FSM 2530, Facilities and Transportation Forest-wide Standards & Guidelines, U.S. Army Corps of Engineers Regulations (33 CFR 323.4) and the Clean Water Act.

Watershed Resource Improvements: S&W2

A. Accomplish soil and water improvement projects on non-designated domestic water use watersheds to prevent degradation of water quality below the State of Alaska's Water Quality Standard for domestic use.

TIMBER

Timber Resource Planning: TIM112

A. Timber management is emphasized. Suitable forested land is available for harvest and is included in the Allowable Sale Quantity calculation. Tentatively suitable lands assigned to no harvest by standard or guideline are unsuitable and not included in the Allowable Sale Quantity calculation.

Timber Resource Coordination: TIM113

A. Personal use wood harvesting and Christmas tree cutting activities are fully compatible with this Land Use Designation.

Timber Sale Preparation: TIM114

A. Locate and design timber harvest activities primarily to meet timber objectives. Include integration of other resources objectives, particularly wildlife and vegetative diversity, if they do not have a significant adverse impact on the timber resource goals. Timber harvest activities may include all applicable silvicultural systems.

B. The following guidelines provide direction for timber harvest activities to meet Visual Quality Objectives (VQO) and Visual Absorption Capability (VAC) settings. The guidelines define the maximum allowable disturbance for timber harvest. Ground conditions may indicate a need to be more or less restrictive in scheduling harvest to meet the intent of the Visual Quality Objective.
   1. Modification - Management activities may dominate the characteristic landscape, yet will be designed to borrow from form and line found in the naturally-occurring landscape.
   2. Maximum Modification - This VQO allows management activities to dominate the seen area. In planning timber harvest, design activities to resemble natural occurrences as viewed in the background distance zone.

C. The following guidelines provide specific visual mitigation measures appropriate to timber management.
   1. The ability to attain the adopted Visual Quality Objective is dependent on many variables. Visual Absorption Capacity (VAC) is an estimate of the relative ability of a landscape to absorb management activities. A Low VAC setting generally has steep slopes, with little landscape variety, while a High VAC setting is relatively flat and/or has a high degree of variety in the landscape.
   2. The unit sizes listed below provide guidance to the project IDT. Each landscape setting is different and should be evaluated on a case-by-case basis. There may be instances where the visual objective can be attained while the unit size is greater than the guideline, and there also may be instances where the unit must be smaller to meet the intent of the Visual Quality Objective.
   3. The following describes typical clearcut regeneration methods and approximate unit sizes for landscapes of different visual absorption capabilities for the VQO's adopted in this LUD.

- VQO Modification:
  Low: Clearcut (approx. 15 - 40 acres)
  Intermediate: Clearcut (approx. 40 - 60 acres)
  High: Clearcut (approx. 60 - 100 acres)
- VQO Maximum Modification:
  Low: Clearcut (approx. 50 - 75 acres)
  Intermediate: Clearcut (approx. 80 - 100 acres)
  High: Clearcut (approx. 80 - 150 acres)

D. Consult Timber Forest-wide Standards & Guidelines for maximum sizes of created openings.

E. Seek to provide for a reasonable assurance of windfirm boundaries. To design for windfirmness, consider conditions such as soils, local wind patterns, tree height and size, and other site-specific factors.

TRANSPORTATION **Transportation Operations: TRAN1**

A. Develop and manage cost-effective transportation systems which integrate resource requirements consistent with Land Use Designation direction.
   1. Perform integrated logging system and transportation system analysis to determine the least-cost facility (considering cost of construction, maintenance, and hauling) and design standards necessary to meet Land Use Designation objectives.
   2. If the need to restrict access is identified during project interdisciplinary review, roads may be closed, either seasonally or yearlong. (See Transportation Forest-wide Standards & Guidelines.)
   3. Consider future recreational access in location and design of roads.
   4. Seek to avoid road crossings on existing trails or locating roads parallel to trails. Should no other feasible alternative exist, minimize site disturbance visible from the trail. Locate rock source developments away from trails to the extent possible, while meeting the objectives of this Land Use Designation.

WILDLIFE **Wildlife Habitat Planning: WILD112**

A. Use existing inventories and evaluate the need for further project-specific inventories of wildlife habitat conditions during project analysis.
   1. Select Management Indicator Species (MIS) appropriate to the project area for project analysis. (See Wildlife Forest-wide Standards & Guidelines.)

B. Consider wildlife habitat needs during project planning and implementation.
   1. Use the habitat needs of MIS to evaluate opportunities for, and consequences on, wildlife.

MINERALS

Land Use Designation MM

Goals

To encourage the prospecting, exploration, development, mining, and processing of locatable minerals in areas with the highest potential for minerals development.

To insure that minerals are developed in an environmentally sensitive manner, and that other high-valued resources are considered when minerals developments occur.

Objectives

Apply this management prescription to the project areas of currently approved minerals plans of operation. Use the prescription as criteria in the planning and design of proposed mineral developments and plans of operation. During the period before approval of the plan of operation, the underlying (initial) LUD(s) continue to apply to the project area.

For minerals activities:

- authorize special uses which facilitate such activities;
- allow reasonable access, consistent with other resource values;
- apply the Modification Visual Quality Objective to foreground areas viewed from the Visual Priority Travel Routes and Use Areas (Appendix F); otherwise, the Maximum Modification objective applies;
- maintain present and continued soil productivity and water quality to the extent feasible. Apply Best Management Practices to meet State Water Quality Standards.

For non-minerals activities:

- authorize special uses that will not substantially conflict with present or anticipated mineral-related activities;
- limit new recreation facilities to those compatible with mineral developments;
- manage recreation settings and opportunities to be as compatible as possible with the initial Land Use Designation.

Maintain the present and continued productivity of anadromous fish and other foodfish habitat, and wildlife habitats, to the maximum extent feasible. Stress the protection of fish and wildlife habitats to prevent or minimize the need for mitigation.

Rehabilitate soil and water resources and fish and wildlife habitats after the completion of mining operations.

After the completion of mining activities and restoration, manage the area according to the original Land Use Designation.

Desired Condition

During mining operations, mining activities are limited to the area necessary for their efficient, economic, and orderly development. Mining is carried out so that any effects on other resources are minimized to the extent feasible, and all minimum legal resource protection requirements are met. Other resource uses and activities in the area do not conflict with mining operations. After the completion of mining, affected areas are rehabilitated and, in most cases, the area once again provides the settings and opportunities of the original Land Use Designation.

Minerals Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST, CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1 TIM1114	All VIII	4-93
Trails	TRAI	All	4-100
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Administrative Facilities: FAC

A. Generally, co-locate administrative facilities with facilities authorized in the Plan of operations.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
B. Suppression tactics are limited only by the standards and guidelines for this Land Use Designation.

Fuel Improvements: FIRE2

Prescribed fire

A. Management-ignited prescribed fire may be used for fuels management, insect and disease protection, silvicultural site preparation and wildlife habitat improvement.
B. Do not use prescribed natural fire.

FISH

Fish Habitat Planning: FISH112

Planning/mitigation

A. Maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
B. Stress protection of fish habitat to prevent the need for mitigation. Mitigation, rehabilitation and monitoring of mining impacts to fish habitat or populations shall be identified in environmental documents and plans of operation.
C. Consider the need to maintain instream flows for fish during the development of minerals management activities.

FOREST HEALTH

Forest Health Management: HEALTH1

A. For underlying (initial) Land Use Designations that permit timber harvest, emphasize Timber Stand Improvement, sanitation, salvage, and insect and disease management measures consistent with the Land Use Designation objectives.
B. For underlying (initial) Land Use Designations that do not permit timber harvest, apply insect and disease management measures consistent with the underlying Land Use Designation to protect these and adjacent resources.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks annually.

HERITAGE

Heritage Resource Activities: HER

Inventory

A. Provide heritage resource assistance to all development proposals. Coordination includes participation and support for environmental analysis, inventory, evaluation, assessment, monitoring and protection of Heritage Resources during activities.
   1. Heritage Resource inventory will be accomplished during project planning. SHPO concurrence and Forest Supervisor approval is required prior to implementation.
   2. Heritage Resource Specialists shall provide input on known or predicted heritage resource site density in proposed project areas and make recommendations to manage Heritage Resources.
   3. Should any Heritage Resources be discovered during project activity, all work within the vicinity of the discovery shall cease until a heritage resource specialist is able to evaluate the situation and resumption of activity is approved by the Forest Supervisor.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this LUD.

LANDS

Special Use Administration (Non-Recreation): LAND122

A. Generally, authorize special uses to facilitate mineral-related activities.
   1. Evaluate alternative facility designs and locations (including off-site) which consider: 1) amount of land disturbance; 2) effects on other resources; and, 3) effects resulting from human use.

B. Generally, authorize non-mineral development related uses if they do not substantially conflict with present or anticipated mineral-related activities or the underlying (initial) Land Use Designation.
   1. Use temporary or annual permits which maintain options for future mineral development.

C. This Land Use Designation represents either a Transportation and Utility Systems (TUS) "Window" or "Avoidance Area" depending upon the TUS category of the initial Land Use Designation.

MINERALS AND GEOLOGY

Minerals and Geology Resource Preparation: MG11

Resource Preparation

A. Emphasize minerals management activities. Management should facilitate the prospecting, exploration, development, mining, and processing of mineral resources in areas with the highest potential for development.

B. Prior to the initiation of mineral activities, manage these lands under their initial Land Use Designation in the Forest Plan. With the initiation of mineral activities, apply reasonable regulation of surface occupancy and use to manage the mineral development to be as compatible as possible with the initial Land Use Designation.

C. The minerals land use prescription will apply upon approval of a Plan of operations. Those portions of the initial Land Use Designation not identified for mineral activity in an approved Plan of operations will continue to be managed under the initial Land Use Designation. After mineral operations are completed, lands allocated under the minerals prescription will revert to the initial Land Use Designation to the extent possible.

Minerals and Geology Administration: MG12

Forest Lands Open to Mineral entry

A. Forest lands within this Land Use Designation are open to mineral entry.

B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Mining Regulations 36 CFR 228.

Plan of operations

A. Encourage the use of state-of-the-art techniques to develop mineral resources, while reducing impacts to other resources to the extent feasible. The economic practicality of the protection measures must be considered while planning mineral activities. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Prior to the initiation of mineral development, provide recreation settings and opportunities consistent with the initial Land Use Designation.
   1. For any new investment in recreation facilities, consider the potential effects to those facilities by future minerals development.

B. With the initiation of mineral development, manage the recreation setting in a manner as compatible as feasible with the initial Land Use Designation.
   1. Manage for the existing recreation settings and opportunities until scheduled activities and practices change the ROS settings. Manage recreation use in a manner that is compatible with the mineral objectives.
   2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) with the appropriate ROS guidelines (generally Roaded Modified).
   3. Seek to maintain the recreation experience along existing trail corridors by locating road crossings and clearing so they are not directly adjacent to the trail when feasible.
   4. Seek to minimize impacts to areas directly adjacent to developed recreation facilities (such as cabins and campgrounds).
   5. Consider regulating recreation use and access to mitigate for the minerals development.
   6. Manage public use of mining access roads and development areas to be consistent with the new ROS class, unless recreation analysis indicates a need for a modified ROS class.
   7. Where effects on existing maintained recreation facilities and trails cannot be avoided due to mineral development, analyze alternatives for reasonable substitute facilities.

Recreation Special Uses

A. Major and minor developments may be compatible with the LUD objectives depending on the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis. (See Recreation and Tourism Forest-wide Standards & Guidelines.)

SCENERY

Scenery Operations: VIS1

A. Prior to the initiation of mineral development, manage for visual quality according to the initial Land Use Designation.

B. With the initiation of mineral development, apply Forest-wide Standards & Guidelines for Modification in the foreground distance as seen from Visual Priority Travel Routes and Use Areas (see Appendix F) and for the Maximum Modification VQO in all other areas. The objective defines the maximum limit of allowable change to the visual character of the area; less evidence of visual change is acceptable.

1. Incorporate landscape design techniques to reduce adverse visual impact in areas visible from sensitive travel routes.

SOIL AND WATER

Watershed Resource Planning: S&W112

A. For use in designing mineral management activities, delineate the location of important soil and water protection areas on project maps to insure their recognition, proper consideration, and protection on the project area.

B. Manage watersheds for beneficial uses consistent with State Water Quality Standards. Apply Best Management Practices to control nonpoint sources of water pollution.

C. Design mineral management activities to maintain the present and continued productivity of soil and water resources to the extent feasible.

D. Stress protection of soil and water resources to prevent the need for mitigation. Identify mitigation, rehabilitation, and monitoring of mining impacts to soil and water resources in environmental documents and plans of operation.

TIMBER

Timber Resource Planning: TIM112

A. Timber land suitability is based on the initial Land Use Designation.

B. For areas where the initial Land Use Designation allows timber harvest, suitable forested land is available for harvest and is included in the Allowable Sale Quantity calculation.

C. For the portions of this Land Use Designation with initial direction that does not allow timber harvest, the forested land is classified as unsuitable for timber production and withdrawn from the timber base.

D. Personal use wood cutting activities will be based on the underlying management prescription until the mineral prescription is implemented. After implementation, access for personal use wood and Christmas trees will be subject to provisions compatible with the Plan of operations.

Timber Resource Coordination: TIM113

A. Project analysis, development of environmental documents and project design will facilitate the probable future mineral development to the maximum extent feasible.

Timber Sale Preparation: TIM114

A. Where possible, coordinate the location and design of timber harvest activities with planned or potential mineral development.

TRANSPORTATION

Transportation Operations: TRAN1

A. Authorize reasonable access, consistent with other resource values, to allow for the exploration and development of mineral resources.
B. Any transportation development in association with minerals extraction will be in accordance with an approved Plan of operations, and subsequent annual work plans.
C. Roads in this Land Use Designation may be closed to public use.
D. Apply Best Management Practices in the development and maintenance of transportation facilities.

WILDLIFE

Wildlife Habitat Inventory: WILD111

A. Prior to the development of minerals management activities, establish or use existing baseline wildlife inventories.

Wildlife Habitat Planning: WILD112

A. Maintain the present and continued productivity of wildlife habitat to the extent feasible.
B. Address protection of wildlife habitat and the need for mitigation. Identify any need for mitigation, rehabilitation and monitoring of mining impacts to wildlife habitat or populations in environmental documents and Plans of Operation.
C. Coordinate road management with the needs of wildlife.

TRANSPORTATION AND UTILITY SYSTEM

Land Use Designation TUS

Goals

To provide for, and/or facilitate the development of, existing and future major public Transportation and Utility Systems, including those identified by the State of Alaska and the Alaska Energy Authority.

Objectives

Apply this management prescription to existing major systems corridors. Use the prescription as criteria in the planning and design of future system corridors. During the period before actual construction of new systems occurs, the management prescription(s) of the (initial) Land Use Designation(s) underlying the corridors will remain applicable. Upon initiation of construction, and during system operation, this management prescription will apply.

For application of this Land Use Designation, "major systems" are defined as state and Federal highways, railroads, powerlines 66 kV or greater, and pipelines 10 inches or greater in diameter.

Allow special uses and facilities not related to transportation or utility systems, if compatible with present or future systems.

If the development of systems changes the Recreation Opportunity System setting, manage recreation and tourism opportunities in accordance with the new setting. Consider the development of recreation and tourism facilities in conjunction with the planning of state or Federal highways or reservoirs.

Following construction of systems, lands in the Right-of-Way, if permanently cleared, will be considered unsuitable for timber production.

Transportation and utility corridors, to the extent feasible, should follow the same route.

Transportation and Utility Systems may dominate the seen foreground area, yet are designed with consideration for the existing form, line, color, and texture of the characteristic landscape.

Minimize and/or mitigate adverse effects to wildlife habitat and populations to the extent feasible.

Maintain the present and continued productivity of anadromous fish and other fish habitat to the extent feasible.

Desired Condition

Transportation and Utility Systems have been constructed in an efficient and economic manner, and have been designed to be compatible with the adjacent Land Use Designation to the maximum extent feasible. The minimum land area consistent with an efficient, safe facility is used for their development. Effects on other resources have been recognized and resource protection has been provided. Other resources uses and activities in the area do not conflict with utility operations. State and Federal highways and reservoirs offer new developed recreation opportunities, as appropriate.

Transportation and Utility Systems Land Use Designation
Apply the following Forest-wide Standards & Guidelines located in Chapter 4:

Resource	Section	Sub-Sections	Page
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH	All	4-4
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST, CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP	All	4-52
Rural Community Assistance	RUR	All	4-73
Scenery	VIS	All	4-74
Soil And Water	S&W	All	4-82
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1,130,140 TIM114	All VIII	4-93
Trails	TRAI	All	4-100
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD	All	4-110

Apply the following Land Use Designation Standards & Guidelines:

FACILITIES

Facilities Improvements: FAC2

A. Allow administrative facilities which are compatible with present and/or future site uses.

FIRE

Fire Suppression: FIRE12

Suppression Action

A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent LUD's, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
B. Suppression tactics are limited only by the standards and guidelines for this Land Use Designation, such as soil, water quality, and scenery.

Fuel Improvements: FIRE2

Prescribed fire

A. Management ignitions may be used as an acceptable means of fuels management as long as its use is compatible with the standards and guidelines for this Land Use Designation.
B. Do not use prescribed natural fire.

FISH

Fish Habitat Planning: FISH112

Planning/mitigation

A. Design Transportation and Utility System activities to maintain the present and continued productivity of anadromous fish and other fish habitat to the extent feasible.
B. Stress protection of fish habitat to prevent the need for mitigation. Mitigation, rehabilitation, and monitoring of impacts to fish habitat or populations shall be identified in environmental documents.

Enhancement

A. Allow fish enhancement activities where consistent with the underlying Land Use Designation.

FOREST HEALTH

Forest Health Management: HEALTH1

A. Encourage insect and disease management activities to maintain or improve forest health in this and adjacent Land Use Designations.
B. Permit timber sanitation and salvage.

Forest Insect and Disease Survey and Inventory: HEALTH2

A. Survey and inventory visible outbreaks annually.

HERITAGE

Heritage Resource Activities: HER

Inventory/Evaluation

A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation within this Land Use Designation.
   1. Identify, classify, and evaluate known Heritage Resources.

2. Identify heritage properties to be nominated to the National Register of Historic Places.
3. Identify heritage properties that require stabilization or other protective measures.
4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

KARST AND CAVES

Cave Management Program: CAVE

A. Identify opportunities for interpretation of caves for public education and enjoyment. Interpretation may occur inside or outside of this LUD.

LANDS

Special Use Administration (Non-Recreation): LAND122

Transportation and Utility Systems

A. Manage Special Use Authorizations related to Transportation and Utility Systems according to the following standards and guidelines.
   1. Coordinate special use proposals with state and Federal Agencies, such as the Federal Energy Regulatory Commission (FERC), the Federal Highway Administration, or Alaska Department of Transportation. Analyze new proposals on a case-by-case basis, using an interdisciplinary process. Obtain input from local communities and other affected publics.
   2. Use designated corridors for multiple compatible Transportation and Utility Systems to the extent feasible.
   3. Require proponents of hydroelectric power projects to obtain a license or exemption from the FERC as a condition of project approval by the Forest Service.
   4. Leave transportation and utility corridors open to public use unless special considerations, such as public safety or resource damage, warrant closures or restrictions.
   5. Bury or submerge powerlines where feasible.

Other Special-Use Authorizations

A. Allow special uses not related to utilities, if compatible with present or future utility uses.
   1. Determine through an interdisciplinary process on a case-by-case basis, if non-related uses are compatible.
   2. Consult with current authorization holders to consider compatibility of new uses.

MINERALS AND GEOLOGY

Minerals and Geology Resource Preparation: MG11

A. Coordinate with claimant to ensure the location of roads, transmission lines, and pipelines across mining claims do not interfere with mining activities, markers, or improvements.

Minerals and Geology Administration: MG12

Mineral entry

A. Depending on the underlying Land Use Designation, sites and corridors may or may not be open to mineral entry. Apply Minerals and Geology Forest-wide Standards & Guidelines appropriate to either open or closed mineral entry.

B. Permit reasonable access to mining claims with valid existing rights in accordance with the provisions of an approved Plan of operations.

Plan of operations

A. Where minerals resources are developed, encourage use of state-of-the-art techniques for developing them, to reduce impacts to the extent reasonable, based on the objectives of the initial Land Use Designation. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads.

RECREATION AND TOURISM

Recreation Use Administration: REC122

Recreation Settings

A. Prior to the construction of a Transportation or Utility System (TUS), provide recreation settings and opportunities consistent with the initial Land Use Designation.
    1. For any new investment in recreation facilities, consider the potential effects to those facilities by TUS development.

B. When TUS's are developed, consider construction of recreation facilities in conjunction with the planning of state and Federal highways and reservoirs.
    1. Manage the changed recreation setting with appropriate ROS guidelines.
    2. If necessary, discourage or restrict recreation use to prevent damage to facilities or to provide for public safety.
    3. Manage recreation use in a manner compatible with adjacent Land Use Designations.

Recreation Special Uses

A. Major and minor developments may be compatible with the LUD objectives depending on the scope, purpose, and magnitude of the proposal and the underlying Land Use Designation. Proposals will be evaluated on a case-by-case basis.

SCENERY

Scenery Operations: VIS1

A. The landscape may be dominated by activities associated with Transportation and Utility Systems. Although TUS developments may dominate the seen area, they are designed with consideration for existing form, line, color, and texture found in the characteristic landscape.
    1. Apply Forest-wide Standards & Guidelines for the Modification Visual Quality Objective. Perform viewshed analysis in conjunction with project development to provide direction for retaining or creating a visually attractive landscape over time.
    2. Work with topographic and vegetative features to screen the development when seen from Visual Priority Travel Routes and Use Areas (see Appendix F).
    3. Consider the following during the design phase of routes which are, or are seen from, Visual Priority Travel Routes and Use Areas (see Appendix F):
        * Vegetation of slopes seen from the road
        * Providing "planting pockets" or terraces or slopes, where needed
        * Maintaining landforms through road location and design

- Breaking up the straight line effect of linear corridors by considering special treatment of vegetation on clearing slopes or application of other design techniques and principles
- Requiring roadside clean-up on all roads receiving general public use or expected to have such future use

SOIL AND WATER

Watershed Resource Planning: S&W112

A. Delineate the location of high hazard soils, riparian, and other sensitive areas on project maps to insure their recognition, proper consideration, and protection on the sale area.

TIMBER

Timber Resource Planning: TIM112

A. Prior to the construction of transportation or utility corridors, base timber suitability on the underlying (initial) Land Use Designation. Following construction, if the rights-of-way are permanently cleared, lands in the Right-of-Way are considered unsuitable for timber production.
B. For areas where the initial Land Use Designation authorizes timber harvest, suitable forested land is available for harvest and is included in the Allowable Sale Quantity calculation.
C. For initial Land Use Designations which do not allow timber harvest, forested land is classified as unsuitable for timber production and withdrawn from the timber base. Any timber harvest associated with facility development is nonchargeable to the Allowable Sale Quantity.
D. Following the construction of a Transportation and Utility System in an area with initial direction authorizing timber harvest, the Right-of-Way is considered unsuitable for timber production unless the utility is buried in the ground or is suspended above the maximum height of the trees.
E. Personal use wood cutting activities are compatible with this Land Use Designation provided that management objectives are met.

TRANSPORTATION

Transportation Operations: TRAN1

A. Locate and design Transportation and Utility Systems using opportunities to be compatible with the theme of the underlying and adjacent Land Use Designations to the maximum extent feasible.
B. Follow existing and planned future land transportation routes with corridors for future utilities to the extent feasible.
    1. Consider potential conflicts and opportunities with future roads, timber harvest, and other management activities.

WILDLIFE

Wildlife Habitat Inventory: WILD111

A. Establish a baseline inventory, or use an existing inventory of wildlife habitat conditions, preceding or coinciding with Transportation and Utility Systems development.

Wildlife Habitat Planning: WILD12

A. Reduce impacts to wildlife habitat and populations to the extent feasible.
    1. Use the habitat needs of MIS to evaluate opportunities for wildlife.
    2. In the design of projects, consider measures which reduce or eliminate electrocution of animals on powerlines, prevent road kills, and provide for public safety.

Chapter 4

Forest-wide Standards & Guidelines

Introduction

Chapters 2, 3 and 4 of the Forest Plan present the direction for managing the Tongass National Forest. The components and priority of this direction are explained in Chapter 1. This chapter includes the Forest-wide Standards & Guidelines. These standards and guidelines for the protection or management of the different forest resources apply to all or most areas of the Forest, and are used in conjunction with additional standards and guidelines included within each management prescription. Each management prescription (Chapter 3) includes a table indicating which of these Forest-wide Standards & Guidelines apply to the area (Land Use Designation) covered by that prescription. The Forest-wide Standards & Guidelines are organized by resource, as shown in the table of contents of this Plan.

AIR
Forest-wide Standards & Guidelines

Air Resource Inventory: AIR111

I. *Baseline Quality and Values*

A. During project planning, assess air quality conditions on National Forest System lands by following direction in FSM 2580.

Air Resource Planning: AIR112

I. *Objective*

A. The objective for the air resource, which is to be managed as a part of the forest ecosystem, is to maintain or improve National Forest air quality by preventing significant deterioration from Forest activities or other sources.

1. Consider the air resource objectives when planning, designing, and implementing projects, which may affect the air resource, consistent with other multiple-use goals and objectives.

II. *Planning for the Maintenance of Air Quality*

A. Plan to maintain current air quality, Forest-wide.

1. Manage on-Forest resource activities to control and minimize air pollution impacts and to ensure that predicted emissions from all pollution sources do not exceed Ambient Air Quality Standards as specified under the Alaska Administrative Code, Title 18, Chapter 50.

a) Obtain burning permits from the Alaska Department of Environmental Conservation for all prescribed fire projects.

2. Require permittees, contractors, and mine operators to apply for applicable state permits and meet State Air Quality Standards when conducting work on the Forest.

3. Cooperate with regulatory authorities to prevent adverse effects of air pollutants and atmospheric deposition on forest ecosystems.

Air Coordination: AIR113

I. *Coordination with the State of Alaska*

A. Cooperate with the Alaska Department of Environmental Conservation to protect the air resource on the National Forest. Join in the assessment of air quality monitoring needs and in the development or revisions of air quality standards and regulations, as needed.

B. Review and comment on both proposed and existing sources of off-Forest pollution that may significantly affect ambient air quality on National Forest System lands.

C. Review the requirements for proposed new emission sources under the Prevention of Significant Deterioration (PSD) Permitting Process.

BEACH and ESTUARY FRINGE
Forest-wide Standards & Guidelines

Beach & Estuary Description: BEACH1

I. *Objectives and Identification*

A. Management objectives of the beach and estuary fringe habitat:

1. To maintain the ecological integrity of beach and estuary fringe forested habitat to provide sustained natural habitat conditions and requirements for wildlife, fish, recreation, heritage, scenery and other resources.
2. To provide a relatively continuous forested corridor linking terrestrial landscapes.
3. To provide a variety of recreation opportunities, normally of a primitive or semi-primitive nature and retain the visual quality
4. To maintain an approximate 1,000-foot wide beach fringe of mostly unmodified forest to provide important habitats, corridors, and connectivity of habitat for eagles, goshawks, deer, marten, otter, bear and other wildlife species associated with the maritime-influenced habitat. Old-growth forests are managed for near-natural habitat conditions (including natural disturbances) with little evidence of human-induced influence on the ecosystem.
5. To maintain an approximate 1,000-foot wide estuary fringe of mostly undisturbed forest that contributes to maintenance of the ecological integrity of the biologically rich tidal and intertidal estuary zone. Habitats for shorebirds, waterfowl, bald eagles, goshawks, and other marine-associated species are emphasized. Old-growth conifer stands, grasslands, wetlands, and other natural habitats associated with estuary areas above the mean high tide line are managed for near-natural habitat conditions with little evidence of human-induced disturbance.

B. Beach fringe identification:

1. The beach fringe is an area of approximately 1,000 feet slope distance inland from mean high tide around all marine coastline.

C. Estuary fringe identification:

1. The estuary fringe is an area of approximately 1,000 feet slope distance around all identified estuaries. Estuaries are ecological systems at the mouths of streams where fresh and salt water mix, and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is the limit of salt-tolerant vegetation (not including the tidally influenced stream or river channel incised into the forested uplands), and the seaward extent is a stream's delta at mean low water.

Beach & Estuary Management: BEACH2

I. *Coordination*

A. Coordinate activities which affect the Coastal Zone with the State of Alaska Office of Management and Budget, Division of Governmental Coordination, to ensure consistency, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program.

II. *Management*

A. Management is governed by the Land Use Designation (LUD) in which the beach or estuary area is located. Some LUD's (such as Wilderness and most of the natural setting LUD's) highly restrict development. Where the LUD permits development (e.g., moderate and intensive Development LUD's) the following standards and guidelines will apply.

B. Allow facility developments which require in-water access (e.g. docks, floats, or boat ramps.)

1. Locate facilities more than 300 feet from the mouths of intertidal channels of known Class I anadromous fish streams or tidal or subtidal beds of aquatic vegetation to avoid significant impairment.
2. Avoid filling of intertidal and subtidal areas to the extent feasible.

C. Permit reasonable access to mining claims in accordance with the provisions of an approved plan of operations. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Mining Regulations 36 CFR 228.

1. Take advantage of topographic and vegetative screening when locating drill rigs, pumps, roads, rock quarries, structures, and marine transfer facilities.
2. Consider timing restrictions to minerals activities to avoid adverse impacts to fish and wildlife resources during critical periods.

D. Emphasize natural recreation settings and continue to provide the spectrum of outdoor recreation and tourism opportunities.
   1. Where feasible, schedule activities to avoid change to the existing Recreation Opportunity Spectrum (ROS) class in marine recreation settings.
   2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the appropriate ROS guidelines with emphasis on marine-related recreation activities.
   3. Design and locate recreation-related structures (e.g. recreation cabins, lodges, wildlife viewing structures) to be compatible with beach and estuary fringe objectives.
   4. Manage Off-Highway Vehicle use to prevent degradation of wildlife and fish habitats.
   5. Manage recreation and tourism use to maintain fish and wildlife habitats.

E. Allow subsistence and other personal use of timber in accordance with ANILCA, Title VIII and other standards and guidelines (e.g. the 330' buffer around bald eagle nests). Personal use is generally inconsistent with beach and estuary objectives but allowed if limited to locally determined areas and feasible opportunities outside the beach and estuary fringe do not exist.

F. Beach log salvage is permitted.

G. The beach and estuary fringe are classified as unsuitable for timber harvest. No programmed timber harvest is allowed, however, on a limited basis, unprogrammed timber harvest could be allowed. Among other reasons, unprogrammed timber harvest may include timber sold as part of a salvage sale (see H. below), for specialty wood products, for customary and traditional uses, and for landings, roads, or timber harvest necessary to access timber in adjacent programmed areas where there are not feasible alternatives in project design. Timber harvest necessary to access timber in adjacent programmed areas, where there are no feasible alternatives in project design (e.g., landings for logical yarding settings), will be considered only on the landward edges of the fringe. Silvicultural prescriptions for any harvest must address beach fringe management objectives.

H. Allow salvage of dead standing and/or down material if the salvage activity is consistent with long-term beach and estuary management objectives. This salvage will not contribute to the Allowable Sale Quantity. Small amounts of standing green timber may be harvested during salvage operations for safety and operational considerations.

I. Road construction is discouraged in the beach and estuary fringes. Where feasible alternatives are not available, road corridors may be designated.
   1. Provide or maintain recreation or community access where needed as identified through project analysis.

J. Log Transfer Facilities may be constructed.
   1. Use the Alaska Timber Task Force Siting Guidelines (see Appendix G & the Log Transfer Facility standards and guidelines in the Transportation Forest-wide Standards & Guidelines section).

K. Wildlife habitat restoration of young-growth conifer stands is encouraged to accelerate development of advanced seral stand structure. Treatments may include thinning of young stands, release, pruning, and fertilization.

L. Other permitted activities (e.g. powerlines, fish camps) may be allowed in the beach and estuary fringe where feasible alternative locations are not available.

FACILITIES
Forest-wide Standards & Guidelines

The recreation and administrative facilities needed to support the management, protection, and utilization of the National Forests including buildings, utility systems, dams, and other constructed features.

Facilities Operations: FAC1

I. *Administration and Maintenance*
   A. Assess and document the ability of Forest Service facilities to support planned activities.
   B. Assess the historic and cultural values of these facilities.
   C. Provide maintenance and safety inspections on major structures on the Forest in compliance with FSM requirements.
   D. Maintain current operation and maintenance plans for Forest Service-owned recreation facilities (FSM 2330).

Facilities Improvement Preparation: FAC21

I. *Plan Development*
   A. Complete site development plans for all facility needs identified in the Forest Plan implementation schedule or the Forest Facility Master Plan (FSM 7311).
   B. Maintain a description of the desired future condition for facilities which reflects needs, future development opportunities, and long-term management in the Forest Facility Master Plan. Document the extent and management of these facilities including:
      1. Number of buildings by type and age.
      2. Number of dams by classification.
      3. Developed recreation sites, such as National Forest campgrounds, picnic areas, and trailheads with recreation facilities.
      4. Number and types of permitted facilities, including dams, ski areas, fences, buildings, etc.
      5. Number (and/or miles) of systems including sewage, water, electrical, and communication networks needed within recreation, permitted, and administrative sites.

Facility Construction: FAC22

I. *Construction Requirements*
   A. All remodeling, new construction, or building leasing should be constructed in accordance with an approved site development plan in order to provide safe, functional, aesthetically pleasing, energy efficient, and cost-effective facilities.
      1. Ensure consistency with Land Use Designation direction.
   B. Access for persons with disabilities is required for new administrative facilities.
   C. Consult FSH 7309.11 for gender-related design standards.

Facility Maintenance: FAC23

I. *Maintenance*
   A. Maintain facilities to meet codes applicable at the time of construction, unless otherwise required by law.
   B. Perform accessibility surveys on all existing facilities. Implement improvements to provide barrier-free, accessible facilities appropriate to the site development and ROS level, as funding and opportunity allow. (See also Recreation and Tourism Forest-wide Standards & Guidelines).

FIRE
Forest-wide Standards & Guidelines

Fire Suppression: FIRE12

I. *Protection Options*

A. Due to weather conditions, fire suppression is not a common need on the Tongass National Forest. Under normal conditions, the period of time for fire starts and spread is short. All suppression actions will provide for the safety of fire fighters and be applied at a minimum suppression cost, commensurate with the values at risk. Fire suppression shall fall into one of four optional categories: "Critical" (control strategy), "Full" (control strategy), "Modified" (contain strategy), or "Limited" (confine strategy). These options and strategies are further defined and discussed in the interagency Southeast Alaska/Prince William Sound Fire Management Plan. Complete an Escaped Fire Situation Analysis for all suppression actions that fail to confine, contain, or control the fire's spread following the first initial attack shift. (Consult FSM 5132)

1. Critical Protection Option (control): This option is specifically created to differentiate the protection of human life and inhabited property and improvements from natural resource protection. The designation of a site or area with this option is the discretion of the land manager responsible for the fire protection. Unquestioned priority over all other fires will automatically be given to control fires on sites or areas identified in this option.
2. Full Protection Option (control): Areas assigned this designation will receive aggressive initial attack and aggressive suppression actions until the fire is declared out. This option was designed for the protection of high resource values, cultural sites, historical sites, and those resources which require wildland fire protection, but do not involve protection of human life and habitation.
3. Modified Protection Option (contain): This option is to provide managers with an alternative for those lands that require a relatively high level of protection during critical burning periods. Its intent is to reduce suppression costs and increase resource benefits where possible during the entire fire season. Some portions of the fire may require aggressive action and others may only require a containment action.
4. Limited Protection Option (confine): This category recognizes areas where a natural fire program is desirable or the values at risk do not warrant the expenditures of suppression funds beyond initial attack. No suppression actions will be taken unless necessary to confine the fire within the limited areas.

Fuels Improvements: FIRE2

I. *Prescribed fire*

A. The use of Prescribed fire as a tool for resource management is often undependable due to shortness of burning opportunities and weather limitations during the burning season. Use Prescribed fire, as appropriate, for silvicultural site preparation, wildlife habitat improvement, or slash hazard treatment.

1. All prescribed fires must have an approved project plan signed by the appropriate line officer with a designated burn boss, contingency options, and a process for monitoring and evaluating results. All prescribed fires will have a qualified organizational structure, including personnel, to suit the complexity of burn. (Consult FSM 5140)
2. For silvicultural site preparation, wildlife habitat improvement, and slash hazard treatment, the District Ranger will assure appropriate interdisciplinary specialist participation during planning, executing, monitoring, and evaluation phases of prescribed fire use. Consult FSM 5140, FSH 5709, FSM 6740.

FISH
Forest-wide Standards & Guidelines

Fish Habitat Inventory and Monitoring: FISH111

I. *Fish Habitat Inventory*
   A. Maintain the channel type and stream class (see Glossary) based inventory of all Forest streams.
      1. Maintain and update the stream inventory during site-specific project planning and analysis.
         a) Consult publication *R10-TP-26, A Channel type Users Guide for the Tongass National Forest, Southeast Alaska* (as revised), for descriptions of the channel types.
         b) Consult the R10 Stream Survey Protocol for descriptions of standardized stream survey methodologies (draft).
   B. Maintain the inventory of Forest streams and watersheds for fish enhancement opportunities.
   C. Maintain, and further develop as necessary, the fish-habitat-objectives database used to measure changes in the natural range and frequency of aquatic habitat conditions. (See FISH 112,IV(B) and Appendix B.)

Fish Habitat Planning: FISH112

I. *Fish habitat and channel processes*
   A. Recognize watershed function and channel processes when planning for the protection, restoration or enhancement of fish habitat. (Consult direction for watershed analysis (Appendix J) and Riparian Forest-wide Standards & Guidelines RIP2,I,B.)
      1. Consider the effects of upstream and upslope activities during site-specific planning.
      2. Consider the condition of upstream and upslope areas during site-specific planning.
      3. Consider topics such as erosion processes, watershed hydrology, vegetation, stream channel morphology, water quality, species and habitats, and human uses, during analyses.

II. *Channel classification and process groups*
   A. Use channel type inventories to categorize stream reaches into channel process groups. Use channel types and process groups to plan management activities affecting fish and fish habitat along all lakes and streams. Process groups and the channel types included in each process group are shown in Appendix D, and in *publication R10-TP-26, A Channel type Users Guide for the Tongass National Forest, Southeast Alaska*. These groups may be redefined as more information about channel types becomes available.
      1. Map and field-verify streams, lakes and estuaries by channel type and stream class for project planning and implementation.

III. *Fish stream value classification*
   A. Determine fish value class of all streams in the affected area prior to or during site-specific project planning.
   B. Use the following classification system across the Forest.
      1. Class I: Streams and lakes with anadromous or adfluvial fish habitat; or high quality resident fish waters listed in Appendix 68.1, Region 10 Aquatic Habitat Management Handbook (FSH 2609.24), June 1986; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.
      2. Class II: Streams and lakes with resident fish populations and generally steep (6-15 percent) gradient (can also include streams from 0-6 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of migration barriers or have other habitat features that preclude anadromous fish use.
      3. Class III: Perennial and intermittent streams with no fish populations but which have sufficient flow, or transport sufficient sediment and debris, to have an immediate influence on downstream water quality or fish habitat capability. These streams generally have bankfull widths greater than 5 feet and are highly incised into the surrounding hillslope.

4. Class IV: Other intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality or fish habitat capability. These streams generally are shallowly incised into the surrounding hillslope.
5. Non-streams: Rills and other watercourses, generally intermittent and less than 1 foot in bankfull width, little or no incision into the surrounding hillslope, and with little or no evidence of scour.

IV. *Objectives/guidelines for management affecting fish habitat*

A. Maintain or restore the natural range and frequency of aquatic habitat conditions on the Tongass National Forest to sustain the diversity and production of fish and other freshwater organisms.

B. Use (and update) baseline fish habitat objectives as a reference to evaluate the relative health or condition of riparian and aquatic habitat. Use baseline fish habitat objectives, listed below (and others as developed), (AFHA, 1995) to characterize the natural range of habitat conditions by channel types and process groups.
   1. Pool Area. Expressed as a percentage of the total habitat area.
   2. Large Woody Debris. Defined as woody material greater that 10 cm in diameter and 1 m long, that protrude into the active stream channel area. Expressed as the frequency of large wood pieces per unit area (1,000 sq. meter) of stream.
   3. Width-to-Depth Ratio. Bankfull channel width-to-depth values are measured at bankfull stream stage which is roughly equivalent to the stream level for a 2-year return-interval flood.

C. Maintain or restore stream banks and stream channel processes.
   1. *Stream class I, and Class II streams that flow directly into Class I streams*. Maintain, restore or improve anadromous, adfluvial, and high value resident fish habitat capability by providing natural or improved cover/pool ratio, pool-riffle sequences, and habitat features, such as stable large woody debris. Design management activities to maintain stream bank, channel and flood plain integrity.
   2. *Other Stream class II*: Maintain or restore habitat capability for resident fish populations by providing natural or improved cover/pool ratio, pool-riffle sequences, and habitat features, such as stable Large Woody Debris. Design management activities to maintain stream bank, channel, and flood plain integrity. Avoid impacts to downstream class I streams.
   3. *Stream class III*: Design management activities to maintain or restore stream bank, channel, and flood plain integrity. Avoid impacts to downstream class I and Class II streams.

D. Maintain or restore natural and beneficial quantities of Large Woody Debris (LWD) over the short and long-term.
   1. *Stream class I, and Class II streams that flow directly into Class I streams*. Maintain or restore anadromous, adfluvial, and high value resident fish habitat capability by providing for natural and beneficial volumes of LWD for rearing and spawning, stream energy dissipation, and sources of organic matter to the stream ecosystem. Use biological and physical characteristics of the stream to determine size classes and distribution of LWD.
   2. *Other Stream class II*: Maintain or restore habitat capability for resident fish populations by providing LWD, and by designing for future sources of LWD at volumes determined by channel type biological and physical characteristics.
   3. *Stream class III*: Maintain or restore LWD in channels and banks to prevent changes in natural stream bank and stream channel processes.

E. Maintain or restore water quality to provide for fish production.
   1. *Stream classes I, II, and III*: Prevent adverse effects to rearing and spawning habitat. Maintain or restore anadromous, adfluvial, and high value resident fish habitat capability. Maintain or restore capability for other resident fish populations to the extent feasible. Assure no chronic sediment input following soil-disturbing activities. Prevent adverse impacts to fish habitat downstream by minimizing siltation.
   2. Implement applicable Best Management Practices. (See Appendix C).

F. Maintain or restore optimum water temperatures for salmonids, considering both winter and summer habitat requirements, climate, and natural watershed characteristics.
   1. *Stream class I, and Class II streams that flow directly into Class I streams*. Maintain or restore optimum salmonid summer stream temperatures at between 50 and 68°F or at natural levels.

2. *Other Stream class II*: Maintain water temperatures below 68°F, or at natural levels, to maintain or restore habitat capability for resident fish populations. Manage watersheds and riparian streamsides to maintain water temperature standards and guidelines for downstream class I streams.
3. *Stream class III*: Manage watersheds and riparian streamsides to maintain water temperature standards and guidelines for downstream class I and II streams.

G. Maintain fish passage through stream crossing structures. (Consult the Aquatic Habitat Management Handbook, FSH 2609.24.)
1. *Stream Class I:* Maintain, restore or improve the opportunities for fish migration.
   a) Use juvenile coho as the design species for upstream fish migration.
   b) When a culvert is selected for stream crossing, design, install, and maintain the culvert to prevent the creation of water velocity or height barriers at the outlet of the pipe, and to allow upstream passage of juvenile coho. Passage may be delayed for up to 4 days due to high water velocity during the mean annual flood.
2. *Stream Class II:* Maintain, restore or improve the opportunities for the natural migration of resident fish, where feasible (see glossary). Overall, the intent is to provide passage of resident fish in all Class II streams, but occasionally it is not feasible to protect short sections of habitat and passage will be restricted.
   a) In determining feasibility, consider the following:
      1) Presence of known sensitive or unique fish populations.
      2) The cumulative impacts of not providing fish passage at multiple sites in the same watershed.
      3) In Class II streams which flow directly into Class I streams: the upstream and downstream linkages between the anadromous and resident life strategies of the same species.
      4) Advice from the Alaska Department of Fish and Game.
   b) Use Dolly Varden char, rainbow trout, and/or cutthroat trout juveniles (greater than one year old) as the design species for fish migration in Moderate Gradient-Mixed Control (MM) and Flood Plain (FP) process groups (see Appendix D), depending on which specie(s) is(are) present. Use adult Dolly Varden char, rainbow trout, and/or cutthroat trout as the design species in all other process groups.
3. *Stream Class III:* No fish habitat is found in this stream class.

V. *Management Indicators*

A. Use forest plan management indicators to evaluate the potential effects of proposed project management activities affecting fish habitat.

VI. *Management Activities*

A. Maintain an Area fish program schedule which includes anticipated inventory needs, monitoring requirements, and proposed habitat improvement and maintenance projects.

VII. *Coordination*

A. Coordinate activities that affect fish resources with other Forest disciplines through the Interdisciplinary Team process, and with state, other Federal, and local agencies and groups.
1. Develop and maintain Memoranda of Understanding/Agreements with appropriate state, Federal, and local agencies and aquaculture associations.
2. Coordinate with the Alaska Working Group on Cooperative Forestry/Fisheries Research, state and Federal agencies, and the Forestry Science Laboratory, in maintaining a continuous program for research, monitoring, and assessment of impacts of land-use activities on fish habitat.

B. Consider the influence of proposed management activities on fishing use patterns.
C. Consider effects of Off-Highway Vehicle (OHV) travel and road closures on fish habitat and populations.

VIII. *Projects*

A. Use the following priority for fish habitat project work: mitigation for unplanned impacts, rehabilitation/restoration, enhancement. For both mitigation and rehabilitation, consider alternatives for cost efficiency of performing off-site enhancement (enhancement of a different area than where the impact actually occurs).
   1. Location of off-site enhancement shall be governed by the following priorities:
      a) First priority: same stream reach (same species)
      b) Second priority: same stream (same species)
      c) Third priority: same watershed (same species)
      d) Fourth priority: same anadromous fish harvest area (same species)
      e) Fifth priority: differing species, using above priority order

B. Enhance fish habitat to meet the objectives identified in this plan. Opportunities may include, but are not limited to: instream enhancement, lake fertilization, cooperative bio-enhancement (e.g., stocking), incubation boxes, and fishway construction.
   1. Use the Cooperative Fisheries Planning process (Consult ANILCA Section 507 and Appendix H) and/or other cooperative agreements for developing priorities for the enhancement of fish resources.
   2. Determine habitat capability on streams and lakes identified for enhancement in the Cooperative Fisheries Planning process prior to construction of fish projects.
   3. Update the fish habitat enhancement list (Cooperative Fisheries Planning process) annually.

C. Recognize bio-enhancement (e.g., stocking of juveniles, use of egg incubation boxes, transferring of adult fish to seed stream systems) as part of the fish improvement project costs when appropriate. Cooperate/coordinate with fish agencies and aquaculture associations to facilitate bio-enhancement.

Fish Habitat Improvement: FISH22

I. *Planning*

A. Improve or restore fish habitat to work toward the habitat and population objectives of the Forest Plan.

B. Construct projects using the most cost-efficient methods, while achieving desired results consistent with the Land Use Designation.

C. During project planning consider the need to monitor the accomplishment of project objectives. Need shall be governed by the type of project, with high interest/high investment projects being monitored more intensively.
   1. Where needed, develop cooperative agreements with fish/aquaculture agencies and other groups to assess the effectiveness of Forest Service habitat improvement.

II. *Construction Coordination*

A. Coordinate all fish habitat improvement using an interdisciplinary process.

B. Coordinate habitat improvement projects with the Alaska Department of Fish and Game and other appropriate agencies and groups.

III. *Monitoring*

A. Conduct monitoring of fish improvement projects to insure their continued function at the design level of operation.

B. Monitor fish production on a representative sample of improvement projects to evaluate effectiveness of the improvement program and conceptual designs of individual projects.

Fish Habitat Maintenance: FISH23

I. *Maintenance*

A. Provide for the maintenance of fish habitat enhancements.

1. Fund maintenance of existing projects prior to the construction of new ones.
2. Include funding for maintenance in the planning and budgeting for all projects.
3. Maintain improvements to assure that investment objectives are met.
4. If maintenance and operation of an improvement are evaluated, and the improvement becomes inefficient to maintain; redesign or stop maintenance of that improvement.
5. If an improvement becomes inoperable, consider its removal or reconstruction.

B. Develop a written maintenance responsibilities agreement with project cooperators prior to project construction.

FOREST HEALTH
Forest-wide Standards & Guidelines

Forest Health Management: HEALTH1

I. *Forest Health Management*

A. Achieve desired future condition of forest health by manipulating insect and disease populations to beneficial levels. Desirable forest health conditions are expected to vary according to different resource goals.

1. Create ecological conditions which improve the health of vegetation by incorporating forest health principles into forest planning, decision-making, and implementation of project activities. The Forest Health Management Group (S&PF) will be responsible for providing the data necessary for project planning to maintain or improve forest health.
2. Consider Forest Health Management information dealing with insects and diseases and recommendations on management alternatives. These recommendations will include analyses of the ecological effects of insects and diseases and management alternatives, including no action, chemical, cultural, mechanical, and biological methods.
3. For direction on the use of pesticides in forest management, consult the "Pesticide Use and Vegetation Management" guidelines in the Timber Forest-wide Standards & Guidelines.

B. Evaluate insect and disease impact(s) to resources. The Forest Health Management Group will:

1. Conduct on-site evaluations to assess past, current and future insect and disease impacts and their effect upon desired forest health.
2. Use data from these evaluations to assist project planning and analysis.

C. The Forest Health Management Group will provide training, technology transfer, and technical assistance to area and district personnel to assist in the management of forest insects and diseases.

Forest Insect and Disease Survey & Inventory: HEALTH2

I. *Insect and Disease Detection Survey*

A. Forest Health Management will conduct an annual insect and disease detection aerial survey in cooperation with the areas and districts.

1. Resource managers will establish survey priorities based on planning needs and current management concerns.
2. Forest Health Management will conduct aerial surveys of a variety of forest cover types and Land Use Designations, concentrating on those areas identified as having the highest management priority.

HERITAGE RESOURCES
Forest-wide Standards & Guidelines

Heritage Resource Activities: HER

I. *Management*

A. Maintain a heritage resource management program to identify, evaluate, preserve, and protect Heritage Resources on a Forest-wide and project specific-level in compliance with the National Historic Preservation Act, the National Environmental Policy Act (NEPA), the American Indian Religious Freedom Act (AIRFA), the Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), their amendments and implementing regulations. Consult Acts, 36 CFR 800, FSM 2300.

B. Coordinate management of Heritage Resources with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP). Consult 36 CFR 800 and FSM 2300 and the Programmatic Agreement #95MOU-10-029 between the USDA Forest Service, Region 10 and the Advisory Council on Historic Preservation (ACHP) and the Alaska State Historic Preservation Officer (SHPO).

C. Identify and develop appropriate interpretive messages for heritage resource sites and activities that relate the historical value and contributions of natural and heritage resource management to the Tongass National Forest. Work closely with all interpretive services programs to assure accurate and effective interpretation of Heritage Resources.

D. Coordinate the management, access, and use of forest products to perpetuate Alaska Native culture and art forms.

E. Develop a heritage resource management assessment that provides a framework for management decisions. Its objectives are to display the schedule of management activities, to summarize current status, and to identify priorities for future Heritage Resources inventory, evaluation, and protection.

1. Update the heritage resource assessment annually, for budget implementation and to fulfill requirements of the annual report to SHPO as stipulated in the Programmatic Agreement #95MOU-10-029.
2. The assessment/annual report should include:
   a) An overview of new data and data management.
   b) Identification of projects reviewed under 36 CFR 800 or the Programmatic Agreement #95MOU-10-029 and areas requiring intensive site inventory, including non-project areas of the Forest.
   c) Identification, classification and evaluation of Heritage Resources located.
   d) Reevaluation and update of the heritage resource sensitivity zone system based on new data and/or understandings of each area's Heritage Resources and their locations.
   e) Identification of measures and priorities for the protection of Heritage Resources from vandalism, theft, and natural deterioration.
   f) Identification of prioritized needs for the stabilization, restoration, and repair of damaged sites.
   g) Identification of the need for maintenance of sites on or eligible for inclusion in the National Register of Historic Places.
   h) Identification of opportunities for interpretation of Heritage Resources for public education and recreation values.
   i) Identification of the interaction of Heritage Resources and other multiple uses, including consideration of management activities, and their impacts on heritage resource management.
   j) Identification of the coordination efforts with appropriate state heritage resource plans and planning activities of the State Historic Preservation Officer, State Archaeologist and other state and Federal agencies.

II. *Project Clearance/Inventory*

A. *Project Clearance*: Any project, activity, or program that can result in changes in the character or use of historic properties and is under the direct or indirect jurisdiction of the Forest, licensed or assisted by the Forest, including new or continuing projects, activities, or programs and any of their elements not previously considered under Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, shall be considered an undertaking and will require evaluation through inventory and survey.

1. If feasible, accomplish Heritage Resources clearance for NEPA prior to the release of the draft Environmental Impact Statement or the Environmental Assessment for public review, or prior to signing a decision memo.

III. *Project Implementation*

A. Inventory and evaluation may be accomplished at the operator's discretion and cost provided that the inventory and evaluation are accomplished under the supervision of a qualified Heritage Resource Specialist authorized by a Special Use Authorization.

B. Include as part of the Clearance Report specific protective and/or mitigative measures to be taken by the operator who is responsible for the cost of any such protective or mitigative measures.

C. Mark known heritage resource sites within or adjacent to the project area prior to project implementation.

D. Include in each contract, permit, or lease a statement of the operating conditions required to protect Heritage Resources in the project area. Also include the pertinent clause notifying the operator of his or her responsibility to protect marked sites when working in the project area and the operators liability for damage.

E. Provide training in the recognition, site inspection, and protection of Heritage Resources for all persons responsible for on-the-ground administration of contracts, permits or leases.

F. If a site is discovered during project implementation, work shall be suspended by the project administrator to avoid potential site damage. The Forest Supervisor shall notify the State Historic Preservation Office (SHPO) and authorize resumption of work only after the consultation process has been completed. The project administrator shall keep the contractor, permittee, or lessee informed of anticipated delays in work resumption.

IV. *Mitigation*

A. In cases where in-place preservation of heritage values is the objective, the Forest Supervisor shall consider management options such as project design, location, or cancellations in meeting the objective. Consult 36 CFR 800 for procedures to be followed in reaching a management decision.

B. The preferred management of sites listed in, nominated to, or eligible for the National Register of Historic Places is avoidance and protection.

1. Sites listed in, nominated to, or eligible for the National Register of Historic Places shall be managed to achieve a "No Adverse Effect" finding, in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation. Consult 36 CFR 800.
2. The recovery (collection) of Heritage Resources can occur during the inventory, evaluation, or mitigation (data recovery) phases. Standard requirements include documentation of the resource, labeling of the artifacts, and curation of the recovered materials and resultant records.
3. Collection of artifacts, except under emergency circumstances, must be accomplished or directly supervised by a professional Heritage Resource Specialist. With the approval of the Forest Supervisor, a qualified Heritage Resource Specialist may recover artifacts for purposes of evaluation.
4. Requirements for heritage resource collection are:
   a) *Emergency collection*: Artifacts collected in emergency situations shall be turned over to the Area Heritage Resource Specialist for appropriate curation.
   b) Special Agents and other law enforcement officers conducting criminal investigations may collect artifacts as evidence. Any material collected must be cataloged and stored in a secure area.
   c) Artifact samples may be collected from heritage resource sites, when they can be systematically recovered and properly recorded for further evaluation (caution must be

exercised to assure that the collection of artifact samples is adequate for the purpose intended without causing unacceptable impacts to the resource).

d) Data recovery (including collection of artifacts and photographic/archival recordation) must be conducted in accord with a Forest Service/State Historic Preservation Office approved Data Recovery Plan, which shall conform to the published guidelines in the Advisory Council on Historic Preservation, *Handbook for the Treatment of Archaeological Properties*.

5. Disinterment of human remains and associated grave goods, sacred objects and objects of cultural patrimony should occur only when consultation has been completed per NAGPRA with the direct lineal descendants or the representative tribe. A signed MOU shall be in place prior to any disinterment activities.

V. *Enhancement*

A. Identify opportunities and priorities for interpretation of Heritage Resources for public education and recreation.

1. Manage significant and suitable heritage resource sites to realize their recreational and educational values to the public. Enhancement programs should include in-service funding as well as opportunity for establishing partnerships with the private sector. The measure of suitability should be based upon accessibility, feasibility for protection, condition of the property, compatibility with other management activities, and value to the public.
2. Enhance suitable heritage values through interpretation, restoration, and the publication of reports, brochures or films, videos, and slide programs. Interpretive services and facilities should be compatible with the nature, quality, and integrity of the resource selected for enhancement.
3. Cooperate with museums, universities, and other recognized institutions, agencies, and knowledgeable persons in planning and constructing heritage resource exhibits and providing opportunities for scholarly/scientific use.
4. Manage Heritage Resources to ensure that properties and their records are protected to prevent degradation or unauthorized use under authority of the Archaeological Resources Protection Act of 1979 and the regulations in 36 CFR 296.

VI. *Site Inspection*

A. Assess condition, and document restoration or stabilization needs of cultural sites. Use this information for reporting the success of mitigation measures and other actions taken to ensure site preservation.

1. Frequency of inspection should seek to include one documented visit per selected site per year as available resources allow. If site damage is observed, additional inspections may become necessary. If an area is damaged through suspected human disturbance, inspect other sites in that vicinity. (Consult the Area Heritage Resource Specialist and/or Special Agent.)
2. Coordinate the assessments with District Rangers, the Area Heritage Resource Specialist and the Special Agent.

B. Assessment procedures should include observations documenting the current site condition. Document assessments through a signed, written report that verifies which site was inspected and the observed condition.

C. *Damage Assessment Report*. If site damage is observed and it has not been previously recorded, a site damage assessment report will be prepared by the Area Heritage Resource Specialist. The purpose of the damage assessment report is: to identify the damage, to make recommendations to stabilize the site from further deterioration, and to evaluate the actions needed to prevent further damage.

D. Remain alert to cultural damage potentially attributable to criminal acts and safeguard investigation by avoiding further disturbance of the area.

E. Prioritize heritage sites to be assessed on a yearly basis as coordinated by the District Ranger, Area Heritage Resource Specialist and Special Agent.

F. Include resource inspection in the measures for the protection of Heritage Resources from vandalism, natural destruction, or project activity. Evaluate and recommend measures such as stabilization, data recovery, or no action, for resources that have sustained damage from natural

forces. Vandalism, collecting, illicit excavation, or project damage shall be evaluated for protective measures, such as signing, administrative closure, remote sensing, increased inspection, investigation, stabilization, data recovery or other measures under the authority of the American Antiquities Act of 1906, the Archaeological Resources Protection Act of 1979 and regulations in 36 CFR 261, 36 CFR 296, and 36 CFR 800.

KARST and CAVE RESOURCES
Forest-wide Standards & Guidelines

Karst Resources: KARST

I. *Strategy*

A. Maintain, to the extent feasible, the natural karst processes and the productivity of the karst landscape while providing for other land uses where appropriate. This strategy is designed to assess a karst resource's vulnerability or sensitivity to a proposed land use and recognize the differences in intensity of karst development across the karst landscape.

B. The key elements of the karst strategy focus on the openness of karst and its ability to transport water, nutrients, soil and debris, and pollutants into underlying hydrologic systems. Strive to maintain the capability of the karst landscape to regenerate a forest after harvest, to maintain the quality of the waters issuing from the karst hydrologic systems, and to protect the many resources values within underlying significant cave systems as per the requirements of the Federal Cave Protection Act.

II. *Management*

A. Maintain a karst resource management program that will identify, evaluate, and provide for karst resources. Evaluate karst resources as to their vulnerability to land uses affecting karst systems, as described in the Karst and Cave Resource Significance Assessment, Ketchikan Area, Tongass National Forest, Alaska (Aley et al., 1993), Karst landscapes and associated resources: a resource assessment (USDA Forest Service Gen. Tech. Rep. PNW-383) (Baichtal and Swanston, 1996), the information provided herein, and within Appendix I.

B. Seek participation from interested individuals and organizations, such as caving groups, scientists, recreationists, and development interests in managing the karst resources.

C. Integrate and coordinate karst management with the management of other resources. Consider the function and biological significance of the entire karst landscape; recognize the importance of protection of karst systems, not solely specific karst features.

D. Public education and interpretative programs should be developed to insure an increased understanding of the components and function of the karst landscape. Use research results to foster and promote conservation and further public education of karst resources.

E. Work with universities and other appropriate research facilities to foster partnerships to study and characterize the function and biological significance of karst landscapes. In order to maintain existing aesthetic and future scientific values, use non-consumptive research techniques as much as possible. See Appendix B for specific information needs.

III. *Karst Landscape Assessment*

A. Karst lands impose land management challenges not encountered in non-karst areas because this three dimensional landform functions differently than do other landforms. Evaluate karst resources as to their vulnerability to land uses affecting karst systems. Classify karst lands as being of low, moderate, and high vulnerability. See Appendix I for additional guidance. This is a four-step process:

1. Identify Potential Karst Lands - Identify those lands underlain by carbonate rocks. As a practical matter, all lands underlain by carbonate rocks within the Forest should be considered a karst landscape.
2. Inventory Karst Landscapes and Cave Resources - Prior to the initiation of any project planning effort, determine the project's proximity to or position on a karst landscape. If it is determined that karst may be present in the area, perform an inventory of the area. Record the presence or absence of karst. If karst is present, document the degree to which karst has developed including the degree of epikarst development, the presence of caves, the presence of insurgences and resurgences, sinkholes, collapse channels, and other karst features.
3. Delineate Karst Hydrologic System and Catchment Area - Define, to the extent feasible, the karst hydrologic system and the recharge-area watershed or catchment area for each karst system. The character of the catchment area, i.e., the area, slope gradient, vegetation, water

quality, soils, etc., controls the nature of the receiving karst system and defines the volume of runoff available for infiltration into the system. Recharge area delineation should be delineated to assess and characterize possible impacts.

4. Assess Vulnerability of Karst Terrain to Management Activity - Delineate the land into vulnerability categories following completion of the above steps. The recommended vulnerability mapping applies only to carbonate rock areas and areas that contribute waters to such areas. An area's vulnerability rating must be sensitive to potential surface management practices based on the extent to which epikarst has developed and the openness of the karst system. The vulnerability categories and criteria are as follows:
   a) Low Vulnerability Karst lands - These are areas of low or negligible vulnerability from a karst management perspective. No special provision for the protection of karst values is considered necessary. It is possible that within and adjacent to areas found to be of low vulnerability, will be found karst areas with high vulnerability. Along such boundaries or margins, apply guidelines described in Appendix I.
   b) Moderate Vulnerability Karst lands - Provide for other land uses taking into account karst management objectives. Timber harvest and related activities could be conducted in such areas under more restrictive guidelines than normally employed on lands underlain by non-carbonate bedrock. Implications of land use will be determined by the nature of the karst values present. It is probable that within and adjacent to areas found to be of moderate vulnerability, will be found karst areas with high vulnerability. Along such boundaries or margins, apply guidelines described in Appendix I.
   c) High Vulnerability Karst lands - These areas are of very high significance and sensitivity from a karst conservation perspective. These areas will be managed to insure conservation of karst values. Karst lands found to be of high vulnerability will be identified and removed from the commercial forest lands suitable land base. Unprogrammed timber harvest, such as for personal use and for long stringer bridge construction, may be allowed if compatible with conservation of the karst resource.

IV. *Mineral development*

A. The chemically pure carbonates of southeastern Alaska have long been considered for their commodity values. Values are determined on chemical purity as well as on brightness. The more pure the carbonate bedrock, the more intense karst development. Analyze the impacts of any proposed mineral development within the karst landscape through the environmental analysis which is triggered once a Plan of operations is received.

Cave Resources: CAVE

I. *Management*

A. Manage lands in a manner which, to the extent feasible, protects and maintains significant caves and cave resources. See Appendix I for guidelines for determining cave significance.

B. Locate, map, and describe caves, and evaluate and document the resource values discovered. Although the word "inventory" is not used in the Federal Cave Resources Protection Act (FCRPA), it is clear that the significant cave designation process is an inventory process for identifying caves that will require some form of management. Carry out data storage and collection in a manner which is consistent, at a minimum, with the processes outlined in 36 CFR 290 for initial and subsequent nomination, evaluation, and designation of significant caves.

C. Develop a comprehensive Cave Resource Management Strategy on known cave resources. Strategies for cave resource management are suggested in Appendix I and within these standards and guidelines. As a minimum the strategy should include components which outline processes for cave inventory, record keeping, cave naming, handling of confidential cave information, partnership opportunities, recreational use monitoring, cave access and entry permits, and cave resource evaluations.

D. Develop public education and interpretative programs to foster an increased appreciation of the function and biological significance of the cave resources, caving ethics and safety, and safe and responsible uses of these resources for research and recreation purposes.

E. Classify caves based on management objectives consistent with identified cave resource values. Caves should be placed into one of the following classifications:
   1. *Class 1 - Sensitive Caves.* Caves considered unsuitable for exploration by the general public either because of their pristine condition, unique resources, or extreme safety hazards. These caves will be closed by the Forest Supervisor and entry allowed by permit only.
   2. *Class 2 - Directed Access Caves.* Caves with directed access and developed for public use. These caves are shown on maps or have signs directing visitor access; public visitation is encouraged.
   3. *Class 3 - Undeveloped Caves.* Caves that are undeveloped but are suitable for exploration by persons who are properly prepared. Location of these resources will not be advertised nor shown on maps.

F. Specific information concerning significant caves on the Forest will not be made available to the public (FCRPA). This information is also not available under Freedom of Information Act requests. Treat this information as confidential and secure it in such a manner as to prevent access by non-authorized individuals. The cave coordinator will maintain the cave files and ensure that access is provided on a need-to-know basis only. Information concerning significant caves may be made available only if the deciding officer determines that disclosure of such information would further the purposes of the Act and would not create a substantial risk of harm, theft, or destruction of a significant cave.

G. Search and rescue in caves is the primary responsibility of the Alaska State Troopers. Supply appropriate support and equipment where needed and available.

LANDS
Forest-wide Standards & Guidelines

Lands Preparation: LAND11

I. *Land Status*

A. Perform a land ownership review during early project planning stages, prior to management activities, to ensure protection of state, private, and other Federal agency rights and interests.

1. Consult sources, such as BLM Master Title Plats (MTP's), in addition to the land status atlas, to identify land encumbrances which do not appear in the land status atlas.

II. *Coordinating with Others*

A. Coordinate activities, including environmental analysis on National Forest System land, with adjacent state and private landowners. Solicit and consider their input when analyzing proposals which might affect them.

B. Coordinate activities which affect the Coastal Zone with the State of Alaska Office of Management and Budget, Division of Governmental Coordination, to ensure consistency, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program.

C. Cooperate with the State of Alaska and local communities in their land and resource planning efforts.

D. Coordinate activities on encumbered lands with interest holders, as appropriate.

Special Use Administration (non-Recreation): LAND122

I. *Special Use Authorizations*

A. Manage Special Use Authorizations to best serve the public interest, in accordance with the following standards and guidelines. (Consult 36 CFR 251.)

1. Do not authorize private uses of National Forest System lands when such uses can be reasonably accommodated on other lands.
2. Review new special use requests for their compatibility with Land Use Designations, based on a consideration of environmental values, economic feasibility, and a determination of social and economic benefits. (Consult FSM 2700.)
3. In addition to the above criteria, special use applications may be denied if the authorizing officer determines that:
   a) The proposed use would not be in the public interest
   b) The applicant is not qualified
   c) The proposed use would otherwise be inconsistent with applicable Federal or state law; or
   d) The applicant does not or cannot demonstrate technical or financial capability. (Consult 36 CFR 251.54.)
4. Review and adjust special use fees on a planned basis to comply with U.S. Office of Management and Budget (OMB) directives and Forest Service policy. (Consult OMB Circular No. A-25, and FSM 2700.)
5. Upon renewal or transfer of a permit, terminate or bring into conformance existing uses which are not compatible with the Forest Plan.
6. On lands encumbered by state selections, obtain concurrence from the Alaska Department of Natural Resources prior to granting a Special Use Authorization, in accordance with the Alaska National Interest Lands Conservation Act, Section 906 (k) and Forest Service Manual policy. (Consult FSM 5450.)
7. Do not issue Special Use Authorizations on lands selected, or withdrawn for selection by a Native corporation without the consent of that Native corporation, unless waived by the Regional Forester. (Consult FSM 5450.)
8. Do not issue Special Use Authorizations on lands for which there is a Native Allotment application without consent from the applicant and the Bureau of Indian Affairs (or their designees), unless the application has been adjudicated by BLM as being invalid and the case has been closed. Contact the Regional Forester prior to granting a Special Use Authorization

within an active claim area, as Regional Forester authorization may also be required. (Consult FSM 5450.)

9. Coordinate all Special-Use Authorization proposals which affect the Coastal Zone with the State of Alaska Office of Management and Budget, Division of Governmental Coordination, to ensure consistency, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program. The Coastal Zone excludes all Federal lands.
10. Require that structures be constructed and maintained in a manner to blend with the surrounding environment, and be consistent with management objectives and other allowed activities. To the extent feasible, locate new structures hidden from areas of concentrated visitor use, such as rivers, roads, trails, and public recreation cabins.
11. Manage authorized uses to maintain a neat and sanitary condition of the permit area. The preferred method of litter disposal is to remove all litter from National Forest System lands and dispose of it at appropriate sanitary facilities. If this is not feasible, require the permit holder to burn all burnables on site, at a location designated by the responsible Forest Officer, and remove all materials which cannot be burned (including ash residue) for disposal at an approved disposal site.
12. Locate outdoor toilets away from lakes, rivers, and streams. Follow guidelines in the State Wastewater Disposal Regulations. Outdoor toilet locations will be approved by the Forest Service prior to construction. (Consult 18 AAC 72.)
13. To the extent allowed by law, regulation, and policy, allow permit applicants to conduct environmental analyses and supporting activities (such as cultural resource surveys) and submit them to the responsible official for consideration in Forest Service decisions.
14. Have electronic site proponents submit technical data required in Section 48 of the Special Uses Handbook (FSH 2709.11) for site designation, including demand for the site, consideration of alternate locations, compatibility with other electronic uses, interference with other uses, areas of electronic signal coverage, signal paths, and relationship of the proposed site to other sites.

II. *Cabins and Related Structures*

A. Manage cabins and related structures which were existing but unauthorized prior to ANILCA (December 2, 1980), in accordance with direction in the Regional Supplement to the Special Uses Handbook (FSH 2709.11) and the following standards and guidelines. (In Wilderness, consult FSM 2320 and the Wilderness prescriptions).

1. Allow the continuation of customary and traditional uses of cabins and related structures which were existing but unauthorized on December 2, 1980 in accordance with a nontransferable, renewable, five-year Special Use Permit until the death of the last immediate family member of the original permittee, when such uses are compatible with Land Use Designation direction, and are otherwise in compliance with the Alaska National Interest Lands Conservation Act (ANILCA), Section 1303(b).
2. Prior to issuing a permit, in accordance with ANILCA, Section 1303(b)(3), require the permit applicant to:
   a) reasonably demonstrate by affidavit, bill of sale or other documentation, proof of possessory interest or right of occupancy
   b) submit a sketch or photograph of the cabin and a map showing its location
   c) agree to vacate the cabin and remove all personal property from it within a reasonable time period following nonrenewal or revocation of the permit
   d) acknowledge in the permit application that the applicant has no interest in the real property on which the cabin is located.
3. When issuing these permits, list all qualifying immediate family members along with the original claimant and require that one person be designated to represent all permit holders. The original claimant is the resident of record, as of December 2, 1980.

B. Manage cabins and related structures which were authorized on December 2, 1980, in accordance with direction in the Regional Supplement to the Special Uses Handbook (FSH 2709.11) and the following standards and guidelines. (For Wilderness cabins and related structures, consult FSM 2320 and the Wilderness Prescription).

1. Allow the continued use of cabins, homesites, and similar structures which were authorized on December 2, 1980, in accordance with the terms of the original permit. Generally renew these permits (if the terms of the permit in effect on December 2, 1980 allow for renewal), subject to reasonable regulations and provisions of the Alaska National Interest Lands Conservation Act, Section 1303(d), unless continuation of the use would constitute a direct threat or significant impairment to the purposes for which the National Forest or conservation system unit was established. A reasonable fee may be imposed on cabins previously under free use or existing fees may be increased by a reasonable amount, to keep pace with inflation, or for other justifiable purposes.
2. These permits may be transferred to one other person at the election or death of the permittee of record on December 2, 1980, if the conditions of the original permit allow for such transfer.
3. Names of immediate family members of the holder may be added as additional permit holders. Immediate family members are defined in the Regional Supplement to the Special Uses Handbook (FSH 2709.11).

C. Manage new cabins and related structures, in accordance with direction in the Regional Supplement to the Special Uses Handbook (FSH 2709.11) and the following standards and guidelines. (For Wilderness, consult FSM 2320.)
1. The construction of new cabins is prohibited with the following limited exceptions. A nontransferable, five-year Special Use Permit may be issued in some circumstances, following a determination that:
   a) the proposed use, construction, and maintenance of the cabin are compatible with Land Use Designation objectives
   b) use of the cabin is directly related to administration of the area or is necessary for continuation of an ongoing activity, allowed within the area
   c) the permit applicant has no reasonable alternative.
2. Do not permit construction of new cabins for private recreational or residential uses. Consider permitting new cabins for some commercial uses, when a cabin is necessary to provide a needed public service (generally, public need is identified in a prospectus) or within areas where such commercial use of cabins was an established customary and traditional use prior to December 2, 1980. Consider permitting new cabins for administrative use by other agencies, such as Alaska Department of Fish and Game, when no feasible alternatives exist.
3. All new cabins will be deeded over to, and become the property of, the United States Government, as provided in the Alaska National Interest Lands Conservation Act, Section 1303(b)(4).
4. Prior to issuing a permit, in accordance with ANILCA, Section 1303(b)(3), require the permit applicant to:
   a) submit a sketch or photograph of the proposed cabin and a map showing its location
   b) agree to vacate the cabin and remove all personal property from it, within a reasonable time period following nonrenewal or revocation of the permit
   c) acknowledge in the permit application that the applicant has no interest in the real property on which the cabin will be constructed
   d) quit claim deed the cabin to the United States Government.

D. Provide for subsistence uses by authorizing temporary facilities, such as tent platforms, rather than new cabins. Follow procedures and design standards for temporary facilities, found in Section 1316 of the Alaska National Interest Lands Conservation Act, the following section on temporary facilities, and the Forest Service Manual. (Consult FSM 2720.)

III. *Temporary Facilities*

A. A temporary facility is defined as: "Any structure or other human-made improvement which can be readily and completely dismantled and removed from the site when the authorized use terminates." (Consult FSM 2720.)

B. Permit temporary campsites, tent platforms, shelters, and other temporary equipment, directly and necessarily related to the taking of fish and wildlife, subject to:
1. Reasonable regulation to ensure compatibility
2. Conditions of the Alaska National Interest Lands Conservation Act, Section 1316
3. Forest Service Manual direction

4. Consistency with management prescriptions direction. (Consult FSM 2720. In Wilderness, consult FSM 2320.)

C. When issuing new permits for subsistence-related facilities, authorize tent platforms and associated temporary facilities only.

D. To the extent feasible, locate subsistence camps out of sight of high use areas such as rivers, roads, trails, public recreation cabins, and other user facilities.

IV. *Aquatic farming Permits*

A. For the direction on the management of aquatic farm permits, consult the Regional Supplement to the Special Uses Handbook (FSH 2709.11).

B. "Aquatic farming" should not be confused with "aquaculture". Consult the glossary for a definition of these and related terms. "Aquatic farming" is provided for in Alaska State Law (AS 16.40.100 - 16.40.199, June 9, 1988). It involves growing aquatic plants or shellfish for sale, either in captivity or under positive control. Typically shellfish are pen-reared. Finfish are generally not included and release of the organism does not result in a product becoming available as a common property resource. "Aquaculture" is provided for in ANILCA, Section 1315(b). It involves the maintenance or improvement of fish stocks. It includes facilities such as fish hatcheries and projects such as fish stocking or lake fertilization. It includes finfish and release results in a product becoming available as a common property resource.

C. Cooperate with state and other Federal agencies to meet industry and public needs for aquatic farming programs and ensure compatibility with other resources and activities.

1. During evaluation of requests for Forest Service permits, carefully analyze the effects of aquatic farming activities on other resources and other activities, such as recreational uses and access to adjacent uplands. Oppose aquatic farm development in or adjacent to National Forest System Wilderness.
2. Coordinate responses to aquatic farming proposals with the Alaska Department of Natural Resources and Alaska Office of Management and Budget, Division of Governmental Coordination.
3. Initially, issue permits only for low investment, minimum development, temporary support facilities (not to include cabins) which can be readily removed from the site if the project ceases to be viable for the operator. Consider permitting additional support facilities on National Forest System lands, only after a viable business is established and need for the facilities can be demonstrated.

V. *Floathouses*

A. Manage residential floathouses in accordance with the following standards and guidelines.

1. Issue Special Use Authorizations for floathouse shoreties only at locations where the activity is specifically provided for in the Alaska Coastal Zone Management Plan or approved coastal zone area plans.
2. Cooperate with the State of Alaska and local communities to help develop criteria which address floathouse placement. In developing new state or city plans, encourage locating floathouses near communities or adjacent to private uplands. Avoid locating them:
   a) Adjacent to designated Wilderness or other areas where they would be incompatible with upland management objectives
   b) Where they may adversely affect forest resources
   c) Where they may conflict with higher priority public uses.
3. As a condition of the Forest Service Special Use Authorization, require applicants to obtain all necessary authorizations from other appropriate agencies, such as Alaska Department of Natural Resources and the U.S. Army Corps of Engineers.

VI. *Fish Camps*

A. Manage Special Use Permits for commercial set net fish camps in accordance with direction in the Regional Supplement to the Special Uses Handbook (FSH 2709.11) and the following standards and guidelines.

1. Where the use of commercial fish camps, including primitive cabins, is a customary and traditional use, allow this use to continue within traditional locations, at approximately

traditional densities, as established prior to ANILCA (December 2, 1980), if compatible with Land Use Designations objectives.

2. New facilities will usually be tent platforms and associated temporary facilities unless a need can be demonstrated for a cabin.
3. New cabins, if authorized, will not exceed 500 square feet in size. Limit new cabin authorizations to one cabin per set net permit. If needed, authorize additional sites for use with a tent platform.
4. Assign a permit tenure of five years for cabins and one to five years for tent platforms with the provision that, unless revoked for violation of permit conditions, these permits may be renewed upon expiration.
5. Assign new fish camp permit holders areas up to 1/4 acre in size, based on need.
6. Within areas traditionally used for fish camps, allow existing privileges currently under permit to continue. Do not allow fish camp permit holders to engage in outfitter/guide or lodge/resort activities from their fish camps, unless already authorized by permit.
7. Consider authorizing requests for subsistence uses from fish camps; however, any authorization for subsistence uses from fish camps will be documented in writing to the permit holder, along with conditions, if any, which may be necessary to protect resources and the rights of other users. Do not permit residential uses of fish camps.
8. To obtain a fish camp permit, require applicants to hold a commercial set net permit from the Alaska Department of Fish and Game, valid for the area in which the proposed facility is to be located. Camp occupancy will generally correspond to the dates of the open set net season, with exceptions allowed for camp set up and take down (if necessary) and for subsistence uses, if authorized.
9. Some fish camp permits have traditionally been issued free of charge. In compliance with U.S. Office of Management and Budget (OMB) directives, and Federal Regulations (36 CFR 251 .57), assess appropriate fees in conjunction with all commercial fish camp uses.
10. Natural hydrologic changes may lead to use areas being relocated. This need is recognized and new use areas may be authorized, if necessary, following separate environmental analysis, as rivers change their course or other changes lead to shifts in the location of fish runs. Issue permits for tent platforms in new locations where cabin use is not already established.

VII. *Right-of-Way Grants*

A. Grant reasonable access across National Forest System land to allow inholders and other landowners use of their land without unnecessarily reducing Forest Service management options or damaging National Forest System lands or resources. (Consult FSM 2730.)
   1. Ensure that all roads constructed through permits or leases are designed according to standards appropriate to the planned uses, considering safety, cost of transportation, and effects upon lands and resources. Ensure these roads are planned and designed to re-establish vegetative cover on the disturbed area within a reasonable period of time (not to exceed 10 years) after the termination of the permit or lease, unless the road is determined necessary as a permanent addition to the National Forest transportation system. (Consult 36 CFR 219.)

B. Apply the following approval authorities, as applicable, when processing Right-of-Way grant requests.
   1. Continue to use existing authorities such as the Federal Land Policy and Management Act (FLPMA), the Forest Road and Trail Act (FRTA), and the Highway Act of 1958, except when prohibited by other applicable law.
   2. When proposed rights-of-way cross, or enter upon, a Conservation System Unit (as defined in ANILCA, Section 102(4)), follow procedural requirements found in ANILCA, Section 1104.
   3. When proposed rights-of-way will provide access to state or private inholdings or valid occupancies (such as a mining claim or Special Use Authorization) surrounded by, within, or effectively surrounded by, a Conservation System Unit, use authorities found in ANILCA, Section 1110(b).
   4. When proposed rights-of-way will provide temporary access to non-Federal lands, to or across a Conservation System Unit, for purposes of survey, geophysical, exploratory, or other

temporary uses which will not result in permanent resource harm, use authorities found in ANILCA, Section 1111.

5. When proposed rights-of-way will provide access to non-Federal inholdings, either within or outside of a Conservation System Unit, use authorities found in ANILCA, Section 1323(a).

C. Allow the following activities to occur without requiring a Special Use Authorization. (Consult ANILCA, Section 1110(a).)

1. The use of snowmachines, motorboats, fixed-wing airplanes, and nonmotorized surface transportation methods for traditional activities which are permitted by law and for travel to and from villages and homesites, subject to reasonable regulations to protect resource values. These uses do not require a permit and may be prohibited only following a notice and hearing in the vicinity of the affected area, and a determination that such uses would be detrimental to resource values.
2. This direction does not authorize the construction or maintenance of improvements or facilities on National Forest System lands, nor does it authorize use of Off-Highway Vehicles, other than snowmachines.

D. Apply the following standards and guidelines to Transportation and Utility Systems. The primary purpose of these systems is to accommodate public transportation and energy transmission. These Transportation and Utility Systems include significant existing and proposed transportation and utility sites and corridors, and other rights-of-way necessary to accommodate use from a facility or other compatible Right-of-Way, when such rights-of-way cross National Forest System lands. Examples of facilities located within these corridors include, but are not limited to, state and Federal Highways, railroads, powerlines 66kV and above, and pipelines 10 inches or greater in diameter, constructed by holders of a Special Use Authorization. Water pipelines greater than 10 inches are included only if they are a public utility (i.e., if they service a community water supply). A portion of existing and proposed Transportation and Utility Systems have been allocated to the Transportation and Utility System (TUS) Land Use Designation (LUD) (see the TUS LUD in Chapter 3). This LUD gives additional emphasis to major Transportation and Utility Systems.

These systems will generally include sites where associated facilities, such as dams, reservoirs, or generators, are located. Sites and corridors include the land directly under, and immediately adjacent to the facilities. Sites have significant improvements located within a generally compact area, while corridors are linear in nature. Sites and corridors will generally be void of large vegetation, but may contain low-lying ground vegetation.

1. A Transportation and Utility System (TUS) "window" is an area potentially available for the location of transportation or utility corridors and sites. Windows represent areas of future opportunity where the applied management direction will not conflict with future designation of a TUS. A site-specific analysis is still required during project level planning, to identify resource protection needs within these areas. Windows are designated through the allocation of lands to TUS windows in their standards and guidelines.
2. A TUS "avoidance area" is an area where the establishment and use of transportation or utility corridors and sites is not desirable given the Land Use Designation emphasis. A search for "windows" should be exhausted before TUS facilities are considered in avoidance areas. When feasible, these areas should be avoided through site-specific analysis during project level planning. Avoidance areas often include Congressionally and administratively designated areas. Although special environmental or procedural considerations may be required for these areas, these special designations do not preclude consideration and use as a TUS. Avoidance areas are designated through the allocation of lands to Land Use Designations specifically identified as TUS avoidance areas in their standards and guidelines. In cases where proposed or potential corridors are allocated to the Transportation and Utility System (TUS) LUD that traverse other LUD's identified as TUS "avoidance areas", treat the corridors within such LUD's the same as Transportation and Utility System "windows" (subject to applicable laws).
3. A TUS "exclusion area" is a large area (large enough to cause significant barriers) which legislatively precludes Transportation and Utility Systems. There will be no exclusion areas on the Tongass National Forest due to special authorities provided in ANILCA, Title XI.
4. Accommodate new transportation and utility proposals within existing corridors, to the maximum extent feasible. (Consult 36 CFR 219.)

a) Site-specific locations and mitigation measures for unconstructed TUS's will be determined by project level planning which will analyze environment considerations, such as visual resources, wildlife habitat, and soil conditions.

VIII. *Military Training Activities*

A. Authorize military training activities on National Forest System lands in accordance with the Master Agreement between the Department of Defense and the Department of Agriculture which governs the use of National Forest System Lands for these purposes. (Consult FSM 1530.)

1. Authorize military training activities on National Forest System lands when these activities:
   a) Will be compatible with other uses.
   b) Conform to Land Use Designation direction.
   c) After the Department of Defense has determined and substantiated that lands under its administration are either unsuitable or unavailable.
2. Determine probable effects of proposed activities, necessary mitigation measures, and effective monitoring techniques, on a case-by-case basis, with a site-specific environmental analysis, conducted in accordance with the Master Agreement.
3. When local supplemental agreements with Military Agencies exist, consult such agreements for additional direction.

IX. *Sanitary Landfills*

A. Manage landfills in accordance with the following national policy but subject to approved special provisions for Alaska.

1. Require strict compliance with applicable Environmental Protection Agency guidelines.
2. Avoid authorizing new solid waste disposal sites and the expansion of existing sites on National Forest System lands, subject to exceptions approved for the Alaska Region.
3. Provide for solid waste disposal sites through exchange, sale under the Townsite Act (7 U.S.C. 1012a; 16 U.S.C. 478a), or selection by the State of Alaska of National Forest System lands when there is no viable alternative on non-Federal land and where there will be no adverse impacts to other National Forest resources or land. Encourage the State of Alaska to request conveyance of those areas suitable and needed for solid waste disposal near existing and proposed communities to eliminate the need to use National Forest System lands. Provide conditions for the conveyance document to assure the land will be controlled by a government entity and activities which interfere with the management and protection of adjacent National Forest System lands will not occur.
4. Solid waste disposals must comply with EPA regulations in 40 CFR 257 and 258, and State of Alaska Administrative Code 18 AAC 60 et seq. These EPA regulations are very restrictive and may preclude continued operation of small landfills. Encourage close out of landfills on National Forest System lands. Those not closed prior to October 9, 1993, require continued monitoring and management of the landfill by the owner or operator for 30 years after landfill closure, in accordance with EPA regulations. Forest Service policy in FSM 2130 discourages waste disposal on National Forest System lands and allows this activity to occur only where it is determined to be the highest and best use of the land.
5. Special situations in Alaska may require the continued use of National Forest System lands for some non-community domestic waste disposal in remote locations. Remote locations are island and mainland locations, accessible only by aircraft or boat, with no private land available for solid waste disposal. Even in these special situations, encourage Forest users to burn burnables and pack-out non-burnable waste materials (including ash residue) and remove them from National Forest System lands, to the extent feasible. Examples of typical special situations include:
   a) Remote lodges under Special Use Authorization
   b) Mining activities in remote Forest locations
   c) Remote Forest Service administrative sites
   d) Forest Service contractors working in remote locations
   e) Aquaculture sites in remote locations
   f) The needs of the state and other Federal Agencies located in remote National Forest locations.

Land Ownership Administration: LAND123

I. *Land Selections*

A. When making land management decisions, appropriately consider valid State selections (pursuant to the Alaska Statehood Act), Native selections (pursuant to the Alaska Native Claims Settlement Act, as amended), and Native Allotment claims (pursuant to the Alaska Native Allotment Act of 1906). Protect legal rights of the State of Alaska, Native Corporations, and Native individuals when managing selected or withdrawn lands, or lands under Native claim. Apply the following standards and guidelines to Land Use Designations encumbered by State selections, Native selections or withdrawals, and Native allotment applications, until these lands are either conveyed into State or private ownership, or they revert back to unencumbered National Forest System land.

1. Cooperate with the State of Alaska, Native Corporations, Native allotment applicants, the Bureau of Land Management, the Bureau of Indian Affairs (or their designee), and other Federal agencies, to assist in processing legitimate claims or applications. Encourage other parties involved to assist in finalizing conveyance of full legal entitlement in a timely manner.
2. Avoid Forest Service investment on lands encumbered by State selections, Native withdrawals or selections, or Native Allotment applications.
3. Carefully review each selection, prior to conveyance, to identify third party interests and needed Right-of-Way reservations which are allowed under applicable legislation.

B. Manage State selections, entered under authority of the Alaska Statehood Act, according to the following standards and guidelines. (Consult 43 CFR 2627.)

1. Encourage conveyance of State selections adjacent to existing communities. Work with State agencies and local communities to substantially eliminate Forest ownership in and adjacent to communities where State, borough, or community governmental improvements and jurisdiction should logically preside.
2. Obtain concurrence from the Alaska Department of Natural Resources prior to any surface-disturbing activity or granting any occupancy permit, contract, easement, or other similar use authorization on State selected lands, in accordance with the Alaska National Interest Lands Conservation Act, Section 906(k) and Forest Service Manual policy. (Consult FSM 5450.)
3. Deposit 90 percent of all proceeds from contracts, leases, licenses, permits, rights-of-way, easements, or from trespass, on unconveyed State selected National Forest System lands, into a suspense account, for future transfer to the State upon conveyance. (Consult Sec. 906(k)(2) of ANILCA.)

C. Apply the following standards and guidelines to Land Use Designations encumbered by Native selections or withdrawals, made under authority of the Alaska Native Claims Settlement Act (ANCSA), as amended, until these lands are either conveyed into private ownership, or they revert back to unencumbered National Forest System land. (Consult 43 CFR 2650.)

1. Do not issue occupancy permits, contracts, easements, or similar authorizations on lands selected, or withdrawn for selection, by a Native Corporation under authority of ANCSA, without coordination and consent from that Native Corporation, unless permission is first obtained from the Regional Forester. (Consult FSM 5450.)
2. Do not allow timber harvest on lands selected by a Native Corporation under authority of ANCSA, which fall within a timber sale contract contingency area, except by agreement with that Native Corporation. (Consult ANCSA, as amended by Section 908 of the Alaska National Interest Lands Conservation Act. "Contingency Area" is defined in this section of ANILCA.)
3. Deposit all proceeds from any contracts, leases, licenses, permits, rights-of-way, easements, or from trespass, on unconveyed National Forest System lands that are selected or withdrawn for selection under ANCSA, into an escrow account, for future transfer to the appropriate Native corporation, upon conveyance. (Consult Sec. 1411 of ANILCA.)

D. Apply the following standards and guidelines to Land Use Designations encumbered by Native Allotment applications, submitted under authority of the Alaska Native Allotment Act of 1906, until these lands are either conveyed into private ownership, or they revert back to unencumbered National Forest System land. (Consult 43 CFR 2561.)

1. Do not issue use authorizations, such as permits, contracts, or easements, on lands for which there is a Native Allotment application, without consent from the applicant and the Bureau of

Indian Affairs (or their designee), unless the application has been adjudicated by BLM as being invalid and the case has been closed. Contact the Regional Forester prior to granting use authorizations within a valid claim area, as authorization from the Regional Forester may be required. Do not authorize construction of new roads on a valid claim area unless a Deed of Further Assurance has been obtained and recorded, or clearance has been received from the Regional Forester. (Consult FSM 5450.)

Lands Activity Maintenance and Landline Location: LAND23, LAND24

I. *Establishing Forest Boundaries*

A. Apply the following standards and guidelines when maintaining established National Forest property boundary lines and corners, or when locating, surveying, and posting new National Forest property boundaries and corners.

1. Coordinate with the Bureau of Land Management (BLM) for original boundary line survey. Encourage cooperative work with the BLM to mark and post original National Forest/State and National Forest/Native boundaries to Forest Service standards. The Forest Service will maintain these boundary lines and corners after the original survey. These boundaries should not be surveyed, marked or posted, until after conveyance of the land.
2. Maintain the existing inventory of surveyed and unsurveyed boundary lines to establish survey priorities. Establish program priorities to coincide with Forest Service manual direction. (Consult FSM 7150.)

II. *International Boundaries*

A. Apply the following standards and guidelines when locating or maintaining international boundary lines and corners.

1. Ensure compliance with the United States/Canada Treaty of 24 February 1925. Coordinate the location, survey, posting, marking, and maintenance of the International Boundary with the U.S./Canada International Boundary Commission, U.S. Department of State.
2. Ensure compliance with Presidential Proclamations of June 15, 1908 and May 3, 1912. Do not permit any occupancies or management activities, within 60 feet of the United States side of the United States/Canada International Boundary, without prior approval from the International Boundary Commission.

III. *Legislated Boundaries*

A. Apply the following standards and guidelines when considering land-disturbing activities in Land Use Designations adjacent to Wilderness, Wilderness and Nonwilderness National Monument, and legislated LUD II boundaries.

1. Boundaries should be surveyed, marked, and posted prior to implementing land-disturbing activities adjacent to Wilderness, Wilderness and Nonwilderness National Monument, and legislated LUD II. Approximate boundaries are not acceptable.
2. Locating and marking boundaries should be supervised by a professional surveyor with the benefiting function funding all necessary survey activities. Consult FSM 2320, FSH 2309.19, and FSM 7150 (including R10 Supplement) for additional survey and marking standards.
3. The District Ranger or Forest Supervisor who approves a project will ensure adjacent legislated boundaries are located and marked, making certain there is no encroachment.

Rights-of-Way (ROW): LAND25

I. *Rights-of-Way Acquired*

A. Acquire, across non-National Forest System land, road and trail rights-of-way which are adequate for the protection, administration, and utilization of the Tongass National Forest. (Consult FSM 5460.)

1. Generally, acquire rights-of-way identified in project plans at least one year prior to scheduled activity.
2. Generally, acquire unlimited easements, granted in perpetuity. Limited easements (e.g., those authorizing administrative use, but not public use) may be acquired when public use is not desirable, as determined through the project planning process.

3. Encourage the use of cost-share agreements, when feasible, to avoid economic and resource impacts associated with duplicate road systems and Log Transfer Facilities.
4. Monitor compliance with stipulations of existing rights-of-way to ensure long-term retention of needed rights-of-way. Dispose of rights-of-way which are no longer needed. Review easements acquired under Section 17(b) of the Alaska Native Claims Settlement Act, and take appropriate steps toward construction of transportation facilities prior to easement expiration dates.
5. Identify and request all needed rights-of-way across lands selected by the state or Native organizations, as provided by Federal law. Carefully review selections prior to conveyance.
6. Secure adequate rights-of-way before issuing contracts or constructing facilities in intermingled land ownerships. (Consult FSM 5400.)
7. Follow the Bureau of Land Management/Forest Service Memorandum of Understanding on ANCSA 17(b) easement administration.

B. Acquire Log Transfer Facility (LTF) authorizations on tidelands in accordance with the following standards and guidelines.
1. Coordinate LTF activities (location, construction, operation, etc.) with the U.S. Army Corps Engineers, U.S. Environmental Protection Agency, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Alaska Department of Natural Resources, Alaska Office of Management and Budget (Division of Governmental Coordination), Alaska Department of Fish and Game, Alaska Department of Environmental Conservation, local communities, and adjacent landowners, as appropriate. (Also see the Transportation Forest-wide Standards & Guidelines in this Chapter.)
2. Ensure LTF activities, which affect the Coastal Zone, are coordinated with the State of Alaska Office of Management and Budget, Division of Governmental Coordination, to ensure consistency, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program.
3. Acquire long-term leases (preferably at least 25 years) for permanent LTF sites.

Land Ownership Adjustment: LAND26

I. *Priorities*

A. Land acquisition priorities have been described and summarized in the document, "*Alaska Submerged Lands Act Report, Analysis of Inholdings, Acquisition Priorities and Recommendations to Reduce Impacts on Conservation System Units in Alaska*," dated August 1990, by U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, and USDA Forest Service. Base acquisition decisions on this analysis and report, as updated by future revisions. Maps identifying the location of parcels are available from USDA Forest Service, Alaska Regional Office lands personnel. Federal lands available for conveyance are those lands approved by the Regional Forester for selection by the State of Alaska, those lands selected by Native Corporations under ANCSA, and those Native allotment claims adjudicated valid by the BLM. These lands are available only to the respective applicants described above, as provided by Federal law. If applications or claims are relinquished or declared invalid, the affected lands are no longer available for conveyance. Consider proposals for other lands not described above, on a case-by-case basis, using the following criteria. (Consult FSM 5400.)
1. Work cooperatively with the State of Alaska and Native Corporations to improve land ownership patterns and management opportunities resulting from State and Native land conveyances.
2. Retain National Forest System lands which best serve the public interest in Federal ownership.
3. Consolidate National Forest System lands, when feasible. Attempt to reduce miles of property boundary lines and number of corners, to locate and maintain.
4. Generally, acquire and convey land with as few reservations and outstanding rights as feasible. (Consult FSM 5420, 5430, and 5470.)
5. Avoid separating the surface and subsurface estate, unless it is clearly in the public interest. (Consult FSM 5430.)
6. Consider wetland and flood plain values.

7. Pursue land adjustments that reduce administrative costs or increase the output of goods and services. Avoid land adjustments that do not enhance Forest Service programs. (Consult FSM 5430.)
8. Generally, pursue land exchanges on an equal value basis. Exchanges may be made for other than equal value if the parties agree and the exchange is determined to be in the public interest, as provided in Section 1302(h) of the Alaska National Interest Lands Conservation Act and Section 22(f) of the Alaska Native Claims Settlement Act, as amended by Section 17 of Public Law 94-204. (Consult FSM 5430.) When considering land exchanges of unequal value, submit the proposal through proper channels, for Congressional oversight, as appropriate, prior to entering into any binding agreements.

II. *Acquisition*

A. Apply the following standards and guidelines for land acquisition activities.

1. Acquire isolated inholdings at critical locations if public benefits will occur.
2. Within Congressionally designated areas, such as Wilderness, acquire private inholdings as opportunities permit. Wilderness inholdings are priority acquisitions until after the State and Native selection process is completed.
3. Within administratively designated areas, such as Special Interest Areas, generally acquire private inholdings, as opportunities arise.
4. Acquire private lands necessary for efficient management of the Forest.
5. Generally, acquire lands by exchange or donation. Attempt to purchase lands on a willing seller/willing buyer basis when exchange or donation is not feasible and funds are available for purchase.
6. In any land adjustment proposal, consider performing a watershed and other resource condition assessment to determine resource restoration needs. Where rehabilitation is needed to comply with Federal Law such as the Clean Water Act, prepare a cost estimate for rehabilitation prior to the land acquisition.
7. Evaluate parcels proposed for acquisition for the presence of hazardous substances, and document the findings, in conformance with established regulatory guidelines for conducting these evaluations.

III. *Conveyance of Federal Lands*

A. Apply the following standards and guidelines for conveyance of federal lands to non-federal owners.

1. Do not exchange National Forest System lands selected by the State of Alaska, or a Native Corporation, or lands under Native allotment application, which have not yet been conveyed, unless specifically provided for in legislation. If the party holding the encumbrance desires ownership adjustments, they may relinquish their selection. The Forest Service may then pursue land ownership adjustment, if otherwise appropriate.
2. Convey National Forest System lands which would best serve the public interest in private ownership, provided the action will not decrease ability to meet National Forest System management objectives. Examples may include:
   a) Isolated small parcels which are impractical to manage
   b) Parcels where a greater general public value can be derived in private ownership
   c) Areas necessary for community expansion. (Consult 36 CFR 254.)
3. Within Congressionally designated areas, retain existing National Forest System lands unless exchanging out of these lands to acquire new lands, or interest in lands, for the purposes of ANILCA (Consult ANILCA Section 1302(h)). Within administratively designated areas, generally retain National Forest System land, unless there are compelling reasons for conveyance.

MINERALS and GEOLOGY
Forest-wide Standards & Guidelines

Minerals and Geology Resource Preparation: MG11

I. *Resource Inventory*
   A. Maintain the Mineral Resource Inventory. Include historic and current mining activity, regional and local geology, access routes, and geologic and mineral terranes. (Consult FSM 2880)

II. *Resource Planning*
   A. Assemble and provide minerals and geology information as needed for project planning. Such information will normally include a minerals and geology inventory and analysis, forecasts for minerals exploration and development activities, and geologic resource interpretations.

III. *Resource Preparation*
   A. Conduct compliance checks, validity and patent exams, and review operating plans, lease proposals, and applications. Provide expert testimony or opinions for contests, hearings, or appeals. Conduct geotechnical engineering and interpretive geology investigations as required.

IV. *Resource Coordination*
   A. Coordinate minerals and geology inventories and minerals administration with state and other Federal agencies including the USDI Bureau of Land Management and the Geologic Survey.

Minerals and Geology Administration: MG12

I. *Forest Lands Withdrawn From Mineral entry*
   A. Claimants with claims located in areas withdrawn from mineral entry retain valid existing rights, if such rights are established prior to the withdrawal date.
   B. Conduct on-the-ground validity examinations by a certified minerals examiner to establish or reject valid existing rights on active mining claims within wilderness areas and other areas withdrawn from mineral entry.
   C. Permit reasonable access to mining claims in accordance with the provisions of an approved plan of operations.

II. *Forest Lands Open To Mineral entry*
   A. Encourage the exploration, development, and extraction of locatable and leasable minerals and energy resources.
   B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and the National Forest Mining Regulations (36 CFR 228).
   C. Permit reasonable access to mining claims in accordance with the provisions of an approved plan of operations.

III. *Plan of operations*
   A. A Notice of Intent and/or a plan of operations is required for locatable, leasable, and salable minerals. (Consult FSM 2810, 2820, 2850, and 36 CFR 228.)
      1. A plan of operations will receive prompt evaluation and action within the time frames established in 36 CFR 228.
      2. Conduct an environmental analysis with appropriate documentation for all operating plans.
   B. Work with claimants to develop a plan of operations that adequately mitigates adverse impacts to Land Use Designation objectives. Include mitigation measures for locatable and salable minerals and standard and special stipulations in leasing actions that are compatible with the scale of proposed development and commensurate with potential resource impacts.
      1. Maintain the habitats, to the maximum extent feasible, of anadromous fish and other foodfish, and maintain the present and continued productivity of such habitats when such habitats are affected by mining activities. Assess the effects on populations of such fish in consultation with appropriate state agencies. (Consult ANILCA, Section 505(a).)

2. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads and facilities.
3. Reclaim disturbed areas in accordance with an approved plan of operations.
4. Apply Best Management Practices (BMP's) to maintain water quality for the beneficial uses of water. (Consult Appendix C of this document and FSH 2509.22.)
5. Periodically inspect minerals activities to determine if the operator is complying with the regulations of 36 CFR 228 and the approved plan of operations.

IV. *Bonds*

A. A bond may be required for locatable, leasable, and salable mineral operations to ensure operator performance and site reclamation are completed. (Consult 36 CFR 228.)

V. *Mineral Materials*

A. Permit mineral material sites only after an environmental analysis assures other resources are adequately protected, the site location and operating plan are consistent with the Land Use Designation emphasis, and such resources are not reasonably available on private land. Require bonds and reclamation as appropriate. (Consult FSM 2850 and 36 CFR 228.)

B. Where the opportunity exists, design, excavate, and reclaim material sites to facilitate their use for dispersed recreation or other desirable uses such as conversion to salmonid rearing ponds and spawning channels.

VI. *Split Estates*

A. Seek to avoid separating the surface and subsurface estates. Coordinate with BLM, the state, Native Corporations, and private landowners to manage split estates in accordance with individual patents or deeds.

VII. *Paleontologic Resources*

A. For the collecting of paleontologic (fossil) resources on the National Forest, consult the guidance in FSM 2860.

RECREATION and TOURISM
Forest-wide Standards & Guidelines

Recreation Resource Inventory: REC111

I. *Recreation Resource Opportunities*
   A. Maintain the inventory of recreation resource opportunities throughout the Forest.
      1. Use the Recreation Opportunity Spectrum (ROS) system and Tongass National Forest Recreation places Inventory. (Consult FSM 2310 and National/Regional ROS Handbooks.)
      2. Update existing ROS inventories as a part of specific project planning and implementation, and whenever project activities cause a change in recreation setting conditions significant enough to reclassify the affected area.
      3. Maintain the necessary data to determine the individual and/or cumulative changes in ROS class distribution throughout the Forest.

Recreation Resource Planning: REC112

I. *Interagency Planning*
   A. The principal feature that sets National Forest System lands apart from most other suppliers of outdoor recreation is the ability to provide opportunities for generally unconfined outdoor recreation, free of urban influences. National policy directs that these special opportunities be maintained for current and future generations; and that National Forest recreation focus primarily on activities which require a large land base and provide a contrast to urbanization. As a part of the National Forest role of helping meet national and regional social needs, endeavor to encourage traditional American values such as a conservation ethic, appreciation of nature, national and community pride, and national and community well-being including the stability of lifestyle and character. Accomplish this through providing opportunities and programs which are appropriate to the forest environment, dependent upon natural settings, and which help participants experience and understand nature.
      1. Determine the appropriate role of the National Forest System lands in providing natural resource-based recreation opportunities, sites, facilities, and experiences. Within the context of National policy, cooperate and coordinate with National, state, and local agencies in providing a balance of outdoor recreation opportunities throughout Southeast Alaska.
      2. Use the ROS framework of settings and experience opportunities to define the capabilities of National Forest System lands to meet identified recreation needs and services. (Consult ROS Handbooks and Forest ROS maps.)
   B. Provide recreation opportunities on National Forest System lands in concert with, and supplemental to, those opportunities which are located on other land ownerships and jurisdictions. Generally, recreation areas, sites, and facilities located on National Forest System lands should:
      1. Complement commercial public services (i.e., resorts, marinas, stores, service stations) within communities or on private or other public land.
      2. Support a system of anchorages suitable for recreation boats along small boat waterways which connect communities or provide access to popular recreation attractions.
      3. Provide other appropriate facilities to meet specific identified recreation needs on a case-by-case basis.
   C. Cooperatively participate with local communities and user groups when implementing recreation development projects. Implementation should:
      1. Involve the public and affected communities, landowners, and other affected interest groups in the project planning process.
      2. Recognize that recreation use by residents and tourists radiate from communities and service centers to use lands and facilities under a variety of ownerships and jurisdictions.
      3. Verify the local role of the Forest Service in providing recreation opportunities, services, and facilities.
      4. Verify the basis for developing Forest Service recreation-related projects.
      5. Identify sites and activities where joint or cooperative development or management is desirable. Include opportunities for such things as: on-site interpretation of natural and

cultural resources, particularly on lands of mixed ownership; providing public information through joint publications; joint cabin reservation systems; or construction, operation, and maintenance agreements.

6. Consult FSM 2300 and internal Service-wide Handbooks.

II. *Integrated Resource Planning*

A. During non-recreation project planning, assess the effects of these projects on the diversity and quality of recreation settings and activity opportunities within, and adjacent to, the project area.

1. Where recreation resources may be affected, analyze the opportunities foregone due to resource management actions. During project planning and design, consider valid substitutes for recreation settings and activity opportunities.

B. Identify opportunities to enhance existing, and provide additional, recreation activities, opportunities and services where desirable to meet local or Forest-wide recreation demands. Give particular attention to opportunities which: are in relatively short supply within the day-use travel distance of communities, are important to local users, are important to tourism and commercial service providers, provide a base for visitor use of primitive and semi-primitive areas, compliment recreation programs of communities, the state, and private landowners, contribute to the supply of Semi-primitive Motorized opportunities, and those related to the unique combination of marine, wildlife, and fish resources characteristic of Southeast Alaska. Consider opportunities including, but not limited to:

- Additional public recreation cabins.
- Fish viewing, angling, and fishing access.
- Ice fishing.
- Fuelwood gathering.
- Wildlife viewing.
- Hunting.
- Interpretation of natural or cultural resources.
- Interpretation of management activities.
- Snowmobile and/or cross-country skiing and access.
- Access to beaches and other attraction features.
- Loop travel routes (roads, trails, and water routes).
- Scenic marine and road travel corridors.
- Parking/camping places for recreation vehicles, bicyclists, and boaters.
- Resort and lodge opportunities to serve as visitor bases.

C. Coordinate, to the extent feasible, recreation project development with fish and wildlife habitat improvement, and road projects.

D. Designate the Forest open to Off-Highway Vehicles (OHV) off of open roads unless site-specific closures are made. Wilderness areas are closed to OHV's except for snowmachines and for local traditional use of OHV's related to subsistence activities.

1. Coordinate Off-Highway Vehicle (OHV) planning and management with other resource concerns and adjacent landowners.
2. Provide a diversity of OHV recreational opportunities across the forest where consistent with the criteria in FSM 2355, which includes:
   a) The use is compatible with established land management and resource objectives.
   b) The use is consistent with the capability and suitability of the resource.
   c) There is demonstrated demand which cannot be better satisfied elsewhere.
3. Review OHV plans and temporary designations implemented since the last review (consult 36 CFR 295). Develop other access and travel management plans by areas and/or districts as the need arises. Identify specific areas, roads, trails, and water surfaces that are open, restricted, or closed to motorized and non-motorized mechanical conveyance, watercraft, and conditions of use. Recreation, subsistence, and authorized uses may be considered separately depending on the circumstances.

III. *Tourism*

A. Tourism is a major industry in Southeast Alaska. The forest provides the backdrop as well as the land base for many tourism activities, including several of the state's leading attractions. The size and extent of the forest has a profound influence on the amount and nature of opportunities for the tourism industry.

1. Work with the tourism industry and government agencies in assessing the value and contribution of the industry to the economy of Southeast Alaska. Identify the role and contribution made by the Tongass National Forest to the industry and the region.
2. Cooperate with the tourism industry and appropriate government agencies in conducting and assessing visitor studies. These studies include: identification of activities, attractions, and attributes visitors seek; response to management activities; demographic traits; and, detection of changing trends.
3. Coordinate information and marketing efforts with tourism providers and promoters to complement efforts, to target markets for new and existing opportunities, and to meet Forest Service management objectives.
4. Work with government agencies, organizations, and the private sector to identify, facilitate, and develop tourism opportunities.
5. Consider access, infrastructure, and other needs of the tourism industry at the project planning level. Incorporate these needs into project design and implementation.

Recreation Use Administration: REC122

I. *Coordination with Wilderness Management*

A. Evaluate the effects of location, design, and operation of developed sites and roads adjacent to Wilderness. Develop and operate projects to complement wilderness management objectives and to avoid degradation of wilderness values.

B. Ensure that special-use activities and facilities adjacent to Wilderness are located, designed, and operated in a manner which complements wilderness management objectives and that avoids degradation of wilderness values.

II. *Recreation Special Uses*

A. Commercial Recreation Opportunities

1. Work with recreation service partners and the tourism industry in identifying and developing services and opportunities. Recreation service partners provide services and opportunities that supplement the use and enjoyment of the national forests by a variety of people.
   a) Identify opportunities for commercial recreation use, services, and developments.
   b) Facilitate authorizing commercial recreation use, services, and developments by:
      (1) Authorizing commercial recreational developments and services where there is a public need, and no private lands are available or suitable for development. Refer to each Land Use Designation management prescription to determine its appropriateness for development.
      (2) Managing recreation special uses in accordance with the direction in LAND 122 - Special-Use Authorizations (items A.1-13 apply to recreation special uses), and outfitter/guide services in this section.
      (3) Working with recreation service partners to provide agency identity, customer information and programs, natural resource education, and to instill a land stewardship ethic.
2. Use the following guidelines in addressing the appropriateness of recreation special-use proposals in each of the Land Use Designations after evaluating factors in 1.b. above. They provide a framework to guide major and minor development proposals. Four strategies (not allowed, discouraged, case-by-case, compatible) are identified for guidance; one is assigned to each Land Use Designation to address major and minor proposals (see next page). The definitions and strategies applied to major and minor developments are as follows:

Major Development

Major recreation and tourism developments provided by the private sector involve long-term commitment of the land base, with a moderate to high level of site modification. They involve large buildings or complexes of buildings and facilities, and often provide several services in a concentrated area. Comfort and convenience are provided for guests, and facilities can generally accommodate more than 12 people. The proposals are typically Development Scale 3, 4, or 5, and Roaded Natural or Rural ROS settings. Site reclamation involves extensive removal of facilities and improvements, revegetation, recontouring, etc., and greater than 5 years to attain a natural appearance. Examples include destination resorts and lodges, food and beverage services, downhill ski areas, marinas and gas stations, and full service campgrounds.

Minor Development

Minor recreation and tourism developments provided by the private sector involve only minor site modifications. They involve small rustic facilities and/or improvements, generally with a single purpose or service, and may involve several sites or an extensive area. Basic essentials are typically provided, and can generally accommodate 12 or fewer people per site. The proposals are typically Development Scale 1 and 2, with a Semi-Primitive ROS setting. Site reclamation involves simple removal of facilities and little or no revegetation; a natural appearance can be attained in a few years. Examples include cabins, huts, small docks, cross-country ski trails with simple facilities, temporary or portable camps, and simple and rustic campgrounds.

Major and Minor Recreation-related Developments

	Major	*Minor*
Not Allowed	Wilderness Wilderness National Monument Research Natural Area Wild River	Wilderness Wilderness National Monument Research Natural Area
Discouraged	Nonwilderness National Monument Remote Recreation Municipal Watershed LUD II Experimental Forest	Municipal Watershed Experimental Forest
Case-by-Case	Special Interest Area Old-growth Habitat Scenic River Modified Landscape Timber production Minerals Transportation and Utility Systems	Nonwilderness National Monument Remote Recreation Special Interest Area Old-growth Habitat Wild River Modified Landscape Timber production Minerals Transportation & Utility System LUD II
Compatible	Semi-Remote Recreation Recreational River Scenic Viewshed	Semi-Remote Recreation Recreational River Scenic Viewshed Scenic River

Definitions

Not Allowed — Recreation special-use developments are not allowed by law or regulation or are not consistent with agency policy and regulations.

Discouraged — Recreation special-use developments are generally not consistent with the objectives of the Land Use Designation. Development proposals require scrutiny of magnitude and scope for LUD conformance.

Case-by-Case — Recreation special-use developments may be compatible with the LUD objectives depending upon the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis.

Compatible — Recreation special-use developments are generally compatible with this LUD, and applicants are encouraged to examine these areas first where there is a public need and no private lands are available or suitable for development.

3. When determined that a development or activity is suitable, use information in the following table in addressing the maximum amount of use for each facility or site in each Land Use Designation. **The numbers in the table are guidelines; the actual numbers authorized could be larger or smaller depending on site-specific analysis**. Refer to section 4.d)(3) in this section for allocation guidelines.

Maximum Recreation and Tourism Development Generally Allowed by LUD[1]

Land Use Designation	Permanent Overnight Facilities (number of overnight guests)	Day-use Facilities (number of users per day)	Flight-based sightseeing (number of landings per site per day)	Boardwalk Paths and Trails	Equipment Storage	Campgrounds (# of sites per campground - includes RV sites)
Wilderness	none[2]	none	3 or 6[3 4]	yes	none[2]	none
Wilderness Monument	none[2]	none	3 or 6[3 4]	yes	none[2]	none
Nonwilderness Monument	none[2]	none	3 or 10[3]	yes	none[2]	none
Research Natural Area	none	none	none	none	none	none
Special Interest Area	case-by-case[5]	case-by-case[5]	case-by-case[5]	case-by-case[5]	case-by-case[5]	case-by-case[5]
Remote Recreation	10	24	10	yes	yes	none
Municipal Watershed	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case
Old-growth Habitat	24	50	10	yes	yes	none
Semi-Remote Recreation	24/150[6]	50/300[6]	10/100[6]	yes	yes	10/75[6]
LUD II	24	50	10	yes	yes	10
Wild River	10	24	10	yes	no	none
Scenic River	100	300	50	yes	yes	40
Recreational River	150	1000	100	yes	yes	75
Experimental Forest	none	none	none	case-by-case	none	none
Scenic Viewshed	150	1000	100	yes	yes	75
Modified Landscape	150	1000	100	yes	yes	75
Timber production	150	1000	100	yes	yes	75
Minerals	case-by-case	500[7]	case-by-case	case-by-case	case-by-case	case-by-case

[1] The actual numbers authorized could be larger or smaller depending on site-specific analysis
[2] Except for ANILCA exceptions
[3] Consistent with existing or adopted ROS class (3 for Primitive ROS, 6 in other ROS classes in wilderness)
[4] Public helicopter landings are currently prohibited (11/96). A separate analysis is being completed to determine whether helicopter landings are appropriate
[5] Must be compatible with Special Interest Area objectives
[6] First number is for most areas within the LUD and the second is for enclaves of recreation and tourism developments
[7] To allow for mine tours

4. Public Outfitter/Guide services
   a) Authorize the services of qualified outfitters and guides to the public where the need for the service has been identified and is compatible with the objectives and management direction of the affected Land Use Designations. The services of outfitters and guides should facilitate the use, enjoyment, understanding, and appreciation of National Forest recreation settings.
   b) Manage outfitter and guide services as partnerships with the Forest Service, as a way to nurture and encourage assistance and support for attaining the objectives of the Land Use Designation, and to assist in increased public understanding and appreciation of the Forest Service's mission and goals.
   c) Encourage skilled and experienced individuals, organizations, and companies to conduct outfitting and guiding activities in a manner that assures National Forest visitors receive quality services.
   d) Administer Outfitter/Guide special-use authorizations in accordance with the direction in FSM 2720, FSH 2709.11 and Regional Supplements.
      (1) Outfitting and guiding operations should not require permanent improvements occupying National Forest System lands. Encourage operations which require only temporary facilities, easily removed at the end of the use season.
      (2) Authorize outfitter/guide operations on the basis of the following criteria:
         (a) The affected ecosystem(s) have the capability to accommodate the expected kinds of activities and amounts of use without degradation of ecosystem composition and structure.
         (b) Existing or proposed operations and activities are appropriate for the specific ROS settings within the Land Use Designation.
         (c) Adverse impacts to popular or highly-valued local areas with outfitter/guide operations are minimized.
         (d) There is a demonstrated public need for the services to be offered and/or the services will enhance the objectives of the Land Use Designation.
         (e) The operations can be carried out in a manner that is compatible with existing or expected use by the non-guided public.
         (f) Adverse impacts to subsistence users are minimized.
      (3) Authorize outfitter/guide operations through the issuance of priority use permits, whenever possible, supplemented with temporary permits. Assign priority use and temporary use permits within a Land Use Designation based on the following:
         (a) Generally allocate no more than one-half the appropriate capacity of the Land Use Designation to outfitter/guide operations on an administrative area (Chatham, Stikine, Ketchikan) basis. For specific locations, consider different allocations based on historical use, changing demand, spatial zoning, or temporal zoning.
         (b) *Party size and distribution of groups*.
            (i) **Wilderness, Monument, and Wild River Land Use Designations, and Primitive ROS settings**: Generally consider a party size of no more than 12 persons for any one site or activity group. A higher group size may be authorized where it is desirable to have a higher guide/client ratio for safety purposes or youth groups.
            (ii) **Semi-primitive ROS settings outside of Wilderness**: Party size should generally be limited to 12-20 people. Within the LUD II, Old-growth Habitat, and Semi-Remote Land Use Designations, larger party sizes may be allowed in limited locations for up to 15% of the primary use season for nature-based interpretive activities if physical site conditions can tolerate it. Larger party sizes may be allowed to go ashore at one location and split up into smaller parties not within sight or sound of each other.
            (iii) **Other ROS settings**: Consider site capacities and impacts to other users and resource values to establish party size limits.

(4) Where there is surplus capacity not being used by the general public, temporary use for specific periods of time (not to exceed one year) may be authorized. Such temporary use does not qualify for credit toward priority use by a permit holder.

e) Cooperate with state and local authorities and user organizations to resolve situations where illegal outfitters are known to be operating. (Consult FSM 5300.)

B. Non-commercial Recreation Uses

1. Issue no authorizations to construct new private recreation facilities, such as private recreation cabins.
2. Maintain non-commercial recreation special-use authorizations except as provided for in FSM 2347. Allow replacement of existing facilities with similar facilities.
3. Manage cabins and related structures which were existing, but unauthorized, prior to ANILCA (December 2, 1980), in accordance with the direction in LAND 122 - Cabins.
4. Manage recreation special uses in accordance with the direction in LAND122 - Special-Use Authorizations.

III. *Recreation Settings*

A. Provide a broad spectrum of outdoor recreation opportunities in accordance with the existing capabilities of the National Forest as indicated by the ROS inventory, and in accordance with the ROS guidelines at the end of this section.

1. Manage recreation use in a manner that is compatible with the long-term objectives of the Land Use Designation. Maintain the capability of all Land Use Designations to provide appropriate quality recreation opportunities on a sustained basis.
2. In Land Use Designations where non-recreation resource management activities are emphasized, manage to continue providing the current settings and opportunities until scheduled activities and practices cause a change in the ROS setting. When scheduled activities change the recreation setting, manage the new setting in accordance with the appropriate ROS guidelines.

B. Manage recreation resource activities and facilities in accordance with the established Regional guidelines and the ROS guidelines at the end of this section or Wilderness-specific ROS guidelines approved by the Forest Service officer with delegated authority. All recreation planning and management activities will address the setting indicators. They are described by ROS class in the guidelines at the end of this section, and are defined as follows:

1. *Visual Quality* - The Visual Quality Objective (VQO) describes varying degrees of allowable alteration of the characteristic landscape in each ROS setting. The key to managing landscape character in each ROS setting is to apply the guidelines for the adopted Visual Quality Objective and the Scenery Forest-wide Standards & Guidelines. (Consult FSH 2309.22.)
2. *Access* - Access includes the mode of transport used within the area and service levels of roads.
3. *Remoteness* - Remoteness concerns the extent to which individuals perceive themselves removed from the sights and sounds of human activity. Remoteness criteria can be modified to conform to natural barriers, screening, vegetative cover, or topographic relief.
4. *Visitor Management* - Visitor management includes both the regulation and control of visitor activities, as well as providing information and services to aid their enjoyment and use of an area. A major reason underlying participation in outdoor recreation is to get away from the controls and constraints of the everyday world. Care and sensitivity are exercised in the methods used to implement visitor management. In managing recreation places, resolving behavioral problems should be given a high priority. The presence of controls and the way in which they are implemented is as much a part of the recreation setting as the physical environment.

   The type, level, and location of information provided to users can enhance or detract from the desired experience. Generally, on-site information is appropriate in the more developed ROS settings, while off-site sources are more appropriate in the more primitive ROS settings and Wilderness.

5. *On-Site Recreation Development* - On-site development refers to the scale and appropriateness of site modification and facilities. Design and location of site development activities should consider the following criteria:
   a) *Extent of site development*. Is it limited to a few isolated locations or distributed throughout the area?
   b) *Evidence of the activity*. Are proposed materials compatible with those found in the characteristic landscape? Will the activity meet the adopted Visual Quality Objective(s) of the Land Use Designation?
   c) *Complexity and scale of the activity*. Are the scale and complexity appropriate for the intended use and compatible with other structures and attributes of a site?
   d) *Purpose*. Are facilities for convenience and comfort, or safety and resource protection?
   e) *Development scale for recreation facilities*. Is the facility development scale compatible with the desired ROS class setting, in accordance with the following definitions?

Development Scale for Recreation Facilities

I.	***Minimum site modification***. Rustic/rudimentary improvements for site protection only.
II.	***Little site modification***. Rustic/rudimentary improvements for site protection and some comfort for user. On-land motorized access with some traffic controls.
III.	***Moderate site modification***. Facilities equally designed for resource protection and user comfort. Contemporary/rustic design of facilities. Interpretive services often informal, but on-site.
IV.	***Site heavily modified***. Some facilities strictly for user comfort and convenience of user. Roads hard surfaced with obvious traffic controls. High density units/acre.
V.	***High degree of site modification***. Facilities mostly designed for comfort and convenience of user. Flush toilets and electrical hook-ups common. Synthetic materials often used. Formal, sophisticated interpretive facilities available. Site often landscaped with exotic materials.

6. *Social Encounters* - The term social encounters refers to the number and type of other people met in the area, along travelways, or camped within sight or sound. They are generally measured by the number of parties an individual or group may encounter. A typical independent party consists of 3-4 people traveling as a social group. Guided or organization groups are typically larger.
7. *Visitor Impacts* - Visitor impacts refer to the affect of recreation use on other resources such as soil, vegetation, water, air, and wildlife. The management intent is not necessarily how to prevent human-induced change, but one of deciding how much change is acceptable, and the actions needed for control. In general, user expectations are for minimum signs of human-caused alterations at the primitive end of the ROS and more acceptance of alterations near the developed end. One method to reduce visitor impacts is through site hardening. Site hardening includes paving, barriers, campsites, trails, viewing platforms, etc.
8. Use the ROS charts at the end of this section in project planning and analysis, and as guidelines to establish appropriate levels of use, scale and kinds of facilities, Visual Quality Objectives, types of access, and services to meet local and Regional needs and desired recreation setting conditions.

IV. *Developed Site Management*
   A. Implement the Meaningful Measures process for quality recreation management.

V. *Recreation Construction and Rehabilitation*
   A. Provide development facilities appropriate to the ROS setting after determining that the private sector is not able or willing to meet the demand.
   B. Maintain cost-effective developed recreation facilities which complement non-Forest Service developments in the same community home range or service center area.

C. Provide barrier-free, accessible facilities appropriate to the site development level and area ROS setting.
D. Evaluate the location and need for recreation facilities which lie within identified 100-year flood plains as to the specific hazards and values involved with the site and its use. Thoroughly explore viable alternatives. (Consult FSM 2527.)
E. Use the regional recreation capital investment process and criteria for the identification of recreation construction and reconstruction projects.

VI. *Interpretive Services*
A. Provide an Interpretive Services Program that is designed to accurately and adequately develop an interest and understanding of the environments of the Forest and Southeast Alaska, and the mission of the Forest Service in managing the National Forest.
B. Conduct on-site interpretive activities to a level consistent with Land Use Designation objectives.
C. Assist visitors and users to understand the role of natural and cultural resources in the development of industry, heritage and culture in Southeast Alaska. Relate these roles to the rest of the state, Canada, and the nation.
D. Promote visitor understanding of the National Forest System, Forest Research, and State and Private Forestry programs.
    1. Emphasize understanding of stewardship of public lands and their productivity through professional forest management with balanced use of natural resources.
    2. Develop Interpretive Services programs for all principal resource management programs. Information should emphasize the integration of management activities designed to achieve the goals and objectives developed for specific areas.
E. Inform visitors of the distribution, differences, and roles of the Federal, state and private lands found in Southeast Alaska and the range of recreation and cultural interest opportunities and facilities available.
    1. Continue to pursue and implement cooperative interpretive partnerships with other Federal and state land management agencies consistent with the principal travel routes and activity centers used by forest visitors.
    2. Provide an array of imaginative and dynamic media by which interpretive messages are made available to the visitor. Use a spectrum of media and presentation designs that are appealing, appropriate for the setting, easily understood by the intended audience, and reflect the Forest Service as a professional and caring land management agency.
    3. Continue to provide accurate and timely information about Southeast Alaska and the Tongass National Forest. Continue the Forest Service's leadership role for the Southeast Alaska Visitor Center in Ketchikan.
    4. Continue to provide or improve interpretive services programs and facilities such as those at Mendenhall Glacier, Centennial Hall (Juneau), and aboard the Alaska Marine Highway ferries. Support shall include identification of current issues and events of interest to forest visitors, adequate staffing to meet program objectives, assistance in training the seasonal and volunteer staff, and objective evaluation of programs to assure accurate and positive coverage of the natural and cultural resources on the Tongass National Forest and their management.
    5. Expand the use of the Alaska Natural History Association (ANHA) as an interpretive partner to provide forest visitors with a broad range of interpretive media. These may include, but are not limited to, publications, video and audio tapes, and other media that feature the natural and cultural resources of the Tongass National Forest and the heritage of Southeast Alaska. Encourage all types of support and donations to ANHA which can be used to develop additional materials and programs.
    6. In partnership with communities, organizations, and individuals, develop additional ANHA outlets at locations that will best serve Forest customers.
    7. Continue to support the Elderhostel Education Program in local communities and aboard the Alaska Marine Highway as budgets will allow.

F. Provide a coordinated program of awareness and training for all employees, and partners (including outfitter/guides and other public service permit holders) to ensure a consistent program of public service.
   1. Encourage other agency participation in Forest Interpretive Services training programs.
   2. Ensure that the Forest Service mission and image remain predominantly visible at all Forest Service facilities through the use of uniformed Forest Service personnel, the Forest Service shield, and other media.
   3. To the extent feasible, provide training about national forest resources, points of interest and management to all interested outfitter/guides, industry representatives and other partners.

VII. *Recreation Use*

A. Gather recreation use information to use in project and forest planning. Many sources of information should be used to gather data, such as cabin permits, campground, and visitor center use, trailhead registers, dispersed sampling, outfitter/guides, ferry and cruiseship arrivals, and employee or public observations.

B. Identify those recreation uses that may be in conflict with each other. Reduce recreation user conflicts and polarization. Work with affected publics in finding solutions to defuse or resolve conflicts or concerns.

ROS Class
Primitive

Setting Indicators	Standards and Guidelines
Visual Quality	Not to exceed the Retention Visual Quality Objective. An Existing Visual Condition of Preservation is fully compatible and encouraged.
Access	Cross-country travel and travel on non-motorized trails and on waterways is typical. Use of airplanes, helicopters, motorboats and snowmachines for traditional activities, subsistence, emergency search and rescue, and other authorized resource management activities may occur but is rare.
Remoteness	No or infrequent sights and sounds of human activity are present. Setting is located more than 1.5 hours walking or paddling distance, or 3 miles, from any human developments other than infrequently-traveled marine travelways. Areas are generally greater than 5,000 acres, but may be smaller if contiguous with a Semi-primitive class.
Visitor Management	On-site regimentation and controls are very rare. Signing is limited to directional information and safety. There are no on-site interpretive facilities. There is great opportunity for discovery on the part of the users.
On-site Recreation Development	Structures do not exceed Development Scale I, except for public recreation cabins, and are maintained for appropriate levels of use.
Social Encounters	User meets less than 3 parties per day during trip. No other parties are within sight or sound of dispersed campsites or cabins. Maximum party size is generally 12 people.
Visitor Impacts	Visitor-caused impacts to resources are slight and usually not noticeable the following year. Site hardening is limited to boardwalk trails and necessary boat moorings or bearproof food caches and rustic public recreation cabins.

ROS Class
Semi-Primitive Non-Motorized

Setting Indicators	Standards and Guidelines
Visual Quality	Not to exceed the Retention Visual Quality Objective. An Existing Visual Condition of Preservation is fully compatible and encouraged.
Access	Cross-country travel and travel on non-motorized trails is typical. Use of airplanes, helicopters, motorboats and snowmachines for traditional activities, subsistence, emergency search and rescue, and other authorized resource management activities may occur unless specifically restricted for safety and/or resource protection purposes.
Remoteness	Nearby sights or sounds of human activity are rare, but distant sights or sounds may occur. Setting is located more than ½ hour walk or paddle, or approximately ½ mile (greater or less depending on terrain and vegetation, but no less than ¼ mile) from: 1) infrequently traveled waterways; 2) roads and trails open to motorized recreation use, and 3) clearcut harvest areas. Aircraft access is only occasional. Areas are generally greater than 2,500 acres but may be smaller if contiguous with Primitive or Semi-primitive motorized classes.
Visitor Management	On-site regimentation and controls are rare. Visitor information facilities may be used to interpret cultural and natural resource features, but are not elaborate and harmonize with the setting.
On-site Recreation Development	Facilities and structures generally do not exceed Development Scale II and are maintained to accommodate the types and levels of use anticipated for the site. Forest Service recreation cabins are fully compatible.
Social Encounters	User meets less than 10 parties per day (6 parties per day in wilderness) on trails and waterways during 80% of the primary use season. No other parties are within sight or sound of dispersed campsites during 80% of the primary use season. Maximum party size is generally 12-20 people. Outside of wilderness, larger party sizes may occur during less than 15% of the primary use season in limited locations.
Visitor Impacts	Visitor-caused impacts to resources are rare and usually not long-lasting. Site hardening is limited to boardwalk trails, boat tramways, moorings and docks, bearproof food cache facilities and rustic public recreation cabins.

ROS Class
Semi-Primitive Motorized

Setting Indicators	Standards and Guidelines
Visual Quality	Not to exceed the Partial retention Visual Quality Objective. Existing Visual Conditions ranging from Preservation through Retention are fully compatible and encouraged.
Access	Travel on motorized and non-motorized trails and Traffic Service Level D roads, although some Traffic Service Level C roads provide access to and through the area. Use by high clearance vehicles and motorized water travel is common. Road density is less than one mile per square mile. Off-road snowmachine travel on snow may occur.
Remoteness	Nearby sights or sounds of human activity are rare, but distant sights or sounds may occur. Setting is located within ½ hour walk or paddle or within ½ mile (greater or less depending on terrain and vegetation but no less than ¼ mile) of infrequently traveled waterways or small aircraft access points and/or roads which are open and maintained for passage by high clearance and four-wheel drive vehicles (Maintenance Level 2) and provide access to recreation opportunities and facilities. Areas are generally greater than 2,500 acres but may be smaller if contiguous with Primitive or Semi-Primitive Non-Motorized classes.
Visitor Management	On-site regimentation and controls are few. Control facilities consist primarily of informational signs and site-specific road closures. Visitor information facilities may be used to interpret cultural and natural resource features, but are not elaborate and harmonize with the setting.
On-site Recreation Development	Facilities and structures generally do not exceed Development Scale II and are maintained to accommodate the types and levels of use anticipated for the site and area. Forest Service recreation cabins are fully compatible.
Social Encounters	User meets less than 10 parties per day (6 parties per day in wilderness) on trails, roads, and shorelines during 80% of the primary use season. During 80% of the primary use season no other parties are visible from campsites. Maximum party size is generally 12-20 people. Outside of wilderness, larger party sizes may occur during less than 15% of the primary use season in limited locations.
Visitor Impacts	Visitor-caused impacts may be noticeable, but not degrading to basic resource elements. Site hardening is very infrequent, but, when it occurs, is in harmony with, and appropriate for, the natural-appearing backcountry setting.

ROS Class
Roaded Natural

Setting Indicators	Standards and Guidelines
Visual Quality	Not to exceed the Modification Visual Quality Objective and typically is Partial retention. Existing Visual Conditions ranging from Preservation through Retention are fully compatible and encouraged.
Access	All forms of access and travel modes may occur. Access to and through the area is typically by passenger vehicle, although motorized use may be restricted to provide for resource protection, user safety, or to provide a diversity of recreation opportunity.
Remoteness	Remoteness is of little importance, but low to moderate concentrations of human sights and sounds are preferred. Setting is located within ½ mile (greater or less depending on terrain and vegetation but no less than ¼ mile) of moderate to heavily-traveled waterways and/or roads which are maintained to Levels 3, 4, and 5 and open for use by the public or those areas that receive heavy small aircraft travel.
Visitor Management	On-site regimentation and controls are obvious. Control facilities such as parking areas, barriers and signs harmonize with the natural environment. Visitor information facilities are not elaborate or complex.
On-site Recreation Development	Facilities and structures generally do not exceed Development Scale III and are maintained to accommodate the types and levels of use anticipated for the site and area. Typical facilities include outdoor interpretive displays and rustic campgrounds and picnic areas.
Social Encounters	User meets less than 20 other parties per day on trails and in dispersed areas, during at least 80% of the primary use season. User may meet numerous other parties on roads and developed recreation sites. Developed sites often are at full capacity but do not exceed 80% of the design capacity over the season of operation.
Visitor Impacts	Visitor-caused impacts are noticeable, but not degrading to basic resource elements nor do they exceed established Visual Quality Objectives. Site hardening may be dominant, but is in harmony with natural-appearing landscape and appropriate for the site and setting.

ROS Class
Roaded Modified

Setting Indicators	Standards and Guidelines
Visual Quality	Not to exceed the Maximum Modification Visual Quality Objective. Apply visual management techniques to soften effects of maximum modification conditions in the foreground of sensitive travel routes and recreation sites.
Access	All forms of access and travel modes may occur, although roads are generally not well suited to highway-type vehicles. OHV use on designated routes or areas is encouraged. Use by high clearance vehicles is common.
Remoteness	Remoteness from urban conditions and high concentrations of other people is important. Low concentrations of human sights and sounds in a backcountry roaded setting are preferred. These areas are accessed by Forest roads which are maintained to Levels 2, 3, and 4 and are available for public use. They generally involve areas with timber management activities.
Visitor Management	On-site regimentation and controls are few. Control facilities are appropriate for the predominating backcountry roaded setting. Visitor information facilities may be used to interpret management activities, but are not elaborate and are appropriate for the setting.
On-site Recreation Development	Facilities and structures generally do not exceed Development Scale II and are maintained to accommodate the types and levels of use anticipated for the site and area.
Social Encounters	User meets less than 20 other parties per day on trails and in dispersed areas during at least 80% of the primary use season. Numerous other parties may be encountered on roads. Few, if any, other parties are visible at dispersed campsites.
Visitor Impacts	Visitor-caused impacts are noticeable, but not degrading to basic resource elements. Site hardening may dominate at campsites and parking areas, but is in harmony with, and appropriate for, backcountry roaded setting.

ROS Class
Rural

Setting Indicators	Standards and Guidelines
Visual Quality	Not to exceed Modification in the Foreground and Maximum Modification in middleground.
Access	All forms of access and travel modes may occur, although access to and through the area is primarily by passenger vehicle. Road and trail surfaces are often hardened.
Remoteness	Remoteness is of little importance, and moderate to high concentrations of people and sights and sounds of human activity are acceptable when not continuous. Setting is located within 1/2 mile of heavily traveled roads and state highways or areas that receive heavy aircraft travel.
Visitor Management	On-site regimentation and controls are obvious. Control facilities such as parking areas, medians, and barriers harmonize with natural/exotic landscaping. Information and interpretive facilities may be complex and dominant on developed sites.
On-site Recreation Development	All Development Scales (I-V) are appropriate and maintained at intended standards necessary to accommodate the types and levels of use anticipated for the site and area. Facilities typically include visitor centers, major campgrounds, and other facilities for concentrated use.
Social Encounters	User may meet many (more than 20) other parties per day on trails, in dispersed areas, on roads, and in developed facilities. Developed sites often are at full capacity, but do not exceed 80% of the design capacity over the operating season.
Visitor Impacts	Visitor-caused impacts are noticeable, but not degrading to basic resource elements nor do they exceed established Visual Quality Objectives. Site hardening may be dominant, but is in harmony with natural/exotic landscape and appropriate for the site and setting.

ROS Class
Urban

Setting Indicators	Standards and Guidelines
Visual Quality	Not to exceed the Modification Visual Quality Objective in the foreground and Maximum Modification in middle ground.
Access	Access and travel facilities are highly intense, motorized and often with mass transit supplements.
Remoteness	Remoteness is not important. High concentrations of people, and sights and sounds of human activity are acceptable.
Visitor Management	Intensive on-site controls are numerous and obvious. Information and interpretive facilities may be complex and dominant.
On-site Recreation Development	All Development Scales (I-V) are appropriate and maintained at intended standards necessary to accommodate the types and levels of use anticipated for the site and area. Synthetic materials are commonly used. Facility design may be highly complex and refined, but in harmony or complimentary to the site. Facilities typically include visitor centers, major campgrounds and other facilities for concentrated use.
Social Encounters	Interaction between large numbers of users is high. Sites often are at full capacity, but do not exceed 80% of the design capacity over the operating season.
Visitor Impacts	Visitor-caused impacts are noticeable, but not degrading to basic resource elements or exceed established Visual Quality Objectives. Site hardening may be dominant, but is in harmony with natural/exotic landscape and appropriate for the site and setting.

RIPARIAN
Forest-wide Standards & Guidelines

Riparian area: RIP1

I. Definition

A. Riparian areas encompass the zone of interaction between the aquatic and terrestrial ecosystems, and include riparian streamsides, lakes and flood plains with distinctive resource values and characteristics.

II. Objectives

A. Maintain riparian areas in mostly natural conditions, for fish, other aquatic life, old-growth and riparian-associated plant and wildlife species, water-related recreation and to provide for ecosystem processes, including important aquatic and land interactions. For further direction, refer to the Fish, Wildlife, Recreation and Tourism, Beach and Estuary Fringe, and Soil and Water Forest-wide Standards & Guidelines. The following is a list of objectives pertaining to riparian areas. (Also consult FSM 2526.)

1. Assure the protection of riparian habitat. (Consult Tongass Timber Reform Act, Section 103 (a)).
2. Manage riparian areas for short and long-term biodiversity and productivity.
3. Maintain natural streambank and stream channel processes.
4. Maintain natural and beneficial quantities of Large Woody Debris over the short and long term.
5. Provide for the beneficial uses of riparian areas by maintaining water quality. (Consult Best Management Practices, Chapter 10 of the Soil & Water Conservation Handbook, FSH 2509.22 and Appendix C of this document.)
6. Maintain or restore the natural range and frequency of aquatic habitat conditions on the Tongass National Forest to sustain the diversity and production of fish and other freshwater organisms.
7. Consider the management of both terrestrial and aquatic resources when managing riparian areas. Consider the effects of terrestrial and aquatic processes on aquatic and riparian resources.
8. In watersheds with intermingled land ownership, cooperate with the other landowners in striving to achieve healthy riparian areas.
9. Design and coordinate road management activities to provide for the needs of wildlife and provide passage of fish at road crossings. (Consult the Aquatic Habitat Management Handbook, FSH 2609.24.)
10. Evaluate the effect of management (including windthrow) of adjacent areas on riparian habitats.
11. Coordinate and consult with state and federal agencies on riparian management issues, as appropriate. Coordinate activities which affect the Coastal Zone with the State of Alaska Office of Management and Budget, Division of Governmental Coordination, to ensure consistency, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program.

RIPARIAN PLANNING: RIP2

I. Project Planning

A. Identify and delineate Riparian Management Areas (RMA's) for each project where ground disturbance will occur. RMA's are areas of special concern to fish, other aquatic resources and wildlife. They are generally delineated as identified in the process group direction (RIP2, III, E). Areas managed to provide a reasonable assurance of windfirmness of the RMA are not considered to be part of the RMA.

B. Complete a watershed analysis before making site-specific adjustments to Process group standards and guidelines. Adjustments to the guidelines may be made only if the objectives of

the group(s) can be met. Consult Appendix J of the Forest Plan for direction on the use of watershed analysis.

C. On those projects and activities that are in, or influence, Riparian Management Areas, assure interdisciplinary involvement and consideration of riparian resources in project planning and in the environmental analysis process.

D. Ensure that permit holders, contractors, and/or purchasers understand Riparian Management Areas and riparian management objectives.

E. Evaluate Riparian Management Area windthrow risk when locating and designing adjacent management activities. Minimize accelerated windthrow. (Consult BMP 12.6a of the Soil and Water Conservation Handbook and the Process group Standards and Guidelines (RIP2, III, E)).

II. General Standards and Guidelines by Activity

A. Special Use Administration of Lands (Non-Recreation).

1. Permit activities, consistent with other Special Use direction, which do not significantly reduce the capability of Riparian Management Areas to: 1) maintain or improve associated fish or wildlife habitat, or 2) protect water quality for beneficial uses.

B. Minerals and Geology Administration, plan of operations.

1. Use state-of-the-art techniques for developing minerals to reduce impacts to riparian resources to the extent feasible. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
2. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location, construction, and maintenance of mining roads affecting riparian areas.
3. Manage mineral exploration and development activities to be compatible with the Process group goals and objectives for Riparian Management Areas.
4. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Sec. 505 (a).)
5. Apply timing restrictions to instream construction and other minerals activities to protect fisheries habitat and mitigate adverse sedimentation, and to avoid critical wildlife mating, hatching, and migrating periods.
6. Minimize the effects of mineral development and related land disturbance activities on the beneficial uses of water by applying Best Management Practices.
7. Locate material sites and marine transfer facilities outside Riparian Management Areas if reasonable alternatives exist.
8. Ensure that disturbed areas are revegetated in accordance with project plans.
9. Approve reclamation plans in which mineral activities leave riparian project areas as natural in appearance and function, as is feasible.

C. Recreation Use Administration

1. Locate, design, and operate only those recreation projects which are necessary to accommodate public use of the water and shoreline areas (i.e., boat or floatplane docks, launching ramps and associated access roads and trails). Where feasible, locate parking, campgrounds, sanitation and other recreation facilities outside the Riparian Management Areas to avoid adverse effects on water quality and riparian function.
2. For existing facilities, consider relocating the facility outside of the Riparian Management Area. Consideration should be based on current and anticipated effects on riparian values, desired recreation experience, public issues, application of Best Management Practices to minimize the effects of recreation facilities on the beneficial uses of water, and costs of relocating the facility.

D. Soil Inventory

1. Field verify and define high hazard and very high hazard soils during project level planning.

E. Watershed Resource Planning

1. Manage activities to meet State water quality standards and protect aquatic and terrestrial riparian habitats, channel and streambanks, and provide for flood plain stability.
   a) Identify soil and water quality requirements for project-level activities.
   b) Apply Best Management Practices to minimize the effects of land disturbing activities on the beneficial uses of water.

c) Determine flood plain values and plan to avoid, where possible, the long and short-term adverse impacts to soil and water resources associated with the occupancy and modification of flood plains.
d) Complete a watershed analysis before making project level site-specific adjustments to Process group standards and guidelines. Adjustments to the guidelines may be made only if the objectives of the process group(s) can be met. Consult Appendix J of the Forest Plan for direction on watershed analysis. The intensity and scope of watershed analysis will vary according to the issues of concern.

F. Timber Resources
1. No commercial timber harvest is allowed within 100 feet horizontal distance either side of Class I streams and Class II streams which flow directly into a Class I stream. (Consult the Tongass Timber Reform Act.)
a) Included in the definition of Class II streams flowing directly into a Class I stream are all Class II tributaries of a Class II stream that flow into a Class I stream without an intervening Class III segment. Mandatory minimum 100 foot buffers will not apply to: 1) A Class II stream that flows directly into the ocean or joins a Class I stream only at lower than mean high tide; and 2) A Class II tributary stream segment that flows into a Class III stream that in turn flows into a Class I stream.
b) The 100 foot measure is a horizontal distance measure from the bankfull margins.
2. Protect Riparian Management Areas, in accordance with the intent of the Alaska Anadromous Fish Habitat Assessment (1995), through application of the direction contained in Process group standards and guidelines (RIP2, III, E). A project may incorporate site-specific adjustments to the standards and guidelines following completion of a watershed analysis. Adjustments to the standards and guidelines may be made only if the objectives of the process group(s) can be met. Consult Appendix J for direction on implementing watershed analysis.
3. Apply Best Management Practices to minimize the effects of timber harvest and related land disturbance activities on beneficial uses of water.
4. Avoid Riparian Management Areas when other feasible locations for personal use wood cutting are available. If personal use wood cutting is allowed, design harvest in such away to meet process group objectives (Section III,E).
5. In locating and designing timber harvest activities, require special consideration and mitigation to ensure that Riparian Management Area characteristics for fish and wildlife habitat, water quality, and other riparian-associated resources are maintained.
6. Provide protection to fish and wildlife during critical periods of their life cycles by applying seasonal restrictions on timber harvest and road use activities, to the extent feasible.
7. When stream crossings are required to harvest timber, perform investigations to compare the environmental consequences of road crossings versus yarding corridors, and select the action of least impact.
8. Streamcourse protection plans (consult BMP 13.16) are required for harvesting activities within the minimum 100 foot required buffers designated in F(1) above.
9. Plan timber harvest settings that cross or include streamcourses or include V-notches to avoid adverse impacts to Riparian Management Areas and soil and water resources. Unless stated otherwise in the Process group direction, the following apply:
a) Trees or tree-parts yarded across or along Class I, II or III streamcourses shall be fully suspended when crossing the streamcourse or yarding the full length of the stream or drainage, unless an alternative is approved in the operating plan or timber sale contract which meets the objectives for Riparian Management Areas.
b) Unless agreed otherwise in the operating plan or timber sale contract, and consistent with safe practices, trees identified for harvest will be felled to avoid: (1) Riparian Management Areas designated for "no commercial timber harvest", and, (2) streamcourses. Trees may be wedged, jacked, lined, or otherwise pulled when necessary. Trees accidentally felled into streamcourses or wind fallen trees shall be removed only following approval by the Sale Officer, and only if such removal meets riparian management objectives for the process group.

c) At the time agreed in the operating plan or timber sale contract, all trees, except those within guyline circles, which cannot be felled to avoid falling in streamcourses, should be left standing until yarding is in progress on the landing to which the trees will be yarded. Trees within the guyline circle will be felled as agreed in the operating plan or timber sale contract.
d) Split yard away from streams whenever feasible.
e) Allow no timber salvage within 100 feet in width on each side of Class I streams or on those Class II streams which flow directly into Class I streams. In addition, allow no timber salvage in Riparian Management Areas defined for each process group, with the following exception: salvage could be allowed following watershed analysis if the salvage activity is needed to meet or further riparian management objectives for the process group. This salvage will not contribute to the Allowable Sale Quantity.
f) In accordance with section e. (above), windthrown timber in Riparian Management Areas should not be subject to salvage unless approved by a line officer in consultation with a fishery biologist or hydrologist.

G. Wildlife Resources
1. Integrate Riparian Management Areas into any modifications to the design and location of small old-growth reserves (consult the Old-growth Habitat Land Use Designation).
2. Use riparian corridors in the design of wildlife travel corridors to provide horizontal connectivity between watersheds, and vertical connectivity between lowland and alpine areas.
3. Consider wildlife needs in the design and management of Riparian Management Areas. Give special emphasis to habitats of riparian associated species, for example, designated brown bear feeding areas. (See Wildlife Forest-wide Standards & Guidelines.)

H. Transportation Systems
1. Use road closures, maintenance, and other measures to keep road-surface and road-side erosion at low or near background levels. Assure long-term fish passage through structures at road crossings on class I and II streams as described in process group direction and the Fish Standards & Guidelines. Utilize Best Management Practices to control effects of transportation systems on water quality and fish habitat.

III. Stream Process group Specific Standards and Guidelines for Timber Harvest

A. Stream Process groups are stream channels which share similar formative processes (consult Appendix D). They reflect the long term interaction of geology, landform, climate, and riparian vegetation. Classification considers the interrelationships among runoff, sediment transport and vegetation along stream banks. The following standards and guidelines are designed to provide essentially natural watershed function and channel processes. Apply these standards and guidelines in Land Use Designations which allow timber harvest.

B. Standards and guidelines for process groups are management direction for Riparian Management Areas. Areas managed to provide a reasonable assurance of windfirmness of the RMA are not considered to be part of the RMA. The standards and guidelines (except for the minimum 100-foot buffers required by TTRA) may be adjusted for a project on a site-specific basis following completion of a watershed analysis. Adjustments to the standards and guidelines may be made only if the objectives of the process group(s) can be met. Consult Appendix J for direction on the use of watershed analysis.

C. Stream class IV will be treated as part of the hillside under slope stability standards and guidelines (see Soil and Water Forest-wide Standards & Guidelines). Apply Best Management Practices.

D. Apply the floodplain process group direction (see “F” below) for estuarine process group channels not buffered using Beach and Estuary Fringe Standards & Guidelines.

E. The following standards and guidelines (in “F”) are designed to meet the intent of the Anadromous Fish Habitat Assessment (1995) for timber harvest activities occurring in each of the Forest's stream channel process groups. Definitions for terminology used in the Process group Standards and Guidelines follow:
1. Where the direction states "no commercial timber harvest”, this is a legal mandate of the Tongass Timber Reform Act of 1990.

2. Where the direction states "no programmed commercial timber harvest", this is management direction that means no timber harvest will be scheduled, but that unprogrammed commercial timber harvest could be allowed where it meets the objectives of the process group (as determined for the project after completion of a watershed analysis). Forest Products sales (reference FSM 2450) are not permitted unprogrammed activities.
3. Class II (non-direct) - A Class II stream that does not flow directly into a Class I stream (see the definition under Timber Resources, above).
4. Buffer measurements - Distance for the first 100 feet from the stream channel is measured horizontally. All other measured distances are slope distances.
5. Salvage harvest - Removal of dead standing or downed trees. Salvage can include the incidental removal of green trees if needed to make logging safe.
6. Definitions for site-potential tree height, stream class, active channel, flood plain, and riparian corridor are located in the glossary.

F. Process groups (see following tables).

Process group: Alluvial fan
(AF1, AF2 and AF8 channels)

Description: Alluvial fan channels flow directly over the alluvial fan landform. These are dynamic multi-branched channels that periodically change course within the landform. Stream gradient ranges from 1 to 3 percent on the lower half of the alluvial fan and increases toward the fan apex. The alluvial fan channel is associated with high gradient contained channels; therefore streamflow is dependent on mountain slope runoff. Groundwater discharge is also significant. Surface flow may be intermittent as substrate consists of sand to cobble size material. During low flow periods stream flow may run subsurface in the middle section of the alluvial fan and emerge on the lower section. Aggradation of material is the dominant process on the alluvial fan and fine sediment may be deposited in the low gradient section. The active channels on alluvial fans often include multiple high flow channels and unvegetated gravel or cobble outwash lobes with ill-defined channel banks. Alluvial fans typically support large spruce with diameters (DBH) of 30 inches and have average site-potential tree heights of 140 feet. Downed wood serves as nurse logs for regeneration.

Desired condition: Stream systems relocate naturally in an unpredictable pattern across the alluvial fan. Large wood occurs across the fan, and is important for the retention and metering of sediment into stream systems, and to create pools for fish rearing habitat. Some amount of large wood is available to the stream wherever the stream may be located on the fan. Wood may be excavated by fluvial processes on the fan.

Objectives: Maintain near-natural quantities of large wood by assessing the site's old-growth type and managing for the natural frequency and size distribution for large, downed wood and standing trees on the fan. (Consult "Ecological Definitions for Old-growth Forest Types in Southeast Alaska," Forest Service publication R10-TP-28.) In the stream channel, meet the natural range of aquatic habitat features for large wood size and distribution described in the Alaska Anadromous Fisheries Habitat Assessment (Forest Service publication R10-MB-279, Appendix C.1. on fish habitat objectives).

Implement BMP 13.9. Provide for natural fish migration. Do not divert stream channels.

Apply the following management direction at the project level to streams in this process group. Complete a watershed analysis before making project site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Stream class/Activity

I, II, (direct)/Timber Harvest

No commercial timber harvest within 100 feet of class I streams and class II streams that flow directly into class I streams. No programmed commercial timber harvest within the Riparian Management Area, which is the greater of the active portion of the alluvial fan or 140 feet (the height of one site-potential tree) from the current channel(s). Manage across the remainder of the fan (no more than 10% of the fan harvested in a 30 year period) with the objective of leaving large trees within the stand for future recruitment to stream channels.

II (non-direct), III/Timber Harvest

No programmed commercial timber harvest within the Riparian Management Area, which is the greater of the active portion of the alluvial fan or 140 feet (the height of one site-potential tree) from the current channel(s). Manage across the remainder of the fan (no more than 10% of the fan harvested in a 30 year period) with the objective of leaving large trees within the stand for future recruitment to stream channels.

I, II & III/Harvest Controls

Yard in a manner to minimize baring of mineral soil and such that new human-caused channelization does not occur across the entire alluvial fan. The objective is to minimize alder growth and formation of new channels (ref. BMP 13.9). Where trees are removed, utility/cull logs should be left distributed across the alluvial fan.

I, II & III/Roads, Borrow Pits, Drainage Structures

Discourage use as borrow sources. Do not allow borrow pits on active fan. Avoid crossing fans where possible. If required, use bridges or depending on projected use, install vented fords utilizing culvert(s) to provide for controlled overflow to minimize downstream disturbance. The objective is to maintain fish migration where needed and avoid diverting stream channels.

Process group: Flood plain/Glacial Outwash (FP1, FP2, FP3, FP4, FP5, GO1, GO2, GO3 channel types)

Description: Flood plain and glacial outwash channels are associated with the valley bottom flood plain landform. These two process groups contain low gradient sinuous singular or anabranched channels. Braided channels are more prevalent in the glacial outwash process group. Mountain slope runoff and ground water discharge control stream flow in the flood plain process group while glacial melt controls flow in the glacial outwash group. Peak flows occur in the spring and fall in the flood plain process group while in summer for the glacial outwash group. Sediment deposition is the dominant process in both groups. Substrate material ranges from sand to cobble size material in both groups.

Flood plains commonly support standing old growth spruce with heights of up to 130 feet. Downed wood provides nurse logs for regeneration, sediment retention, and infiltration. Flood plain width may exceed 200 feet on FP4 and FP5 channels, but are generally less than 200 feet on FP3 channels. These areas are typically highly productive for fish. Large wood and off channel rearing areas are of particular significance as habitat features. Early successional forest species, such as black cottonwood, are common in the glacial outwash process group.

Desired condition: Flood plains are highly productive as fish and wildlife habitat. Natural flood plain functions occur, such as flood mitigation, surface-groundwater exchange, water temperature moderation and the formation of streams providing off-channel fish habitat. Large wood is distributed across the flood plain, except where non-forest or early successional species naturally occur. Old-growth habitat provides high quality habitat for riparian-associated wildlife species.

Objectives: Maintain near-natural quantities of large wood by assessing the site's old-growth type and managing for the natural frequency and size distribution for large, downed wood and standing trees on the flood plain. (Consult "Ecological Definitions for Old-growth Forest Types in Southeast Alaska," Forest Service publication R10-TP-28.) In the stream channel, meet the natural range of aquatic habitat features for large wood size and distribution, pool size and frequency and channel morphometry. (Consult the Alaska Anadromous Fisheries Habitat Assessment, Forest Service publication R10-MB-279, Appendix C.1. on fish habitat objectives).

Minimize soil disturbance and the formation of new channels (BMP 13.9). Maintain fish access to entire range of habitat. Avoid diverting surface drainage channels.

Minimize damage to large standing trees from yarding activities.

Apply the following management direction at the project level to streams in this process group. Complete a watershed analysis before making project site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Stream class/Activity

I, II (direct)/Timber Harvest

No commercial timber harvest within 100 feet of class I streams and class II streams that flow directly into class I streams. Although not required by the Tongass Timber Reform Act, no commercial timber harvest in the flood plain until the completion of watershed analysis. No programmed commercial timber harvest in the Riparian Management Area (greatest of flood plain, riparian vegetation or soils, riparian associated wetland fens, or 130 feet (the height of one site-potential tree)). Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

II (non-direct), III/Timber Harvest

No programmed commercial timber harvest in the Riparian Management Area (greatest of flood plain, riparian vegetation or soils, riparian associated wetland fens, or 130 feet (the height of one site-potential tree)). Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

I, II & III/Harvest Controls

Yard in a manner to minimize baring of mineral soil (<1%) and such that new channelization does not occur across the flood plain. The objective is to minimize alder growth and formation of new channels (BMP 13.9).

I, II & III/Roads, Borrow Pits, Drainage Structures

Locate roads only when other feasible routes do not exist (BMP 14.2). Develop stream course protection plans when stream crossings are necessary. Do not develop borrow pits within the active flood plain (BMP 14.9). The objective is to maintain fish passage and access to all available habitats and avoid diverting surface drainage channels.

Process group: High Gradient Contained
(HC1, HC2, HC3, HC4, HC5, HC6, HC8 and HC9 channels)

Description: High gradient contained channels are located on mountain slopes. These are singular straight incised channels with steep slopes and channel gradients greater than 6 percent. Stream flow is dependent upon mountain slope runoff and may be intermittent. Sediment is readily transported through these channels. Substrate material ranges from cobble to bedrock. Riparian Management Areas include incised channel sideslopes. Hemlock series dominates vegetation although spruce is also common. Some streams have intermittent flows. Steep gradients (>6%) limit fish capability. Typical site-potential tree height is 120 feet.

Desired condition: Natural integrity of channel sideslopes is maintained. Sediment is "metered out" to downstream reaches by large wood structure. Over the long-term, high gradient contained streams act as conduits to move large wood and gravel into downstream fish bearing streams during debris flow events.

Objectives: Activities should not accelerate sideslope surface erosion or mass wasting. Maintain some instream large wood structure over the long-term where important for downslope channel processes which require wood as a component of natural debris torrents.

Retain natural drainage patterns and minimize changes to the natural rates of sediment transport.

Design, install, and maintain stream crossings to pass flow, bedload, and wood debris from peak events with minimal impacts to stream channel and road integrity.

Apply the following management direction at the project level to streams in this process group. Complete a watershed analysis before making project site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Stream class/Activity

I, II (direct)/Timber Harvest

No commercial timber harvest within 100 feet of class I streams and class II streams that flow directly into class I streams. No programmed commercial timber harvest within the Riparian Management Area, defined as within 100 feet of the stream or to the top of the V-notch (side-slope break), whichever is greater. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

II (non-direct)/Timber Harvest

No programmed commercial timber harvest within the Riparian Management Area, defined as within 100 feet of the stream or to the top of the V-notch (side-slope break), whichever is greater. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

III/Timber Harvest

No programmed commercial timber harvest within the Riparian Management Area, defined as the V-notch (side-slope break). Following watershed analysis, Riparian Management Areas which become available for timber harvest will be converted from nonsuitable to suitable forested lands. (On a forest-wide basis, it is anticipated that this change will occur along 25% of the class III streams in this process group.) Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

I, II & III/Harvest Controls

Minimize yarding corridors within the Riparian Management Areas.

I, II, & III/Roads, Borrow Pits, Drainage Structures

Borrow pits are generally not appropriate. Road and road crossings should be designed and constructed to minimize soil runoff to the channel, retain natural drainage patterns and minimize changes to the natural rates of sediment transport.

Process group: Large Contained (LC1 and LC2 channels)

Description: Large contained channels are associated with canyons or sloping lowlands. These are low gradient (less than 3 percent), singular, straight and entrenched channels with gravel to bedrock substrate. Sediment regime balances input with output. Stream flow is dependent upon mountain slope or lowland runoff. Habitat is often limited by a scarcity of stable large wood structure. Riparian vegetation communities are varied. Riparian width, including flood plain and sideslope breaks reach 150 feet (LC1) to 190 feet (LC2). A site potential tree reaches an average height of 100 feet.

Desired condition: Natural integrity of channel sideslopes is maintained. Large wood is recruited and retained in the stream channel. Riparian vegetation provides shade and is a source of organic inputs to the stream. Old-growth habitat provides high quality habitat for riparian-associated wildlife species.

Objectives: Maintain near-natural quantities of large wood by assessing the site's old-growth type and managing for the natural frequency and size distribution for large, downed wood and standing trees. (Consult "Ecological Definitions for Old-growth Forest Types in Southeast Alaska," Forest Service publication R10-TP-28.) In the stream channel, meet the natural range of aquatic habitat features for large wood size and distribution, and pool size and frequency. (Consult the Alaska Anadromous Fisheries Habitat Assessment, Forest Service publication R10-MB-279, Appendix C.1. on fish habitat objectives).

Allow no increase over natural rates of channel sideslope surface erosion or mass wasting.

Minimize changes to the natural rates of sediment transport. Assure fish passage for all Class I & II streams.

Apply the following management direction at the project level to streams in this process group. Complete a watershed analysis before making project site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Stream class/Activity

I and II (direct)/Timber Harvest

No commercial timber harvest within 100 feet of class I streams and class II streams that flow directly into class I streams. No programmed commercial timber harvest within the Riparian Management Area, defined as within the channel sideslope break. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

II (non-direct)/Timber Harvest

No programmed commercial timber harvest within the Riparian Management Area, defined as within 100 feet of the stream or to the top of the side-slope break, whichever is greater. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

III/Timber Harvest

No programmed commercial timber harvest within the Riparian Management Area, defined as the side-slope break. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

I & II/Harvest Controls

Fully suspend trees over the bankfull stream when yarding. Minimize yarding corridors within the Riparian Management Area. Yard in a manner to assure: no delivery of sediment from channel sideslopes; baring of mineral soil is minimized (<1%); and, that new channelization does not occur across the floodplain.

I, II & III/Roads, Borrow Pits, Drainage Structures

Do not develop borrow pits within the active floodplain (BMP 14.9). Where road crossings are required, minimize erosion and sedimentation associated with road crossing approaches within inner gorge. Fish migration should not be impeded by road crossings.

Process group: Moderate Gradient Contained (MC1, MC2 and MC3 channels)

Description: Moderate gradient contained channels are associated with sloping or rolling lowlands. Stream gradient ranges from 2 to 6 percent for these singular, straight and entrenched channels. Stream flow is dependent upon mountain slope runoff. Sediment is transported through these channels. Substrate is dominated by cobble, boulder and bedrock material. Habitat is often limited by stable large wood structures. Riparian vegetation communities are varied. Riparian width, including flood plain and sideslope breaks, reach 60 to 70 feet. A site potential tree height is 100 feet.

Desired condition: Natural integrity of channel sideslopes is maintained. Large wood is recruited and retained in the stream channel. Riparian vegetation provides shade and is a source of organic inputs to the stream.

Objectives: Maintain near-natural quantities of large wood by assessing the site's old-growth type and managing for the natural frequency and size distribution for large, downed wood and standing trees. (Consult "Ecological Definitions for Old-growth Forest Types in Southeast Alaska," Forest Service publication R10-TP-28.) In the stream channel, meet the natural range of aquatic habitat features for large wood size and distribution, and pool size and frequency. (Consult the Alaska Anadromous Fisheries Habitat Assessment, Forest Service publication R10-MB-279, Appendix C.1. on fish habitat objectives).

Allow no increase over natural rates of channel sideslope surface erosion or mass wasting.

Minimize changes to the natural rates of sediment transport. Assure fish passage for all Class I & II streams.

Apply the following management direction at the project level to streams in this process group. Complete a NEPA document that includes a watershed analysis before making site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Stream class/Activity

I and II (direct)/Timber Harvest

No commercial timber harvest within 100 feet of class I streams and class II streams that flow directly into class I streams. No programmed commercial timber harvest within the remainder of the Riparian Management Area, defined as within the channel sideslope break. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

II (non-direct)/Timber Harvest

No programmed commercial timber harvest within 100' or within the channel side-slope break, whichever is greater. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

III/Timber Harvest

No programmed commercial timber harvest within the Riparian Management Area, defined as the side-slope break. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

I, II & III/Harvest Controls

Fully suspend trees over the bankfull stream when yarding. Minimize yarding corridors within the Riparian Management Area. Yard in a manner to minimize delivery of sediment from channel sideslopes.

I, II & III/Roads, Borrow Pits, Drainage Structures

Borrow pits are generally not appropriate. Where road crossings are required, minimize erosion and sedimentation associated with road crossing approaches within inner gorge. Maintain fish passage at road crossings and avoid diverting surface drainage channels.

Process group: Moderate Gradient/Mixed Control (MM1, MM2, and GO4 channels)

Description: These channels are commonly found in transition zones between high gradient contained streams and flood plain channels. They are located in narrow valleys, footslopes or sloping and rolling lowlands. Stream channel gradients range from 2 to 6 percent. Channel containment is variable as structural control may be intermittent or only along one bank. Overall channel pattern is straight. Stream flow is dependent upon mountain slope runoff and the sediment regime is balanced (input equals output). Channel substrate ranges from coarse gravel to boulder size material. Typical site potential tree is 120 feet.

Desired condition: Large wood is recruited and retained in the stream channel. Riparian vegetation provides shade, is a source of organic inputs to the stream, and maintains dynamic flood plain processes. Large wood is distributed across the flood plain. Old-growth habitat provides high quality habitat for riparian-associated wildlife species.

Objectives: Maintain near-natural quantities of large wood by assessing the site's old-growth type and managing for the natural frequency and size distribution for large, downed wood and standing trees. (Consult "Ecological Definitions for Old-growth Forest Types in Southeast Alaska," Forest Service publication R10-TP-28.) In the stream channel, meet the natural range of aquatic habitat features for large wood size and distribution, pool size and frequency and channel morphometry. (Consult the Alaska Anadromous Fisheries Habitat Assessment, Forest Service publication R10-MB-279, Appendix C.1. on fish habitat objectives).

Minimize soil disturbance and the formation of new channels (BMP 13.9). Maintain fish migration where needed and maintain natural surface drainage patterns for flood plain areas.

Apply the following management direction at the project level to streams in this process group. Complete a watershed analysis before making project site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Stream class/Activity

I, II (direct)/Timber Harvest

No commercial timber harvest within 100 feet of class I streams and class II streams that flow directly into class I streams. No programmed commercial timber harvest in the Riparian Management Area (greatest of flood plain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet (the height of one site-potential tree)). Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

II (non-direct), III/Timber Harvest

No programmed commercial timber harvest in the Riparian Management Area (greatest of flood plain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet (the height of one site-potential tree)). Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

I,II & III/Harvest Controls

Fully suspend trees over the bankfull width of the stream when yarding. Minimize yarding corridors within the Riparian Management Area. Yard in a manner to assure no baring of mineral soil (<1%) and such that new channelization does not occur across the entire floodplain. The objective is to minimize surface soil disturbance and formation of new channels (BMP 13.9).

I,II & III/ Roads, Borrow Pits, Drainage Structures

Borrow pits are generally not appropriate. Special road construction techniques may be required to ensure fish passage. Maintain fish migration where needed and avoid diverting surface drainage channels.

Process group: Palustrine
(PA1,PA2, PA3, PA4 and PA5 channels)

Description: Palustrine channels are associated with lowland landforms and wetlands. Channel gradients are less than 1 percent. Palustrine channels are singular and sinuous. Stream flow is dependent on peatland and lowland runoff. Sediment storage is the dominant process. Substrate material ranges from fine organic material to coarse gravel.

Riparian vegetation includes mixed conifer, shore pine, and non-forest. Site-potential tree height is generally less than 85 feet.

Desired condition: Highly complex stream and riparian systems provide canopy shading, instream organic recruitment for food and cover, and habitat diversity for rearing salmonids. Undercut banks are often present. Old-growth habitat provides high quality habitat for riparian-associated wildlife species.

Objectives: Maintain near-natural quantities of large wood (primarily for cover habitat) by assessing the site's vegetation type and managing for the natural frequency and size distribution for large, downed wood and standing trees. (Consult "Ecological Definitions for Old-growth Forest Types in Southeast Alaska," Forest Service publication R10-TP-28.) In the stream channel, meet the natural range of aquatic habitat features for large wood size and distribution, and channel morphometry. (Consult the Alaska Anadromous Fisheries Habitat Assessment, Forest Service publication R10-MB-279, Appendix C.1. on fish habitat objectives).

Maintain streambank structure and wetland functions and values.

Apply the following management direction at the project level to streams in this process group. Complete a watershed analysis before making project site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Stream class/Activity

I & II (direct)/Timber Harvest

No commercial timber harvest within 100 feet of class I streams and class II streams that flow directly into class I streams. No programmed commercial timber harvest in the Riparian Management Area (greatest of flood plain, riparian vegetation or soils or riparian associated wetland fens). Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

II (non-direct)/Timber Harvest

No programmed commercial timber harvest in the Riparian Management Area (greatest of flood plain, riparian vegetation or soils or riparian associated wetland fens). Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area).

III/Timber Harvest

Consider no harvest (or limited harvest) areas to benefit water quality or palustrine-associated wildlife species.

I, II & III/Harvest Controls

Fully suspend trees over the bankfull stream when yarding. Minimize width and number of yarding corridors within the Riparian Management Area. Yard in a manner to minimize delivery of sediment from channel sideslopes. Use wetland guidelines

I, II & III/Roads, Borrow Pits, Drainage Structures

Wetland functions and fish passage receive special attention in locating roads.

Process group: Lakes and Ponds

Description: Lakes and ponds can be located throughout a watershed from near sea level to the alpine. Very high elevation lakes (over 1,000 feet) are often frozen much of the year. Low elevation lakes are often high quality fish rearing habitat, and provide for many species of wildlife (especially beaver, loons, eagles, swans, and other water birds). Lakes and ponds function to mitigate downstream flooding during large precipitation events, and are important for surface-groundwater exchange and moderating water temperatures. Low elevation, fish-abundant lakes, are commonly used for customary and traditional subsistence harvests, sport fishing, and recreational camping. Small ponds, particularly beaver ponds, can be highly productive on a per unit area basis.

Riparian and near-lake vegetation can often be mixed and a mosaic. It can include old-growth forests, hardwoods (e.g., alder or cottonwood), shore pine, and non-forest.

Desired condition: Low elevation lakes and ponds provide high quality fish rearing, wildlife habitat, and recreation. In forested areas, adjacent riparian areas provide the lake or pond canopy shading, organic recruitment for food and cover, and habitat diversity for fish. Old-growth habitat surrounding the lakes and ponds provides high quality habitat for lake and riparian-associated wildlife species. Lakes offer scenic diversity and attract recreationists for both consumptive and non-consumptive pursuits.

Objectives: In forested areas, maintain near-natural quantities of large wood for near-shore lake habitat and for lake and riparian-associated wildlife.

Maintain lake shore character, including vegetation, bank conditions, and near-shore substrate (except occasionally for localized areas developed for recreation or other conforming uses); maintain hydrologic and wetland function and values.

(Note: since lakes and ponds are so variable in their physical and biological characteristics, additional objectives should be set on a project basis.)

Apply the following management direction at the project level to lakes in this process group. Complete a watershed analysis before making project site-specific adjustments to Process group direction. Adjustments to the direction may be made only if the objectives of the process group can be met.

Lake Class/Activity

I (lakes with anadromous fish or with high value resident fisheries) and II (lakes with lower value resident fisheries; lakes >= 3 acres) /Timber Harvest

No programmed commercial timber harvest within 100 horizontal feet of the lake margin or within the Riparian Management Area (greatest of the riparian vegetation or soils, riparian associated wetland fens, or the height of one-site potential tree (to be determined at the project level)). Consider an additional no harvest (or limited harvest) area beyond the no programmed commercial timber harvest area to benefit lake-associated scenic quality, wildlife species (e.g., spotted frogs, Vancouver Canada geese, tree nesting ducks), and recreation, subsistence, and visitor uses. Typically larger lakes in lesser development LUD's with higher resource values should have wider additional buffers than smaller lakes in the more highly developed LUD's with lower resource values. Manage an appropriate distance beyond any no-harvest zone to provide for a reasonable assurance of windfirmness of the desired standing timber (pay special attention to the area within one site-potential tree height of the no-harvest zone).

II (lakes with lower value resident fisheries; lakes < 3 acres), III/Timber Harvest

Consider no harvest (or limited harvest) areas to benefit lake-associated scenic quality, wildlife species and recreation, subsistence, and tourism uses.

I & II Harvest Controls

Yard in a manner to minimize baring of mineral soil (<1%) and such that new channelization does not occur in areas that would drain into a lake, pond or wetland.

I, II, & III/Roads, Borrow Pits, Drainage Structures, Facilities

Special attention shall be given to wetland/riparian functions and values. Normally, locate roads and borrow pits outside the no programmed commercial timber harvest area. Roads, trails and other facilities which are dependent on, or make specific use of, the lake or pond may be located to the lake edge.

RURAL COMMUNITY ASSISTANCE
Forest-wide Standards & Guidelines

Activities: RUR

I. *Resource Management Decisions Affecting Communities*
   A. Emphasize, where appropriate, local needs and opportunities for rural community assistance in forest programs and budgets.
      1. Consider rural interests, including Native organizations, in resource decisions by jointly identifying and developing natural resource opportunities.
   B. Consider social, cultural, and economic issues in resource management by:
      1. Considering local communities' needs in project plans.
      2. Evaluating community-based sources of goods and services for implementing Forest projects.
      3. Considering community organization and protocol in resource planning and decision processes.
      4. Providing information pertaining to resource management and development on national forests with communities.
      5. Encouraging local rural development entities to include Forest Service employees in their local rural development planning.

SCENERY
Forest-wide Standards & Guidelines

Scenery Operations: VIS1

I. Scenery Management

A. This plan adopts Visual Quality Objectives (VQO's) which provide direction and objectives for landscapes within each Land Use Designation. The long-term desired future visual condition for a specific area is the maintenance of a visual quality level that is at least as high as the adopted VQO for that area. Adopted VQO's are described in the scenery section of each Land Use Designation.

B. Perform landscape/viewshed analysis, using as much of the available tools and technology as possible, when planning projects within viewsheds seen from Visual Priority Travel Routes and Use Areas (VPR's). Some level of analysis may be appropriate in some areas involving non-priority use areas. More comprehensive viewshed analysis such as long term, full corridor planning may be necessary in the most sensitive viewsheds. See Appendix F of this Plan for a listing of the designated VPR's. As a part of the planning for major land-disturbing activities, consider whether changes to the VPR list are necessary.

C. Consider the visual condition of adjacent non-National Forest System lands during the planning of development activities on the National Forest.

D. Consult the National Forest Landscape Management Handbooks series (nos. 434, 462, 478, 483, 484, 559, 608, 617, 666) and R10 Forest Service Handbook 2309.22 for scenery management guidance.

Scenery Preparation: VIS11

I. Visual Quality Objectives (VQO's): APPLICATION

VQO's are applied to any activity which has the potential to affect the visual character of the landscape. Activities could include, but are not limited to: recreation facilities: trails, cabins, restrooms, interpretive displays; timber sales: roads, harvest units, logging camps, sort yards, Log Transfer Facilities; rock pits; gravel pits; mineral development; fish enhancement projects: in-stream fish pass structures, gabions; facilities authorized under Special Use Permits: electronic facilities, hydroelectric projects, etc. In designing activities to meet specific VQO's, a number of factors must be considered. Some of these factors are:

A. The landscape's Existing Visual Condition (EVC) rating. This is an inventoried condition which rates the degree of change that has already occurred on-the-ground. It is important to compare the EVC of the project area to the VQO's assigned by the Forest Plan. Should there be conflicting conditions presently existing and the intent of the LUD is not presently met, it would be appropriate to consider either 1) some specific rehabilitation measures or 2) project deferral which would allow the landscapes in the project area time to regenerate sufficiently.

B. Visual Absorption Capability (VAC) which is an estimate of the relative ability of a landscape to absorb management activities. High, Intermediate and Low VAC ratings are used. These ratings reflect the degree of landscape variety in an area, viewing distance, and topographic characteristics. As examples, a Low VAC setting generally has steep slopes, with little landscape variety, while a High VAC setting may be relatively flat and/or has a high degree of variety in the landscape.

C. Size, shape, orientation to viewer, color, texture, etc. are critical elements in determining whether or not an activity meets the assigned VQO. Consideration for the scenery is essential early on in planning processes, particularly in areas seen from a VPR. However, each landscape setting is different, and should be evaluated on a case-by-case basis. There may be instances where the VQO can be met while the proposed activity is greater than the guideline, or there also may be cases where the activity must be smaller to meet the intent of the VQO.

D. Depending on the assigned VQO, specific time frames are allowed for meeting the VQO following project completion. Long-term projects (i.e.: those with no specific completion date) should be initially designed to meet the assigned VQO as the project progresses.

II. *Visual Quality Objectives (VQO's): SPECIFIC GUIDELINES*

A. *VQO Retention:* Design activities to not be visually evident to the casual observer. This objective should be accomplished within six months following project completion.

1. Facilities.
   a) Keep vegetation clearing to a minimum and within close proximity of the site.
   b) Select materials and colors which blend with those found in the natural surroundings.
   c) Screening should be used from viewpoints and travel routes if feasible.
2. Transportation.
   a) *Rock Sources.* When a forest development road is a Visual Priority Route, locate rock sources off the road when possible. Spur road access may be necessary to minimize the visual impact. Rock source development should not be apparent from the road, use area, or marine travel route to meet this visual objective.
   b) *Corridor Treatment.* Provide for roadside cleanup of ground-disturbing activities. Depending on site conditions, cut stumps as low as possible and angled away from the viewer. Incorporate this treatment in the timber sale contract.
   c) *Log Transfer Facilities (LTF's).* LTF's are generally not appropriate in this VQO setting.
3. Timber Harvest: VAC Setting, Typical Regeneration Method and Unit Size
   a) Low: Single tree or group selection (less than 2 acres)
   b) Intermediate: Single tree or clearcut (approx. 5 - 15 acres)
   c) High: Clearcut (approx. 15 - 30 acres)

B. *VQO Partial Retention:* Design activities to be subordinate to the landscape character of the area. This VQO should be accomplished within one year of project completion.

1. Facilities.
   a) Keep vegetation clearing to a minimum and within close proximity of the site.
   b) Emphasize enhancement of views from recreational facilities.
   c) Select materials and colors which blend with those found in the natural surroundings.
2. Transportation.
   a) Design rock sources to be minimally apparent as seen from Visual Priority Travel Routes and Use Areas. Rehabilitation is usually necessary following closure of rock source developments. It may be necessary to modify some ground-disturbing activities seen from the foreground of Visual Priority Travel Routes and Use Areas.
   b) *Corridor Treatment.* Roadside cleanup of ground disturbance activities may be necessary.
   c) *LTF's (temporary or permanent).* Perform a visual quality analysis during LTF planning and design. Consider low profile designs to minimize visibility from Visual Priority Travel Routes and Use Areas. For temporary LTF's, incorporate rehabilitation measures into the project analysis and the contract package.
3. Timber Harvest: VAC Setting, Typical Regeneration Method and Unit Size
   a) Low: Group selection or clearcut (approx. 5-10 acres)
   b) Intermediate: Clearcut (approx. 15 - 40 acres)
   c) High: Clearcut (approx. 40 - 60 acres)

C. *VQO Modification:* Activities may visually dominate the characteristic landscape, but must have visual characteristics similar to those of natural occurrences within the surrounding area or character type. This VQO should be met within one year in the foreground distance zone and within five years in the middle and background distance zones following project completion.

1. When planning activities, use naturally established form, line, color and texture found in the landscape.
2. Facilities. Siting and design should borrow from naturally occurring patterns in the landscape, and should not be visually dominant when viewed in the background distance zone.
3. Transportation.
   a) Rock source operations and resulting landform modifications may be evident to the casual observer as seen from Visual Priority Travel Routes and Use Areas. However, the quarry location and design should mitigate, to the extent feasible, the apparent visual size and dominance of the activity (for example, shaping of backwalls, roadside screening and general orientation of the opening).

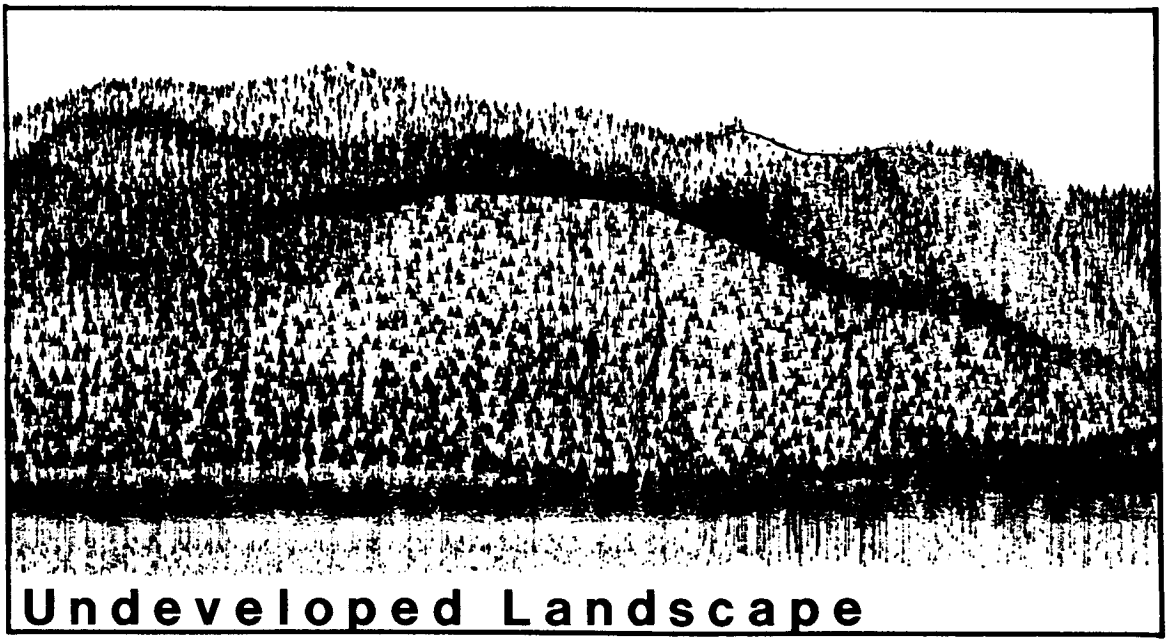
b) *LTF's (temporary or permanent).* Perform a visual quality analysis during LTF planning and design.

4. Timber Harvest: VAC Setting, Typical Regeneration Method and Unit Size
   a) Low: Clearcut (approx. 15 - 40 acres)
   b) Intermediate: Clearcut (approx. 40 - 60 acres)
   c) High: Clearcut (approx. 60 - 100 acres)

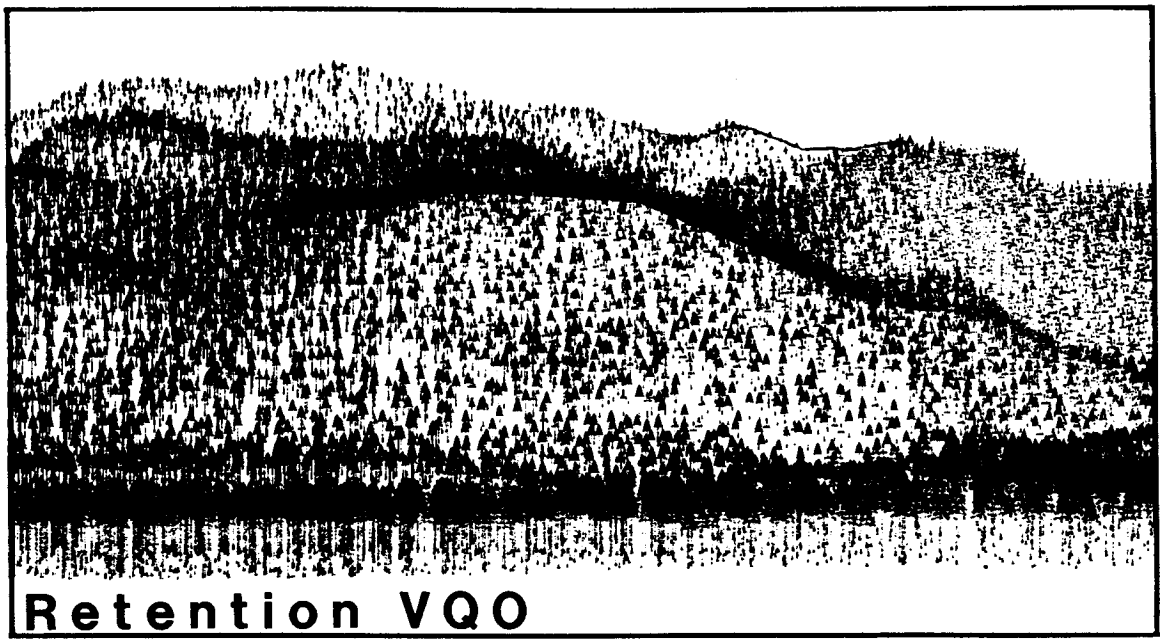
D. *VQO Maximum Modification:* Activities may dominate the characteristic landscape, yet when viewed as background, should appear to be a natural occurrence.
   1. Locate and design management activities to take advantage of existing (both natural and imposed) pattern and texture found in the landscape when viewed in the middleground from Visual Priority Travel Routes and Use Areas.
   2. Design activities to resemble natural occurrences as viewed in the background distance zone.
   3. Timber Harvest: VAC Setting, Typical Regeneration Method and Unit Size
      a) Low: Clearcut (approx. 50 - 75 acres)
      b) Intermediate: Clearcut (approx. 80 - 100 acres)
      c) High: Clearcut (approx. 80 - 100 acres)

E. The following are graphic illustrations of timber harvest activities designed to meet each Visual Quality Objective. The undeveloped landscape is provided for comparative purposes.

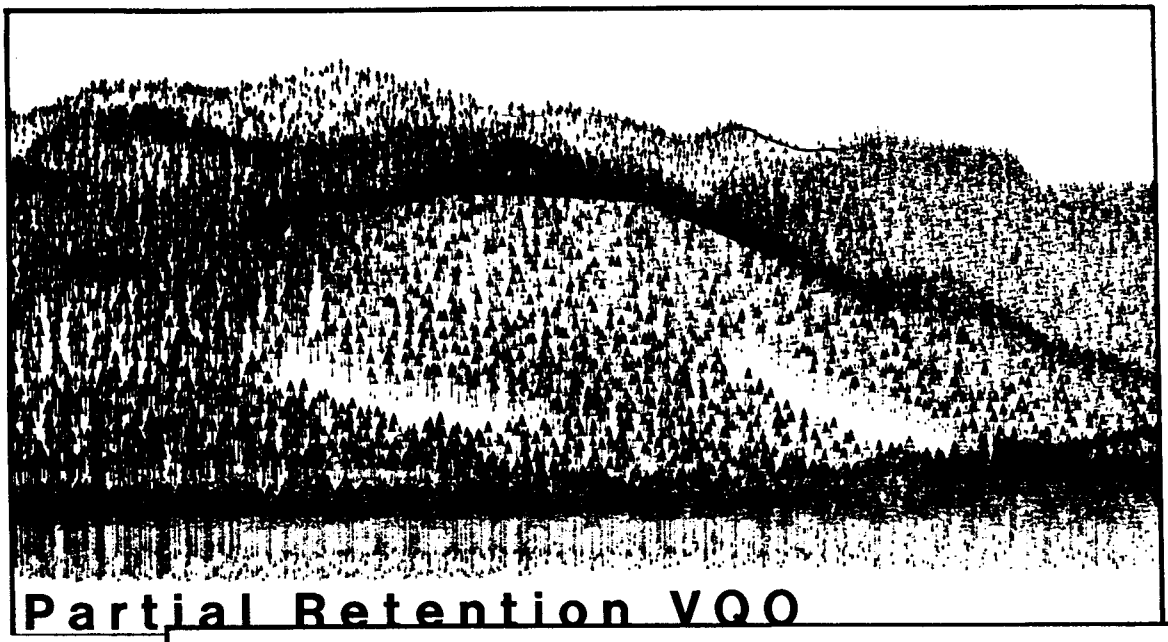
E. The following are graphic illustrations of timber harvest activities designed to meet each Visual Quality Objective. The undeveloped landscape is provided for comparative purposes.



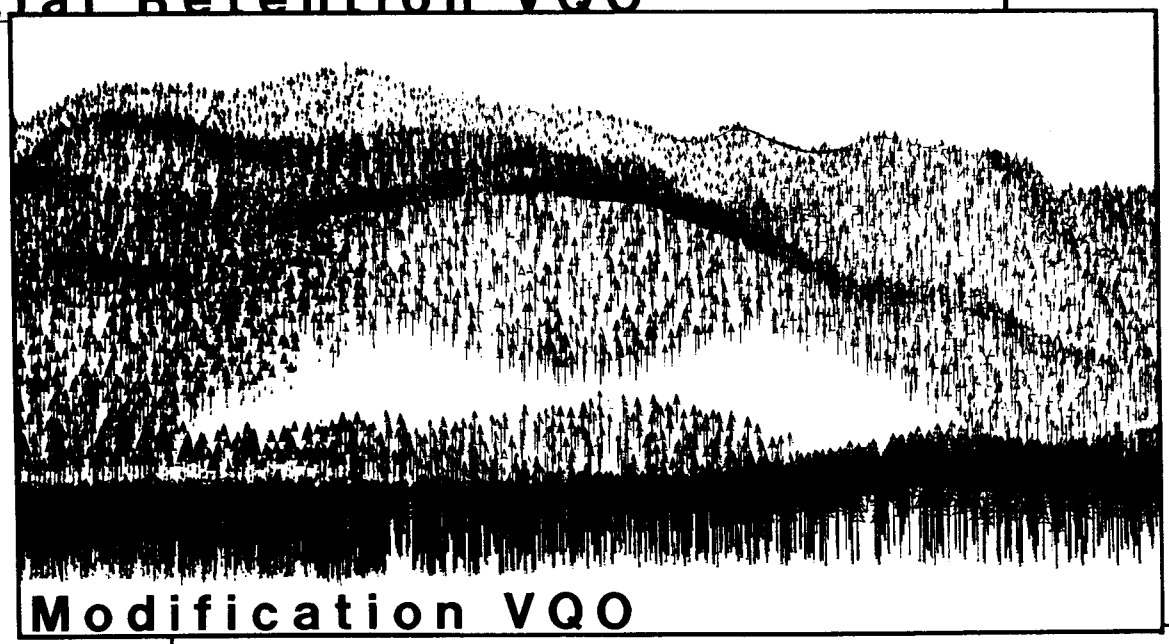
Undeveloped Landscape



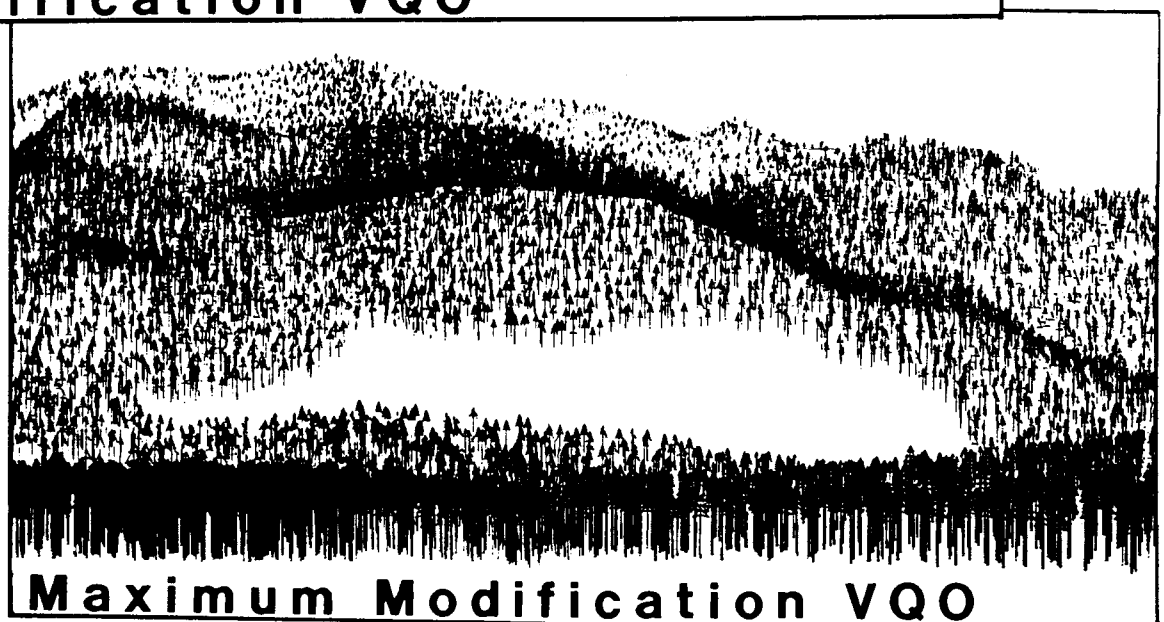
Retention VQO



Partial Retention VQO



Modification VQO



Maximum Modification VQO

Adopted Visual Quality Objectives (VQO) for each Land Use Designation[1]

Land Use Designation	Foreground	Middleground	Background	Not Seen or Non-priority
Wilderness Wilderness Nat. Monument Research Natural Area Special Interest Area [2 4] Remote Recreation Old-growth Habitat [4] LUD II [4]	Retention	Retention	Retention	Retention
Special Interest Area [3 4]	Modification	Partial retention	Partial retention	Not Applicable
Semi-remote Recreation [4]	Partial retention	Partial retention	Partial retention	Partial retention
Wild River [6]	Retention	Retention	Retention	Retention
Scenic River [4 6]	Retention	Partial retention	Partial retention	Modification
Recreational River [4 6]	Partial retention	Modification/Partial retention [7]	Modification/Partial retention [7]	Maximum Modification
Scenic Viewshed [4]	Retention	Partial retention	Partial retention	Maximum Modification
Modified Landscape [4]	Partial retention	Modification	Modification	Maximum Modification
Timber production Minerals Experimental Forest [5]	Modification	Maximum Modification	Maximum Modification	Maximum Modification
Transp. & Utility System [6]	Modification	Not applicable	Not applicable	Not applicable
Municipal Watershed	A range of visual conditions may exist in the watershed, which are a result of the municipality's watershed management objectives. Visual impacts should be minimized as seen from Visual Priority Travel Routes and Use Areas.			
Nonwild. Nat. Monument	Visual Quality Objectives will range from Retention, in those portions of the Monument without access, to Maximum Modification in those portions developed in connection with mineral activities. Site-specific VQO's will be identified in the specific plan of operation for mineral development.			

[1] The foreground, middleground, and background Visual Quality Objectives are adopted as seen from the Visual Priority Travel Routes and Use Areas (Appendix F). Non-priority travel routes and use areas, and those areas not seen from the Visual Priority Routes and Use Areas, are managed according to the direction listed in the "Not Seen or Non-priority" column.

[2] Except for the developed recreation and interpretive portions of Special Interest Areas such as Mendenhall Glacier, Ward Cove, and Blind Slough.

[3] Applies only to the developed recreation and interpretive portions of Special Interest Areas such as Mendenhall Glacier, Ward Cove, and Blind Slough. Undeveloped areas are managed according to the guidance on the previous line.

[4] Exceptions for small areas of non-conforming developments, such as recreational developments, transportation developments, Log Transfer Facilities, and mining development, may be considered in these Land Use Designations on a case-by-case basis.

[5] The Visual Quality Objective may vary depending on the research objectives of the Experimental Forest.

[6] These objectives apply only to the actual corridor. The area adjacent to this LUD is managed according to the guidelines of the adjacent Land Use Designation.

[7] Apply the Partial retention VQO in corridors where scenic quality is included as one of the "outstandingly remarkable" values for that corridor. If it is not, apply the lower VQO.

III. Visual Quality Objectives - Harvest Methods Other Than Clearcutting

The timber-harvest-related visual management guidelines described previously are based on several analyses of harvested viewsheds throughout the Tongass that represented different VAC characteristics and different levels and scales of harvest. Similar specific guidelines for other types of silvicultural treatments cannot be provided due to the lack of experience with these treatments. However, the following paragraphs provide some general guidelines concerning the use of harvest methods other than clearcutting.

A. Harvest Area With Percentage of Stand Left As Legacy Trees (Permanent Reserve trees). Based on a few observations of some recent treatments of this type it would appear that if approximately 20%-40% of the trees within a harvest area are retained, the size of that harvest area might be increased and still meet the same VQO. Also it may be possible to meet a higher VQO by leaving an appreciable percentage of legacy trees within an area. However many factors such as natural vegetative patterns, steepness and obliqueness of slope, likelihood of blowdown, and viewing distance play an important role in determining how to apply this technique in a specific landscape.

B. Uneven-aged management - single-tree or group selection. Meeting a retention or partial retention VQO in a low VAC setting requires a relatively small percentage of stems removed on a single-tree basis - anywhere from 5 to 20%. The exact amount cannot be stated since a lot depends on the slopes, viewing distances, and natural characteristics of the stand. To meet a modification VQO, it is possible that a larger percentage could be removed. Exactly how much and what the limit would be is also based on the existing landscape characteristics. When utilizing a group selection method, the appropriate size and distribution of the groups are heavily dependent on the VQO, and particularly the natural landscape characteristics such as the size and distribution of natural openings. From observations of the few examples available in Alaska of this type of treatment, the design of the groups should replicate natural openings and avoid the use of geometric shapes. The initial uses of these harvest techniques will have to be experimental in nature, employ a variety of harvest intensities and designs, and be followed by careful monitoring.

Scenery Administration: VIS12

I. Mitigation, Enhancement and Monitoring

A. Minimize potential visual impacts through scheduling or timing of management activities so that they are dispersed and not concentrated, subject to considerations given to other resources (e.g. wildlife).

B. Rehabilitate, where feasible, existing projects and areas which do not meet the Adopted Visual Quality Objectives. Consider the following in setting priorities:

1. Relative importance of the area (public sensitivity).
2. Projected length of time to naturally attain the Adopted VQO in comparison to the use of rehabilitation techniques. Examples of rehabilitation include: seeding road cuts and fills, recontouring temporary roads, removing roadside slash and debris, re-shaping harvest unit boundaries, cutting roadside stumps as low as possible, shaping or spreading excess overburden, etc.
3. Benefits to other resources by accomplishing rehabilitation.

C. Use enhancement measures, where feasible, to create variety where little variety now exists through addition, subtraction, or alteration of vegetation, earthforms, waterforms, etc. Examples include: opening up vistas or screening out undesirable views and planting of species to give unique form, color or texture to an area.

D. Consult the Landscape Management Handbook, Region 10, to determine project level monitoring.

1. Identify and document specific areas to be monitored.

II. New Scenery Management System

A. By early 1997, the development of the new National Scenery Management System should be complete, and a final new manual, *Landscape Aesthetics: A Handbook for Scenery Management*, will be available for use by all National Forests. This new system has been developed to 1) incorporate into one manual the analysis tools that have evolved over the past two decades since the inception of the basic system; 2) redefine and clarify some terms; 3) revise some of the inventory processes; 4) provide a stronger link with ecosystem management; and, 5) provide more

graphic examples of all the system's concepts as they apply to the various landscape types throughout the nation.

1. Appendix B lists information needs associated with implementing the new system. Appendix L includes a schedule for implementing certain aspects of the new system.
2. For project level planning, base the project area analysis on the terminology and concepts of the original Visual Management System and the Visual Quality Objectives of this Plan. However, after training in the new system is complete, new project planning should begin to use the concepts of landscape ecology, landscape character, and sense of place. (For example, analysis and design of these projects should incorporate landscape character descriptions of the project area, how this character is related to the ecological processes that have taken place in the area, what makes these landscapes important to people and give them a “sense of place,” and how the Forest Plan’s scenery management objectives relate to this landscape character.)

SOIL and WATER
Forest-wide Standards & Guidelines

Soil Inventory: S&W1111

I. Inventory

A. Maintain the Soil Resource Inventory (SRI) or Integrated Resource Inventory (IRI). (Consult FSM 2550, Soil Management Handbook, Ecological Classification and Inventory Handbook (FSH 2090.11-91-1), National Soil Handbook-430-VI, Soil Survey Manual-430-V.)

1. Determine and implement the level of Soil Resource Inventory (SRI) or Integrated Resource Inventory (IRI) necessary to meet planning and implementation needs for proposed management projects.

B. Use the National Hierarchical Framework of Ecological Units (Terrestrial ECOMAP) to inventory and classify ecosystems.

Water Inventory: S&W1112

I. Inventory and Evaluation

A. In conducting water investigations, consider and evaluate the following elements in Water Resource Inventories (WRI).

1. Climate
2. Water Quality
3. Water Quantity
4. Channel types
5. Water Uses and Developments
6. Watershed Condition

B. Consult FSM 2530, Water Resource Inventory Handbook (5/83 R-10 .Supp. 1) and Water Information Management System Handbook (FSH 2509.17).

1. Determine the level of Water Resource Inventory (WRI) to meet project planning and implementation needs.
2. Use the National Hierarchical Framework of Ecological Units (Aquatic ECOMAP) to inventory and classify watersheds, streams, lakes, and groundwater systems.

C. Develop and maintain up-to-date inventories and case folders for all public water systems. Consult FSM 2542.

Watershed Resources Planning: S&W112

I. Land Use Activities

A. Plan and conduct land use activities to avoid irreversible or serious and adverse effects on soil and water resources.

1. Include soil and water resource data and interpretations in project analyses. (Consult FSM 2530 and 2550.)
2. Maintain water quality and quantity to protect the state-designated beneficial uses. Consult the Alaska Nonpoint source Pollution Control Strategy, the Soil and Water Conservation Handbook (Chapter 10, FSH 2509.22), the Soil Management Handbook (FSH 2509.18), and the "Forest Service Alaska Regional Water Quality Management Plan" addressed in the Memorandum of Agreement dated April 6, 1992 (as amended) with the Alaska Department of Environmental Conservation.
3. Apply Best Management Practices (BMP's) to all land-disturbing activities as a process to protect the beneficial uses of water from nonpoint sources of pollution. (Note: Appendix C of the Plan includes a summary of the BMP's which are found in the Soil and Water Conservation Handbook, Chapter 10, FSH 2509.22.) Also consult FSM 2530, Facilities, Transportation, and Fish Forest-wide Standards & Guidelines, U.S. Army Corps of Engineer Regulations (33 CFR 323.4), and the Clean Water Act.
4. Apply soil conservation practices to meet regional Soil quality standards (SQS) on all land-disturbing activities as a process to prevent detrimental soil disturbance. Detrimental soil disturbance is defined as significant changes or impairment in soil properties that are

expected to result in reduced short or long-term productivity of the land. (Consult FSM 2520 and 2550, FSH 2509.18 and R10 Supplement to FSM 2554 #2500-92-1, effective Jan. 15, 1992 (as amended)). BMP's also include some soil conservation practices (Soil and Water Conservation Handbook, Chapter 10, FSH 2509.22); develop other specific soil conservation practices during project planning, as needed.

5. Evaluate soil stability, potential soil mass wasting effects, and stability of class IV channel systems. At the forest plan level, slope gradients of 72% or more are removed from the tentatively suitable timber base due to high risk of soil mass movement and accelerated erosion of class IV channel systems. At the project planning level, the Forest Supervisor or District Ranger may approve timber harvest on slopes of 72% or more on a case-by-case basis, based on the results of an on-site analysis of slope and class IV channel stability and an assessment of potential impacts of accelerated erosion on downslope and downstream fish habitat, other beneficial uses of water, and other resources. (See Fish Forest-wide Standards & Guidelines for definitions of Class IV streams.) For management guidance for class IV streams, consult BMP 13.16 in the Soil and Water Conservation Handbook.
6. Avoid locating a road on a slope greater than 67%, on an unstable slope, or in a slide-prone area, where feasible.
7. Where slopes have a grade greater than 67%, are unstable, or are in a slide-prone area, fill material used in construction of a landing must be free from loose stumps and excessive accumulations of slash, and must be mechanically compacted in layers if necessary to prevent soil erosion and mass wasting.
8. Soil Map Units (SMU's) with McGilvery soil meet the criteria for tentatively suitable forest land, but require harvest systems capable of at least partial suspension over the entire length of the yarding distance over the McGilvery soils. SMU's with McGilvery soil may be considered for harvest on a case-by-case basis.

B. Seek to avoid adverse impacts to soil and water resources (such as accelerated surface erosion or siltation of fish habitat) when conducting land use activities on wetlands, flood plains, and riparian areas. (Consult Executive Orders 11988, 11990, and 11514; FSM 2510 and 2520; U.S. Army Corps of Engineers regulations (33 CFR 323); NFMA Planning Regulations (36 CFR 219.27); appropriate Best Management Practices (Chapter 10 of the Soil and Water Conservation Handbook, FSH 2509.22) for wetlands, flood plains and riparian areas; and, Wetlands and Riparian Forest-wide Standards & Guidelines.)

C. Under applicable state and Federal Law, reserve both ground and surface water rights to manage National Forest System lands. (Consult FSM 2540.)
   1. Review projects and reserve water rights or notify the state of water uses for reservation management purposes, when it is determined such uses are necessary for carrying out the purposes of the project. Be sure review of uses and needs includes at least the following items:
      a) In-stream flow needs
      b) Adequate flow for fish passes and habitat
      c) Forest Service administrative and domestic use
      d) Developed special uses and recreation sites

D. Consult with state, Federal and local government agencies and Native American communities for the protection, mitigation, and/or improvement of the water and soil resources.

E. Participate actively in planning by other Federal, state and local agencies where these plans could affect the beneficial uses of water on National Forest System lands.

F. Cooperate with state and Federal agencies having overlapping resource management responsibilities including the Alaska Department of Fish and Game, Alaska Department of Environmental Conservation, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, National Marine Fisheries Service, and the U.S. Fish and Wildlife Service. Execute plans and decisions in consideration of the statutory responsibilities of these agencies.

II. Watershed analysis and Cumulative watershed effects

A. Conduct watershed analyses as directed in RIP2,I,B and described in Appendix J.

B. Minimize cumulative watershed effects which could adversely affect soil and water resources and change stream channel equilibrium, such as: 1) changes in sediment transport or stream flow leading to stream aggradation, degradation and/or streambank erosion; 2) silting in of pools; and, 3) reduction in aquatic habitat capability. Evaluate cumulative effects at the watershed scale during project planning and analysis. Consult BMP 12.1 (Soil and Water Conservation Handbook, FSH 2509.22) for cumulative watershed effects analysis guidance.

III. Public Water Systems

A. Secure "favorable conditions of water flows" (Organic Administration Act of 1897). Maintain water quality consistent with Alaska Water Quality Standards for water supply (18 AAC 70) and Alaska Drinking Water Regulations for source water protection (18 AAC 80.015(a)). Avoid management activities which are likely to pollute a known public water system or violate Alaska Water Quality Standards. Conduct watershed analysis and consult with the Alaska Department of Environmental Conservation before authorizing management activities that create or maintain a condition that has a significant potential to cause the pollution or contamination of a public water system.

1. For incorporated city watersheds, refer to the Municipal Watershed Land Use Designation.
2. For unincorporated communities and other public water systems, coordinate with owners or operators of public water systems to meet watershed protection needs on a case-by-case basis. Develop written agreements with owners or operators consistent with 18 AAC 80.520(c)(3) and 36 CFR 251.9, if appropriate. Consult with owners or operators before authorizing management activities.

Watershed Resources Improvements: S&W2

I. Soil and Water Quality Protection and Improvement

A. Protect or improve water quality and sustain soil productivity. Implement the Alaska Regional Watershed Restoration Strategy (October 1995 version and subsequent updates). Consult and coordinate with other agencies and landowners when implementing and updating the Strategy.

1. Conduct Watershed Condition Surveys (WCS) to determine treatment needs. Consideration of treatment needs should include looking at changed fish habitat, as measured against natural conditions predicted by baseline fish habitat objectives (see Fish Forest-wide Standards & Guidelines). Identify and prioritize needs on the Forest Watershed Improvement Needs Inventory (WINI) database. Complete watershed improvement project plans and coordinate with fish habitat improvement projects. Include projects in Sale Area Improvement Plans and use K-V funds as appropriate. (Consult FSM 2510 and 2520.)
2. Give priority to cost-effective watershed improvement projects with the most erodible conditions directly affecting the beneficial uses of water.
3. For revegetation of disturbed sites, erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other revegetation projects, consider natural revegetation as an alternative to seeding or planting. Encourage natural revegetation where seed source and soil conditions are favorable. Use native species of seeds and plant in revegetation projects where seeding or planting is appropriate. Native plant material sources include commercial nurseries, agency native seed programs, and local seed collection.
4. Inspect all watershed improvements until the final evaluation indicates that maintenance is no longer needed.

SUBSISTENCE
Forest-wide Standards & Guidelines

Subsistence: SUB

I. Subsistence

A. In accordance with Title VIII of the Alaska National Interest Lands Conservation Act of 1980, it is the policy of the Forest Service that:
   1. Consistent with the purposes for which National Forest System lands in Alaska were established, sound management principles, and the conservation of healthy populations of fish and wildlife, the utilization of the National Forest System lands in Alaska is to cause the least adverse impact possible on rural residents who depend upon subsistence.
   2. Provide for the continuation of the opportunity for subsistence uses by rural Alaskan residents, including both Natives and non-Natives.
   3. Non-wasteful subsistence uses of fish and wildlife shall be the priority consumptive uses of such resources on National Forest System lands in Alaska when it is necessary to restrict the taking of such resources.
   4. Cooperate with adjacent landowners and land managers in managing subsistence activities and in maintaining the continued viability of all wild renewable resources on National Forest System lands.

B. Consult the Southeast Alaska Federal Subsistence Regional Advisory Council for opinions and recommendations on current and proposed management actions, pursuant to ANILCA, Title VIII, Section 805.

C. Locate and manage Forest management activities considering impacts upon rural residents who depend upon subsistence uses of the resources of National Forest System lands. In compliance with ANILCA, Title VIII, Section 810, and the Region 10 Subsistence Handbook, the Forest Service shall:
   1. In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of National Forest System lands, evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of National Forest System lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit or other use, occupancy, or disposition of such lands which may significantly restrict subsistence uses shall be effected until the following actions are accomplished:
      a) Notice is given to the appropriate Federal and State agencies, local committees, recognized Tribal Governments, and the Southeast Federal Subsistence Regional Advisory Council established pursuant to Section 805 of ANILCA;
      b) Notice of a hearing is given and a hearing is held in the vicinity of the area involved;
      c) A determination is made that: 1) such a significant possibility of a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands; 2) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and 3) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.
   2. If required to prepare an environmental impact statement pursuant to the National Environmental Policy Act, the notice and hearing and findings required in 1 above shall be a part of such environmental impact statement.
   3. Regardless of whether or not an EIS is required, in all project scoping, include initial and on-going contact with the appropriate Federal and State agencies, local committees, recognized Tribal Governments, and the Southeast Federal Subsistence Regional Advisory Council.
   4. After compliance with the procedural requirements of Section 810 of ANILCA and other applicable law, the responsible Forest Service official may manage or dispose of public lands

under their primary jurisdiction for any of those uses or purposes authorized by ANILCA or other law. Management to accommodate identified subsistence uses could include:

a) Implement planned project;
b) Canceling all or part of the planned project;
c) Substituting another site for the project and prepare another environmental analysis if the change is significant;
d) Implementing appropriate mitigation measures.

D. Evaluate changes in subsistence use patterns and activities in cooperation with appropriate state and Federal agencies by conducting periodic surveys of wildlife populations and subsistence harvest and consulting with subsistent user groups (note: see Appendix B, listing of priority research items).
E. Make recommendations for subsistence regulations to the Southeast Alaska Federal Subsistence Regional Advisory Council and the Federal Subsistence Board and provide technical support to these two bodies for analyzing the effects of proposed regulations on Federal Public Lands under Forest Service Jurisdiction.
F. Provide for enforcement of subsistence use regulations promulgated by the Federal Subsistence Board.
G. Provide public information concerning subsistence management on National Forest System lands.
H. In cooperation with appropriate state and Federal agencies, and recognized Tribal Governments, maintain a subsistence research program and data base.
I. Maintain reasonable access to subsistence resources as required by ANILCA, Section 811. Address subsistence concerns when developing road management objectives (RMO's) for forest roads. (See Transportation Forest-wide Standards & Guidelines.)
J. Seek to maintain abundance and distribution of subsistence resources necessary to meet subsistence user needs.
K. Consider subsistence users' needs in the scheduling, locating, and designing of fish and wildlife habitat improvement projects.
L. In the development of access and facilities, seek opportunities to provide for subsistence users (for example, anchorages and shelters). Such access and facility opportunities should be identified and planned with local subsistence users.

THREATENED, ENDANGERED, and SENSITIVE SPECIES
Forest-wide Standards & Guidelines

Threatened, Endangered and Sensitive species: TE&S

I. Threatened or Endangered Species

A. Meet the requirements of the Endangered Species Act, as amended.

1. Ensure that projects funded, authorized, or permitted by the Forest Service do not jeopardize the continued existence of threatened or endangered species. Use informal and formal consultation (for listed species) procedures, and conference (for formally proposed species) procedures (whichever is appropriate) with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service for all major construction activities and other forest management activities which may have an effect on federally-listed threatened, endangered, or proposed species population, or critical habitat. Prepare biological assessments or evaluations, as required, for species that may be affected by management activities (Consult FSM 2670).
2. Identify, manage, and protect essential and critical habitats to meet legal requirements and recovery objectives for species that are federally-listed as threatened or endangered. Implement national and regional Forest Service policy and direction for management of threatened, endangered, and proposed species (Consult FSM 2670.)
3. Support monitoring, research, and inventory work for threatened, endangered, and proposed species. Coordinate with appropriate Federal and state agencies. Use "challenge cost share," Sikes Act agreements, "Section 6 Grants" (under authority of the Endangered Species Act), and other partnerships.
4. Conserve habitats for species tending toward federal listing to preclude the need for listing and additional protection under the Endangered Species Act. Meet this objective by implementing the following interagency memorandums of understanding:
   a) National Memorandum of Understanding between the U.S. Department of Agriculture Forest Service, U.S. Department of Interior Fish and Wildlife Service, Bureau of Land Management, and National Park Service and the U.S. Department of Commerce National Marine Fisheries Service, and International Association of Fish and Wildlife Agencies (January 25, 1994, 94-SMU-058 as amended). The purpose of the MOU is to establish a framework for the conservation of species that are tending toward federal listing.
   b) Regional Memorandum of Understanding that is tiered to the National MOU (a. above) entered into between the Forest Service, Alaska Region, Fish and Wildlife Service, Alaska Region, and Alaska Department of Fish and Game (December 20, 1994 as amended).
      (1) The objective of this MOU is to promote interagency cooperation in the conservation of species tending toward listing under the Federal or State Endangered Species Acts.
      (2) Cooperators shall meet at least annually to assess implementation of the MOU and success in meeting MOU objectives.

B. Steller Sea Lion

1. Protect Steller sea lion habitats.
2. Ensure that Forest Service funded, permitted or authorized activities are conducted in a manner consistent with the requirements, consultations, or advice received from the appropriate regulatory agencies for the Marine Mammal Protection Act (MMPA), the Endangered Species Act, and National Marine Fisheries Service guidelines for approaching seals and sea lions. "Taking" of sea lions is prohibited; "taking" includes harassing or pursuing or attempting any such activity.

3. Locate facilities, camps, Log Transfer Facilities, campgrounds and other developments 1 mile from known haulouts, and, farther away, if the development is large.
4. Cooperate with state and other federal agencies to develop sites and opportunities for the safe viewing and observation of sea lions by the public. Maintain a public education program explaining forest management activities related to sea lions in cooperation with state and other federal agencies.

C. Humpback Whale
1. Provide for the protection and maintenance of whale habitats.
2. Ensure that Forest Service permitted or approved activities are conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching whales, dolphins, and porpoise. "Taking" of whales is prohibited; "taking" includes harassing or pursuing or attempting any such activity.

D. American peregrine falcon
1. Provide for the protection and maintenance of habitats for migrating American peregrine falcons.
2. Obtain increased understanding and knowledge about the migration of American peregrine falcons through southeast Alaska (for example the timing of migrations, the length of stay in southeast Alaska, important foraging areas, important prey items, etc.).
3. Protect seabird rookeries and waterfowl concentration areas that provide important prey foraging habitat (see Wildlife Forest-wide Standards & Guidelines).

II. Sensitive species

A. Implement national and regional Forest Service policy and direction for the conservation and management of sensitive species and subspecies of animals and plants (including identified and unique fish stocks and plant varieties). Sensitive species are those taxa identified by the Regional Forester for which a viability concern has been identified due to a predicted or documented downward trend in species populations or habitat and where continued downward trends in population or habitat capability may lead to local or forest-wide extirpation, federal listing under the ESA, or both.

B. Maintain habitat to support well-distributed viable populations of sensitive species throughout the recent range of the species by avoiding or minimizing impacts to species whose viability has been identified as a concern.
1. Where desirable, implement habitat improvement projects to increase habitat capabilities and expand species distributions.
2. Where necessary to achieve species conservation objectives, protect important habitats.

C. Identify research and information needs for known or suspected sensitive plants and animals.

D. Identify and consider the conservation of representative rare plant communities (e.g., communities that only exist on only one or limited areas of the Forest) during project planning.

E. Support monitoring, research, and inventory work for sensitive species. Coordinate with appropriate Federal and state agencies. Use "challenge cost share," Sikes Act agreements, "Section 6 Grants" (under authority of the Endangered Species Act), and other partnerships.

F. Sensitive species lists shall be reviewed periodically to consider new information to reflect the best available information regarding viability concerns.

G. Prepare a biological evaluation as part of the NEPA process for each project authorized, funded, or conducted on National Forest System lands to evaluate and disclose the potential impacts of proposed activities on sensitive species.
1. Consult FSM 2670 and R10 protocols for comprehensive elements and standards for the preparation of biological evaluations. The biological evaluation shall be of sufficient detail to determine how a proposed action may affect sensitive species.
2. The need for and extent of field surveys to develop a biological evaluation should be considered in relation to the possible risks associated with the project, the species involved, and the level of knowledge already on hand. The intensity and scope of inventories should be commensurate with the potential risk of a proposed project on sensitive species.

3. Survey sensitive plants according to the following guidelines as determined by the potential risks of proposed actions:
   a) Survey intensity level guidelines for sensitive plant inventories:
      (1) LEVEL 1. Field Check: Survey the area with a quick 'once-over' but do not walk completely through the project area. The entire project area is not examined.
      (2) LEVEL 2. Cursory: Survey the area with a 'once-over' by walking through the project area. The entire project area is not examined.
      (3) LEVEL 3. Limited Focus: Survey to closely examine one or more habitat-specific locations within the project area, but do not look at the rest of the area.
      (4) LEVEL 4. General: Survey with more intensity by walking through the project area and walking around the perimeter of the area or by walking more than once through the area. Most of the project area is examined.
      (5) LEVEL 5. Intuitive Controlled: Survey by conducting a complete examination of specific areas of the project after walking through the project area and perimeter or by walking more than once through the area.
      (6) LEVEL 6. Complete: Survey throughout the area until nearly all of the area has been examined.
   b) Conduct plant surveys using the “timed meander” technique at a time of the year when sensitive plants are identifiable.
   c) Plant surveys should be conducted by individuals able to make positive field identification of sensitive plant species.
4. The biological evaluation will disclose the potential impacts of proposed activities on sensitive species. Consider the direct, indirect and cumulative effects of the proposed action on the population and the likelihood that adverse effects will occur.
5. If a biological evaluation concludes that a project may have an adverse effect on a sensitive species or its habitat, consult with appropriate state and federal agencies to consider mitigation measures to reduce possible effects. These measures include avoiding cumulative impacts that would contribute to further population or habitat declines and the possible need for federal listing.
6. Document the determinations from the biological evaluation in the NEPA decision documentation. Where NEPA documentation is not prepared, document the determination in the project files.

H. Exchange records and information with appropriate organizations and state and Federal agencies on the status of populations and habitat.

I. Sensitive species habitat conservation. The following site specific habitat management standards provide guidance for management of locally important habitats for sensitive species but independently do not necessarily represent a comprehensive management strategy to meet conservation objectives. At the project level, monitor habitat management activities to:
   1. Ensure standards are implemented as prescribed.
   2. Evaluate whether habitat management standards are achieving conservation objectives.

J. Northern Goshawk (including the Queen Charlotte goshawk subspecies).
   1. Preserve nesting habitat around all confirmed and probable goshawk nests whether or not they are currently occupied.
      a) Consider the following evidence for determining confirmed or probable nest sites:
         (1) a goshawk observed on or near a nest;
         (2) nestlings or branchers (young not able to fly) observed on or near a nest;
         (3) goshawk feathers or eggs obtained from the nest
         (4) one or more nest structures indicative of goshawk were found with goshawk prey remains, but without positive identified goshawk on the nest and without positive identified feathers from nest;
         (5) aggressive, territorial breeding season adults vocalizing or attacking an observer (with or without locating a nest);
         (6) adults observed during the breeding season in a territory and recently fledged young were observed (with or without locating a nest).
      b) Nesting Habitat: Maintain an area of not less than 100 acres of productive old-growth forest (if it exists) generally centered over the nest tree or probable nest site. Attempt to

include prey handling areas, perches, roosts, inactive nest stands, hiding cover and foraging opportunities for young goshawks. Vegetative structure should include a multi-layered, closed (over 60%) forest canopy, a relatively open understory, with large trees (usually 20+ inches DBH) and low ground vegetation. These conditions generally equate to the high timber volume strata used in preparation of this Plan.

c) Management: No commercial timber harvest is permitted. Existing roads may be maintained. New road construction is permitted if no other reasonable roading alternatives outside the mapped nesting habitat exist. Permit no continuous disturbance likely to result in nest abandonment within the surrounding 600 feet from March 15 to August 15. Activity restrictions are removed for active nests that become inactive or unsuccessful. Other management activities which maintain the integrity of the forest stand structure are consistent with the objectives for this area. Activities such as cabin, trail, or campground construction should be consistent if designed with minimal vegetative manipulation.

2. Cooperate and coordinate with state and other Federal agencies to understand the life history requirements and distribution of the northern goshawk.
3. Conduct inventories to determine the presence of nesting goshawks for proposed projects. Use the most current inventory protocols developed in cooperation with the appropriate state and Federal agencies.
4. The objective is to manage goshawk foraging habitat (productive old-growth forest) to retain important features of forest stand structure in areas of timber harvest in Value Comparison Units (VCU's) on Prince of Wales Island where over 33 percent (as of the date of this Forest Plan's approval) of the productive old-growth forest has been converted to young conifer stands (e.g., harvested since 1954).
   a) Timber harvest units over 2 acres in size should meet the following forest stand structural characteristics after harvest:
      (1) An average of over 30 percent canopy closure throughout the timber harvest unit.
      (2) An average of at least 8 large trees/acre (20-30" DBH or greater). Where not available substitute the next largest trees.
      (3) An average of at least 3 large decadent (dead or dying) trees/acre (20-30" diameter at the large end). Where not available substitute the next largest decadent trees.
      (4) Remaining trees should be uniformly distributed throughout the stand, but trees may be clumped for operational concerns or ecological opportunities.
      (5) Retained trees should have a reasonable assurance of windfirmness.
   b) For timber harvest units less than 2 acres in size, allow full canopy removal but limit the number of openings to an equivalent of 25 percent of the stand removed every 50 years (e.g., 12-13, 2-acre openings; 25, 1-acre openings, etc. within a 100-acre stand).
   c) Local information from Southeast Alaska may be used to accomplish the goshawk habitat objectives by employing different specific methods than those listed in sections a) (1-5) above. Document the analysis to use other specific methods through the NEPA process. Such local information could consist of some or all of the following:
      (1) Habitat relationships information on the structure of forest stands used and selected by goshawks for various life functions.
      (2) The amount and distribution of old-growth foraging habitat that will be protected through land allocations or standards and guidelines (e.g., habitat reserves, riparian buffers, beach fringe corridors, etc.) that maintain the integrity of the old-growth forest and the known or inferred goshawk population response of that combination of protected habitats.
      (3) The response of goshawk populations to the configuration of habitat at the landscape scale.

K. Peale's Peregrine Falcon
1. Provide for the protection and maintenance of Peale's peregrine falcon habitat.
2. Maintain nest site location data in cooperation with the U.S. Fish and Wildlife Service.
3. Plan project activities to avoid adverse impacts to the falcons and their habitats. Evaluate the effects of proposed projects within two miles of known falcon nests considering such items as: a) human activities (aircraft, ground and water transportation, high noise levels, and

permanent facilities) which could cause disturbance to nesting pairs and young during the nesting period April 15 - August 31; b) activities or habitat alterations which could adversely affect prey availability. Coordinate all project activities that may affect known or potential nesting habitat with the U.S. Fish and Wildlife Service.

4. Within 15 miles of all known or historical nest sites, prohibit all use of herbicides and pesticides.

L. Trumpeter Swan
   1. Provide for the protection and maintenance of trumpeter swan habitats.
   2. Avoid disturbance of trumpeter swans, particularly during nesting, brood-rearing, and wintering periods, to prevent abandonment of their nests, brood-rearing areas, and winter habitats. As a general guideline, limit developments within 0.5 miles (2640 feet) of wetlands used by nesting, brood-rearing, and wintering trumpeter swans. The District Ranger will take feasible measures to minimize disturbance.
   3. Avoid placement of overhead wires, fences, or other structures which could interfere with the flight paths of swans and cause injury or mortality.
   4. Cooperate with state, Federal, and local agencies, partner organizations, and individuals to develop sites and opportunities for the safe viewing of trumpeter swans by the public and maintain a public education program explaining Forest management activities related to trumpeter swans.

M. Osprey
   1. Maintain and improve osprey populations and habitat.
   2. Establish a minimum 330-foot radius habitat management zone around each existing osprey nest tree. Determine the exact boundary based on local topography, timber type, a reasonable assurance of windfirmness, and other factors.
   3. Within the osprey nest zones, prohibit all land use activity which would likely disturb nesting osprey. Infringement may be acceptable depending on the nature of the project and timing of the activity.
   4. Maintain the osprey nest zone even though the nest or nest tree becomes inactive.
   5. Provide trees suitable for use by osprey for nesting, feeding and perching. Consider the following:
      a) Reserve trees and live trees that dominate or co-dominate a shoreline.
      b) Reserve trees with broken tops and live trees with branches large enough to support birds.
   6. New nests will receive the same level of management protection as existing nests, however, osprey which select new nests in close proximity to existing human activities will not cause those human activities to be modified.

N. Island King Salmon
   1. Provide for the protection and maintenance of runs of king salmon that naturally occur on islands including the runs in King Salmon and Wheeler creeks on Admiralty Island.
   2. Coordinate with the Alaska Department of Fish and Game and National Marine Fisheries Service on commercial, sport and subsistence fish use, hatchery egg take programs, and other activities affecting the viability of king salmon runs in order to conserve these unique populations.
   3. Avoid the placement of facilities or issuing permits for activities near these streams that would increase harvest pressure on these king salmon runs.
   4. Coordinate with other groups or Federal and state agencies to develop a program of study to understand the life history and genetic characteristics of these unique runs of king salmon.

O. Northern Pike
   1. Provide for the protection and maintenance of northern pike found in the Pike Lakes on the Yakutat Forelands. This population of northern pike is unique to Southeast Alaska.
   2. Avoid the placement of facilities near the Pike Lakes which would increase harvest pressure to the point where the viability of these species is affected.
   3. Coordinate with the Alaska Department of Fish and Game on any activities that would affect the viability of the northern pike.

4. Coordinate with other groups or Federal and state agencies to develop a program of study to understand the life history and genetic characteristics of this unique population of northern pike.

P. Fish Creek Chum Salmon
1. Provide for the protection and maintenance of chum salmon in Fish Creek near Hyder. This population of chum salmon is characterized by their extraordinary large size.
2. Coordinate with the Alaska Department of Fish and Game and the National Marine Fisheries Service on commercial, sport and subsistence fish use, hatchery egg take programs, and other activities affecting the viability of the chum salmon runs in Fish Creek in order to preserve these populations.
3. Coordinate with other groups or Federal and state agencies to develop a program of study to understand the life history and genetic characteristics of this run of chum salmon.
4. Provide for habitat improvement and maintenance to maintain the viability of this run of salmon, as necessary.

Q. Sensitive Plants
1. Provide for the conservation of habitats that support populations of sensitive plant species to maintain representative populations across all islands or all terrestrial landscapes throughout their range.
2. Permits may be issued to collect sensitive plants or plant parts or plant parts for legitimate scientific or educational purposes. Such collections must not adversely affect the continued existence or vigor of a plant population. Sensitive plants shall not be collected for commercial use.
3. No herbicide may be applied from the air within 600 feet, nor ground-applied within 60 feet, of any identified population of a sensitive plant species.

III. Candidate Species

A. Candidate species are defined as those species for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threats to support proposals for listing as threatened or endangered under the Endangered Species Act.

B. Implement national and regional Forest Service policy and direction for the habitat management of candidate species.

C. Coordinate with the U.S. Fish and Wildlife Service in the conservation and management of candidate species consistent with the objectives of the Interagency Memorandum of Understanding to prevent the need for Federal listing and protection under the Endangered Species Act.

D. Contact the U.S. Fish and Wildlife Service for the most recent list of Candidate species and Species of Concern during initial phases of project development.

TIMBER
Forest-wide Standards & Guidelines

Allowable Sale Quantity

I. Decade Allowable Sale Quantity

A. The amount of chargeable timber volume that can be sold from the Tongass National Forest, for a decade, cannot exceed the established Allowable Sale Quantity. The yearly quantity may exceed or be less than the decadal average. The Allowable Sale Quantity is a ceiling; it is not a future sale level projection or target and does not reflect all of the factors that may influence future sale levels.

Integrated Resource Inventory - Existing Vegetation: TIM111-1

I. Inventory

A. Coordinate vegetative inventories with other data collection efforts to minimize duplication and to maximize the use of the resulting information. Emphasize multiple-resource or integrated resource inventories.

B. Reinventory vegetation on a 10 to 15 year cycle.

Silvicultural Examination and Prescription: TIM111-2

I. Stage II Intensive Inventory

A. Manage vegetation according to a silvicultural prescription certified by a certified silviculturist; this applies to any vegetative manipulation activity.

B. Conduct silvicultural examinations and develop silvicultural prescriptions for proposed resource management activities where vegetative manipulation of the forest is involved. (Consult Region 10 Silvicultural Examination and Prescription Handbook - 2409.26d).

C. Conduct silvicultural examinations as part of timber sale analysis. Silvicultural examination is the process of gathering vegetative data to provide a basis for silvicultural and other management decisions.

D. Develop silvicultural prescriptions as part of project planning. Complete all prescriptions before project implementation where implementation is defined as either the Final ROD, Environmental Assessment Decision Notice or Decision Memo. Base silvicultural prescriptions on silvicultural examinations; include a written description of the current stand conditions, the anticipated future condition based on management activities, and a statement on land management and resource objectives. The prescription should also include silvicultural practices, cutting methods, or other management actions that will be applied sequentially to achieve the desired stand condition and structural attributes. A silvicultural analysis for project planning should address both stand and landscape conditions.

E. Facilitate development of appropriate silvicultural system prescriptions by describing desired conditions in terms of structural attributes.

F. Include an appropriate species mix for regeneration in the silvicultural prescription prepared during the environmental analysis. The "appropriate species" is based on the potential of the site as indicated by plant associations and adjacent stand conditions.

G. Evaluate the natural reproduction potential and existing reproduction as part of the silvicultural analysis and prescription. Where possible, harvest prescriptions should consider leaving advance regeneration to meet reforestation needs and stand objectives.

H. Consider regenerating and maintaining minor species, where appropriate for the site, as viable components of future stands and for vegetative diversity. Minor species include, but are not limited to, Alaska yellow-cedar, western redcedar, and Pacific yew.

I. Select a silvicultural system that meets the resource and vegetation management objectives of the area, including objectives for biological diversity, long-term site productivity, visual objectives, and forest health.

J. Even-aged, two-aged, and uneven-aged systems shall be available for use.

K. Select rotations that produce sawtimber products, unless otherwise provided for in the Land Use Designation.

L. Even-aged timber stands shall not be scheduled for final harvest before stand growth has reached or surpassed 95% of the Culmination of Mean Annual Increment in cubic feet. Exceptions may be made where special resource considerations require earlier harvest. Exceptions also may be made where small inclusions of young stands in harvest units that otherwise meet this requirement will result in more logical management units allowing greater efficiency or less resource impacts.

M. Even-aged stands may be regenerated without having reached Culmination of Mean Annual Increment where salvage is prescribed after windthrow, where stands are in imminent danger from insect or disease attack or cutting for experimental and research purposes.

Timber Resource Planning: TIM112

I. Information Gathering and Maintenance

A. Provide timber resource information necessary to prepare timber harvest projects. This includes maintenance of inventories, analysis of data, and input for environmental analysis.

B. The Allowable Sale Quantity is partitioned into two non-interchangeable components (NIC's) (see glossary). Do not exceed limits on the sale of chargeable timber volume associated with each NIC during the plan period.

1. Determine operability based on site-specific project conditions; classify the suitable lands using the NIC definitions in the glossary.
2. Track and report project volume separately for each NIC component; use the Sales Tracking and Reporting System (STARS). Base volume estimates on available project data.

II. Pacific Yew (Pacific Yew Act, January 3, 1992, 16 U.S.C 4804)

A. Inventory and maintain existing populations of Pacific yew.

1. Locate and document the location of any existing plants during Forest Service project activities.
2. If found, implement site-specific silvicultural prescriptions to maintain Pacific yew's regeneration capabilities and presence on the site.
3. Retain Pacific yew during Timber Stand Improvement activities such as precommercial thinning where ever feasible.

Timber Resource Sale Schedule: TIM112-3

I. Timber Sale Schedule

A. Update or adjust annually the ten-year timber sale schedule to reflect specific project viability, budgetary actions, availability of personnel, and other operational constraints.

B. Publish a 12-month sale schedule that is updated every 6-months.

C. Timber sale schedules are not a commitment to sell timber. NEPA analysis is not required for timber sale scheduling.

Timber Resource Coordination: TIM113

I. Timber Program

A. Consider the management emphasis of the project area in project design and environmental analysis for timber activities.

B. The project NEPA process, which forms the basis for the Sale Area Improvement Knutson-Vandenburg (K-V) Plan, identifies resource improvement opportunities within the sale area. Schedule essential reforestation prioritized by mitigation or enhancement.

C. Coordinate activities which affect the Coastal Zone with the State of Alaska Office of Management and Budget, Division of Governmental Coordination, to ensure consistency, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program.

Timber Sale Preparation: TIM114

I. Scenery Management

A. Apply Visual Quality Objectives (VQO's) to timber sale areas based on the Land Use Designation assigned to the area. Design all vegetative management activities to meet VQO's as defined in the Visual Management System Handbook(s).

B. Size, shape, orientation to viewer, color, texture, etc. are critical elements in determining whether or not an activity meets the assigned VQO. Consideration for the visual resource is essential early on in the planning process, particularly in areas seen from a Visual Priority Route or Use Area (see Appendix F). However, each landscape setting is different and should be evaluated on a case-by-case basis. There may be instances where the VQO can be met while the proposed activity is greater than the guideline, or there also may be cases where the activity must be reduced to meet the intent of the VQO.
C. Tree limbs, root wads, and excessively high tree stumps are considered logging slash. To meet Retention and Partial Retention VQO's adjacent to road corridors, it may be necessary for the contractor to do additional clean-up as part of the timber sale.
D. Integrate the protection of aesthetic values with all timber resource planning
E. Assure compliance or guidance of adopted VQO's in timber resource management. At the project implementation stage, the VQO should be refined to the project scale.
F. Plan, design, and locate vegetation manipulation in a scale that retains the color and texture of the characteristic landscape, borrowing directional emphasis of form and line from natural features.

II. Regeneration Methods

A. Regeneration methods refer to the manner in which a new stand is created. There are three categories of regeneration systems, even-aged, two-aged, and uneven-aged silvicultural systems. Even-aged systems include clearcutting, seed tree, and shelterwood. Two-aged systems include clearcutting with reserves, seed tree with reserves and shelterwood with reserves. Uneven-aged systems include single-tree selection, group selection and group selection with reserves.
    1. Ensure that silvicultural systems other than clearcutting are considered through an appropriate project level prescription process and that documentation of this process and results are provided in project NEPA documents. As part of the project NEPA process, analyze current scientific information related to the applicability of alternative timber harvest methods. Document the predictable effects associated with alternatively using other regeneration methods.
B. Test alternative regeneration harvest methods and monitor results in cooperation with timber purchasers and other interested parties.

III. Even-aged Systems

A. Apply even-aged silvicultural methods in such a way that isolated stands of timber will not be created. Avoid locating harvest units where future harvest activities will destroy regeneration under earlier regeneration harvest activities.
B. Clearcutting is an even-aged regeneration method. There are a number of supportive reasons for the use of this method in Alaska's western hemlock-Sitka spruce forests. These include: excellent regeneration of desired species, effective dwarf mistletoe control, viable harvest economics, and compatibility with the use of standard logging systems. Other silvicultural techniques have been used to a limited degree and are still experimental in nature (see information needs section).
    1. Use clearcutting only where such a practice is determined to be the best system to meet the objectives and requirements of Land Use Designations.
    2. Generally apply clearcutting where trees are cut to achieve timber production objectives, where there is risk of dwarf-mistletoe infection and disease control is desired, or where there is a high risk of windthrow.
    3. The Chief's directive (June 4, 1992) on ecosystem management limits "clearcutting" to areas where it is essential to meet Forest Plan objectives and involve one or more of the following circumstances:
        a) To establish, enhance or maintain habitat for Endangered, Threatened and Sensitive species.
        b) To enhance wildlife habitat or water yields, or to provide for recreation, scenic vistas, utility lines, road corridors, facility sites, reservoirs or similar development.
        c) To rehabilitate lands adversely impacted by events, such as fires, windstorms or insect or disease infestations.
        d) To preclude or minimize the occurrence of potentially adverse impacts from insect or disease infestations, windthrow, logging damage or other factors affecting Forest health.

e) To provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant.
f) To rehabilitate poorly stocked stands due to past management practices or natural events.
g) To meet research needs.

IV. Size of Clearcuts

A. NFMA regulations provide that 100 acres is the maximum size of created openings allowed for the western hemlock-Sitka spruce forest type of coastal Alaska, unless excepted under specific conditions. Cedar and hardwoods are usually considered to be a component of the western hemlock-Sitka spruce ecotype in Southeast Alaska and, therefore, the 100-acre limit will also apply to these types of stands.

B. Recognizing that harvest units must be designed to accomplish management goals, created openings may be increased in size where larger units will produce a more desirable contribution of benefits.

1. Use the following factors when proposing units that would exceed 100 acres:
   a) Natural and biological hazards to the survival of residual trees and surrounding stands
   b) Topography
   c) Relationship of units to other natural or artificial openings and the proximity of units
   d) Coordination and consistency with adjacent Land Use Designations
   e) Effects on water quality and quantity
   f) Visual Absorption Capability (VAC)
   g) Effect on wildlife and fish habitat, based on the most recent research
   h) Regeneration requirements for desirable tree species
   i) Transportation and regeneration method requirements
   j) Relative total costs of preparation, logging, and administration of harvest

C. Where it is determined by an environmental analysis that exceptions to the size limit are warranted, the actual size of openings may be up to 200 acres, if required due to natural biological hazards to the survival of residual trees and surrounding stands, and up to 150 acres for the remaining factors, with the approval of the Forest Supervisor.

D. The Forest Supervisor will identify the particular conditions under which the larger size is warranted by considering the benefits to be gained.

1. Exceptions to the 150-acre size limit (200 acres for natural biological hazards) are permitted on an individual timber sale basis after 60 days public notice, and review and approval by the Regional Forester.

E. The established limits and exceptions do not apply to the size of areas harvested as a result of natural catastrophic conditions, such as insect and disease infestation or windthrow.

F. Created openings will be adequately stocked with desirable tree species, which are approximately 5 feet in height, before the area will no longer be considered an opening for the purposes of determining limitations on the scheduling, locating, and calculating the size, of additional created openings.

V. Two-aged System

A. Two-aged silvicultural systems are designed to maintain and regenerate a stand with two age classes. The resulting stand may be two-aged or trend towards the uneven-aged condition as a consequence of both an extended period of regeneration establishment and the retention of reserve trees that may represent one or more age classes. The reserve trees provide structural diversity and a biological legacy. Two-aged management regimes can produce stands of greater structural diversity than even-aged management. This method may be used where windthrow or dwarf mistletoe are not major threats or can be tolerated .

1. Emphasize green-tree and snag retention in landscape management. The actual number and attributes of the trees retained is dependent on Forest Plan and site-specific silvicultural objectives. To the extent feasible, residual patches and single trees should include large, old trees and snags.
2. Retained patches or residual trees should not be scheduled for removal. The retained patches and residual trees will provide support for those organisms that require old forests.

3. Address safety issues by utilizing the guidelines in Reserve Tree Selection Guidelines, R10-MB-215, March 1993.

VI. Uneven-aged Systems

A. Uneven-aged silvicultural systems are methods of regenerating a forest stand, and maintaining an multi-aged/multi-layered structure, by removing some trees in all age groups and stratum either singly, in small groups, or in strips. Overstory density is regulated to avoid the suppression of understory trees and to maintain understory vigor. There is very little experience and research in using uneven-age methods in southeast Alaska's western hemlock-Sitka spruce forest type.

B. All timber types on the Tongass National Forest may be harvested using uneven-aged silvicultural methods.

1. Using adaptive management, test uneven-aged management where the interdisciplinary process determines the system is appropriate to meet the objectives and requirements of the Land Use Designation including the protection of excessively steep or unstable soils, visual resources, wildlife and fish, recreation, and for use of noncommercial wood products (fuelwood). Monitor results.
2. Limit uneven-aged management systems to areas where yarding equipment suited to selective logging can be used.

VII. Intermediate Treatment Methods

A. These activities include those treatments that improve the composition, health, value and growth of a timber stand. Continue development and application of the Alaska Region Second-Growth Forest Management Program.

B. Assess areas that have received precommercial thinning, release and weeding or pruning treatments to insure management objectives have been met.

1. Certify that the treatment met the prescription objectives. In the case of thinning, it normally means certifying that the stocking of desired residual trees meets prescribed standards.

VIII. Salvage harvest

A. Salvage cutting is the removal of dead trees or trees being damaged or dying due to injurious agents other than competition and is used to recover value that would otherwise be lost.

B. Sale and utilization of dead, blown-down and other deteriorating timber will receive high priority in Land Use Designations where the harvest of timber is compatible with the area's management objectives. Salvage may include trees damaged by road construction.

C. Trees salvaged in a Land Use Designation excluded from scheduled timber harvest (unsuitable forest land) will not be included as chargeable volume to the Allowable Sale Quantity. For catastrophic events which occur on unsuitable timber lands, not withdrawn from harvest, consider an appropriate range of management alternatives to meet varying levels of resource protection and commodity outputs. These lands will not be substituted for suitable forest land.

D. Beach log salvage often involves both state and National Forest System lands. A Memorandum of Understanding between the State of Alaska and the Forest Service on coordination of beach log salvage dated April 23, 1980 provides direction.

1. The state and Forest Service will prepare combined beach log salvage sales. The party with the larger share of material will sell and administer the sale.
2. Beach logs may be exported.
3. Beach logs that are not merchantable will be designated for personal use whenever possible.
4. Beach log salvage material is not chargeable to the annual Allowable Sale Quantity.

E. Where catastrophic events cause extremely heavy tree losses on the suitable timber base, commercial timber harvest will be given high priority to maximize utilization.

F. Refer to the Riparian Forest-wide Standards & Guidelines for salvage in riparian areas.

IX. Utilization standards

A. Industrial wood products on the Tongass National Forest will be managed for quality sawtimber material.

1. Require utilization and optimum feasible use of wood material. Promote the use of wood for its highest value product commensurate with present and anticipated supply and demand.

2. Improvements in utilization will be made through sale preparation, appraisals, contract administration, and dissemination of research information.
3. Consult current Regional direction for precise standards.

X. Requirement for Proportionality

A. Consult Tongass Timber Reform Act, Section 301 and FSH 2409.18.

XI. Competitive Bidding and Small Business

A. Private enterprise shall be encouraged to use National Forest timber resources.
   1. The Forest Service will plan sale offerings to encourage competitive bidding in a range of total sale volume and species that provides opportunities for purchasers.
   2. Consult annually on the amount of volume to be offered with the Small Business Administration.

XII. Unit Cards

A. Unit cards should document mitigation and protection measures displayed and documented in NEPA documents.

XIII. Windthrow

A. Special consideration will be required in the design of harvest units adjacent to Land Use Designations or other areas which limit or prohibit timber harvest activities. Where the chance of windthrow in adjacent stands is increased by timber harvest, measures will be taken to contain the windthrow within the Land Use Designation where timber harvest is allowed.

Commercial Sale Administration: TIM122

I. Contract Administration

A. Administer timber sale contract provisions, post-sale measurement, and financial oversight of all sales.
   1. Frequency of timber sale inspection will be determined by the complexity of the timber sale and operator performance, with the objective being to ensure full contract compliance.
   2. Sale administrators will work with the other specialist(s) to ensure that the project goals are obtained.
   3. Consult with designated District and Area staff to determine BMP measurement and reporting requirements.

Other Forest Products: TIM130

I. Free-use Program

A. Make fuelwood available in areas accessible to the public consistent with LUD management objectives.
B. Make Special Forest Products available, such as berries, mushrooms, Sphagnum moss, cones, bark, Christmas trees, boughs, trolling poles, spruce roots, cedar bark, and transplants consistent with LUD management objectives. Integrate the use and availability of these forest products with historically used forest products.
C. Address requests for green saw-timber as soon as feasible.
D. Designate the timber planned for harvest.

II. Commercial Program

A. Allow harvest of Special Forest Products (SFP's) (see above TIM130, I, B for a description of products) in ways that assure the continued integrity of the forest stand.
B. Permits shall be required for commercial collection of any SFP.
C. Commercial harvest shall occur only where adequate quantities of the resource are available on harvestable sites.
D. Selling units (bushels, pounds, sacks, etc.) for specific SFP's shall be consistent across the forest to make record-keeping, reporting, and monitoring more accurate and efficient.

E. Collection of SFP's adjacent to trails and roads shall be avoided where scenic quality would be impaired. Collection should be no closer than 20-50 feet from the trail or road. Site-specific prescriptions will vary by class of trail or road.

Pesticide Use and Vegetation Management: TIM140

I. Pesticide Use

A. Pesticide use is not prescribed in the Forest Plan, but may be considered on a case-by-case basis. Biological, environmental, and economic costs and benefits of pesticide use are to be identified and weighed prior to Forest Service use of pesticides on the Forest.

B. Pesticides will be employed only after such use has been evaluated in an environmental analysis, recommended for approval by the Integrated Pest Management Working Group, and approved by the Forest Service officer with delegated authority.

C. When pesticide use is judged necessary, selection and application will be based on the following guidelines:

1. Those application methods and formulations will be used that are most effective in suppressing the pest, most specific to the target organisms, and least harmful to non-target components of the environment.
2. In operational pest management programs, only those pesticides that are registered in accordance with the Federal Insecticide, Fungicide and Rodenticide Act, as amended, will be used, except as otherwise provided in regulations issued by the Environmental Protection Agency or the Department of Agriculture.
3. Application will be restricted to the minimal effective dosage that, when precisely applied to the target area at optimum times, will accomplish the resource management objectives.

Reforestation: TIM24

I. Site preparation, Planting, Stocking

A. This activity comprises all treatments and activities aiding the re-establishment of desirable tree cover following timber harvest.

1. Prescribed burning may be used for preparing sites for planting, seeding, and for other resource needs; it may also be used for fuels management, when the wood residue cannot feasibly be used for other purposes.
2. Examine all forest lands treated.
   a) No first year surveys are required if the silvicultural prescription anticipates natural regeneration.
   b) Examine artificial seeding or planting treatments one and three years after treatment.
   c) Stands will be certified as stocked, if the third-year survey indicates that the area meets stocking standards. Permanent openings are allowed, and do not need certification, where created for wildlife habitat improvement, vistas, recreation uses and similar practices.
   d) Prescribe artificial regeneration if the third-year survey indicates that natural regeneration is highly unlikely.
   e) Schedule another survey no later than five growing seasons after harvest if the third-year survey indicates the area is very likely to be stocked, but more time is required to make this determination.
   f) Certify that every unit which receives a final harvest meets or surpasses the stocking guidelines and certification standards (Consult Silvicultural Practices Handbook - FSH 2409.17) within the 5-year regeneration period established by law. A unit may be certified as adequately stocked at any time during this 5-year period. (Also see the Monitoring Plan in Chapter 6.)
   g) Certify that a planted or seeded area has attained a stocking level above a defined minimum in terms of number and distribution of acceptable species, whether planted, seeded, or natural.

TRAILS
Forest-wide Standards & Guidelines

Trail Activities: TRAI1

I. Opportunities

A. Provide for a diversity of outdoor recreation trail and waterway opportunities that are appropriate for the Recreation Opportunity Spectrum (ROS) class and Land Use Designation. Include such activities as hiking, mountaineering, spelunking, cross-country skiing, snowmobiling, OHV use, motorized trail bike riding, mountain bike riding, motorboating, canoeing, and kayaking.

B. Emphasize opportunities in all ROS classes, as applicable, for activities which are in harmony with the natural environment and consistent with the recreation role of the National Forest System lands in a given area.

C. Locate, design, and operate trails to make the best use of available recreation opportunities. Establish trail objectives and associated management actions by examination of the interaction of all resource activities, opportunities inherently present, and the objectives of the Land Use Designation.

D. Coordinate trail planning, location, design and operation with the recreation management goals and objectives of other national, state, local agencies, and private operations. Make an effort to provide loop trail opportunities through the integration of systems regardless of jurisdiction.

E. Provide access to high quality recreation places with trail systems that will enhance the total experience of the user.

F. Emphasize trail systems that offer the following opportunities as may be appropriate and feasible in a given area:

1. Connected, multi-day trip opportunities for both land trails and water trails.
2. Link trails with existing (or emerging) road systems.
3. Alpine trail systems with quick access from saltwater anchorages, cabins, local communities, and resorts.
4. OHV trail systems utilizing connections with existing road systems to form loop trips and access to recreation attractions.
5. Loop trail systems in connection with recreation cabins.
6. Access from local communities to snowline where snow trails are feasible.
7. Heli-hiking trails within a reasonable distance (based on cost) from local communities and service centers.

Trail Administration: TRAI2

I. Inventory, Construction and Maintenance

A. Maintain an inventory of existing trail systems which will assist in determining the desirability of retaining trails in their current locations, their contribution in meeting overall recreation objectives, and actions needed to bring the system up to desired standards and to maintain those standards. (Consult Forest Service Trails Management Handbook and Alaska Region Trail Construction and Maintenance Guide.)

B. Construct, reconstruct and maintain trails and waterway facilities as part of the Forest transportation system.

1. Prioritize and schedule trail construction and maintenance to meet public needs as follows:
   a) Existing trails which are causing resource damage or to protect investments.
   b) Existing trails and waterways serving local community needs and tourist centers.
   c) Existing trails and waterways providing access to recreation cabins.
   d) Existing trails and waterways in Wildernesses.
   e) New trails and waterways which will serve local communities, tourist centers and resorts.
   f) New trails in Wilderness which will disperse use and are needed to help protect wilderness resources from degradation.
2. Provide trailheads in locations to allow access to the greatest number and types of trails practicable within an area. Consider use for both snow and snow-free trail access (during

different seasons) from the same trailhead when practicable. Match the capacity of the trailhead with the desired capacity of the area being served.

3. Construct and maintain trails to the standard appropriate for the type and amount of use desired in a given area. If the trail is to be used by multiple types of users, design and construct it to adequately and safely accommodate the most demanding or impacting type of use. (Consult FSH 2309.18.)
4. Design and construct bridges to support the maximum expected snow and ice load, construction or maintenance equipment, and anticipated user equipment. Bridges must be appropriate for the prescribed ROS class and meet the adopted Visual Quality Objective for the area.
5. Plan and provide trails for a variety of accessibility challenge levels, appropriate to the ROS setting.
6. Use volunteer, human resource, and cooperative programs to augment trail construction and maintenance budgets and to provide land use education opportunities for the public. Integrate these resources into the total trail management system. Encourage local organizations to "adopt a trail" to provide needed maintenance on a continuing basis. Crews must be under the supervision of a qualified trail supervisor. Help develop qualified supervisors in volunteer organizations and other cooperative programs. (Consult FS Trails Management Handbook.)

C. Trails and associated waterways within Land Use Designations and recreation places often become the principal tools for achieving management objectives. Construct and maintain trails and related facilities so that they contribute to desired conditions and appear to be an appropriate part of the forest setting and not an intrusion upon it. (Consult FS Trails Management Handbook.) Use Best Management Practices (Chapter 10 of the Soil and Water Management Handbook, FSH 2509.22 and Appendix C of this Plan) to reduce the effects of trail activities on the beneficial uses of water.

1. Develop and incorporate in project plans an erosion control and stabilization plan for stabilizing all human-caused soil disturbances.
2. Locate trail crossings at right angles to streams and at suitable bridge locations. Design and maintain trail treads to protect riparian values and minimize soil erosion.
3. Locate stream crossings only in stable reaches. Design crossings of V-notched drainages to prevent debris jamming. Drainage structure gradients should follow natural gradient for non-fish streams where needed to prevent downstream erosion. Require brow logs for dirt and rock-surfaced log stringer bridges and turnpike sections to contain materials and prevent entry of sediment into the stream. For further location and design guidance consult the Trails Handbook and Drainage Structures Handbook.
4. Permit construction of trails parallel to and crossing fish streams only where objectives for the management of fish habitat can be met. Where trails are located near fish streams, minimize the introduction of sediment during clearing, construction, and operation activities. Sidecasting and waste materials must not encroach upon the stream course and as much undisturbed groundcover as practicable shall be left between the trail and the stream. Complete endhaul of waste material will be required where trails are located near fish streams when there is the probability of downhill movement of the material into the stream. Fill will be allowed in fish streams only when considered through the IDT process to be the best alternative.
5. Meet fish passage direction at all locations where trails cross fish streams. Contracts will specify permissible uses of motorized equipment and the timing of trail construction activities based on agreement with the Alaska Department of Fish and Game and as determined by environmental analysis and appropriate line officer approval.

TRANSPORTATION
Forest-wide Standards & Guidelines

Transportation System Inventory: TRAN111

I. Inventory Updating and Maintenance

A. Maintain an inventory of all forest development transportation facilities, including roads, bridges and major culverts (including those which require fish passage), Log Transfer Facilities, and airfields. (Consult FSM 7710.)

1. Use the Transportation Management System (TMS), or subsequently developed and approved system, as the data management system for the forest road, bridge, and major culvert inventory.
2. Update changes on transportation maps annually. Map all roads, as an historical record, regardless of administrative classification.

Road and Bridge Administration: TRAN122

I. Road Management

A. Manage Forest Development Roads and bridges based on Road management objectives using the criteria listed below:

1. Keep Forest Development Roads open to public motorized use unless:
   a) Use conflicts with Land Use Designation objectives, such as the need to protect fish or wildlife habitat or to retain a non-motorized recreation experience.
   b) Financing is not available to maintain the road or manage the associated use of adjacent lands.
   c) Use causes unacceptable damage to roadway or adjacent soil and water resources.
   d) Use results in unsafe conditions.
   e) There is little or no public need.
2. Manage road use by seasonal closure if any of the following conditions are anticipated:
   a) Seasonal conflicts with Land Use Designation objectives, such as the need to provide security for wildlife during critical times of the year.
   b) Traffic hazards or unacceptable damage to roadway or adjacent soil and water resources due to weather or seasonal conditions.
3. Restrict public use by temporary closure if:
   a) Concurrent use between commercial and other traffic is unsafe.
   b) The potential for damage to equipment from vandalism is high.
4. Allow administrative use of closed or restricted roads when needed for emergency use or uses otherwise deemed appropriate by the Forest Service officer with delegated authority.

B. Consider the opportunities to manage road use cooperatively with applicable state and other Federal agencies to meet fish and wildlife management objectives.

C. Manage roads to be consistent, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program.

D. Communicate road closures to the public in a positive manner, stressing the reason for closure rather than denial of access.

II. Permitting

A. Authorize, by issuing a road use permit, appropriate commercial use of Forest Development Roads not otherwise authorized by a Forest Service contract, easement, Special Use Authorization, operating plan, or other similar agreement. Include investment sharing and maintenance requirements and rules of use as terms of the permit. (Consult FSM 7730 R-10 supplement).

B. Obtain needed permits for the construction of bridges across navigable waters, and for Log Transfer Facilities.

III. Cost Share Management

A. Administer cost-shared roads in accordance with the terms of the agreement between the Forest Service and the cooperators.

1. Collect data about traffic volume and types of users on Forest Development Roads as needed to determine investment sharing and commensurate maintenance responsibilities.

Transportation Improvement Planning: TRAN212

I. Planning

A. Plan transportation facilities that will efficiently integrate and achieve Forest Plan direction, including consideration of landscape-scale ecological objectives. Take advantage of resource opportunities recognized during project scoping, such as providing access to a recreation attractor or mineral deposit.

B. Direct the orderly development and management of the transportation system and ensure the documentation of decisions affecting the system.

C. Coordinate transportation corridor development with the applicable Canadian, Federal, state, and local government agencies and private landowners. Consider opportunities to enhance the overall transportation system by locating roads coincident with the TUS corridors identified in this Plan. Make no road connections between communities or emerging communities without the participation and collaboration of state and local governments, communities, and affected individuals.

D. During project planning, identify resource concerns and site specific mitigation measures. Clearly document these mitigation measures to facilitate project implementation and monitoring.

II. Access and Travel management Planning and Road management objectives

A. Undertake access and travel management planning based on Forest Plan goals, objectives, and desired conditions. As part of the planning process, update road management objectives for all Forest Development roads (see Appendix L). (Consult FSM 7710 and FSH 7709.55.) Road management objectives include access objectives, design criteria, environmental and resource considerations, operation and maintenance criteria, and other road attributes.

1. Road management objectives should be updated as a part of the planning process for all projects that affect road access.

Road and Bridge Preconstruction: TRAN214

I. Road Standards

A. Perform route or site selection, location, geotechnical investigations, survey, and design to a technical level sufficient to meet the intended use and commensurate with both ecological objectives and the investment to be incurred. Ensure consistency with Forest-wide standards and guidelines and Best Management Practices. (Consult FSH 2509.22.)

1. Consider each of the following factors when determining standards for the intended uses:
   a) cost of transportation (including operation and maintenance)
   b) safety
   c) intended purpose and ecological objectives
   d) impacts on land and resources on both local and landscape points of view.

B. Construct roads in the most cost-effective manner consistent with Land Use Designations, ecological objectives, and intended purposes. Use the Forest Highway Program (consult FSM 7740) and joint financing with other state and Federal agencies to construct roads to a higher standard, when determined appropriate to meet road management objectives.

C. Evaluate each proposed road construction or reconstruction project to determine the least cost road (considering cost of construction, maintenance, and hauling) which meets the intended purpose. Compare the road construction standard required for the immediate harvest and removal of timber with that needed to meet long-term road management objectives. When a higher standard facility is required to meet multiple-use objectives or for future management, include supplemental funding (Forest Service funds) to construct the higher standard. The purchaser of National Forest timber shall not bear that part of the cost necessary to meet the higher standard. (Consult FSM 2430.)

D. Cooperate with the Alaska Department of Transportation and Public Facilities and the Federal Highway Administration in the administration of the Forest Highway Program. Provide nominations of routes to be upgraded and encourage their transfer to state jurisdiction, in order to provide safe facilities and adequate maintenance between communities linked by the Forest Development Transportation System. (Consult FSM 7700.)

E. Build and manage roads primarily to meet public needs. Include considerations for a full range of access forms such as cars, trucks, bicycles, Off-Highway Vehicles, and foot travel. Where roads will provide potential access to private or State of Alaska lands, recognition of the route as a potential state route should influence location and alignment standards to avoid future duplication of construction. Such consideration must not, however, be considered justification for a higher cost road than is necessary for Forest Service resource management.

F. Consider conservation of petroleum energy supplies in the location, design, and operation of the transportation system.

II. Location and Design

A. Locate and design Forest Development Roads in a manner which will utilize both local and landscape scale ecological objectives, as well as Best Management Practices. Seek to minimize effects on wildlife and fish habitat, riparian habitat, and wetlands. (Consult the Forest Service Road Preconstruction and Drainage Structures Handbooks, and the Region 10 Soil and Water Conservation Handbook for detailed location and design guidance.)

1. Incorporate erosion control and stabilization measures in project plans for stabilizing all human-caused soil disturbances. Assure Best Management Practices can be implemented in construction, operation, and maintenance of the road.
2. Avoid construction on highly unstable uplifted marine sediment as identified in the Soil Resource Inventory (SRI) or use geotechnical engineering designs to maintain stability. Obtain line officer approval after on-site consideration and stability analysis.
3. Roading on slopes in excess of the soil's internal angle of friction, as identified in SRI's, requires geotechnical investigation and appropriate designs. Obtain line officer approval after site-specific investigation has been conducted to determine degree of risk and the potential effects from mass wasting. Conduct stability analysis to determine the most effective and lowest cost method of reducing the risk of roadway failure. Consider constructing full bench roads and end-hauling excess excavation. End-hauled excess excavation shall be deposited at appropriate locations that prevent the excess material from entering streams. Stabilize and revegetate end-hauled materials in accordance with prescribed erosion control measures specified in the project plan.
4. Locate stream crossings in stable reaches, unless mitigation measures are taken. Design crossings of V-notched drainages to prevent debris jamming. Design and install culverts to prevent downstream erosion. When embankment material is used for surfacing native log bridges, install side logs, wood chinking, and a geotextile fabric blanket prior to embankment placement to contain surfacing materials and prevent entry of sediment into the stream.
5. Avoid locations of roads near fish-bearing streams. Seek locations which avoid fish streams, crossing streams when other locations are not feasible and fish habitat can be protected. Where roads are located near fish streams, avoid the introduction of sediment during clearing, construction, and operation activities. Excess excavation material must not encroach upon the stream course. Leave as much undisturbed ground cover between the road and the stream as feasible. Require complete endhaul of excess excavation where there is the probability of downhill movement of that material into the stream. Place fill into fish streams only when it is considered by the environmental analysis process to be the best alternative, and following consultation with the Alaska Department of Fish and Game.
6. Meet fish passage direction at locations where roads cross fish streams. (Consult Forest-wide Standards & Guidelines for Fish Habitat Planning, FISH112.) Specify permissible uses of heavy machinery and the timing of road construction activities in contracts based on consultation with the Alaska Department of Fish and Game and as determined by interdisciplinary analysis and on approval by the appropriate line officer.

7. In areas where erosion due to heavy rains on disturbed soil is a resource protection concern, provide special project specifications that prescribe the maximum distance beyond the end of embankment placement that pioneering operations (preliminary clearing of the road Right-of-Way) may occur.
8. Slope drainage ditches along the roadbed to the nearest relief culvert. Discharge from road ditches should be cross drained to filter on natural forest floor, rather than flowing directly into streams.
9. Design bridge abutments to minimize disturbances to streambanks.
10. Promptly rehabilitate temporary roads in accordance with erosion control and stabilization measures prescribed in the project plan. Establish vegetation on roadbeds of temporary roads within 10 years following termination of use.
11. Design roads to conform to the Memorandum of Understanding with the U.S. Fish and Wildlife Service on eagles, or obtain variances.
12. Avoid ditching across wetlands if surface water control is not required for safety or protection of the running surface.

B. Design and construct roads to conform to the Adopted Visual Quality Objectives.
1. For guidance, consult National Forest Landscape Management Handbook, Volume 2, Chapter 4: Roads.
2. Consider the following practices during road design on, or seen from, *Visual Priority Travel Routes and Use Areas* (see Appendix F):
   a) Vegetating slopes seen from the road.
   b) Providing "planting pockets" or terraces on slopes, where needed.
   c) Minimizing landform modifications through road location and design.
   d) Considering vegetative treatment of clearing edges such as feathering or free-flowing, undulating edge to break up the straight line.
   e) Cleaning-up roadsides after construction on all roads receiving general public use or expected to have such use.

C. Plan, design, and construct roads to minimize conflicts or mitigate conflicts with existing facilities such as trails, pipelines, utilities, and cabins.

III. Wetlands, Flood plains, Estuaries, Tidal Meadows

A. Locate and design Forest Development Roads to minimize impact to soils, water, and associated resources in accordance with Executive Orders 11988 and 11990 (Floodplain Management and Protection of Wetlands). Avoid development activities, to the extent feasible, in areas of important wetland value identified during project Interdisciplinary Team analysis.
1. Do not construct roads across alluvial flood plains, mass wastage areas, or braided stream bottom lands unless an Interdisciplinary Team investigation indicates that individual site-specific mitigation can be applied to assure protection for the soils, water and associated resources.
2. For roads or other facilities approved for location near estuaries, fills and excess excavation materials must not encroach upon such areas unless recommended after project Interdisciplinary Team analysis.
3. Use the following criteria for siting water-dependent transportation facilities, other than Log Transfer Facilities, such as docks, landings, floats, and boat ramps:
   a) Locate far enough from known anadromous fish streams to avoid significant interference (generally a minimum of 300 feet away).
   b) Locate far enough from tideflats or subtidal beds of aquatic vegetation to avoid significant impairment (generally a minimum of 300 feet away).
   c) Restrict the filling of intertidal and subtidal areas to those sites having the least value as habitat for marine organisms and vegetation, unless Interdisciplinary Team and interagency (FWS, NMFS, and ADF&G) joint analysis determines that for other resource reasons it is desirable to fill the more productive site.
   d) Avoid areas with established uses, such as areas used for commercial and sport fishing, hunting, and anchorages for commercial and recreational vessels, unless interdisciplinary review determines that location of sites may be accomplished in a manner that is compatible with such uses.

e) Assure that all needed permits, leases, and accesses are acquired. Work cooperatively with other agencies such as National Marine Fisheries Service, U.S. Fish and Wildlife Service, Department of the Army Corps of Engineers, Alaska Department of Fish and Game, and Alaska Department of Natural Resources on these efforts.

IV. Quarry and Borrow Sites

A. Locate and design quarry (shot rock pit) and borrow (gravel pit) sites and time their use to minimize the impacts upon other resource values, existing facilities, and to meet Land Use Designation objectives. During the design phase, consider the potential for use of the pit to improve fish habitat and dispersed recreation opportunities.

1. Plan rock quarries and borrow pits through the Interdisciplinary Team process. On potentially landslide-prone areas, blasting will be avoided during or within 72 hours following a 2-year 24-hour storm (total amount of expected rainfall from a storm event that would statistically occur once every two years; in Southeast Alaska, this would probably equate to about 4 inches of rain in one day), or until determined that the soil groundwater level does not constitute a high-risk situation. Where other sources are available, do not locate borrow pits on landslide-prone areas. Where no other feasible alternative exists, strip quarries of their overburden and haul excavated material to a stable location. Stabilization of the overburden material will conform to the erosion control and stabilization measures developed during the planning of the quarry or borrow pit.
2. Design quarry and borrow pits to minimize the possibility of sediment being carried into watercourses by run-off. Quarry and borrow pits will be located away from watercourses, unless project Interdisciplinary Team analysis determines that site-specific mitigation measures can be applied to assure protection of the soils, water and associated resources. Whenever locations near streamcourses or other water bodies are recommended, erosion control measures must provide for drainage from materials sites to run-off through a filter strip, buffer, or sediment basin prior to entering a water body, unless the quarry or borrow pit is to be used for fish habitat management.
3. Limit blasting that adversely effects fish spawning beds to times when eggs and alevins are not vulnerable. Safe times and distances will be determined on a site-by-site basis after consultation with agencies such as:
   a) Alaska Department of Fish and Game
   b) National Marine Fisheries Service
   c) U.S. Fish and Wildlife Service
4. Do not allow the use of intertidal gravel as a source of borrow.
5. Drain borrow pits and quarries no longer needed, unless developed for fish or waterfowl habitat, and revegetate mineral soil.
6. Consider screening borrow pits, quarries and access roads along sensitive travel routes.

V. Log Transfer Facilities Siting, Construction, Operation, and Monitoring

A. Site Log Transfer Facilities in locations which will best avoid or minimize potential impacts on water quality, aquatic habitat, and other resources. During site analysis, cooperate with state and Federal agencies to assemble required data and evaluate alternatives.
When considering alternative siting, construction, and operation of Log Transfer Facilities, use both regulatory guidelines established by the Clean Water Act (40 CFR Part 230), and the Alaska Timber Task Force Log Transfer Facility Guidelines (See Appendix G). All Log Transfer Facilities are evaluated by regulatory agencies using these two sets of guidelines (items 1 and 2 below).

1. *The Log Transfer Facility Siting, Construction, Operation and Monitoring/Reporting Guidelines (1985),* developed by the Alaska Timber Task Force (ATTF) Log Transfer Facility Guidelines Technical Subcommittee, are used by the regulatory agencies in evaluating applications for meeting requirements of the Clean Water Act. These guidelines are to be used when evaluating proposals for log transfer and associated facilities. The introduction to the guidelines say "The objective is to consider all the guidelines and develop the "best mix" which allows the activities to proceed while meeting all applicable statutory and regulatory requirements". The ATTF Guidelines may be found in Appendix G of this document.

2. Alternatives for siting, construction, and operation must also be evaluated using the 404(b)(1) process of the Clean Water Act and the requirements of 40 CFR 230.12(a)(3) to determine if:
   a) There is a feasible alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences; or
   b) The proposed discharge will result in significant degradation of the aquatic ecosystem; or
   c) The proposed discharge does not include all appropriate and feasible measures to minimize potential harm to the aquatic ecosystem; or
   d) There does not exist sufficient information to make a reasoned judgment as to whether the proposed discharge will comply with these Guidelines.
   e) The "proposed discharge" refers to the discharge of logs, bark, any other dredged or fill material, and storm water into the aquatic systems.

B. Use the additional following guidelines, consistent with the 404(b)(1) *process and Log Transfer Facility Siting, Construction, Operation and Monitoring/Reporting Guidelines (1985)* as described in Part A above, when evaluating alternatives for log transfer. The guidelines described in Part A take precedence over these guidelines.
   1. Minimize the number of Log Transfer Facilities and storage areas by selecting locations that will accommodate future logging without requiring additional transfer or storage sites.
   2. Give preference to locating Log Transfer Facilities along straits or channels when feasible. When located in bays, large bays are preferred to small bays, deep bays preferred to shallow bays. Sites near the mouths of bays are preferred to sites near the heads of bays. Give preference to sites where marine vegetation is sparse or absent over sites with vegetation.
   3. Avoid siting log transfer, rafting, and storage facilities in areas with established commercial, subsistence, and sport fishing activity, high levels of recreation use, areas of high scenic quality, or documented concentrations of species commonly pursued by commercial, subsistence, and sport fishers.
   4. When an existing Log Transfer Facility in a less than optimal location is considered for reconstruction, perform environmental analysis to determine whether adverse impacts of relocating the facility exceed those resulting from continued use at the existing site.
   5. Site locations that have foundation materials, determined by appropriate subsurface investigation, that can economically and effectively support the structure through the duration of its design life.
   6. Consider the visual impact of a proposed structure in the selection of alternative designs. In areas of high visual sensitivity emphasize designs which would be less likely to dominate the landscape (such as a low-angled slide rather than a bulkhead design).

Road and Bridge Construction/Reconstruction: TRAN22

I. Construction

A. Construct Forest Development Roads and bridges that provide the stability and durability appropriate for their intended use as documented in the road management objectives.

II. Reconstruction

A. Reconstruct roads and bridges in accordance with the following limitations.
   1. Limit reconstruction activities to:
      a) Correction of unsafe conditions that cannot be corrected by traffic restriction.
      b) Repair of situations where use will cause environmental impacts inconsistent with Forest Plan direction.
      c) Upgrading of a facility that was not originally constructed to accommodate current or anticipated use.
      d) Repair of surfacing, bridges, and Log Transfer Facilities, where analysis clearly shows an economic advantage to protect the investment.
      e) Removal of vegetation, repair of surfacing, repair or replacement of culverts and bridges where necessary to bring roads up to timber haul standards.

B. Reconstruct roads and bridges using Best Management Practices. Consult the Alaska Department of Fish and Game on reconstruction activities affecting fish-bearing streams.

Road Maintenance: TRAN23

I. Maintenance Levels, Conditions, and Inspections

A. Operate and maintain Forest Development Roads in a manner which meets the road management objectives and ecological objectives for the landscape where the road is located. Use road closures, maintenance and other measures to keep road surface and road site erosion at low or near background levels. Maintain roads to meet Best Management Practices (BMP's) regardless of the methods used to obtain the maintenance work. Manage roads to provide cost-effective support to Land Use Designation objectives and safe travel to users of the system, while protecting the environment, adjacent resources, and the public investment. (Consult the Transportation System Maintenance Handbook.)

1. Consider protection needs of adjacent resources when planning and conducting road maintenance activities. Where consistent with road management objectives, consider incorporating design features which will protect water quality by minimizing long term maintenance needs (e.g. driveable dips adjacent to culverts, oversized culverts, outsloping roads).
   a) Maintain road running surfaces and bridge decks to minimize the amount of road surface sediment entering adjacent streams and lakes.
   b) Maintain ditches and culverts to keep water effectively flowing, and minimize sediment entering streamcourses.
   c) Provide for the disposal of materials collected during road maintenance (soil, rock, and debris) in a manner that minimizes sediment entering streams and lakes and meets Land Use Designation objectives (particularly those regarding visual quality).
   d) During snow plowing operations, do not use bodies of fresh water as disposal sites for snow (and accompanying road surface sediments).
2. Perform Condition Surveys in accordance with criteria set forth in the Soil and Water Conservation Handbook. The intensity of survey will be commensurate with the risks and potential effects of structure failure. Itemize deficiencies needing correction and present recommendations for corrective action.
3. Inspect bridges at frequency and standards specified in FSM 7730.
4. Implement requirements of the Forest Service Highway Safety Program (consult FSM 7730), which include recording the location of all known accidents and identifying locations, design, and operating features that are potential high hazards. Prioritize hazards for correction based on traffic volume, traffic mix, and degree of hazard. Program the elimination of identified hazards on a systematic basis, and as funding permits.
5. Use of traffic control devices will be in accordance with the guidelines contained in the Manual on Uniform Traffic Control Devices (U.S. Department of Transportation, Federal Highway Administration, Publication Number FHWA - SA-89-006; HTO-21/2-89 (15M)P.)

WETLANDS
Forest-wide Standards & Guidelines

Wetlands: WET

I. Objectives

A. Avoid alteration of, or new construction on wetlands, wherever there is a practicable, environmentally-preferred alternative, considering the functions and values of wetlands as well as other non-wetland ecosystems in the project area. Practicable alternatives take into consideration costs, existing technology, and logistics in light of overall project purposes. 40 CFR 230.3(q).

B. Minimize the loss of higher value wetlands (especially fens) and the adverse impacts of land management activities on wetlands. Consult Executive Order 11990 and BMP 12.5 for guidance on wetland protection.

C. Seek to maintain the natural and beneficial functions and values of wetlands.

II. Inventory and Evaluation

A. Use the most current technical criteria for wetland identification and delineation. Consult the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*, 1987 (or its revision), as appropriate.

B. Develop data on wetlands values and functions as needed for watershed analysis and project planning.

C. Evaluate the hydrologic, water quality, and habitat functions of wetlands and determine their biological significance and scarcity at the appropriate landscape scale.

III. Land Use Activities

A. The discharge of dredged or fill material onto wetlands is regulated under Section 404 of the Clean Water Act which is administered by the Corps of Engineers (COE) and the Environmental Protection Agency (EPA). Certain categories of activities are exempt from regulation while others may be permitted (refer to 33 CFR 323.4 Part 330 Appendix A 325). Consult with COE early in the planning process to determine whether a 404 permit is required.

B. Consistent with the Clean Water Act, as amended, use Best Management Practices (BMP's) (FSH 2509.22) in all management activities which could affect water quality of wetlands. BMP's are intended to assure that flow and circulation patterns, and chemical and biological characteristics of water are not impaired. (BMP's are summarized in Appendix C.)

C. Before issuing authorizations, leases, easements, rights-of-way or exchanging lands containing wetlands, identify uses that are restricted under identified Federal, state or local wetlands regulations. Incorporate appropriate restrictions, where necessary, to protect or minimize wetland impacts, or withhold such properties from exchange.

D. Cooperate with state and Federal agencies having overlapping resource management responsibilities for wetlands, including the Alaska Department of Fish and Game, Alaska Department of Environmental Conservation, Alaska Division of Governmental Coordination, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, National Marine Fisheries Service, and the U.S. Fish and Wildlife Service.

WILDLIFE
Forest-wide Standards & Guidelines

Wildlife Habitat Planning: WILD112

I. Coordination/cooperation with other Agencies, Institutions and Partners

A. Coordinate with the Alaska Department of Fish and Game, other state agencies, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, tribal governments, and other cooperators and partners during the planning of activities that may affect wildlife.
   1. Each administrative area should meet at least annually with state and Federal wildlife agencies to review resource activities, present progress reports on implementation of past cooperative work or agreements, and schedule cooperative work.
   2. Seek to maintain memoranda of understanding with appropriate state, Federal, and local agencies and associations.

B. Emphasize management for indigenous wildlife species and natural habitat except in cases where the Forest Service, in cooperation with the Alaska Department of Fish and Game and U.S. Fish and Wildlife Service, find desirable alternatives. Special consideration should be given to the possible adverse impacts on habitat of sensitive, threatened, and endangered species.

C. Coordinate wildlife habitat surveys, studies, plans and improvement projects with the Alaska Department of Fish and Game, U.S. Fish and Wildlife Service, and other appropriate state, Federal, tribal, local and private agencies. Use the Sikes Act authorities for cooperative work with the state. Use agreements and other partnerships to cooperate with other partners.

D. Coordinate with the Alaska Department of Fish and Game in development of state strategic plans and population goals and objectives for wildlife species and attempt to incorporate wildlife goals and objectives into forest management.

E. Provide habitat information to the Alaska Department of Fish and Game to assist in correlating hunting seasons, permits, and bag limits to on-the-ground habitat conditions so that population and habitat objectives can be achieved.

II. General Habitat Planning/Coordination

A. Recognize as wildlife habitat, areas of land and water which can contribute to achieving wildlife objectives for consumptive and non-consumptive uses.

B. Provide the abundance and distribution of habitat necessary to maintain viable populations of existing native and desirable introduced species well-distributed in the planning area. (Consult 36 CFR 219.19 and 36 CFR 219.27.)

C. Cooperate with the State and, as appropriate, the U.S. Fish and Wildlife Service in managing vehicle, boat, and other human use (e.g. hunting and fishing seasons and bag limits) as necessary to achieve wildlife objectives, recognizing the access provisions of ANILCA. Emphasize management to reduce human disturbance in high value habitat areas and during critical periods of wildlife use.

D. Maintain an Area program schedule which includes anticipated wildlife habitat and population inventory needs, monitoring requirements and proposed habitat improvement and maintenance projects.

E. Use forest plan management indicators to evaluate the potential effects of proposed management activities affecting wildlife habitat. (Consult Forest Service Manual 2620.)

F. Develop interagency habitat capability models for any or all of the management indicators to systematically assess the impacts of proposed projects during project level analysis. Periodically review and update models to reflect the most current habitat relationships and habitat modeling technology.

G. Cooperate with the Alaska Department of Fish and Game to seek to prevent existing populations of non-indigenous species from dispersing into Wilderness areas. Address issues regarding management, introduction, and re-introduction of wildlife species consistent with National and Regional Policy.

H. When population or habitat declines for a plant or animal species or subspecies indicates that long-term persistence is at risk, evaluate the particular species for designation as a Regional

Sensitive Species by the Regional Forester. (See Threatened, Endangered & Sensitive Species Forest-wide Standards & Guidelines.)

III. Habitat Improvement Planning

A. Identify habitat improvement projects to meet wildlife habitat and population objectives.
   1. Consider the following factors to assess habitat improvement project opportunities and priorities:
      a) To meet state wildlife population objectives.
      b) To meet subsistence use needs.
      c) Existing habitat in poor condition compared to its potential.
      d) Habitat with a history of receiving high levels of use.
      e) Treatments with a favorable benefit/cost ratio.
   2. Use silvicultural practices, where applicable, to accomplish wildlife habitat objectives.

IV. Sitka Black-tailed Deer Habitat

A. Identify important deer winter range before or as part of project analysis.
B. Assure interdisciplinary involvement and consideration of deer winter range in project planning and in the environmental analysis process.

V. Bald Eagle Habitat

A. *The Bald Eagle Protection Act* provides for special management for the bald eagle. Manage bald eagle habitat in accordance with the Interagency Agreement established with the U.S. Fish and Wildlife Service to maintain habitat to support the long-term nesting, perching, and winter roosting habitat capability for bald eagles. Coordinate with the U.S. Fish and Wildlife Service for bald eagle habitat management.

VI. Bear Habitat Management

A. Continue to implement strategies, in cooperation with the Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, cities, and boroughs, which prevent habituation of bears to human foods/garbage and reduce chances of human/bear incidents. Strategies that can be used to reduce human/bear incidents include:
   1. Phasing out and rehabilitating any remaining open garbage sites on National Forest land. Establish timetables for phase out and rehabilitation in cooperation with appropriate state agencies (also see Lands Forest-wide Standards & Guidelines on sanitary landfills).
   2. Requiring incinerators and/or other bearproof garbage disposal methods at work camps, recreation sites, administrative and research facilities, and Special Use Authorizations in bear habitats.
   3. Where feasible, locating seasonal and permanent work camps, recreation facilities, mineral exploration and operational facilities, Log Transfer Facilities, where allowed by the Land Use Designation, more than 1 mile from sites of important seasonal bear concentrations to reduce chances of bear-human confrontations.
   4. On Forest Service approved projects and Special Use Authorizations in brown bear habitat, minimizing adverse impacts to the habitat and seeking to reduce bear-human conflicts. Specific plans could include seasonal restrictions on activities and other measures determined on a case-by-case basis.
   5. Maintaining an aggressive public education program on bear behavior to reduce the number of human/bear incidents.
   6. Requiring storage of human food in ways to make it unavailable to bears to reduce habituation of bears and reduce human/bear incidents,

B. During project planning, evaluate the need for additional protection of important brown bear foraging sites (e.g., waterfalls used as fishing sites) in addition to the buffers already provided by the Riparian and Beach & Estuary Fringe Forest-wide Standards & Guidelines, and the Old-growth Habitat and other natural setting Land Use Designations. Establish forested buffers, where available, of approximately 500 feet from the stream at sites where, based upon the evaluation, additional protective measures are needed to provide cover among brown bears while feeding, or

between brown bears and humans. This may be especially important on Class I anadromous fish streams within the Moderate Gradient/Mixed Control and Flood Plain process groups (see Appendix D) where a large amount of bear feeding activity on salmon occurs. Consider the combination of bear foraging behavior, stream channel types, and adjacent landform to help identify probable important feeding sites. Consult the Alaska Department of Fish and Game in identifying and managing important brown bear foraging sites.

C. Manage human/bear interactions to limit brown bear mortality from both illegal kills and defense of life and property. Work with the Alaska Department of Fish and Game to develop and implement a brown bear management program which considers both access management and season and bag limits to manage brown bear mortality rates within sustainable levels.

D. Manage road use where concentrations of brown bear occur to minimize human/bear interactions and to help ensure the long-term productivity of brown bears. To meet this direction, develop and implement road management objectives through an interdisciplinary process (see Transportation Forest-wide Standards & Guidelines).

E. Cooperate with the State to develop sites for safe public brown bear viewing opportunities.

VII. Marine Mammal Habitats

A. Provide for the protection and maintenance of harbor seal, Steller sea lion and sea otter habitats.

1. Ensure that Forest Service permitted or approved activities are conducted in a manner consistent with the Marine Mammal Protection Act (MMPA), the Endangered Species Act, and National Marine Fisheries Services guidelines for approaching seals and sea lions. Consult with the appropriate agency for identification of critical timing events, such as molting, parturition, etc., and recommended distances to avoid disturbances. "Taking" of marine mammals is prohibited; "taking" includes harassment (adverse disturbance), pursuit, or attempting any such activity.
2. Locate Forest Service authorized and approved facilities and concentrated human activities as far from known marine mammal haul outs, rookeries and known concentration areas as feasible to meet the Alaska Coastal Management Program (ACMP) consistency requirements and MMPA**.** The following distances are provided as general guidelines for maintaining habitats and reducing human disturbance:
   a) Locate camps, Log Transfer Facilities, campgrounds and other developments (where allowed by the Land Use Designation) 1 mile from known haul outs, and farther if the development is large.
   b) Forest Service permitted or approved activities will not intentionally approach within 100 yards, or otherwise intentionally disturb or displace any hauled-out marine mammal.
   c) Dispose of waste oil and fuels off-site as regulated by the Alaska Department of Environmental Conservation.
3. Cooperate with the State and other Federal agencies to develop sites and opportunities for the safe viewing and observation of marine mammals by the public. Maintain a public education program explaining forest management activities related to marine mammals in cooperation with state and other Federal agencies.

VIII. Seabird Rookeries

A. Provide for the protection and maintenance of seabird (marine bird) rookeries.

1. Locate facilities and concentrated human activities requiring Forest Service approval as far from known seabird colonies as feasible consistent with the Migratory Bird Treaty Act. The following distances are provided as general guidelines for maintaining habitats and reducing human disturbance:
   a) For aircraft flights on Forest Service permitted or approved activities, when weather ceilings permit, maintain a constant flight direction and airspeed and a minimum flight elevation of 1,500 feet (458 meters) for helicopters and fixed-winged aircraft. If at all possible, avoid flying over seabird colonies.
   b) Regulate human use to maintain a 250 meter no-disturbance distance from seabird colonies on upland habitats.
2. The availability of garbage to gulls should be eliminated by requiring Special Use Permittees to collect and dispose of garbage from their Special Use Authorizations.

3. Cooperate with state and other Federal agencies to develop sites and opportunities for the safe public viewing of these species. Maintain a public education program explaining forest management activities related to these species in cooperation with state and other Federal agencies.

IX. Waterfowl and Shorebird Habitats

A. Maintain or enhance wetland habitats which receive significant use by waterfowl and shorebirds. (The Tongass National Forest is a "Priority Forest' in the national TAKING WING Strategic Plan.) "Significant" is relative, but generally relates to use of a specific area by tens or hundreds of individuals of one or more species.

1. Support the international significance of wetland habitats on the Tongass National Forest by participating in partnerships such as the North American Waterfowl Management Plan and the Western Hemisphere Shorebird Reserve Network.
2. Identify during project analysis, in cooperation with the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service, wetlands which receive significant waterfowl or shorebird use during fall/winter/spring concentrations or nesting, brood rearing or molting habitats.
3. Locate facilities and concentrated human activities requiring Forest Service approval as far from known waterfowl or shorebird concentration and nesting areas as feasible. Minimize disturbance of waterfowl by restricting, when feasible, development activities to periods when waterfowl are absent from the area.
4. During project analysis, consider the need to rehabilitate waterfowl habitat following development activities if there is no feasible alternative to the habitat disturbance. (Also see the Wetlands Forest-wide Standards & Guidelines.)
5. Maintain habitat capability in coastal wetlands and intertidal areas that are important migratory staging areas and fall/winter/spring concentration areas, and wetlands that are important nesting and brood-rearing habitats, by avoiding, where feasible, all development activities which could fill wetlands, drain wetlands, or alter water levels resulting in loss of desirable vegetation, or direct loss of habitat. (Consult the Migratory Bird Treaty Act.)
6. Minimize human disturbance of habitats during important periods of the year (nesting and brood-rearing, molting, and winter) by managing human use (such as trails, Off-Highway Vehicle use) in significant wetland areas. The following distances are provided as guidelines for reducing human disturbance:
   a) Provide a minimum distance of 330 feet (100 meters) between human activities on the ground and significant areas being used by other waterfowl.
7. Develop waterfowl habitat improvement projects in cooperation with appropriate state, Federal and local agencies, partner organizations, and individuals .
8. For Special Use Administration (non-recreational), issue only authorizations which meet the objectives of Executive Order 11990 (Protection of Wetlands). Issue permits which serve to preserve, enhance, or aid in the management of the natural and beneficial values of wetlands.
9. Perform integrated logging system and transportation analysis to determine if other feasible routes avoiding high use waterfowl areas exist.
10. If the need to restrict road access is identified during project interdisciplinary review, roads will be closed either seasonally or yearlong to minimize adverse effects on waterfowl.
11. Cooperate with state and other Federal agencies to develop sites for safe public viewing opportunities that do not adversely disturb wildlife. Maintain a public education program explaining forest management activities related to these species in cooperation with state and other Federal agencies.

B. Conduct activities to avoid or minimize disturbance to habitats within the forest, riparian, and estuarine areas which are important nesting, brooding, rearing, and molting areas, for Vancouver Canada geese, sandhill cranes, or trumpeter swans.

X. Heron and Raptor Nest Protection

A. Provide for the protection of raptor (hawk and owl) nesting habitat and great blue heron rookeries.
   1. Conduct project level inventories to identify heron rookeries and raptor nesting habitat using the most recent inventory protocols.
   2. Protect active rookeries and raptor nesting habitat. Active nests will be protected with a forested 600-foot windfirm buffer, where available. Road construction through the buffer is discouraged. Prevent disturbance during the active nesting season (generally March 1 to July 31).
   3. Conduct annual monitoring for not less than 2 years after discovery of active nests. If the previously active nests remain inactive for 2 consecutive years, protection measures for the site may be removed.
   4. Bald eagle nest protection standards are outlined in Section V.
   5. Northern goshawk and osprey nest protection standards are included under the Threatened, Endangered, and Sensitive species Forest-wide Standards & Guidelines.

XI. Alexander Archipelago Wolf

A. Implement a Forest-wide program, in cooperation with the Alaska Department of Fish and Game and U.S. Fish and Wildlife Service, to assist in maintaining long-term sustainable wolf populations.
   1. Where wolf mortality concerns have been identified, develop and implement a Wolf Habitat Management Program. To assist in managing wolf mortality rates to within sustainable levels, integrate the Wolf Habitat Management Program (including road access management) with season and harvest limit proposals submitted to Federal and State Boards..
      a) Participate in interagency monitoring of wolf populations on the forest.
      b) Where wolf population data suggest that mortality exceeds sustainable levels, work with the Alaska Dept. of Fish and Game and the U.S. Fish and Wildlife Service to identify probable sources of mortality. Examine the relationship among wolf mortality, human access, and hunter/trapper harvest. Conduct analyses for smaller islands (e.g., Mitkof Island), portions of larger islands, or among multiple WAA's.
      c) Where road access has been determined, through the analysis, to significantly contribute to wolf mortality, implement effective road closures to reduce mortality. Open road densities of 0.7 to 1.0 miles per square mile of landscape or less may be necessary to reduce mortality to sustainable levels. Effective road closure prohibits motorized traffic (e.g., removing culverts or bridges versus only signing). Off-Highway Vehicle travel restrictions may also be necessary.
   2. Through the interdisciplinary process, integrate Wolf Habitat Management Program recommendations in the development of Road management objectives. (See Transportation Forest-wide Standards & Guidelines and Appendix L.)
   3. Provide sufficient deer habitat capability to first maintain sustainable wolf populations, and then to consider meeting estimated human deer harvest demands. This is generally considered 13 deer/square mile in biogeographic provinces where deer are the primary prey of wolves. Use the most recent version of the interagency deer habitat capability model and field validation of local deer populations to estimate deer habitat capability.
   4. Design management activities to avoid abandonment of wolf dens.
      a) Maintain a 1,200-foot forested buffer, where available, around known active wolf dens. Road construction within the buffer is discouraged and alternative routes should be identified where feasible. No road construction is permitted within 600 feet of a den unless site-specific analysis indicates that local landform or other factors will alleviate potential adverse disturbance.
      b) If a den is monitored for two consecutive years and found to be inactive, buffers described in a), above, are no longer required. However, in the spring-time, prior to implementing on-the-ground management activities (timber harvest or road construction), check each known inactive den site to see if it has become active.

XII. Mountain Goat

A. Provide for the long-term productivity of mountain goat habitat and viability of mountain goat populations, both native and introduced.
   1. Locate facilities and concentrated human activities as far from important wintering and kidding habitat as feasible.
      a) Where feasible, locate facilities, camps, LTF's, campgrounds, and other developments 1 mile or more from important wintering and kidding habitat.
      b) If the 1 mile or more distance cannot be achieved, mitigate possible adverse impacts by seasonally restricting or regulating human use, and other-site specific mitigation measures.
   2. Forest Service and State of Alaska permitted or approved aircraft flights (fixed wing and helicopter), including helicopter yarding of timber, should maintain a 1,500 foot vertical or horizontal clearance from traditional summer and kidding habitat and animals whenever feasible. Where feasible, flight paths should avoid known mountain goat kidding areas from May 15 through June 15. Pilots will not compromise safety.
   3. Where feasible, maintain mountain goat important winter habitat capability. During project planning, use the most recent version of the interagency mountain goat habitat capability model which shows the most important habitat to generally be productive old-growth forest within 1,300 feet of escape terrain (>50% slope or cliff). Travel corridors used by mountain goats between important seasonal sites should be identified and maintained, especially when they occur in forested areas.

XIII. Marbled Murrelet

A. Cooperate and coordinate with state and other Federal agencies to better understand the life history requirements and distribution of the marbled murrelet. Nesting habitat relationships are poorly understood.

B. Maintain a 600 foot, generally circular, radius of undisturbed forest habitat surrounding identified murrelet nests, where available. Minimize disturbance activities within this buffer during the nesting season (May 1 - August 15). Maintain the buffer zone and monitor the site for nesting activity for not less than two nesting seasons after nest discovery. Maintain the buffer if the nest site is active during the monitoring period. Buffer protection may be removed if the site remains inactive for two or more nesting seasons.

XIV. Reserve Tree/Cavity-Nesting Habitat

A. Provide habitat for cavity-nesting wildlife species.
   1. Retain reserve trees within all Land Use Designations. Consider the following:
      a) Retain reserve trees (which may be soft or hard snags) with a reasonable assurance of windfirmness, while meeting management objectives, considering safety needs for people and equipment.
      b) Reserve trees do not need to be evenly distributed; clumped distributions are preferred.
      c) Favor saving reserve trees away from roads to reduce loss from firewood gathering activity.
      d) After timber harvest in an area, remaining reserve trees may be designated as wildlife trees and marked to make them illegal for cutting.
      e) Consider retaining live trees for future reserve tree recruitment.

XV. Moose Habitat

A. Develop habitat management direction for moose habitats. Coordinate planning with the Alaska Dept. of Fish and Game.
   1. During project planning, inventory vegetative conditions in moose habitat areas to help identify short and long-term changes in habitat conditions, and to assess the effects of various management activities.
   2. Plan habitat improvement projects utilizing a variety of techniques such as silvicultural treatments, young-growth management activities, prescribed burning, planting, and other vegetative manipulation techniques as appropriate.

3. Coordinate other resource management activities to maintain or improve habitat conditions for moose. Manage roads to minimize adverse effects of human access on moose populations.

XVI. *American Marten*

A. Implement a Forest-wide program, in cooperation with the Alaska Department of Fish and Game, to provide and conserve habitat to assist in maintaining long-term sustainable marten populations.

1. Where marten mortality concerns have been identified, cooperate with the Alaska Department of Fish and Game to assist in managing marten mortality rates to within sustainable levels. Consider both access management on National Forest lands and hunter/trapper harvest regulations administered by the Alaska Department of Fish and Game.
   a) Participate in interagency monitoring of marten populations on the forest.
   b) Where marten data suggest that mortality exceeds sustainable levels, work with the Alaska Department of Fish and Game to identify probable sources of mortality. In an interagency analysis, examine the relationship between hunter/trapper marten harvest and human access.
   c) Where road access has been determined, through the analysis, to significantly contribute to unsustainable marten mortality, implement effective road closures to reduce mortality. Effective road closure prohibits motorized traffic (e.g., may include removing culverts or bridges versus only signing). Off-Highway Vehicle travel restrictions may also be necessary. To meet this direction, develop and implement road management objectives through an interdisciplinary process (see Transportation Forest-wide Standards & Guidelines).
2. The objective is to manage high value marten habitats in areas of timber harvest in higher risk biogeographic provinces to retain features of forest stand structure important to marten habitat use. Higher risk biogeographic provinces include regions where significant amounts of past timber harvest has established a large component of forest stand structure in young conifer stands (e.g., harvested since 1954) with little or no residual forest structure within the stands. These provinces are East Chichagof, Mitkof/Kupreanof, North and Central Prince of Wales, Etolin Island and Vicinity (excluding Zarembo Island where marten are absent), and Revillagegado Island and Vicinity. High value marten habitat includes stands below 1,500' elevation in high volume productive old-growth timber strata as identified in the latest version of the Interagency Marten Habitat Capability Model. High value habitat may be verified by project level review of model projections considering on-site specific information and stand characteristics.
   a) Implement the following standards and guidelines in 2. b) and 2. c) for high value marten habitat, unless local information from Southeast Alaska indicates that the marten habitat objective may be accomplished by employing different methods. Document the analysis to use other methods through the NEPA process. Examples of such local information include: 1) habitat relationships information on the structure of forest stands used and selected by marten for various life functions; 2) the response of marten populations to the configuration of habitat at the landscape scale; 3) the amounts and dynamics of coarse woody debris in various habitat types of forest stands and the relationship to marten habitat use; and 4) the amount and distribution of high value marten habitat that will be protected through land allocations or standards and guidelines (e.g., habitat reserves, riparian buffers, beach fringe corridors, etc.) that maintain the integrity of the old-growth forest and the known or inferred marten population response to that combination of protected habitat.
   b) In VCU's in the higher risk biogeographic provinces where over 33 percent of the productive old growth forest has been converted to young conifer stands (e.g., harvested since 1954) or will exceed this amount after a proposed project activity, vegetation management that creates openings over 2 acres should use silvicultural methods to meet the following forest stand structural characteristics after harvest:
      (1) Maintain an average of over 30 percent canopy closure throughout the harvest unit. Remaining trees should be uniformly distributed throughout the stand, but trees may

be clumped for operational concerns or ecological opportunities. Remaining features should include:

(a) An average of at least 8 large trees/acre (20-30" DBH or greater) for future snag recruitment. Where not available substitute the next largest trees.

(b) An average of at least 3 large decadent (standing dead or dying) trees/acre (20-30" DBH or greater). Where not available substitute the next largest trees.

(c) An average of at least 3 pieces/acre of down material (logs 20-30" or greater in diameter at the large end and 10' long), generally distributed throughout the harvest unit.

(d) Consider adding smaller or younger trees for future structure recruitment and to improve windfirmness.

(e) Retained trees should have a reasonable assurance of windfirmness.

c) In VCU's within higher risk biogeographic provinces and where less than 33 percent of the original productive old-growth forest has been harvested, vegetation management applied to high value marten habitats that creates openings over 2 acres should use silvicultural methods to meet the marten objective, above. Within the harvest unit, meet the following forest stand structural characteristics after harvest:

(1) Retain approximately 10-20 percent of the original stand structure.

(2) An average of at least 4 large trees/acre (20-30" DBH or greater) for future snag recruitment. Where not available substitute the next largest trees.

(3) An average of at least 3 large decadent (dead or dying) trees/acre (20-30" DBH or greater). Where not available substitute the next largest decadent trees.

(4) An average of at least 3 pieces/acre down material (logs 20-30" or greater in diameter at the large end and 10' long), generally distributed throughout the harvest unit.

(5) Retained trees should have a reasonable assurance of windfirmness.

(6) Consider adding smaller or younger trees for future structure recruitment and to improve windfirmness.

d) For timber harvest units less than or equal to 2 acres in size, in high value marten habitat, allow full canopy removal but limit the number of openings to an equivalent of 25 percent of the stand removed every 50 years (e.g., 12-13, 2-acre openings; 25, 1-acre openings, etc. within a 100-acre stand).

XVII. *Endemic Terrestrial Mammals*

A. The objective is to maintain habitat to support viable populations and improve knowledge of habitat relationships of rare or endemic terrestrial mammals that may represent unique populations with restricted ranges.

1. Conduct surveys for endemic mammals prior to any project that proposes to substantially alter vegetative cover (e.g. road construction, timber harvest, etc.).

a) Survey islands smaller than 50,000 acres in total size (e.g., Hecata Island and smaller) that have productive old-growth forest suitable for timber harvest. Conduct surveys on larger islands if there is a high likelihood that endemic taxa are present that may be affected by the proposed project.

b) The extent and rigor of surveys will be commensurate with the degree of existing and proposed forest fragmentation, and potential risk to endemic mammals that may be present.

c) Surveys should emphasize small (voles, mice, and shrews) and medium sized (ermine and squirrels) endemic mammals with limited dispersal capabilities that may exist within the project area.

d) Design and test survey protocols in cooperation with the PNW Research Station.

2. Assess the impacts of the proposed project relative to the distinctiveness of the taxa, population status, degree of isolation, island size, and habitat associations relative to the proposed management activity.

3. Where distinct taxa are located, design projects to provide for their long-term persistence on the island.

XVIII. *Landscape Connectivity*

A. Design projects to maintain landscape connectivity.

1. The objective is to provide corridors of old-growth forest among large and medium old-growth habitat reserves (Appendix K) and other natural setting Land Use Designations (LUD's) at the landscape scale.
2. During the environmental analysis for projects proposing to harvest timber, construct roads, or otherwise significantly alter vegetative cover, conduct an analysis at the landscape scale to identify blocks of contiguous old-growth forest habitat within large and medium reserves and other natural setting LUD's and then determine whether forest connectivity exists among old-growth blocks in large and medium reserves and natural setting LUD's. Consider existing features of the old-growth strategy such as the beach fringe, riparian buffers or other lands unsuitable for development as contributing to maintaining connectivity among large and medium old growth habitat reserves and natural setting LUD's. Where these features do not provide sufficient productive old-growth forest connectivity to meet the objective in 1. above, provide stands, where they exist, of productive old-growth forest or relocate mapped small old-growth habitat reserves (See Appendix K) during project planning. Designed corridors should be of sufficient width to minimize edge effect and provide interior forest conditions.

Wildlife Habitat Improvement: WILD22

I. Improvement Projects

A. Continue a young-growth management program to maintain, prolong, and/or improve understory forage production and to increase future old growth characteristics in young-growth timber stands for wildlife (deer, moose, black bear, and other species).

1. Consider stands for young-growth management which meet the following conditions:
   a) Historical deer winter range with high deer use.
   b) Historical or potential moose winter range.
   c) Areas with important and accessible consumptive and non-consumptive human uses of wildlife benefited by second-growth management.
   d) Second-growth timber stands which have a relatively high tree stocking density which would result in early loss of understory forage. Plant associations containing hemlock or spruce and *Vaccinium* or skunk cabbage on high site potential should be considered for treatment.
   e) Along the beach fringe where thinning second growth stands will accelerate development of potential bald eagle nest trees.
2. Use the following general guidelines for precommercial thinning:
   a) Timing: Time precommercial thinning before desirable forage species are shaded out by trees, although trees should fully occupy the site. The smaller trees in the stand should be at least one foot high so they can be seen and thinned or removed. Generally, highly productive sites will need to be thinned at a younger age (10-15 years) than moderate or low productive sites (15-25 years). Use site-specific conditions to determine the timing of precommercial thinning.
   b) Spacing: Vary tree spacings from 12 feet by 12 feet to 20 feet by 20 feet. Site-specific objectives and analysis should identify spacings to be used. Consider variable spacings and leaving some unthinned thickets to create future structural diversity.
   c) Slash Disposal: Generally, slash disposal treatments will not be necessary. In some site-specific areas, slash treatments may be needed to facilitate animal movements or increase forage production and availability. Consider slash treatments when slash depths exceed 1.6 ft. (50 cm.), as a general guideline. Slash treatments may include girdling trees, falling trees away from high forage areas, piling trees, or lopping and scattering of slash.
3. Use the following general guidelines for canopy gaps:
   a) Timing: Same as precommercial thinning. It is generally recommended that canopy gaps be created at the same time as precommercial thinning activity.
   b) Slash Disposal: Generally, slash disposal treatments will not be necessary. In some site-specific areas, slash treatments may be needed to facilitate animal movements or

increase forage production and availability. Consider slash treatments when slash depths exceed 1.6 ft. (50 cm.), as a general guideline. Slash treatments may include girdling trees, falling trees away from high forage areas, piling trees, or lopping and scattering of slash.

c) Sizes: Size recommendations for canopy gaps range from 0.1 acres to 2.0 acres. Site-specific objectives and analysis should identify the gap sizes.

d) Amount of Area: Depending upon site-specific objectives, recommendations for the amount of area to be managed for canopy gaps range from 5 to 50 percent of the harvest unit.

e) Maintenance: Where possible, maintain canopy gaps to prevent loss of understory forage whenever possible from tree canopy closure or tree regeneration. Generally, 10 to 25 year intervals will occur between treatments.

4. Use the following general guidelines for commercial thinning:

a) Spacing: Vary tree spacing and maintain canopy gaps and openings to allow for some "side lighting" to occur.

b) Timing: Timing will vary depending on site-specific conditions.

c) Method: Encourage vertical diversity and windfirmness. Do not remove more than 25 to 30 percent of the stand basal area (rule of thumb to prevent blowdown).

d) Snow Interception: Leave 10 to 20 of the largest trees on each acre for snow interception.

B. Coordinate habitat improvement projects with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and other appropriate agencies.

Wildlife Habitat Maintenance: WILD23

I. Maintenance

A. Provide for the maintenance of wildlife habitat improvements.
   1. Fund maintenance of existing structures prior to the construction of new structures.
   2. Include funding for maintenance in planning and budgeting all structures.
   3. Maintain structures to assure objectives of the original project are met.
   4. If the improvement becomes inefficient to operate or maintain, redesign or stop maintenance of that improvement.
   5. If a structure becomes inoperable, consider removal or reconstruction, as appropriate.

B. Develop a written agreement with project cooperators on maintenance responsibilities prior to project construction.

Chapter 5

Implementation

Introduction

Plan implementation is the activity to accomplish the management direction of the Forest Plan, and is necessary to meet public expectations of Forest Service actions and legal requirements. It is mainly accomplished through the recurrent identification of proposed actions (initiated by the Forest Service or in response to external applications by individuals or groups) consistent with activities anticipated in the Plan; the analysis and evaluation of such actions (and reasonable alternatives to them); related documentation and decision-making; and project execution and administration, in a manner that is consistent with the management direction of the Plan. It also involves meeting the Plan's monitoring and evaluation requirements, and making needed Plan amendments.

The management direction elements of this Plan include:

1. The Forest multiple-use Goals and Objectives contained in Chapter 2;

2. The designated Suitable Timber Land and associated Allowable Timber Sale Quantity contained in Appendix A and Chapter 2;

3. The Management prescriptions, including the Land Use Designations shown on the Plan map and their related Standards and Guidelines contained in Chapter 3 & 4; and,

4. The Monitoring and Evaluation requirements contained in Chapter 6.

Plan implementation is strongly influenced by annual budget direction and fiscal limitations. Each year, upon approval of a budget, the Forest Supervisors develop and implement annual programs of work. The accomplishment of these annual programs is to result in the incremental achievement of the Plan's management direction. Future budget requests are to be based on the management direction of this Forest Plan, and related project and activity scheduling.

Schedules of Forest Service proposed activities for some resources are presented in Appendix L. Such schedules are to be updated frequently to keep them current. Additional proposals by others (such as for the development of communications facilities on the Forest by private firms) will also be considered and evaluated for compliance with all applicable direction in this Plan, as well as applicable laws and higher-level Forest Service policy and regulations.

Procedural guidance for Plan implementation is provided in the Forest Service Planning Handbook (FSH 1909.12, Chapter 5).

Implementation

Plan and Project Level Decisions

Planning for units of the National Forest System includes two levels of decision-making.

Forest Plan Decisions: The first decision level involves the development of a Forest Plan to provide direction for all resource management programs, practices, uses, and protection measures. This Plan provides the broad, programmatic direction necessary to manage the resources and uses of the Tongass National Forest in a coordinated and integrated manner. It includes the above listed management direction elements, which are to influence how subsequent site-specific project decisions are made and how other management activities are conducted. The Management Prescriptions, and the related Standards and Guidelines, are applied in planning individual projects, for example. Adjustments to this direction may be made through Plan amendments. Plan-level decisions are appealable under 36 CFR 217.

Project Planning Decisions: The second decision level involves the analysis and implementation of management practices designed to achieve the management direction of the Forest Plan. Project decisions (which can change the environment) generally require site-specific analysis to meet National Environmental Policy Act (NEPA) requirements for decision-making, and are subject to continuing compliance with other Federal environmental laws such as Endangered Species Act, Clean Water Act, and Clean Air Act. Common project-level decisions include whether or not, and in what way, timber will be harvested in a particular area; a campground will be constructed; or a fisheries structure will be installed. The preparation of an environmental analysis document, such as an environmental impact statement or environmental assessment, precedes these decisions, unless they are categorically excluded from documentation. Project-level planning provides an additional opportunity (beyond development of this Plan) for public participation. Project decisions are appealable under 36 CFR 215.

Additional Analysis

Additional analysis in support of Plan implementation activities may also be conducted at various scales above the site (project) level. Doing these analyses can improve our understanding of ecosystems and associated social and economic dimensions, and provide important context information for project planning. This kind of analysis does not require NEPA review and does not result in decisions which are subject to appeal. Additional analyses are not prescribed here; development of additional analyses are identified by the appropriate line officer(s). The need, scope and intensity of analysis is based on the combination of issues, values and risks, such as internal issues and public concerns and interests; land characteristics and geologic risk; presence of threatened, endangered or sensitive species; other biological information; and, past land use activities and watershed condition.

Watershed analysis, for example, is designed to help set the stage for project planning and NEPA analysis, focus interdisciplinary discussion on key watershed-level management issues, and provide a basis for integrating project designs. Watershed analysis, as is described in Appendix J, is not a decision-making process, and a Watershed analysis report is not a decision document, a planning document requiring NEPA review, or a regulatory, prescriptive document.

Plan Amendments

The Plan's management direction elements may be amended as the need arises. The need to amend the Plan may result from:

1. Recommendations of an Interdisciplinary Team, based on the results of monitoring and evaluation.

2. Determinations by the Forest Supervisors that existing or proposed projects, permits, contracts, cooperative agreements, or other instruments authorizing occupancy and use are appropriate, but not consistent with elements of the Plan's management direction.

3. Administrative appeal decisions.

4. Planning errors found during Forest Plan implementation.

5. Changes in physical, biological, social or economic conditions.

The Forest Supervisors will determine whether proposed changes in the Forest Plan are significant or non-significant. ("Significance" here is as defined by the National Forest Management Act regulations, and is different than significance as used under the National Environmental Policy Act.)

Non-significant Amendments: If a proposed amendment is determined to be non-significant, the Forest Supervisors will document the determination and describe the change in a decision document, after environmental analysis, and provide public notification prior to implementing the changes. Non-significant amendments applicable to only one of the three Administrative Areas may be made by that Area's Forest Supervisor. Non-significant amendments applicable to more than one of the three Administrative Areas must be made by the Forest Supervisors of the affected Areas.

Non-significant amendments to the Forest Plan may result from:

1. Actions that do not substantially alter the multiple-use goals and objectives for long-term land and resource management. This includes actions whose effects have already been analyzed, evaluated and disclosed at the Forest Plan level.

2. Minor adjustments to Land Use Designation boundaries, management prescriptions, or Forest-wide standards and guidelines resulting from improved understanding of resource conditions, further inventory, or site-specific analysis.

3. Short-term fluctuations in projects to be implemented or in planned annual outputs.

Significant Amendments: If the proposed amendment is determined to be significant, the decision about the change then rests with the Regional Forester, who will also prepare a decision document after environmental analysis. The development and approval of a significant amendment must follow the same procedures as were required for developing and approving the Forest Plan (or its revision).

Significant amendments to the Forest Plan may result from:

1. Changes that have a major effect on the entire Forest Plan, or that affect land and resources throughout a large portion of the planning area (for example, identification of a threatened or endangered species with major area-wide increases or decreases in resource demands).

2. Changes that would significantly alter the long-term relationship between the amounts of resource uses and Forest products originally projected

(such as changes in implementation schedules resulting from sustained differences between proposed and actual budgets).

3. Major changes in management prescriptions or Land Use Designation allocations, or in Forest-wide standards and guidelines.

It is anticipated that most Forest Plan amendments will be non-significant in nature.

Adaptive Management

Adaptive management is a fairly new term for an old concept. It is the ecosystem management counterpart to "learning from experience." All such concepts have two essential elements in common: 1) a feedback element which gathers and evaluates information about current performance (of an action or activity), and 2) an adjustment element which responds to feedback information by being able to alter future performance when needed. (See Bormann et al., Adaptive Ecosystem management in the Pacific Northwest, 1994, for a fuller discussion of these ideas.)

For forest planning, two key aspects of adaptive management are the monitoring and evaluation process (see Chapter 6) which provide feedback on implemented activities and the effectiveness of associated resource protection or mitigation measures, and the amendment process (described above), which allows for making necessary changes to those activities and measures. Monitoring is one source of feedback information; other sources include scientific literature and studies, resource inventories, changes in technology, and public concerns. However, monitoring at the plan and project levels is a primary means by which the continued appropriateness of management techniques will be evaluated. Thus it is an indispensable part of ongoing forest management. Adaptive management is both the recognition of these sources as potentials signals for change, and the willingness, through environmental analysis and the plan amendment process, to positively respond to these signals. It is also the recognition that forest planning, and ecosystem management, will never have complete or "perfect" information, but that planning can minimize uncertainty by including the ability to adapt to change.

This Forest Plan embraces these adaptive management concepts.

Plan Revisions

The Plan will ordinarily be revised on a 10-year cycle, or at least every 15 years. It may also be revised whenever the Forest Supervisors determine that conditions in the area covered by the Forest Plan have changed significantly, or when changes in national policies, goals, or objectives would have a significant effect on Forest-level programs. In the monitoring and evaluation process, an Interdisciplinary Team may recommend a revision (or an amendment) of the Forest Plan at any time.

Revisions are not effective until considered and approved in accordance with the requirements for the development and approval of the Forest Plan. Revisions must be approved by the Regional Forester. The Forest Supervisors will review conditions in the area covered by the Forest Plan at least every five years to determine whether significant changes have occurred. A component of this review will be an interagency evaluation of the overall old-growth habitat and riparian strategies.

Chapter 6

Monitoring and Evaluation Plan

Introduction

Monitoring and evaluation is a quality control process for implementation of the Tongass Land and Resource Management Plan (TLMP). It provides the public, the Forest Service, and other concerned resource agencies with information on the progress and results of TLMP. As such, monitoring and evaluation comprise an essential feedback mechanism within an adaptive management framework to keep the Plan dynamic and responsive to changing conditions. The evaluation process also provides the feedback that triggers corrective action and the adjustment of plans and budgets, or both, so that they are realistic and being adhered to.

TLMP identifies management direction for the Tongass in terms of goals, objectives, and standards and guidelines--all of which are based on underlying assumptions (policy, theory, data, and technology). Monitoring is gathering data and information and observing the results of management activities to provide a basis for the periodic evaluation of the Plan. Evaluation is a process for interpreting monitoring data and determining whether changes in management direction are needed. This plan recognizes three types of monitoring and evaluation: implementation, effectiveness, and validation. Implementation monitoring and evaluation is used to determine whether standards and guidelines are implemented. Effectiveness monitoring and evaluation is used to determine whether standards and guidelines are achieving objectives, whether objectives are achieving goals, and includes an evaluation on whether there are significant changes in productivity of the land. Validation monitoring and evaluation is used to examine whether the assumptions and predicted effects used to formulate the plan are accurate. The precise methods used for the sampling methods are contained in the Tongass Forest Monitoring Methods Handbook (in development at the time this Plan was printed). These methods are periodically updated to reflect the most recent survey and analysis procedures.

Roles and Responsibilities

The Forest Service will continue to strengthen the collaborative working relationships between the Alaska Regional Office, each Administrative Area, and the Pacific Northwest Station. For the purposes of this monitoring and evaluation plan, the roles and responsibilities of forest management and forest research are defined below:

Regional Office. The Regional Office will develop regional policies and directives on monitoring and evaluation.

Administrative Areas. Each Administrative Area (Chatham, Ketchikan, Stikine) will implement the Plan and conduct implementation monitoring and evaluation. The responsibilities of the Administrative Areas include:

Preparing an annual monitoring program.

Collecting data for implementation, effectiveness, and validation monitoring.

Assisting the Pacific Northwest Station in collecting data for effectiveness and validation monitoring.

Analyzing and interpreting implementation monitoring data and reporting implementation monitoring results, conclusions and evaluation recommendations to the Regional Office, and making these reports available to the public and other agencies.

Pacific Northwest Research Station. The Station will provide scientific and technical expertise to conduct effectiveness and validation monitoring and evaluation. The responsibilities of the Station include advising and assisting the Region with:

Publishing, when appropriate, study results in Regional publications, Pacific Northwest Research Station publications or professional journals.

Development of monitoring study plans, including study objectives, sampling designs, methods, quality assurance plans, and budgets in cooperation with the Administrative Areas.

Collection of data for effectiveness and validation monitoring (with the assistance of the Administrative Areas).

Analysis and interpretation of the data.

Reporting study results, conclusions and recommendations to the Administrative Areas and the Regional Office, and making these reports available to the public and other agencies.

Relationship to Other Monitoring Activities

This monitoring and evaluation plan is not intended to depict all monitoring, inventorying, and data gathering activities undertaken on the Tongass, nor is it intended to limit monitoring. Many such activities are conducted under direction contained in site-specific project plans developed under the programmatic guidance of TLMP. Other routine monitoring activities include the preparation of timber sale administrator and engineer reports. In addition, monitoring for large-scale mining activities are included in the site-specific Plans of Operation for each mine.

Management of the Forest, including implementation of project plans and TLMP, is reviewed and documented periodically by various Forest Service officials during what are known as “management reviews,” “activity and program reviews,” and “general management reviews,” depending on the geographic or programmatic scope of the review, or both. Administrative studies can be yet another form of monitoring. Some of the studies on-going at the time of this TLMP revision include growth and yield of forested wetlands, buffer strip stability, V-notch soil stability based on timber cutting prescriptions, stream temperature monitoring, and effectiveness of fish passes. The Monitoring Avian Productivity and Survivorship (MAPS) program is conducted on all Administrative Areas, as are counts of marbled murrelets and other species of interest.

The requirements of this monitoring and evaluation plan are not intended to replace monitoring requirements developed in the project planning process, or other ongoing monitoring activities such as management reviews. Specific project monitoring requirements are determined during the National Environmental Policy Act project planning process, based on interagency and public involvement early in the planning process. Although there will be overlap between monitoring requirements of project plans and TLMP, no single project monitoring plan is expected to address all of the questions listed in this monitoring and evaluation plan. Some project plans may impose monitoring requirements not included in this monitoring and evaluation plan, in response to site-specific concerns. Taken as a

whole, however, each Administrative Area's project monitoring should be designed to answer the questions posed in this monitoring and evaluation plan, so that wherever possible monitoring requirements in TLMP can be met by compiling the results of project monitoring.

Finally, other data gathering activities are listed in Appendix B as “information needs.” These are inventory or research items that are useful or necessary, and can be thought of as “monitoring” in a broad use of the term. Many of these items are often called “baseline” or “trend” monitoring. However, these items are not included in the monitoring and evaluation plan.

Annual Monitoring and Evaluation Programs

The Forest Supervisors are responsible for coordinating the preparation of an annual monitoring and evaluation report. Such reports will summarize the monitoring activities conducted during the year covered and the results obtained, address each of the monitoring questions listed in this monitoring plan and evaluate the implementation of TLMP. Finally, the annual monitoring and evaluation report should include recommendations for remedial action, if necessary, to make management activities and their effects consistent with TLMP. Specific recommendations for corrective action will depend on the risk to the resource and the type of disparity discovered. The types of action that could be recommended include:

No action, if monitoring and evaluation indicate that the standards and guidelines are being followed and the results are meeting Forest plan objectives.

Additional monitoring, if initial results are inconclusive or indicate a pattern of minor discrepancies between the standards and guidelines and their implementation, or between expected and actual results.

Referral to the appropriate line officer for action to ensure proper application of the standards and guidelines, if compliance is inconsistent.

Changing the projected output schedule, if it turns out to be unachievable given funding and other constraints.

Revising the budget, if the anticipated costs of implementation of TLMP turn out to be incorrect.

Amending TLMP to change, for example, the allocation of particular areas from one Land Use Designation to another, or changing one or more of the standards and guidelines. (Refer to the description of revising the Forest Plan in Chapter 5.)

Revising TLMP if major changes are warranted.

Monitoring and Evaluation Items

Following is a description of how the monitoring and evaluation items in this plan are organized in Table 6-1. Data collected for each monitoring item will be aggregated and evaluated on an annual basis unless otherwise noted. Monitoring items are sorted alphabetically by resource area and include the following five components:

Monitoring Question and Type of Monitoring and Evaluation. Implementation [I], effectiveness [E], and validation [V].

Annual Cost. Estimated annual cost (1997 dollars in thousands) of collecting information and analyzing and reporting results to address each question. Although actual annual funding may not correspond to the level projected in TLMP, each Administrative Area will, subject to appropriations and higher level funding direction, ensure that monitoring and evaluation is funded at a level commensurate with the level of funding provided for program implementation. The total annual estimated costs for monitoring and evaluation is approximately $1.4 Million.

Evaluation Criteria. Management objectives, standards, guidelines, or other bases for monitoring. Where appropriate, the alpha-numeric code for standards and guidelines are listed (refer to Forest-wide Standards & Guidelines, Chapter 4).

Sampling Methods. General methods for collecting information needed to address the monitoring question. More detailed sampling methodologies are contained in the Tongass Forest Monitoring Methods Handbook (in development when this Plan was printed). These methods will be periodically updated. Descriptions of the expected precision and reliability of the monitoring process will be addressed in the Methods Handbook. For the purposes of this monitoring and evaluation plan, precision refers to the closeness of repeated measurements and reliability refers to the nearness of a measurement to the actual variable being measured. In general, we expect that the monitoring process described in this chapter has a moderately high precision and reliability.

References. Statutory or regulatory foundations of the monitoring question.

Table 6-1.
Monitoring and evaluation items for the Tongass Land Management Plan.

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Air Quality				
Is air quality meeting State and Federal ambient air quality standards? (V)	1	Changes in meeting state and federal ambient air quality standards.	Annually summarize and evaluate available information from the State of Alaska Department of Environmental Conservation and the U.S. Environmental Protection Agency.	Clean Air Act
Biodiversity				
Are contiguous blocks of old growth habitat being maintained in a forest-wide system of old growth reserves to support viable and well distributed populations of old growth associated species and subspecies? (I)	3	Changes in the system of large, medium, and small habitat reserves identified and mapped in the Forest Plan as part of a forest-wide old-growth habitat reserve strategy: WILD112 II.B. Appendix K.	Annually measure and review the cumulative changes to the old-growth reserve system, including boundary changes done through project implementation and due to natural changes in condition such as insect and disease epidemics or fire. Evaluate if the remaining old-growth blocks, including both those in development and non-development LUD's, meet or exceed the minimum criteria for size, spacing, and composition.	36 CFR § 219.12 (k)
Are the effects on biodiversity consistent with those estimated in the Forest Plan? (E, V)	3	Changes in habitat types at the appropriate scales.	Annually calculate the changes in the amount of acres for each habitat type, as displayed in the FEIS, at the appropriate scales. Compare this to the effects estimated for these changes in the Forest Plan.	36 CFR § 219.12 (k)
Are management practices consistent with current knowledge regarding sensitive species conservation (federally listed threatened or endangered species, Alaska Region sensitive species, and State species of special concern)? (E, V)	30	Habitat changes and population trends for threatened, endangered, and sensitive taxa: TE&S I.A.1, 2, 3, and 4.	Annually review files and recent information regarding sensitive taxa on the Tongass National Forest. Consult with other agencies regarding these species and whether additional species should be considered for addition to the Region 10 sensitive species list. These species include all other species in Southeast Alaska with threatened or endangered status (U.S. Fish and Wildlife Service designation), sensitive species status (U.S. Forest Service designation), and Species of Special Concern status (Alaska Department of Fish and Game designation). Evaluate data collected in studies to determine the need for changes in the standards and guidelines of the Tongass land management plan. Summarize results of Biological Evaluations and associated effectiveness monitoring conducted at the project-level level, and results of any consultations with ADF&G and U.S. FWS under the MOU with those agencies.	36 CFR § 219.12 (k)

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Are destructive insect and disease organisms increasing to potentially damaging levels following management activities? (E)	4	Identify and quantify areas where insects or disease are occurring: HEALTH1 I.	Annually summarize by Administrative Area information from the annual Alaska Region report: *Forest Insect and Disease Conditions in Alaska*.	36 CFR § 219.12 (k)(5)(iv)
Fish Habitat				
Are population trends for Management Indicator Species (MIS) and their relationship to habitat changes consistent with expectations? (V)	5	Habitat changes and population trends for management indicator species.	**Pink and coho salmon**—Annually evaluate harvest and spawning-survey statistics, as reported by the Alaska Department of Fish and Game, to determine long-term population trends. Compare with predictions (of no measurable effect to fish habitat). (Also see fish and riparian effectiveness monitoring, below.) **Dolly Varden char**—Annually evaluate harvest statistics, as reported by the Alaska Department of Fish and Game, to help determine long-term population trends. If data are unavailable, conduct population surveys on a sample basis. Compare with predictions (of no measurable effect to fish habitat). (Also see fish and riparian effectiveness monitoring, below.)	36 CFR § 219.19(a)(6)
Are fish & riparian standards and guidelines being implemented? (I)	60	Compliance of land-disturbing projects with Fish and Riparian Forest-wide Standards & Guidelines: RIP2; FISH112 IV. G. (fish passage); FISH112. IV. C. (streambanks & channel protection).	Annually conduct field inspections on a representative sample of newer and older harvest units and their associated roads to determine if standards and guidelines have been implemented. This monitoring may overlap with timber, karst, wetlands, transportation, and soil & water monitoring.	36 CFR § 219.12 (k); Tongass Timber Reform Act
Are fish & riparian standards and guidelines effective in maintaining or improving fish habitat? (E)	60	Effects of management activities in riparian areas on fish habitat	Annually survey a representative sample of class I streams in or adjacent to timber harvest units approved for harvest in the past year. The stream segments will be surveyed before timber harvest, and again 5, 10, and 15 years following harvest. Upon completion of surveys in year 5, results will be reported. Estimate habitat components important for fish, including the fish habitat management objectives such as Large Woody Debris, pool depth, frequency, and percent of pool area, stream width to depth ratios, accumulation of fine sediments, and upstream fish passage at road crossings. This monitoring may overlap with soil & water monitoring.	36 CFR § 219.12 (k)

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Heritage Resources				
Are heritage resources standards and guidelines being implemented? (I)	10	Compliance of activities with Heritage Resources Standards & Guidelines: HER.	Assess (on a representative sample of Districts and/or projects) whether procedural requirements of the Heritage Resources Standards & Guidelines are being followed.	36 CFR § 296
Are heritage resources standards and guidelines effective in protecting heritage/cultural resources as expected in the Forest Plan? (E)	40	Evidence of damage to sites.	Conduct field inspections on selected sites at least once a year, and document the conditions of the site, any changes from the previous inspection and, if possible, the cause of the change. Sites should be selected based on an assessment of several factors, including their resource values and their susceptibility to disturbance from natural forces, vandalism or management activity. This monitoring may be conducted in conjunction with heritage resources implementation monitoring.	36 CFR § 296
Karst and Caves				
Are karst and cave standards and guidelines being implemented? (I)	30	Compliance of land-disturbing projects with Karst and Cave Forest-wide Standards & Guidelines: KARST I.	Annually conduct field inspections on a representative sample of newer and older harvest units and their associated roads to determine if standards and guidelines have been implemented. This monitoring may overlap with fish, timber, wetlands, transportation, and soil & water monitoring.	36 CFR § 219.12 (k); Tongass Timber Reform Act
Are karst and cave standards and guidelines effective in protecting the integrity of significant caves and the karst landscape? (E)	50	Effects of management activities on	Annually conduct field inspections on a representative sample of older and newer harvest units and their associated roads to determine if karst and cave standards and guidelines were effective in maintaining the integrity of significant caves and high vulnerability karst landscapes including, karst hydrology, soils loss, forest regeneration sedimentation and debris transport. This monitoring may be conducted in conjunction with karst and caves implementation monitoring.	36 CFR § 219.12 (k)
Land Management Planning				
Is the management of National Forest System lands consistent with management objectives of adjacent lands and their management plans? (I)	3	Implementation of projects under TLMP compared with land management objectives of adjacent publicly owned lands.	Annually note any inconsistencies between National Forest management projects and management objectives of adjacent publicly owned lands. A determination should be made based on information from a number of sources, including project level environmental documents, input from state, local, and other federal agencies, as well as professional judgment.	36 CFR § 219.7 (f); FSH 1909.12-92-1 Chapter 6.21 6

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Local and Regional Economies				
Are the effects on employment and income similar to those estimated in the Forest Plan? (V)	3	Effects of Forest Plan implementation on employment and income by resource sector.	Annually summarize and compare to Plan estimates the natural-resource employment and income estimates from the Alaska Dept. of Labor employment and earnings publications and U.S. Bureau of Economic Analysis income and employment data.	
Has the Forest Service worked with local communities to identify and pursue Rural Community Assistance opportunities? (I)	5	Evidence of a Rural Community Assistance program: RUR I.A.	Annually document, summarize, and evaluate rural community assistance activities; coordinate with community leaders and others in preparing the report.	
Minerals and Geology				
Are the effects of mining activities on surface resources consistent with Forest Plan expectations, as allowed in approved Plans of Operations? (E)	2	Mining operations with effects not anticipated in the Plan of Operations: MG12 III.B.	Annually summarize monitoring efforts, results, and findings conducted under project-specific Plans of Operations.	36 CFR § 219.12 (k)
Recreation and Tourism				
Are areas of the Forest being managed in accordance with the prescribed Recreation Opportunity Spectrum (ROS) class in Forest-wide Standards & Guidelines? (I)	20	Compliance with guidelines: REC122 III. (and other standards and guidelines specific to numbers of encounters allowed in each ROS class).	Annually monitor a representative sample of areas on each Administrative Area. Report cumulative changes in ROS every 5 years.	36 CFR § 219.12 (k)
Is Off Road Vehicle (ORV) use causing, or will it cause, considerable adverse effects on soil, water, vegetation, fish and wildlife, visitors or cultural and historic resources of the Forest? (I, E)	10	The degree to which ORV's are causing impacts: REC112 II.D.	Annually examine a representative sample of areas used by ORV's.	36 CFR § 295; Executive Orders 11644, 11989

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Research				
Have identified high-priority information needs been fulfilled?	1	Completion of existing high-priority information needs and identification of any new high-priority information needs.	Annually summarize progress of and significant results from studies addressing high priority information needs.	36 CFR § 219.28
Scenery				
Are the standards and guidelines effective in attaining the adopted Visual Quality Objectives established in the Plan? (E)	20	Whether the standards and guidelines associated with harvest unit size, type of silvicultural system used, amount of dispersal between units, and overall percent of viewshed disturbed are generally adequate to meet the different visual objectives in different types of landscapes: VIS11 II. A, B, C, D.	Select a representative set of viewsheds across the Forest (a minimum of 5 per Administrative Area) that have been harvested during implementation of TLMP standards and guidelines. These viewsheds should be associated with the use areas or travel routes on the visual priority list in Appendix F. This set should include areas representing all four Visual Quality Objectives and landscapes representing the different characteristic landscapes and different Visual Absorption Capability settings. This monitoring should also include assessing the effectiveness of alternatives to clearcutting management. Documentation should include photographic records from established photo points that are updated and assessed periodically and kept in a permanent file. Report 3-5 years following adoption of TLMP and at approximately 5 year intervals thereafter.	
Soil and Water				
Are the standards and guidelines for soil disturbance being implemented? (I)	60	Compliance of land-disturbing activities with Alaska Regional Soil Quality standards: S&W112 I.A.5, 6, 7, 8.	Annually conduct field inspections on a representative sample of older and newer harvest units and their associated roads to determine if soil quality standards were implemented. This monitoring may overlap with timber and soil & water monitoring.	36 CFR § 219.12(k); Alaska Region Supplement to Forest Service Manual (FSM) 2554 #2500-92-1, effective 1/15/92, as amended.
Are the standards and guidelines effective in meeting Alaska Regional Soil Quality Standards? (E)	20	Effects of project management S&W112 I.A.5, 6, 7, 8.	Annually conduct surveys on a representative sample of areas with timber harvest. Repeat this survey in years 3 and 5. Estimate size of mass wasting events (acres and cubic yards), map location, and determine whether associated with management activity or not. Results are reported in year five. If inconclusive, determine whether or not to continue surveys in that VCU. This monitoring may be conducted in conjunction with soil implementation monitoring.	36 CFR § 219.12(k); R10 Supplement to Forest Service Manual (FSM)2554 #2500-92-1, effective 1/15/92, as amended.

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Are Best Management Practices being implemented? (I)	60	Determine if Best Management Practices are being properly implemented on projects. The memorandum of agreement with Alaska Department of Environmental Conservation defines the Best Management Practices monitoring responsibilities of the Tongass National Forest: BMP's: Roads: 12.8, 12.9, 12.16, 14.5, 14.6, 14.7, 14.8, 14.9, 14.10, 14.11, 14.14, 14.15, 14.16, 14.17, 14.19; Timber Harvest: 12.5, 12.6, 12.6a, 12.17, 13.3, 13.10, 13.16, 13.11, 13.14.	Annually conduct field inspections on a representative sample of older and newer harvest units and their associated roads to This monitoring may overlap with timber, karst, wetlands, transportation, and fish monitoring.	36 CFR § 219.12 (k); Clean Water Act
Are Best Management Practices effective in meeting water quality standards? (E)	260	Water quality effects of forest management activities. The memorandum of agreement with Alaska Department of Environmental Conservation defines the Best Management Practices monitoring responsibilities of the Tongass National Forest.	Annually conduct long term best management practice effectiveness studies according to study plans for specific Best Management Practices coordinated across the three Administrative Areas. Current effectiveness monitoring projects include: stability and effectiveness of stream buffers; road drainage structure operations and maintenance; soil disturbance, and downstream aquatic habitat effects in harvested versus non-harvested v-notches; stream buffer strip stability and consequences of blowdown; effectiveness of class III stream prescriptions in minimizing sediment delivery to fish streams; cumulative watershed effects using macroinvertebrates as indicators of stream health; effectiveness of yarding methods in minimizing soil disturbance and achieving soil quality standards; frequency and effects of landslides in old growth, young growth and clearcut sites on Prince of Wales Island; and macroinvertebrate sampling prior to road construction to measure application of stream crossing installation, road use, and road maintenance. Annual status reports, with comprehensive reports of findings every three years, to correspond with the triennial State water quality standards review.	36 CFR § 219.12 (k)

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Subsistence				
Are the effects of management activities on subsistence users in rural Southeast Alaska communities consistent with those estimated in the Forest Plan? (V)	20	Changes in traditional resource use patterns, traditional environmental knowledge, and subsistence needs	Once every five years summarize and evaluate the effects of the Forest Plan on subsistence users by community. Information used in this evaluation should include testimony from subsistence hearings, project evaluations conducted under ANILCA Section 810, communications with community leaders and elders, the efforts to capture traditional environmental knowledge, and the information obtained from the subsistence study specified in the Information Needs Appendix of the Forest Plan.	36 CFR § 219.12 (k)
Timber Management				
Are timber harvest activities adhering to applicable timber management standards and guidelines? (I)	40	Harvest units in compliance with Forest-wide Standards & Guidelines: TIM114 IV.A., C. (Unit size limits); S&W112 I.A.5. (72% slopes); BEACH2 II.G. (beach and estuary fringe).	Annually conduct field inspections on a representative sample of older and newer harvest units and their associated roads to determine if the following sets of standards and guidelines were implemented as prescribed: maximum clearcut size limits, including compliance with criteria for exceptions to the 100-acre size limit; and timber dispersion, including compliance with (1) guidelines for allowing harvest on slopes in excess of 72 percent and (2) the management of the beach fringe and estuarine areas within timber harvest prescriptions as required by the Beach and Estuary Fringe Forest-wide Standards & Guidelines. This monitoring may overlap with soil & water, karst, wetlands, transportation, and fish monitoring.	36 CFR § 219.12 (k)
Are harvested forest lands restocked within five years following harvest? (I)	40	Restocking of all acres of harvested forest land following a regeneration harvest: TIM24 I.A.	Annually review regeneration certification records in the Silviculture Information System (SIS) to identify the units that have not met the NFMA requirement. Quantify the areas that failed to meet stocking requirements where planting was implemented.	36 CFR § 219.12 (k)(5)(i)
Is the Allowable Sale Quantity (ASQ) consistent with resource information and programmed harvest? (V)	20	New information leading to changes in timber utilization standards, timber inventory results, timber dispersion requirements, tentatively suitable land base (including the suitability of Kaikli, Karheen, Kitkum, and Maybeso forested wetland soils), yield tables, the operability inventory, projections in the average width of the area managed for riparian,	Review and analyze assumptions in TLMP at least every five years, unless major changes in any of the factors listed above are evident earlier. Some of this information can be gathered in conjunction with other monitoring items. Rerun the Report results every 5 years.	36 CFR § 219.27 (b)-(d)

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
		beach fringe and estuarine resources, and implementation factors (MIRF's) applied for: streams missing from the channel-type inventories, land not available for timber harvest due to isolation, streams corridors, spatial limitations of FORPLAN, and other factors. Also consider changes in land conditions due to large-scale natural disturbances.		
Are the Non-Interchange-able Components (NIC) of the allowable sale quantity consistent with actual harvest? (I)	3	Amount of harvest by NIC is consistent with amounts specified in the Forest Plan.	Annually evaluate information regarding amount of harvest by NIC I and NIC II categories. Compare the cumulative harvest in these categories to the ceilings specified for the first decade in the Forest Plan for each component.	36 CFR § 219.27 (b)-(d)
Is the proportional mix of volume in NIC I and NIC II as estimated in the Forest Plan accurate? (V)	2	Estimate the amount of volume within NIC I and NIC II areas across the Forest.	Annually report on the progress of the administrative study on NIC's. Upon completion, summarize and evaluate its results to determine if changes to the Forest Plan are required.	36 CFR § 219.27
Should maximum size limits for harvested areas be continued? (V)	3	Maximum size limits of harvest areas and their effects on other resources as well as public acceptance of harvest units at or near the maximum allowable size.	Annually evaluate information, including results of monitoring for other resources, and use professional judgment in determining whether or not to recommend a change to the maximum allowable harvest unit size.	36 CFR § 219.12 (k)(5)(iii); FSH 1909.12-92-1 Chapter 6.21 10
Transportation				
Are the standards and guidelines used for forest development roads and Log Transfer Facilities effective in limiting the environmental effects to anticipated levels? (E, V)	80	Environmental effects of forest development roads and Log Transfer Facilities. Specific areas to be addressed include: drainage of rock pits (TRAN214 IV.; BMP 14.9), fish passage through culverts (TRAN214 II.A.6.; BMP 14.17), and effectiveness of access management prescriptions in restricting access.	Annually conduct field inspections on a representative sample of older and newer harvest units and their associated roads and Log Transfer Facilities to determine whether the standards and guidelines adequately mitigate adverse impacts on other resources, including soil productivity, water quality, and wildlife and fish habitat. This monitoring may overlap with timber, karst, wetlands, soil & water, and fish monitoring.	36 CFR § 219.12 (k)

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Wetlands				
Are wetlands standards and guidelines being implemented? (I)	50	Compliance of land disturbing activities with Wetlands Forest-wide Standards & Guidelines: WET III.B. (BMP 12.5).	Annually conduct field inspections on a representative sample of older and newer harvest units and their associated roads to determine if wetlands standards and guidelines are being implemented. Annually, summarize and evaluate: 1) the acres of wetlands lost (or gained), and 2) the number of forested wetland acres harvested on Kaikli, Karheen, Kitkum, and Maybeso soil types. This monitoring may overlap with timber, karst, soil & water, transportation, and fish monitoring.	33 CFR § 323.4, Section 404(f) of the Clean Water Act
Are wetlands standards and guidelines effective in minimizing the impacts to wetlands and their associated functions and values? (E)	50	Loss of wetlands and/or impacts to their natural and beneficial functions and values: WET III.B. (BMP 12.5).	Annually conduct field inspections in conjunction with wetland implementation monitoring to rate the effectiveness of wetlands standards and guidelines.	33 CFR § 323.4, Section 404(f) of the Clean Water Act
Wild and Scenic Rivers				
Are Wild, Scenic, and Recreational River standards and guidelines being implemented? (I)	3	Compliance of activities with standards and guidelines.	Annually summarize activities (e.g., special uses) and conduct a survey of a representative sample of rivers to document the degree of compliance of Forest Service activities and permitted uses with applicable standards and guidelines.	36 CFR § 219.12 (k); 36 CFR § 297
Are Wild, Scenic, and Recreational River standards effective in maintaining or enhancing the free flowing conditions and outstandingly remarkable values at the classification level for which the river was found suitable for designation as part of the National Wild and Scenic River System? (E)	3	The degree to which human activities maintain or enhance the resource values of the river.	Annually, in conjunction with Wild and Scenic River implementation monitoring.	36 CFR § 219.12 (k); 36 CFR § 297

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
Wilderness Areas				
Are standards and guidelines for the management of wilderness being implemented? (I)	30	Compliance with guidelines establishing levels of social encounters, development, and visitor impacts by Recreation Opportunity Spectrum class: REC122 I.B.1.	Annually conduct field monitoring of a representative sample of Forest Service permitted uses in Wilderness (Special Use Permits and uses authorized by agreements) to document the degree of compliance with applicable standards and guidelines. In addition, perform a field monitoring trip on a representative sample of Wilderness Areas each year to assess compliance with standards and guidelines not related to authorizations and as an overview of the permit compliance within that individual wilderness area.	36 CFR § 219.12 (k)
Are standards and guidelines for the management of wilderness effective in maintaining the wilderness resource? (E)	30	The degree to which human activities maintain the wilderness resource.	Annually, in conjunction with wilderness implementation monitoring.	36 CFR § 219.12 (k)
Wildlife				
Are population trends for Management Indicator Species (MIS) and their relationship to habitat changes consistent with expectations? (Also see the biodiversity monitoring questions.) (V)	260	Habitat changes and population trends for management indicator species.	Measure habitat changes (see Biodiversity Monitoring, item #2). Use the most recent version of the interagency habitat capability models (other sources may be used if they better reflect habitat change) to estimate change in the relative habitat values for each MIS since the start of plan implementation. Compare population trends for MIS (gathered as described below) with habitat changes. Evaluate approximately every five years for consistency with plan expectations. **Red squirrel**—In conjunction with annual deer pellet surveys conducted by the Forest Service, observers will count the number of squirrels seen and heard along each route. Annual comparisons of total counts will be evaluated to determine population trends. **Black bear**—Harvest statistics, bear mortality data, and results of population surveys from all sources will be gathered, reviewed, and evaluated annually to determine population trends. **Brown bear**—Harvest statistics, bear mortality data, and results of population surveys from all sources will be gathered, reviewed, and evaluated annually to determine population trends.	36 CFR § 219.19(a)(6)

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References

Marten—Harvest statistics, results of population surveys, and results of on-going studies from all sources will be gathered, reviewed, and evaluated annually to determine population trends.

River otter—Harvest statistics and results of population surveys from all sources will be gathered, reviewed, and evaluated annually to determine population trends.

Sitka black-tailed deer—Harvest statistics, results of population surveys, Forest Service pellet surveys, and ADF&G publications will be gathered, reviewed, and evaluated annually to determine population trends.

Mountain goat—Harvest statistics and results of population surveys from all sources including incidental or project-related mountain goat data collected by the Forest Service, will be gathered, reviewed, and evaluated annually to determine population trends.

Gray wolf—Harvest statistics, wolf mortality data, and results of population surveys, as well as preliminary or final research results from all sources will be gathered, reviewed, and evaluated annually to determine population trends.

Vancouver Canada goose—Compile results of Christmas bird counts, numbers of Vancouver Canada geese in wintering areas obtained in conjunction with other surveys, and incidental observations made in conjunction with other project activities. These results will be evaluated to determine population trends.

Bald eagle—Compile results of Christmas bird counts, surveys and published bald eagle status reports by US Fish and Wildlife Service, Forest Service surveys of project areas, and breeding bird surveys. These results will be evaluated to determine population trends.

Red-breasted sapsucker—Compile results of Christmas bird counts, annual breeding bird survey routes or point-counts, and any Monitoring Avian Productivity and Survivorship Program data collected each year. These results will be evaluated to

Resource Area and Monitoring Question	Annual Cost ($1,000)	Evaluation Criteria	Sampling Methods	References
			determine population trends. **Hairy woodpecker**—Compile results of Christmas bird counts, annual breeding bird survey routes or point-counts, and any Monitoring Avian Productivity and Survivorship Program data collected each year. These results will be evaluated to determine population trends. **Brown creeper**—Compile results of Christmas bird counts, annual breeding bird survey routes or point-counts, and any Monitoring Avian Productivity and Survivorship (M.A.P.S.) Program data collected each year. These results will be evaluated to determine population trends.	
Are the population levels and associated distribution of mammalian endemic species on islands and portions of the mainland consistent with the estimates in the Forest Plan? (V)	1	Documentation for several recognized mammalian taxa with limited historical ranges including geographic extent and habitat distribution within and across islands and the mainland portion of the Forest.	Annually report on the progress of the small mammal study specified in the Information Needs section of the Forest Plan (Appendix B). Summarize and evaluate the final results when complete.	36 CFR § 219.12 (k)
Costs and Outputs				
What outputs were produced in the previous year? (I)	4	Outputs of desired goods and services as described in TLMP.	Annually summarize and evaluate management attainment report (MAR) items with Forest Plan projections.	36 CFR § 219.12(k)
Are the costs associated with carrying out the planned management prescriptions (including those of producing outputs) consistent with those costs estimated in Plan? (V)	3	Comparison of the estimated and actual costs for carrying out TLMP including the monitoring and evaluation plan. Use annual MAR for outputs and year-end financial report.	Once every five years compare MAR items and cost of producing targets; compare with Forest Plan projections and cost estimates.	36 CFR § 219.12(k)(3)

Chapter 7

Glossary

A B C D E F G H I J K L M

N O P Q R S T U V W X Y Z

These definitions apply to Forest Service land management and planning. Meanings may differ when used in another context. Glossary definitions are not legal unless otherwise noted. Definitions were shortened, paraphrased or adapted to fit local conditions and for ease of understanding.

Beginning of Glossary

A

Access — The opportunity to approach, enter, and make use of public lands.

Access management — Acquiring rights and developing and maintaining facilities needed by people to get to and move through public lands (physical attributes).

Acquired Land — Lands in Federal ownership which were obtained by the Government through purchase, condemnation, gift, or by exchange.

Active channel — As defined for purposes of the riparian standards and guidelines . . . includes stream channels*, secondary channels*, and braided channels*. For the Alluvial Fan Process Group, it also includes gravel outwash lobes. (Words marked by a * have further definitions within the glossary.)

Activity fuel loading — The amount of burnable debris left after logging.

Adaptive Management — A continuous process of action-based planning, monitoring, research, evaluation, and adjustment with the objective of improving implementation and achieving desired management goals and objectives.

Adfluvial fish — Species or populations of fish that do not go to sea, but live in lakes, and enter streams to spawn.

Administrative site — Lands used as headquarters or administrative facility by a Federal agency.

AFHA — See Anadromous Fisheries Habitat Assessment

Aggradation — The process of building up a land surface by deposition.

AHMU — Aquatic Habitat Management Unit.

AHRS — See Alaska Heritage Resource Survey.

Airshed — Geographical areas which, because of topography, meteorology, and climatic conditions, share the same air mass. Air is managed by airshed.

Alaska Heritage Resource Survey (AHRS) — The official list of cultural resources in the State of Alaska, maintained by the Office of History and Archaeology, Alaska Division of Parks and Outdoor Recreation.

Allowable Sale Quantity (ASQ) — The maximum quantity of timber that may be sold in each decade from suitable lands covered by the Forest Plan.

Alluvial fan — A cone-shaped deposit of organic and mineral material made by a stream where it runs out onto a level plain or meets a slower stream.

Alluvium — Recent soil deposits resulting from modern rivers, including the sediment laid down in river beds, flood plains, lakes, and at the foot of mountain slopes and estuaries.

Alpine — Parts of mountains above tree growth.

Alternative — An option proposed for decision making.

Ambient air That air, external to buildings, encompassing or surrounding a specific region.

Ambient Air Quality Standard The prescribed level of pollutants in the outside air that cannot be exceeded legally during a specified time in a specified geographical area.

Amenity Resource use, object, feature, quality, or experience that gives pleasure or is pleasing to the mind or senses. Amenity value typically describes those resource properties for which monetary values (or market values) are not or cannot be established.

Anadromous fish Fish which mature and spend much of their adult life in the ocean, returning to inland waters to spawn. Salmon and steelhead are examples.

Anadromous Fisheries Habitat Assessment An assessment conducted in 1994 within the Tongass National Forest (published in 1995) to study the effectiveness of current procedures for protecting anadromous fish habitat and to determine the need for any additional protection.

Analysis area An area of land which has the same timber management costs and responses to timber management activities.

ANCSA The Alaska Native Claims Settlement Act of December 18, 1971. Public Law 92-203, 92nd Congress, 85 Stat. 688-716.

ANILCA The Alaska National Interest Lands Conservation Act of December 2, 1980. Public Law 96-487, 96th Congress, 94 Stat. 2371-2551.

Appropriate suppression action The planned strategy for suppression action (in terms of kind, amount, and timing) on a wildfire which most efficiently meets fire management direction under current and expected burning conditions.

> **Critical protection** Areas where human life or habitation are present have priority over all others. Immediate and continuous efforts are made to minimize loss of life and damage to property.
> **Full protection** Valuable resources, such as commercial timber stands and historic structures exist; however, no human life or habitation exist in these areas. Immediate and aggressive action is taken to limit the number of acres burned.
> **Modified action** Uninhabited; with resources of lesser value. Land managers consider tradeoff of acres burned versus suppression expenses. Fires during critical burning months are attacked, but a lower level of protection is provided when the risks of large, damaging fires is less.
> **Limited action** Areas where the cost of fighting the fire is greater than the fire damage. Suppression efforts are limited to keeping a fire within a designated area or protecting critical sites within the areas.

Appropriation of land The act of selecting, devoting, or setting apart land for a particular use or purpose, such as appropriating land for public buildings and military reservations or other public uses (Black, 1979).

Aquaculture Maintaining, enhancing, and rehabilitating fish stocks through improvements and facilities, including the rearing of anadromous juvenile fish, generally in fresh water, for release into salt water for maturing, to become available as a common property resource.

Glossary

Aquatic ecosystem — A stream channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.

Aquatic farm (or Aquafarming) — Growing, farming, or cultivating aquatic products in captivity or under positive control. Current State of Alaska law (AS 16.40.100 - 16.40.199, July 1, 1990), does not allow the aquatic farming of finfish, but does allow the farming of shellfish.

ARC/INFO — ARC/INFO is the name of the Geographic Information System (GIS) software used for the Revision database.

Area of potential effects — The geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist.

Arterial road — Roads usually developed and operated for long-term land and resource management purposes and constant service.

Associated grave goods — The items placed with human remains at the time of interment.

ASQ — See Allowable Sale Quantity.

Atmospheric dispersion — The lofting and distribution of particulate matter from wood smoke into the atmosphere over time.

Augmentation funds — The funds used to finance timber purchaser constructed or reconstructed road without regard to whether the funds are contributed or supplemental.

Available timberlands — Timberland not withdrawn from use in production of timber products as a result of administrative statue or regulation.

B

Background The distant part of a landscape. The seen, or viewed, area located from three or five miles to infinity from the viewer. (See “Foreground” and “Middleground”.)

Bank The continuous margin along a river or stream where all upland vegetation ceases.

Bankfull width The width of the wetted channel when the water surface is at the same elevation as the active floodplain.

Beach fringe The area inland from salt water shorelines which is typically forested.

Beachlog salvage The salvage of logs that have been washed-up on beaches. Special provisions in ANILCA allow beachlog salvage in Wilderness and National Monuments if it can be conducted without roads or use of vehicles on uplands.

Bedload Sand, silt, and gravel, or soil and rock debris rolled along the bottom of a stream by the moving water. The particles of this material have a density or grain size which prevents movement far above or for a long distance out of contact with the streambed under natural flow conditions.

Benchmark An analysis of the supply potential of a particular resource, or set of resources, subject to specific management objectives or constraints. Benchmarks define the limits within which alternatives can be formulated.

Benthic Pertaining to the sea bottom or to organisms that live on the sea bottom.

Best Management Practices (BMP's) Land management methods, measures or practices selected by an agency to meet its non-point source control needs. BMP's include, but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMP's can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. BMP’s are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility. BMP’s are found in Forest Service Handbook 2509.22.

Biogeographic provinces Twenty-one ecological subdivisions of Southeast Alaska that are identified by generally distinct ecological, physiogeographic, and biogeographic features. Plant and animal species composition, climate, and geology within each province are generally more similar within than among adjacent provinces. Historical events (such as glaciers and uplifting) are important to the nature of the province and to the barriers that distinguish each province.

Biological diversity The variety of life forms and processes, including the complexity of species, communities, gene pools, and ecological functions, within the area covered by a land management plan.

Biological potential The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.

Biomass The total quantity, at a given time, of living organisms of one or more species per unit area or all of the species in a community.

Blowdown See windthrow.

BMP's See Best Management Practices.

Board foot A unit of timber measurement equaling the amount of wood contained in an unfinished board 1 inch thick, 12 inches long and 12 inches wide.

Bole Trunk of the tree. A tree stem once it has grown to substantial thickness—roughly to that capable of yielding poles, sawlogs, or veneer logs.

Boulders Rounded or angular rocks greater than 12 inches in size.

Braided streams or channels A stream flowing in several dividing and reuniting channels resembling the strands of a braid, the cause of division being the obstruction by sediment deposited by the stream.

BTU British thermal unit. The quantity of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

C

Canopy gap Natural openings created in the overstory of old-growth conifer forests from the loss of a single or small group of trees from windthrow, insects, or disease. Gaps are also created in second growth conifer stands to increase light penetration to the understory by cutting all of the trees in a small area to maintain or increase the number of understory plant species.

Catastrophic event Events resulting from a great and sudden calamity or disaster. In the case of forest stands such events may include windstorms, wildfire, floods, snowslides, and insect outbreaks. Whether a disturbance event is called catastrophic is dependent on the context within which the event occurs, the scale of the event, and the effects of the event.

Capability The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity.

Capital investment cost Costs generally associated with construction such as trails, roads, and physical structures.

Carrying capacity The estimated maximum number of animals that can be sustained over the long term within a specified area.

Cave Cave is legally defined under federal law as "any naturally occurring void, cavity, recess, or system of interconnected passages which occurs beneath the surface of the earth or within a cliff or ledge and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or human-made. Such term shall include any natural pit, sinkhole or other feature which is an extension of the surface," (Federal Cave Resource Protection Act of 1988). Speleologists use "cave" to refer to all parts, regardless of size, of an underground system that links openings and chambers and that may connect the system to the surface. Included in the term caves are tree molds and lava tubes associated with lava flows, erosional caves, and those formed by dissolution of bedrock.

CFL See Commercial forest land.

CFR Code of Federal Regulations.

Channel A natural waterway of perceptible extent that periodically or continuously contains moving water. it has a definite bed and banks which serve to confine the water.

Channel migration Movement of a stream or river channel within a flood plain area (or an alluvial fan) usually over an extended period of time.

Channel sideslope The area from the stream channel to the side-slope break. See also Side-slope break.

Channel type A means of distinguishing parts of a stream system into segments which have fairly consistent physical and biological characteristics. For descriptions, see "Channel Type Field Guide," Forest Service publication R10-MB-6.

Class (streams) See Stream class.

Class II area (Air) Geographic area having air quality exceeding the National Ambient Air Quality Standards, which is designated for a moderate degree of protection from future air quality degradation. Moderate increases in new pollution may be permitted.

Clearance Cultural resources: Certification by the Forest Supervisor documenting that the requirements of 36 CFR 800 have been fully met for each undertaking.

Clearcut Harvesting method in which all trees are cleared in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as a separate age class in planning.

CMAI See Culmination Mean Annual Increment.

Coarse filter An approach used for wildlife conservation management and analysis which focuses on the characteristics of entire ecosystems and landscapes. (See also "fine filter.")

Coarse gravel Rounded rocks generally 3/4 of an inch to 3 inches in size.

Cobbles Rounded rocks between 3 and 12 inches in size.

Colluvial Soil and material produced by the disintegration and weathering of rocks, including cliff debris, material of avalanches, and alluvium. This material accumulates at the foot of a slope.

Commercial forest land (CFL) Forest land that is producing or is capable of producing crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary, or the Chief; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; and (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting.

Commodities Resources with monetary (market) or commercial value; all resource products which are articles of commerce, such as timber and minerals.

Glossary

Common variety	Deposits of sand, stone, gravel, and others of widespread occurrence not having distinct special value. These deposits are used generally for construction and decorative purposes and are disposed of under the Materials Act of 1947.
Condemnation	In real property law, the process by which property of a private owner is taken for public use, without his/her consent, but upon the award of payment for just compensation.
Confined streams	Streams that are confined within their channel banks; they are controlled by stream incision, geomorphic landform characteristics, and local geological conditions.
Confluence	The point where two streams meet.
Connectivity	A measure of the extent that forest areas between or outside reserves provide habitat for breeding, feeding, dispersal, and movement.
Contributed funds	Funds used to pay for a portion of the work or materials needed to construct a road only to the standard needed for a timber sale, which could have properly been paid for by purchaser credits, if available.
Control (Nick) points	Points in streams which are not easily erodible.
Convey	To pass or transmit the title to property from one to another (Black 1979).
Conveyance	An instrument by which some estate or interest in lands is transferred from one person to another (Black 1979); a transfer of legal title to land.
Corridor (transportation)	A linear strip of land defined for the present or future location of transportation or utility rights-of-way within its boundaries. For planning purposes, potential and proposed corridors are depicted on the Plan map to show approximate corridor routes and widths. Actual corridor routes and boundaries for new systems will be identified through site-specific transportation and/or utility project planning.
Corridor (habitat)	Habitats, often linear, that facilitate dispersal and movement of wildlife between larger patches of suitable habitat. (Also see “connectivity.”)
Corridor (Wild & Scenic Rivers)	Wild, scenic and recreational river corridors are generally comprised of the area within 1/4 mile either side of the ordinary high water mark of the river. River corridor boundaries may be changed as a result of specific river planning following inclusion of the River in the National Wild and Scenic Rivers system.
Cost Efficiency	The usefulness of specified inputs (costs) to produce specified outputs (benefits). In measuring cost efficiency, some outputs, including environmental, economic, or social impacts, are not assigned monetary values, but are achieved at specified levels in the least cost manner. Cost efficiency is usually measured using present net value, although use of benefit-cost ratios and rates-of-return may be appropriate.
Created opening	Openings in the Forest canopy created by silvicultural practices including shelterwood regeneration cutting, clearcutting, seed tree cutting, or group selection cutting.
Critical habitat	Specific areas designated as critical by the Secretary of Interior or Commerce for the survival and recovery of species listed as Threatened or Endangered pursuant to the Endangered Species Act.

Crown The tree canopy. The upper part of a tree or woody plant that carries the main branch system and foliage.

Cubic foot Equivalent to a cube of wood with 1-foot sides. The cubic foot volume is a measure of the total sound wood in a tree and is a more accurate depiction of wood volume than the board foot measure. Forest Service policy is that cubic foot measure will be the basis for timber sales by Fiscal Year 1995 (WO Amendment 2400-92-4, 9/30/92).

Cull logs Trees that do not meet certain merchantability specifications.

Culmination of Mean Annual Increment (CMAI) The point at which a tree (or stand) achieves its highest average growth, based on expected growth according to the management intensities and utilization standards assumed in the Forest Plan.

Cultural descendant A person who, although not necessarily a direct descendant of a particular deceased person, is associated with a cultural religious tradition to which the human remains of the deceased person has significance.

Cultural resources See Heritage Resources.

Cumulative effects See Effects.

Cumulative watershed effects (CWE) The effects on a watershed's streams and lakes which result from the incremental impact of individual actions within a watershed when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative watershed effects can result from individually minor but collectively significant actions taking place over a period of time.

D

DBH See Diameter at Breast Height.

Dead A standing tree that is completely dead. May be in various stages of decay.

Debris flows The movement of material resulting from the decay and disintegration of rocks, earth, and other materials.

Debris slides The rapid downslope movement of a mixture of soil, rock, and forest litter with or without a relatively high water content. Also known as debris avalanches.

Debris torrents Landslides that occur as a result of debris; avalanche materials which either dam a channel temporarily or accumulate behind temporary obstructions such as logs and forest debris. Debris torrents are usually confined within the stream channel until they reach the valley floor where the debris spreads out, inundating vegetation and forming a broad surface deposit.

Decision criteria The rules, standards or guidelines used to evaluate alternatives. They are measurements or indicators that are designed to assist a decision maker in identifying a preferred choice from an array of possible alternatives.

Decks Cut timber, sawlogs, or cull logs that have been removed from logging units and stacked.

Degradation	The general lowering of the surface of the land by erosive processes, especially by the removal of material through erosion and transportation by flowing water.
Demand	The amount of goods or services that will be consumed if offered over a given range of prices at a particular point in time.
Demographic	Pertaining to the study of the characteristics of populations, such as size, growth, density, distribution, and vital statistics.
Departure	A timber harvest level that cannot be continued at that level forever.
Detrimental soil disturbance	The condition where established threshold values of soil properties are exceeded and result in significant change or impairment to long-term soil productivity. (See also, Significant change and Significant impairment.)
Detritus	Material, produced by the disintegration and weathering of rocks, that has been moved from its site of origin.
Developed recreation	That type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.
Development LUD's	Land use designations that permit commercial timber harvest (Timber Production, Modified Landscape, and Scenic Viewshed) and convert some of the old-growth forest to early-to mid-successional, regulated forests.
Diameter at Breast Height (DBH)	The diameter of a standing tree at a point four feet, six inches from ground level.
Digitize	The act of placing spatial information into a computer.
Discharge velocity	The speed of water outflow from a stream or river over a given period of time.
Discount rate	The rate used to adjust future benefits or costs to their present value.
Dispersal	The movement, usually one way, of plants and animals from their point of origin to another location where they subsequently produce offspring.
Dispersed recreation	That type of recreation use that requires few, if any, improvements and may occur over a wide area. This type of recreation involves activities related to roads, trails and undeveloped waterways and beaches. The activities do not necessarily take place on or adjacent to a road, trail, or waterway, only in conjunction with it. Activities are often day-use oriented and include hunting, fishing, boating, off-road vehicle use, hiking, and among others.
Dispersion	To disperse the effects of timber harvest by distributing harvest units more or less uniformly throughout a drainage so that increased runoff and sediment from disturbed sites will be buffered by lower levels of runoff and sediment production from surrounding undisturbed lands.
Dissected landforms	A physical, recognizable form or feature of the earth's surface such as a mountain, hill, or valley, having a characteristic shape, that in part is the result of several shallow or deeply incised drainage channels.

Dissolved oxygen The amount of free (not chemically combined) oxygen in water.

Distance zone Areas of landscapes denoted by specified distances from the observer (foreground*, middleground*, or background*). Used as a frame of reference in which to discuss landscape characteristics of management activities. (Words marked by a * have further definitions within the Glossary.)

Disturbance A force that results in changes in the structure and composition through natural events such as wind, fire, flood, avalanche, or mortality caused by insect or disease outbreaks or by human caused events (e.g., timber harvest).

Diversity See Biological diversity.

Down A tree or portion of a tree which is dead and laying on the ground.

Draft Environmental Impact Statement (DEIS) The version of the statement of environmental effects required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA) and released to the public and other agencies for review and comment.

Duff layer The general term for vegetation material covering the mineral soils in forests including the fresh litter and well-decomposed organic material and humus.

Dust, fugitive or Fugitive dust Particulate matter composed primarily of soil which is uncontaminated by industrial activities. Examples are emissions from haul roads and wind erosion.

Dying A standing tree partially dead above ground and likely to die in the future.

E

Easement An interest or right in land owned by another that entitles its holder to a specific limited use.

Ecological provinces See Biogeographic provinces.

Ecosystem A complete, interacting system of organisms considered together with their environment (for example; a marsh, a watershed, or a lake).

Ecosystem management The use of an ecological approach to land management to sustain diverse, healthy and productive ecosystems. Ecosystem management is applied at various scales to blend long-term societal and environmental values in a dynamic manner that may be modified through adaptive management.

Ecotone A transition or junction zone between two or more naturally occurring diverse plant communities (ecosystems).

Edge Effect The effect of adjoining vegetative communities on the population structure along the margin, which provides for greater numbers of species and higher population densities than either adjoining community. Edge may also result in negative effects, since habitat along the edge is different than within the patch, reducing the effective area of the habitat patch.

Effect In Cultural Resources, the potential of an undertaking to alter the characteristics that may qualify a property for inclusion in the National Register of Historic Places.

Effects	**Direct.** Results of an action occurring when and where that action takes place. **Indirect.** Results of an action occurring at a location other than where the action takes place and/or later in time, but in the reasonably foreseeable future. **Cumulative.** Results of collective past, present, and reasonably foreseeable future actions.
EIS	See Environmental Impact Statement.
Emergent	A plant rooted in shallow water and having most of its vegetation above water (cattails).
Encumbrance	A claim, lien, charge, or liability attached to and binding real property (Black 1979).
Endangered species	Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.
Endemic	Restricted to a particular locality. For example, a particular species or subspecies may occur on only one or a very few islands.
Enhance	To improve, reinforce, enrich or strengthen the existing condition, value, or beauty of a resource.
Entitlement	Right to benefits, income or property which may not be abridged without due process (Black 1979).
Environmental analysis	An analysis of alternative actions and their predictable short- and long-term environmental effects, incorporating the physical, biological, economic, social and environmental design arts and their interactions.
Environmental Impact Statement (EIS)	A document prepared by a federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. A federal statute (Section 102 of the National Environmental Policy Act of 1969) requires that such statements be prepared. It is prepared first in draft or review form, and then in a final form. An impact statement includes the following points: (1) the environmental impact of the proposed action, (2) any adverse impacts which cannot be avoided by the action, (3) the alternative courses of actions, (4) the relationships between local short-term use of the human environment and the maintenance and enhancement of long-term productivity, and (5) a description of the irreversible and irretrievable commitment of resources which would occur if the action were accomplished.
Ephemeral channels	A stream that flows in direct response to rainfall and snowmelt but not during dry seasons. Its channel is above the level of the water table.
Equipment fires	Those wildfires originating from the use of equipment in forest operations such as logging, yarding, chainsaws, land clearing, road building, etc.
Erosion	The wearing away of the land surface by running water, wind, ice, gravity or other geological activities.
Escapement	Adult anadromous fish that escape from all causes of mortality (natural or human-caused) to return to streams to spawn.

Estuary

An ecological system at the mouth of a stream where fresh water and salt water mix, and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is the limit of salt-intolerant vegetation, and the seaward extent is a stream's delta at mean low water.

Evaluation

A process for interpreting monitoring data and determining whether changes in management direction are warranted.

EVC

See Existing Visual Condition.

Evapotranspiration

The sum total of water lost from the land by evaporation and plant transpiration. Transpiration is loss of water in vapor form from a plant.

Even-aged management

The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. The difference in age between trees in forming the main canopy level of a stand usually does not exceed 20 percent of that age of the stand at harvest rotation age. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.

Exchange

A trading of public lands (surface or subsurface estates) that usually do not have high public value for lands in other ownerships which do have value for public use, management, and enjoyment.

Executive Order

An order or regulation issued by the President or some administrative authority under his direction.

Existing data search

A systematic check and evaluation of available records, documents, and informant sources to gather information pertinent to cultural resources within a given area.

Existing Visual Condition (EVC)

EVC ratings are established to give the land manager an indication of the current level of visual quality and visual evidence of management activities. EVC classes are as follows:

Type 1. Appears to be untouched by human activities, except for trails needed for access; only ecological changes have occurred.

Type 2. Changes in the landscape are not noticed unless pointed out.

Type 3. Changes in the landscape are noticed as minor disturbances, but the natural appearance of the landscape remains dominant.

Type 4. Changes in the landscape are easily noticed and perceived as disturbances, but resemble natural patterns.

Type 5. Changes stand out as a dominant impression on the landscape, yet are shaped to resemble natural patterns from 3-5 miles or more distant.

Type 6. Changes are in glaring contrast to the landscape's natural appearance; excessive visual alteration has occurred.

F

Facility — Structures needed to support the management, protection, and utilization of the National Forests, including buildings, utility systems, dams, and other construction features. There are three types of facilities: recreation, administrative, and permitted.

Falldown — The difference between the number of acres planned for timber harvest and those actually harvested, usually experienced as a reduction in acres. Falldown results from many factors, including unmapped unsuitable timber land, newly available information, and project-level consideration of site-specific issues and non-timber resource needs. See also Management Implementation Reduction Factor.

Feasible — Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, technical, and safety factors. In evaluating feasibility, the following are considerations: 1) the effectiveness and practicality of the measures being considered; and, 2) the long- and short-term costs of the measures and the effect of those costs on long- and short-term economic viability of projects or programs.

Fen — A tract of low, wet ground containing sedge peat, relatively rich in mineral salts, alkaline in reaction, and characterized by slowly flowing water. Vegetation is generally sedges and grasses, often with low shrubs and sometimes a sparse cover of trees. Sphagnum mosses are absent or of low cover. Unlike peatlands (commonly referred to as bogs or muskegs), fen's contribute to stable stream flows, provide nutrient input to streams and often contribute to fish rearing habitat.

FHAT — See Fish Habitat Assessment Team.

FHIP — See Forest Habitat Integrity Program.

Fine filter — An approach used for wildlife conservation management and analysis which focuses on individual species and their habitat needs. (See also "coarse filter.")

Fire Management Action Plan — A plan which provides detailed information for, and guides the implementation of, fire management activities for the approved alternative for the Forest Plan.

Fire severity — How hot a fire is for how long. The hotter a fire is and the longer it burns, the more severe it is.

Fire suppression — All the work of extinguishing or confining a fire, beginning with its discovery.

Fiscal Year (FY) — October 1 to September 30. The Fiscal Year is referred to by the calendar year which begins on January 1. For example, October 1, 1996, to September 30, 1997, is referred to as Fiscal Year 1997.

Fish Habitat Assessment Team — The team that conducted the analyses for the Anadromous Fisheries Habitat Assessment.

Fish Passage — The ability of both adult and juvenile fish to move both up and down stream.

Fish User Day (FUD) — A recreation visitor day spent fishing or viewing fish.

Flash flooding — A very rapid responding, relatively high streamflow overtopping the banks in any reach of a stream.

Flood plain — That portion of a river valley, adjacent to the river channel, which is covered with water when the river overflows its banks at flood stages in response to a 100-year storm event.

Fluvial — Of, or pertaining to, streams and rivers.

Foodfish — Fish consumed by humans.

Footslope — The inner, gently inclined surface at the base of a hill or mountain slope. The surface profile is dominantly concave, and is the transition zone between upslope erosional sites and downslope depositional sites.

Forbs — A grouping/category of herbaceous plants which are not included in the grass, shrub or tree groupings/categories; generally smaller flowering plants.

Foreground — A term used in visual management to describe the stand of trees immediately adjacent to a scenic area, recreation facility or forest highway. The area is located less than 1/4 mile from the viewer. (See Background and Middleground.)

Forest Development Transportation Plan — The plan for the system of access roads, trails, and airfields needed for the protection, administration, and utilization of the National Forests and other lands administered by the Forest Service, or the development and use of resources upon which communities within or adjacent to the National Forests are dependent (36 CFR 212.1). The plan also addresses permanent or temporary road closures necessary for resource protection or public safety.

Forest Facility Master Plan — The plan which depicts the development and management of the Forest's facilities. This includes current volume of business and projections for the future, locations for needed skills to perform program work, existing administrative sites and proposed locations of new sites, and management strategies concerning consolidation or sharing services between units (FSM 7312.1).

Forest Habitat Integrity Program — A method of classifying watersheds based on specific resource attributes. The program was developed by the State of Alaska in 1983 based on VCU values developed for the 1979 Tongass Land Management Plan.

Forest health — An expression of the relationship among biotic and abiotic influences on the forest (i.e., insects, diseases, atmospheric deposition, silvicultural treatments, harvesting practices, natural disturbance process) and the ability to achieve management objectives for a given forest unit now or in the future, and sustain long-term site productivity.

Forest Plan — Source of management direction for an individual Forest specifying activity and output levels for a period of 10-15 years. Management direction in the plan is based on the issues identified at the time of the plan's development.

Forested land — Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use.

Forested wetland — A wetland whose vegetation is characterized by an overstory of trees that are 20 feet or taller.

Forest-wide Standards & Guidelines — A set of rules and guidance that directs management activities and establishes the environmental quality, natural renewable and depletable resource requirements, conservation potential, and mitigation measures that apply to several land use designations.

FORPLAN — The forest planning model. A linear programming software package used to analyze planning decisions regarding land use patterns, capital investment, and timber harvest scheduling.

Fragmentation — An element of biological diversity that describes the natural condition of habitats in terms of the size of discrete habitat blocks or patches, their distribution, the extent to which they are interconnected, and the effects of management on these natural conditions. Also the process of reducing the size and connectivity of stands within a forest.

Free use permit — A permit that allows the removal of timber or other resources from public lands free of charge.

FSH — Forest Service Handbook.

FSM — Forest Service Manual.

FUD — See Fish User Day.

Fuel — The organic materials that will support the start and spread of a fire: duff, litter, grass, weeds, forbs, brush, trees, dead woody materials.

Fuel loading — The volume of the available or burnable fuels in a specified area.

Function — A term in ecology referring to the interreactions and influences between plant and animal species within an area (how each species uses its environment), and to natural processes of change or disturbance (such as wind or aging).

FY — See Fiscal Year.

G

Genetic descendant — A person known or reliably assumed to have a genetic relationship to a deceased person.

Geographic provinces — Subdivisions of Southeast Alaska used to define natural diversity, including areas with distinctive regional climate, physiography, and geology. Seven geological provinces have been identified on the Tongass.

Glacial refugia — The areas of Southeast Alaska that were not covered by glaciers during the last ice age.

Glacial rivers and streams — Rivers and streams that receive their main flow characteristics from the presence and activities of ice and glaciers and their meltwater.

Glide or placid streams — Grouping of channel types that have fairly consistent physical characteristics occurring on lowland landforms and are mostly associated with bogs, marshes, or lakes.

Goal A concise statement that describes a desired future condition normally expressed in broad, general terms that are timeless, in that there is no specific date by which the goal is to be achieved.

Goods and services The various outputs and on-site uses produced from forest resources.

Groundwater Water within the earth that supplies wells and springs. Specifically, water in the zone of saturation where all openings in soils and rocks are filled; the upper surface level forms the water table.

Group Selection A harvesting method in which trees are removed in small groups at a time.

Guideline A preferred or advisable course of action or level of attainment designed to promote achievement of goals and objectives.

Guyline circle Guylines are cables to brace the tower (spar) used in cable logging systems. Using the tower as the center, the guyline circle is the area between the tower and where the guylines are anchored. For safety reasons, this area is usually cleared of all trees.

H

Habitat The sum total of environmental conditions of a specific place occupied by a wildlife or plant species or a population of each species.

Habitat capability The estimated maximum number of fish or wildlife that can be supported by the amount and distribution of suitable habitat in an area.

Habitat conservation area See Old growth habitat reserve.

Hard snags/soft snags Terminology used to described the state of the decay process in dead trees. Hard snags are dead trees which have little decay and are generally still hard wood. Soft snags are dead trees which have a considerable amount of decay and are generally soft, broken wood.

Haul out Areas used by marine mammals for resting and other social/biological activities which occur in the intertidal zone.

HCA See Habitat conservation area

Heritage Resources The physical remains of districts, sites, structures, buildings, networks, events, or objects used by humans in the past. They may be historic, prehistoric, architectural, or archival in nature. Heritage resources are non-renewable aspects of our national heritage.

Historic property Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. The term includes artifacts, records, and remains that are related to and located within such properties.

Horizontal distance Distance measured in a flat (horizontal) manner at zero angle.

Human remains The physical remains of human bodies.

Humus Substance of organic origin that is fairly but not entirely resistant to further bacterial decay.

Hunter Day One hunter day is equivalent to one person hunting for any length of time during a 24 hour period.

Hydrologic cycle The complete cycle through which water passes, commencing as atmospheric water vapor, passing into liquid and solid form as precipitation, thence along or into the ground surface, and finally again returning to the form of atmospheric water vapor by means of evaporation and transpiration. Also called Water Cycle.

Hydrophyte Plants typically found in wet habitats.

I

IDT See Interdisciplinary Team.

Ignition The initiation of combustion.

Implementation For cultural resources, that point in an undertaking when the proponent has full and complete authorization to proceed with the undertaking.

Improvements Includes any structures of a permanent nature placed upon the land, which tend to increase its value.

Industrial wood All commercial roundwood products, except fuelwood.

Infrastructure The facilities, utilities, and transportation systems needed to meet public and administrative needs.

Inherent capability Recreation capability for the physical, social and managerial setting for recreation, based on remoteness from modern human development and activity, modification of the land, and social factors such as crowding.

Integrated Pest Management (IPM) A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable.

Intensity How hot a fire is. Specifically, a measure (in BTU's per foot per second) of the energy released per unit of time in an area of actively burning fire. The amount of heat released per foot of fire front per second.

Inter To place in a grave or tomb.

Interception The process by which precipitation is caught and held by foliage, twigs, and branches of trees, shrubs, and other vegetation, and lost by evaporation, never reaching the surface of the ground. Interception equals the precipitation on the vegetation minus stemflow and throughfall.

Interdisciplinary Team (IDT) A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is

sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem.

Interest

A general term to denote a right, claim, title, or legal share in real estate (Black 1979).

Interior old-growth forest

The region of a forested stand that has a stable microclimate relative to light, wind, humidity, moisture regime, etc. Natural forest ecotones (see glossary) "seal" a forests edge and stabilize these microclimate features. Ecotones created by management such as the old growth - clearcut edge may have "edge" effects that extend into a forest for several hundred feet (estimated 2-3 tree heights) before stable "interior forest" conditions are achieved and microclimatic effects of the edge are no longer evident.

Invertebrate population

That population of creatures without a backbone. Context would depict whether land invertebrates, shore invertebrates, or water invertebrates.

Invertebrates

Animals without a backbone.

IPM

See Integrated Pest Management.

Irretrievable commitments

Applies to losses of production or use of renewable natural resources for a period of time. For example, timber production from an area is irretrievably lost during the time an area is allocated to a no-harvest prescription. If the allocation is changed to allow timber harvest, timber production can be resumed. The production lost is irretrievable, but the action is not irreversible.

Irreversible commitments

Decisions causing changes which cannot be reversed. For example, if a roadless area is allocated to allow timber harvest and timber is actually harvested, that area generally cannot, at a later date, be allocated to Wilderness. Once harvested, the ability of that area to meet Wilderness criteria has been irreversibly lost. Often applies to nonrenewable resources such as minerals and cultural resources.

Issue

A point, matter, or section of public discussion or interest to be addressed or decided.

K

Karst

A type of topography that develops in areas underlain by soluble rocks, primarily limestone. Dissolution of the subsurface strata results in areas of well-developed, surface drainage that are sinkholes, collapsed channels, or caves.

L

Lacustrine wetland

Includes permanently flooded lakes and reservoirs, intermittent lakes, and tidal lakes with ocean-derived salinities of less than 0.5 percent. Typically, there are extensive areas of deep water and there is considerable wave action.

Land allocation

The decision to use land for various resource management objectives to best satisfy the issues, concerns and opportunities and meet assigned forest output targets.

Land exchange

The conveyance of non-Federal land or interests to the United States in exchange for National Forest System land or interests in land.

Land Use Designation (LUD)

(As used in the 1979 Tongass Land Management Plan:) General management direction applied to a Value Comparison Unit or group of Value Comparison Units. These four land use designations are defined as follows.

LUD 1. Forest Service recommended Wilderness areas, most of which became Wilderness through the 1980 Alaska National Interest Lands Conservation Act. In general, these undeveloped areas are managed for solitude and primitive types of recreation, and contain unaltered habitats for plants and animal species. These areas are managed as directed in the 1964 Wilderness Act and ANILCA, as amended.

LUD 2. Lands under this designation are managed in a roadless state to retain their wildland character. Primitive recreational facilities can be built and habitat improvements for fish and wildlife are permitted. Timber harvest on these lands is limited to salvage operations to protect other resources.

LUD 3. These lands are managed for a variety of uses. The emphasis is on managing for both amenity and commodity oriented uses in a compatible manner to provide the greatest combination of benefits. These areas usually have high amenity values in conjunction with high commodity values. Allowances in calculated potential timber yield have been made to meet multiple-use coordination objectives.

LUD 4. These lands are managed to provide opportunities for intensive development of resources. Emphasis is primarily on commodity, or market resources and their use. Amenity values are also provided for. When conflicts over competing resource uses arise, conflicts would most often be resolved in favor of commodity values. Allowances in calculated potential timber yield have been made to provide for protection of physical and biological productivity.

Land Use Designation (LUD)

(As used in the 1996 Tongass Land Management Plan Revision:) A defined area of land specific to which management direction is applied. (See also Land Use Prescriptions.)

Land Use Prescriptions

Specific management direction applied to a defined area of land (land use designation as defined in the Revision) to attain multiple use and other goals and objectives.

Land Utilization Project (LUP)

A unit designated by the Secretary of Agriculture for conservation and utilization under Title III of the Bankhead-Jones Farm Tenant Act (USDA Forest Service, undated, Land Areas of the National Forest System).

Landform

Any physical, recognizable form or feature of the earth's surface, having a characteristic shape, and produced by natural causes. Major forms included are plains, plateaus, and mountains; minor forms are hills, valleys, slopes, eskers, and dunes.

Landslides

The moderately rapid to rapid downslope movement of soil and rock materials that may or may not be water-saturated.

Large Woody Debris (LWD)

Any piece of relatively stable woody material, having a diameter of four inches or greater and a length greater than three feet, that intrudes into a stream channel. Formerly called large organic debris.

Leasable minerals

Generally includes minerals such as coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur, and geothermal steam.

Lease	An authorization (usually long-term) to possess and use public lands for a fixed period of time.
Leave strips	The result of timber harvest activities where blocks of timber are left after harvest has occurred.
Locatable minerals	Includes minerals such as gold, silver, lead, zinc, copper, and mercury.
Log Transfer Facilities (LTF)	Formerly referred to as Terminal Transfer Facilities, Log Transfer Facilities include the site and structures used for moving logs and timber products from land-based transportation forms to water-based transportation forms (or vice versa).
Logging slash	The wood residue left on the ground after harvesting. It includes unused logs, uprooted stumps, broken or uprooted stems, tops, branches, and leaves.
Logging systems	**Tractor.** A system of log transportation in which logs are pulled from the woods to a landing by means of a crawler tractor, skidder, or similar ground-based equipment. **High-lead.** A system of cable logging in which the working lines are elevated at the landing area by a rigged wooden tree or portable steel spar. **Skyline.** A system of cable logging in which all or part of the weight of the logs is supported during yarding by a suspended cable. **Balloon.** A system of cable logging in which the weight of the logs is counteracted by the lift provided by a lighter-than-air balloon. **Helicopter.** A system of transporting logs from the woods to a landing as an external load on a helicopter.
Long-term Sustained Yield Timber Capacity (LTSY)	The highest uniform wood yield from suitable-scheduled lands that may be sustained in perpetuity consistent with the Forest Plan.
Lows	Atmospheric disturbances that can properly be considered as storms, for they bring changeable, unsettled weather that normally includes widespread, abundant, and often intensive precipitation.
LTF	See Log Transfer Facilities.
LTSY	See Long-term Sustained Yield Timber Capacity.
LUD	See Land Use Designation.
LUP	See Land Utilization Project.
LWD	See Large Woody Debris.

M

Macrophytes Any plant species that can be readily observed without the aid of optical magnification.

Major culvert A culvert that provides an opening of more than 35 square feet in a single installation or in a multiple installation in which the smallest opening is more than 19 square feet.

Managed stand A stand of trees in which stocking level control is applied to achieve maximum growth.

MAI See Mean Annual Increment.

Management Area Combinations of adjacent Value Comparison Units having common management direction, as defined in the 1979 Tongass Land Management Plan.

Management concern An issue, problem or a condition which constrains the range of management practices identified by the Forest Service in the planning process.

Management direction A statement of multiple-use and other goals and objectives, the associated land use prescriptions, and standards and guidelines for attaining them.

Management Implementation Reduction Factor (MIRF) An adjustment made to the timber outputs of the FORPLAN computer model to account for anticipated effects on timber availability that cannot be accounted for in the computer model. (See also Falldown.)

Management Indicators Plant or animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent.

Management practices The activities applied to a defined area of land (land use designation as defined in the Revision) to attain multiple-use and other goals and objectives.

Management prescription Management practices and intensity selected and scheduled for application on a specific area (e.g., a land use designation) to attain multiple-use and other goals and objectives.

Management requirement Standards for resource protection, vegetation manipulation, silvicultural practices, even-aged management, riparian areas, soil and water and diversity, to be met in accomplishing National Forest System goals and objectives. (See 36 CFR 219.17)

Mariculture The cultivation of plants and animals in saltwater, with no freshwater component. Mariculture does not include anadromous fish farming.

Marine systems Of, or belonging to, or caused by, the sea.

Maritime climate Weather conditions controlled by an oceanic environment characterized by small annual temperature ranges and high precipitation.

Mass-wasting — A general term for a variety of processes by which large masses of earth material are moved by gravity either slowly or quickly from one place to another. Also, mass movement.

MBF — Thousand Board Feet.

MCF — Thousand Cubic Feet.

Mean Annual Increment (MAI) — The total increment to a given age in years, divided by that age.

Memorandum of Understanding (MOU) — An agreement between the Forest Service and others agencies resulting from consultation between agencies that states specific measures the agencies will follow to accomplish a large or complex project. A memorandum of understanding is not a fund obligating document.

Microclimate — The temperature, moisture, wind, pressure, and evaporation (climate) of a very small area that differs from the general climate of the larger surrounding area.

Middleground — The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly from the landscape. The area is located from 1/4 to 3-5 miles from the viewer. (See Foreground and Background.)

Mineral development — The activities and facilities associated with extracting mineral deposits.

Mineral entry — Filing a mining claim on public land to obtain the right to mine any minerals it may contain. Also the filing for a mill site on Federal land for the purpose of processing off-site minerals.

Mineral exploration — The search for valuable minerals on lands open to mineral entry.

Mineral lease — A lease which authorizes the development and production of leasible minerals from public lands.

Mineral production — The extraction of mineral deposits.

Mineral rights — The rights of one who owns the mineral estate (subsurface).

Mineral soils — Soils consisting predominantly of, and having its properties determined by, mineral matter. These soils usually contain less than 20 percent organic matter, but can contain an organic surface layer up to within 20 inches of the surface.

Mineral withdrawal — A formal designation by the Secretary of Interior which precludes entry or disposal of mineral commodities under the mining and/or mineral leasing laws.

Mining claims — A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit.

MIRF — See Management Implementation Reduction Factor.

Mitigate — To lessen or make minimal the severity. For cultural resources, to lessen or minimize an adverse effect upon a cultural resource listed on or eligible for the National Register of Historic Places. The two categories of mitigation most often used are project modification and data recovery.

Mixed conifer — In Southeast Alaska, mixed conifer stands usually consist of the following species: western hemlock, mountain hemlock, Alaska yellow-cedar, redcedar, and Sitka spruce. Shorepine may occasionally be present depending on individual sites. Redcedar is not usually in mixed conifer stands on the Chatham or Stikine areas.

MMBF — Million Board Feet.

MMCF — Million Cubic Feet.

Modal — Relating to the statistical mode.

Model — An idealized representation of reality developed to describe, analyze, or understand it; a mathematical representation of the relationships under study (e.g., FORPLAN, wildlife habitat capability models).

Moderately well-drained soil — Water in these soils is removed from them somewhat slowly, so that the profile is wet for a small, but significant, part of the time.

Modification — See Visual Quality Objectives.

Moisture regime — The variation of moisture content in a specified portion of soil during the year.

Monitoring — Gathering information and observing results of management activities to provide a bass for the periodic evaluation of the Forest Plan.

Mop-up — Following suppression activities to stop the spread of the fire, the business of extinguishing the fire is called mop-up.

MOU — See Memorandum of Understanding.

Multiple-aged stands — An intermediate form of stand structure between even- and uneven-aged stands. These stands generally have two or three distinct tree canopy levels occurring within a single stand.

Multiple use — The management of all the various renewable surface resources of the National Forest System so that they are used in the combination that will best meet the needs of the American people; harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources.

Muskeg — See Peatland.

N

National Cooperative Soil Survey (NCSS)

A program consisting of a joint effort of cooperating Federal agencies, land-grant universities, and other state and local agencies to map soils, collect soil data, interpret the maps and data, and promote their use. Federal leadership is provided by the National Resource Conservation Service.

National Environmental Policy Act of 1969 (NEPA)

An act declaring a National policy to encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and the biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

National Fire Management Analysis System (NFMAS)

A broad umbrella process to help fire managers identify the most efficient fire program meeting the direction in the Forest plan. This includes information for the planning record on program composition, annual programmed costs, emergency fire fighting costs, expected resource impacts, and net value change.

National Forest Management Act (NFMA)

A law passed in 1976 that amends the Forest and Rangeland Renewable Resources Planning Act and requires the preparation of Forest Plans.

National Forest System (NFS) Land

Federal lands that have been designated by Executive order or statute as National Forests, National Grasslands, or Purchase Units, or other lands under the administration of the Forest Service.

National Register of Historic Places

A register of cultural resources of national, state, or local significance, maintained by the Department of the Interior.

National Wild and Scenic River System

Rivers with outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

Native selection

Application by Native corporations formed under authority of the Alaska Native Claims Settlement Act of 1971 (ANCSA - Public Law 92–203, 85 Stat. 688) and by Native individuals (under Section 14(h)(5), ANCSA) to the USDI Bureau of Land Management (BLM) for conveyance of a portion of lands withdrawn under ANCSA in fulfillment of Native entitlements established under ANCSA. Native village corporations had three years from the date of ANCSA (December 18, 1971) to make their selections and regional corporations had four years. Native individuals who met the criteria had two years from the date of ANCSA to make application under Section 14(h)(5). BLM regulations allowed Native corporations formed under ANCSA to select in excess of their entitlements to ensure sufficient land would be available to meet full entitlement. Remaining lands in excess of entitlement which have been selected but not conveyed will revert back to unencumbered National Forest System land status after full entitlement is reached.

Net public benefit

The overall long-term value to the Nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index.

Net sawlog volume — Trees suitable in size and quality for producing logs that can be processed into lumber. In Southeast Alaska, depending on the market, the volume may be processed as pulp or lumber.

Net willingness-to-pay — The amount that a person would have paid for an activity above and beyond what the person actually did pay for that activity.

NIC — See Non-interchangeable Components.

No action alternative (Alternative 9) — The most likely condition expected to exist in the future if current management direction were to continue unchanged.

No adverse effect — When the effect on a cultural resource would not be considered harmful to those characteristics that qualify the property for inclusion in the National Register.

Noncommercial species — Tree species that have no economic values at this time nor anticipated timber value within the near future.

Non-declining even flow — A policy governing the volume of timber removed from a National Forest, which states that the volume planned for removal in each succeeding decade will equal or exceed that volume planned for removal in the previous decade.

Non-development LUD's — Land use designations that do not permit commercial timber harvest and generally maintain the integrity of the existing old-growth ecosystem.

Nonforest land — Land that has never supported forests and lands formerly forested but now developed for such nonforest uses as crops, improved pasture, etc.

Non-interchangeable Components — Non-interchangeable components (NIC's) are defined as increments of the suitable land base and their contribution to the allowable sale quantity (ASQ) that are established to meet Forest plan objectives. NIC's are identified as parcels of land and the type of timber thereon which are differentiated for the purpose of Forest plan implementation. The total ASQ is derived from the sum of the timber volumes from all NIC's. The NIC's cannot be substituted for each other in the timber sale program.

> **NIC I. Normal Operability**: This is volume scheduled from suitable lands using existing logging systems. Most of these lands are expected to be economic under projected market conditions. On average, sales from these lands have the highest probability of offering a reasonable opportunity for a purchaser to gain a profit from his/her investment and labor. This is the best operable ground.
>
> Normal operability includes those systems most frequently used on the Tongass. These systems are tractor, shovel, standard cable and some helicopter.
>
> > **Tractor** - Tractor logging includes all ground wheel or track system s used for skidding logs to a landing. Shovel yarding is included; however, tractor or rubber-tire skidding used in conjunction with swing operations are not included.
> >
> > **Standard Cable** - The most typical logging systems used on the Tongass. Included in the standard cable system component are highlead uphill, highlead downhill, slackline, running skyline, and flyer.

Standard Helicopter - Helicopter yarding with yarding distances up to three quarters of a mile.

NIC II. Difficult and Isolated Operability: This is volume scheduled from suitable lands that are available for harvest using logging systems not in common use in Southeast Alaska. Most of these lands are presently considered economically and technologically marginal.

Difficult operability includes those systems used on the Tongass which have significantly higher cost. These may include balloon, long-span skyline, multi-span, or helicopter with yarding distances greater than three-quarters of a mile. This category also includes lands which have limited access as a result of being isolated by prior harvest activities or other management activities.

Long Span Cable - Cable systems which require longer than average yarding distances. Typical long span cable systems considered are standing skylines and multispan.

Access Limitation - Logging systems required for areas with access limitation concerns. The logging system could be highlead cable when access to timber and roading is difficult. Typical harvest systems are helicopter and swing operations.

Isolated Operability - This class is comprised entirely of isolated stands. These area small stands of isolated timber which are extremely difficult to harvest. The harvest system could vary, but would be more costly due to the location of the stand. Typical harvest systems are helicopter with average yarding distances greater than one mile.

Nonmarket value

Products derived from National Forest resources that do not have a well-established monetary (market) value, for example, wilderness, wildlife. (Noncash economic benefits.)

Nonpoint source (pollution)

Unlike point sources of water pollution, nonpoint sources are diffuse and can come from any land area. Nonpoint sources of water pollution originate from many undefinable sources such as agricultural and urban runoff, runoff from construction activities, and runoff from forestry practices. Nonpoint source pollutants are generally carried over or through the soil and ground cover via storm flow processes. The following activities are potential nonpoint sources of pollution; reforestation and subsequent cultural treatment, thinning, prescribed burning, pest and fire control, harvest operations, surface drainage, and road construction and maintenance from which there is natural runoff. Best Management Practices are recognized as control mechanisms for nonpoint source pollution.

Nunatak

An isolated hill or peak which projects through the surface of a glacier.

O

Objectives The precise steps to be taken and the resources to be used in achieving goals.

Off-Highway Vehicle (OHV) Any vehicle which is restricted by law from operating on public roads for general motor vehicle traffic. Includes motorbikes, minibikes, trailbikes, snowmobiles, dunebuggies, all-terrain vehicles, and four-wheel drive, high clearance vehicles (FSM 2355.01). Sometimes referred to as Off-Road Vehicle or "ORV".

OHV See Off-Highway Vehicle.

Old-growth forest Ecosystems distinguished by the later stages of forest stand development that differs significantly from younger forests in structure, ecological function, and species composition. Old-growth forest is characterized by a patchy, multi-layered canopy; trees that represent many age classes; large trees that dominate the overstory, large standing dead (snags) or decadent trees; and higher accumulations of large down woody material. The structure and function of an old-growth ecosystem will be influenced by its stand size and landscape position and context.

Old-growth associated species Plant and animal species with habitat relationships that exhibit a strong association with old-growth forests.

Old-growth habitat reserve A contiguous unit of old-growth forest habitat to be managed to maintain the integrity of the old-growth forest ecosystem.

Open road density The length of forest development roads open for public access and use per unit area of land; usually expressed as miles of open road per square mile of land.

Operability See Non-interchangeable Components.

Operation and maintenance costs Costs associated with operating and maintaining facilities, program management, and support costs associated with management of other resources.

ORACLE A relational database management system software package.

Order three inventory A level of soil surveys made for extensive land uses that do not require precise knowledge of small areas or detailed soils information. Such survey areas are usually dominated by a single land use and have few subordinate uses. This information can be used in planning for range, forest, recreational areas, and similarly extensive land uses and in community planning.

Order four inventory A soil survey level made for extensive land uses that require general information for broad statements concerning land-use potential and general land management. This information can be used in locating, comparing, and selecting suitable areas for major kinds of land use in regional land-use planning, and in selecting areas for more intensive study and investigation.

Ordinary high water mark The mark along the bank or shore up to which the presence and action of the nontidal water are common and usual, and so long continued in all ordinary years, as to leave a natural line impressed on the bank or shore and indicated by erosion, shelving, changes in soil characteristics, destruction of terrestrial vegetation, or other distinctive physical characteristics. (Consult 11 AAC 53.900 — Alaska Code.)

Organic soils — Soils which contain a high percentage (greater than 15 percent) of organic matter throughout the soil depth.

ORV — Off-Road Vehicle. (See Off-Highway Vehicle.)

Other forest land — Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions.

Output — The measurable goods, end products, or services resulting from management activities that are purchased, consumed, or used directly by people.

Overflow — High runoff which overflows natural stream and river banks. Also known as flooding.

Overmature — The stage at which a tree declines in vigor and soundness, for example, height growth has usually stopped and probability of mortality is high.

Overselection — Unconveyed lands selected in excess of entitlement. Overselections by the State of Alaska are authorized in Section 906 (f), ANILCA. They are authorized for Native Corporations organized under ANCSA in Federal Regulations (43 CFR 2650).

Overstory — The portion of trees in a forest which forms the upper most layer of foliage.

P

Palustrine wetland — Includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 percent.

Parent material — The unconsolidated, and more or less chemically weathered, mineral or organic matter from which soils develop.

PAOT — See Persons-at-one-time.

Partial cut — Any cutting in which only part of the stand is harvested. This may include thinning, selection, shelterwood, or an overstory removal.

Partial retention — See “Visual Quality Objectives.”

Parts per million (PPM) — A measurement of concentration indicating the quantity of a substance per unit volume of a solution.

Parturient — Of or relating to giving birth.

Payments to states — A fund consisting of approximately 25 percent of the gross annual timber receipts received by the National Forests in that state. This is returned to the State for use on roads and schools.

Peak flow — The highest discharge of water recorded over a specified period of time at a given stream location. Often thought of in terms of spring snowmelt, summer, fall or winter rainy season flows. Also called maximum flow.

Peatland — A wetland type (also called “muskeg”) in Southeast Alaska that has developed over thousands of years in depressions, or flat areas on gentle to steep slopes. These

	bogs have poorly drained, acidic, organic soils materials that support vegetation that can be either sphagnum moss or herbaceous plants or sedges, rushes, and forbs or may be a combination of sphagnum moss and herbaceous plants. These vegetation types may have a lesser abundance of shrubs and stunted trees.
Personal use	Personal use refers to the green or dried timber that residents may harvest free of charge for personal use, and not for sale, from National Forests in Alaska. The amount of material granted to any one person in one year shall not exceed 10,000 board feet of saw timber and 25 cords of wood or an equivalent volume in other forms (36 CFR 223.10).
Persons-at-one-time	Used to measure how many people at one time can use a recreation facility.
pH	The degree of soil acidity or alkalinity.
Plan of operations	A plan of operations is required from anyone whose proposed operations, under the 1872 Mining Law, would cause, "significant surface disturbance." See 36 CFR 228, Subpart A.
Plan period	The period of time a Forest Plan is in effect, normally 10 years, but no longer than 15 years.
Planning area	The area of the National Forest System controlled by a decision document.
Planning horizon	The overall time period considered in the planning process that spans all activities covered in the analysis or plan and all future conditions and effects of proposed actions which would influence the planning decisions.
Planning period	Generally one decade. The time interval within the planning horizon that is used to show incremental changes to yields, costs, effects, and benefits.
Planning records	A system that records decisions and activities that result from the process of developing a forest plan, revision, or significant amendment.
Plant association	Climax forest plant community type representing the endpoint of succession.
Plant communities	An assemblage of plants that, in general, occur together on similar site conditions.
Point source (pollution)	A point at which pollution is added to a system, either instantaneously or continuously. An example is a smokestack.
Pole	An immature tree between 5 and 9 inches diameter breast height.
Pollution	The presence of matter or energy whose nature, location, or quantity produces undesired environmental effects.
Pond log value	Selling value minus manufacturing costs. Pond log values are the price a timber buyer would pay for a log at the mill site.
Poorly drained soils	Water in these soils is removed so slowly that the soil remains wet for a large part of the time. The water table is commonly at or near the surface during a considerable part of the year.
Population	The actual number of animals or plants present in an area at a certain time that share a common gene pool.

Population viability	Probability that a population will persist for a specified period of time across its range despite normal fluctuations in population and environmental conditions.
Positive control	The condition that exists when fish and other mobile species are enclosed in an escape-proof barrier for rearing and other clams (bivalves) or aquatic plants are managed for cultivation in unenclosed water.
Potential yield	The maximum, perpetual, sustained-yield harvest attainable through intensive forestry on regulated areas considering the productivity of the land, conventional logging technology, standard cultural treatments, and interrelationships with other resource uses and the environment.
PPM	See Parts per million.
Practicable	In reference to the Alaska Coastal Management Program, consistent with enforceable policies of approved management programs unless compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations.
Present Net Value (PNV)	The difference between the discounted value (benefits) of all outputs to which monetary values or established market prices are assigned and the total discounted costs of managing the planning area.
Prescribed fire	A wildland fire burning under planned conditions to accomplish specific land and resource objectives. It may result from either a management or natural ignition.
Preservation	A technique of conservation which maintains the resource in or on the ground in perpetuity.
Prevention of Significant Deterioration (PSD)	The process incorporated in the Clean Air Act which requires emission limitations for certain new or modified sources. (See also Class II Area.)
Primary stream production	Results from photosynthesis by green plants. In streams, includes production from algae and aquatic plants, and from non-stream sources such as leaf litter.
Primary succession	Vegetation development initiated on newly formed soils or upon surfaces exposed for the first time (as by landslides or retreating glaciers) which have, as a consequence, never borne vegetation before. Any succession beginning on a bare area not previously occupied by plants or animals.
Priority use	A Forest Service commitment to the holder of a permit for outfitting and guiding to give priority consideration to granting the holder a specific amount of available future use.
Process Group	A combination of similar channel types based on major differences in landform, gradient and channel shapes. (A full description of process groups is located in Appendix D of the Forest Plan.)
Productive old growth	Old-growth forest capable of producing at least 20 cubic feet of wood fiber per acre per year, or having greater than 8,000 board feet per acre.
Programmatic Environmental Impact Statement	The document disclosing the environmental consequences of a program or plan which guides or prescribes the use of resources, allocates resources, or establishes

rules and policies in contrast to disclosure of the environmental consequences of a site-specific project.

Programmed timber harvest — Timber harvest that occurs on suitable forested lands and that is chargeable to (contributes to) the Allowable Sale Quantity.

Project — One or more site-specific activities designed to accomplish a specific on-the-ground purpose or result.

Proponent — An agency, institution, or individual applying to perform an activity on National Forest System lands under authority of a mining plan of operation, contract, license, special use authorization, or other agreement.

PSD — See Prevention of Significant Deterioration.

Public issue — A subject or question of widespread public interest relating to management of the National Forest System.

Public participation — Meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities designed and held to obtain comments from the public about Forest Service planning.

Purchase unit — A unit designated by the Secretary of Agriculture or previously approved by the National Forest Reservation Commission for purposes of Weeks Law acquisition (USDA Forest Service, undated, Land Areas of the National Forest System).

Purchaser road credit — Credit earned by the purchaser of a National Forest timber sale by construction of contract-specified roads. Earned "effective" purchaser credit may be used by the purchaser as payment for National Forest timber removed.

R

Real dollar value — A monetary value which compensates for the effects of inflation.

Reburial and reinterment — The replacement of disinterred human remains into the ground or otherwise disposing of such remains in a manner likely to approximate the wishes of the deceased (e.g., placement in burial caves, legal cemeteries, surface mortuary structures, or cremation where traditionally practiced).

Reconstruction — Road or trail construction activities which take place on an existing road or trail and raises the standard of the road or trail. This can include relocation of the facility in a completely new location.

Recreation capacity — The number of people that can take advantage of the supply of a recreation opportunity during an established use period without substantially diminishing the quality of the recreation experience or the resources.

Recreation Opportunity Spectrum (ROS) — A system for planning and managing recreation resources that categorizes recreation opportunities into six classes. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use. The seven classes are:

Primitive. An unmodified environment generally greater than 5,000 acres in size and located generally at least 3 miles from all roads and other motorized travel routes. A very low interaction between users (generally less than 3 group encounters per day) results in a very high probability of experiencing solitude, freedom, closeness to nature, tranquillity, self-reliance, challenge, and risk. Evidence of other users is low. Restrictions and controls are not evident after entering the land unit. Motorized use is rare.

Semi-Primitive Non-motorized. A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located at least 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) but not further than 3 miles from all roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a high probability of experiencing solitude, freedom, closeness of nature, tranquillity, self-reliance, challenge, and risk. There is a minimum of subtle on-site controls. No roads are present in the area.

Semi-Primitive Motorized. A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located within 1/2 mile of primitive roads and other motorized travel routes used by motor vehicles; but not closer that 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than-primitive roads and other motored travel routes. Concentration of users is low (generally less than 10 group encounters per day), but here is often evidence of other users. There is a moderate probability of experiencing solitude, closeness to nature, and tranquillity along with a high degree of self-reliance, challenge, and risk in using motorized equipment. Local roads may be present, or along saltwater shorelines there may be extensive boat traffic.

Roaded Natural. Resource modification and utilization are evident, in a predominantly naturally-appearing environment generally occurring within 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than-primitive roads and other motorized travel routes. Interactions between users may be moderate to high (generally less than 20 group encounters per day), with evidence of other users prevalent. There is an opportunity to affiliate with other users in developed sites but with some chance for privacy. Self-reliance on outdoor skills is only of moderate importance with little opportunity for challenge and risk. Motorized use is allowed.

Roaded Modified. Vegetative and landform alterations typically dominate the landscape. There is little on-site control of users except for gated roads. There is moderate evidence of other users on roads (generally less than 20 group encounters per day), and little evidence of others or interactions at campsites. There is opportunity to get away from others but with easy access. Some self-reliance is required in building campsites and use of motorized equipment. A feeling of independence and freedom exists with little challenge and risk. Recreation users will likely encounter timber management activities.

Rural. The natural environment is substantially modified by land use activities. Opportunity to observe and affiliate with other users is important as is convenience of facilities. There is little opportunity for challenge and risk and self-reliance on outdoor skills is of little importance. Recreation facilities

designed for group use are compatible. Users may have more that 20 group encounters per day.

Urban. Urbanized environment with dominant structures, traffic lights and paved streets. May have natural appearing backdrop. Recreation places may be city parks and large resorts. Opportunity to observe and affiliate with other users is very important as is convenience of facilities and recreation opportunities. Interaction between large numbers of users is high. Outdoor skills, risk, and challenge are unimportant except for competitive sports. Intensive on-site controls are numerous.

Recreation places Identified geographical areas having one or more physical characteristics that are particularly attractive to people engaging in recreation activities. They may be beaches, streamside or roadside areas, trail corridors, hunting areas of the immediate area surrounding a lake, cabin site, or campground.

Recreation Visitor Day (RVD) A measure of recreation use of an area. One recreation visitor day consists of 12 hours of recreation use of a site or area. Recreation visitor days are used to measure recreation production or output capacity.

Reducing soil condition An environment in the soil conducive to the removal of oxygen and chemical reduction of ions caused by saturated soil conditions.

Reforestation The natural or artificial restocking of an area usually to produce timber and other wood products, but also to protect watersheds, prevent soil erosion, and improve wildlife, recreation and other natural resources. Natural reforestation includes site preparation to reduce competing vegetation and provide a mineral seed bed for seed provided by seed trees. Artificial reforestation is the planting of seedlings, cuttings or seeds by hand or mechanical means and may include site preparation.

Regeneration treatment Treatments and activities that relate to the re-establishment of stands of trees. Includes planting, seeding, and preparing the ground for seeding from adjacent stands where ground preparation is not necessary.

Regulated volume The quantity of timber in the allowable sale quantity that is based on the growth and yield projections for growing stock.

Rehabilitation Actions taken to protect or enhance site productivity, water quality, or other values for a short period of time.

Research design A statement of work to be done toward a particular goal. The research design details what will be done, how it will be done, what is required to do it, and why it is important or useful to do the work .

Research Natural Area (RNA) An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and most public uses are not allowed.

Reserve A general term for an area of land recognized for, and managed to preserve or maintain, specific natural features. Wilderness is one common example. In the context of wildlife or fish habitat management, or biological diversity, an area set aside for the maintenance and perpetuation of its habitat or ecosystem features. (See also Old-growth habitat reserve and Non-development LUD's.)

Reserve trees	Live or dead trees that are retained for various resource objectives such as wildlife, structural diversity, etc.
Resident fish	Fish that are not migratory and complete their entire life cycle in fresh water.
Resource values	The tangible and intangible worth of forest resources.
Responsible official	The Forest Service employee who has the delegated authority to make a specific decision.
Restoration	The long-term placement of land back into its natural condition or state of productivity.
Retention	The amount of commercial forest land removed from the timber base to protect other resource values.
Revegetation	The re-establishment and development of a plant cover. This may take place naturally through the reproductive processes of the existing flora or artificially through the direct action of reforestation or reseeding.
Riffles	Shallow rapids in an open stream, where the water surface is broken by waves caused by wholly or partially submerged obstructions.
Right-of-Way	An easement, license, or permit to pass through another person's land. It does not grant an estate of any kind, only the right to use.
Riparian area	The area including a stream channel, lake or estuary bed, the water itself, and the plants that grow in the water and on the land next to the water.
Riparian corridor	The floodplain and associated riparian soils, vegetation, and wetlands.
Riparian ecosystem	Land next to water where plants that are dependent on a perpetual source of water occur.
Riparian management area	Land areas delineated in the Forest Plan to provide for the management of riparian resources. Specific standards and guidelines, by stream process group, are associated with riparian management areas. Riparian management areas may be modified by watershed analysis.
Riverine wetland	A category in wetland classification which includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5 percent.
RNA	See Research Natural Area.
Road density	The number of road miles per square mile of land area.
Roadless area	An area of undeveloped public land within which there are no improved roads maintained for travel by means of motorized vehicles intended for highway use.
Road Maintenance Level	Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria (FSH 7709.58, section 12.3).

Maintenance Level 1. Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period is one year or longer. Basic custodial maintenance is performed.
Maintenance Level 2. Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration.
Maintenance Level 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
Maintenance Level 4. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.
Maintenance Level 5. Assigned to roads that provide a high degree of user comfort and convenience. Normally, roads are double-laned and paved, or aggregate surfaced with dust abatement.

Road management objectives — Define the intended purpose of an individual road based on management area direction and access management objectives. Road management objectives contain design criteria, operation criteria, and maintenance criteria.

ROS — See Recreation Opportunity Spectrum.

ROS existing — The ROS setting in place, regardless of the official inventory.

ROS inventoried — A general inventory of the physical, social and managerial setting for recreation, based on remoteness from modern human development and activity, modification of the land, and social factors such as crowding. (See Recreation Opportunity Spectrum.)

Rotation — The planned number of years between the formation or the regeneration of a crop or stand of trees and its final cutting at a specified stage of maturity.

Rotation age — The age of a stand when harvested at the end of a rotation.

RPA — Forest and Rangeland Renewable Resources Planning Act.

RPA Assessment and Program — The RPA Assessment is prepared every ten years and describes the potential of the nation's forests and rangelands to provide a sustained flow of goods and services. The RPA Program is prepared every five years to chart the long-term course of Forest Service management of the National Forests, assistance to State and private landowners, and research. They are prepared in response to Sections 3 and 4 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) (16 U.S.C. 1601).

Rubble — All accumulations of loose angular rock fragments, commonly overlying outcropping rock.

Rural development — Rural Development is the management of human, natural, technical, and financial resources needed to improve living conditions, provide employment opportunities, enrich the cultural life, and enhance the environment of rural America. In the National Forest System, rural development is accomplished through partnerships.

S

Saleable minerals — Include common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay. In general, these minerals are of wide-spread occurrence and are of relatively low unit value. They are generally used for construction materials and for road building purposes.

Salvage harvest — Removal of dead or dying trees resulting from insect and disease epidemics or wildfire.

Saturated soils — Soil condition where all the spaces between soil particles are filled with water.

Sawlogs (Sawtimber) — That portion of a tree that is suitable in size and quality for the production of dimension lumber, collectively known as sawtimber.

Scoping — Determination of the significant issues to be addressed in an environmental impact statement.

Scree — An accumulation of loose stones or rock debris lying on a slope or at the base of a cliff.

Scrub-shrub wetland — Wetlands dominated by woody vegetation less than 20 feet tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. In Southeast Alaska this includes forested lands where trees are stunted because of poor soil drainage.

Second growth — Forest growth that has regenerated naturally or has been planted after some drastic interference (for example, clearcut harvest, serious fire, or insect attack) with the previous forest growth.

Secondary channel — Lateral channel with an axis of flow roughly parallel to the mainstem and fed by the mainstem.

Secondary stream production — Results from consumption by animals of materials produced in primary production in streams; this includes production of macroinvertebrates and some fish species.

Secondary succession — The process of reestablishing vegetation after normal succession is disrupted by fire, cultivation, lumbering, windthrow, or any similar disturbance.

Sediment — Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Seed tree — Small number of seed-bearing trees left singly or in small groups after timber harvest to provide seed for regeneration of the site.

Selection cutting — A silvicultural system used to create or maintain uneven-aged stands, usually by the periodic removal of groups of trees or individual trees. It is undertaken to provide periodic harvests while maintaining full residual stand growth rates. It attempts to develop a balanced uneven-aged stand structure, including the encouragement of regeneration by providing the cultural measures needed for tree growth and seedling establishment. The selection system refers to the programs used to create or maintain the stand, while the selection method refers to the way in which the stand is

regenerated. The cutting usually involves a mixture of regeneration and improvement cuts. Note that selection cutting is not the same thing as selective cutting (logging). See also Selective cutting.

Selective cutting

A system in which groups of trees or individual trees are removed periodically from the forest based on economic criteria aimed at maximizing logging revenues rather than the need to ensure satisfactory regeneration or to maintain stand growth rates and quality of timber production.

The term is often used synonymosly with selection cutting, but this is seldom correct, since the management goals of the two systems differ. Selective cutting provides periodic revenues from the forest but is not specifically designed to improve the growing conditions of the trees remaining.

The practice of selective cutting has historically resulted in the selection of all the biggest and best trees for cutting, leaving behind a silvicultural slum of damaged trees and degraded ecosystem functions. See also High grade; Selection cutting.

Sensitive species

Plant or animal species which are susceptible or vulnerable to habitat alterations or management activities resulting in a viability concern for the species long-term persistence. Sensitive species may be those species under consideration for official listing as endangered or threatened species, that are on an official state list, or that are recognized by the Regional Forester as needing special consideration to assure viable populations and to prevent their being placed on Federal or state lists.

Sensitive travel route

A road system or marine water way which receives a moderate to high degree of use by the public, both Alaskan residents and tourists.

Sensitivity level

A measure of the people's concern for the scenic quality of the National Forest applied to travel routes, use areas, and water bodies.

Sensitivity zone

A body of land which has been classified on the basis of cultural and environmental data, as having a high, medium, or low likelihood for containing cultural resources.

Settlement sale

The disposition of timber or other national forest products, cut, damaged or destroyed in conjunction with an authorized occupancy of a right-of-way or other use of National Forest Land. In wilderness it would be the sale of timber removed from an inholding access road or privately developed hatchery site. Also, the compensation of the United States for property taken or rendered unusable for other purposes incidental to some lawful use of National Forest land. When timber has a value, clearing the land for some use other than growing timber constitutes a forced sale.

Shelterwood harvest

The removal of a stand of trees through a series of cuttings designed to establish a new crop with seed and protection provided by a portion of the stand.

SHPO

See State Historic Preservation Officer.

Side-slope break

The abrupt change (usually decreases) in slope gradient defining the upper limit of channel incision.

Significant change

(Soils) Change in productivity of the land as indicated by changes in soil properties that are expected to result in a reduced productive capacity over the planning horizon. Based on available research and current technology, a guideline of 15 percent reduction in inherent soil productivity potential is used as a basis for setting

	threshold values for measurable or observable soil properties or conditions. The threshold values, along with areal extent limits, will serve as an early warning signal of reduced productive capacity. A more stringent basis than 15 percent can be used where appropriate and documented.
Significant impairment	(Soils) Changes in the productivity of the land as indicated by changes in soil properties which would result in significant changes in the inherent productive capacity that last beyond the planning horizon.
Significant surface disturbance	(Mining operations) changing the above-ground environment so much that returning that site to the condition it was in before the change is difficult or impossible. Road construction, use of mechanical earthmoving equipment including backhoes and bulldozers, construction of buildings, and cutting of timber are all examples of activities that are considered to cause significant disturbance to surface resources. An evaluation of proposed operations must be made on a case-by-case basis to determine if disturbance is considered significant. For example, a mining activity in an alpine area may result in significant disturbance that takes years to reclaim while the same activity conducted at a lower elevation where natural conditions are not as severe may result in a disturbance that would take only a few months to successfully reclaim.
Silvicultural system	A management process whereby forests are tended, harvested, and replaced resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the process. (See single-tree selection, shelterwood cutting, group selection, even-aged management, uneven-aged management, two-aged management, and clearcut.)
Silviculture	The science and art of growing and tending crops of forest trees to attain the desired level of marketable and unmarketable products.
Single-tree selection	A cutting method to develop and maintain uneven-aged stands by removal of selected trees from specified age classes over the entire stand area in order to meet a predetermined goal of age distribution and species in the remaining stand.
Site index	A measure of the relative productive capacity of an area for growing wood. Measurement of site index is based on height of the dominant trees in a stand at a given age.
Site preparation	Removing unwanted vegetation and debris from a site and preparing the soil before reforestation.
Site-potential tree height	The average height of a given species of tree when mature on a given site.
Site productivity	Production capability of specific areas of land.
Skyline logging	See “Logging systems”.
Slash	Debris left after logging, pruning, thinning, or brush cutting, and large accumulations of debris resulting from windstorms. It includes logs, bark, branches, and stumps.
Slope distance	Distance measured along the contour of the ground.
Slough	A section of an abandoned river channel containing stagnant water and occurring on a flood plain or delta.

Smolt	A young silvery-colored salmon or trout which moves from freshwater streams to saltwater.
Snag	A non-living standing tree usually greater than 5 feet tall and 6 inches in diameter at breast height. The interior of the snag may be sound or rotted.
Soil conservation practices	Practices that are mechanisms used to protect soil quality while managing for other resource goals and objectives. They can be administrative, preventive or corrective measures. They are identified during project planning and design.
Soil drainage	The rapidity and extent of the removal of water from the soil, in relation to additions especially by surface runoff and by flow through the soil to underground spaces.
Soil mass movement	See mass movement.
Soil productivity	The capacity of a soil, in its normal environment, to produce a specific plant or sequence of plants under a specific system of management.
Soil quality standards	Standards that are a combination of 1) “threshold” values for severity of soil property alteration, or significant change in soil properties conditions, and 2) areal extent of disturbance.
Soil Resource Inventory (SRI)	An inventory of the soil resource based on landform, vegetative characteristics, soil characteristics, and management potentials.
Somewhat poorly drained soil	Water in the soil is removed from the soil slowly enough to keep it wet for significant periods but not all of the time.
Special habitats	Structural elements of ecosystems. These may include, but are not limited to: snags, spawning gravels, fallen trees, aquatic reefs, caves, seeps, and springs.
Special Interest Areas	A designation for areas possessing unique or unusual scenic, historic, prehistoric, geodesic scientific, or other characteristics.
Special Use Authorization	A permit, term permit, temporary permit, lease, or easement that allows occupancy or use of, or rights and privileges on National Forest System lands.
Special Use Permit	Permits and granting of easements (excluding road permits and highway easements) authorizing the occupancy and use of land.
Specified Road	Those roads including related transportation facilities and appurtenances, listed in timber sale contracts for construction or reconstruction by the timber purchaser in accordance with locations and specifications provided by the Forest Service. Those Forest Development roads planned for recurrent land management uses and for which the timber sale contract species the location, standards, and specifications.
Speleothem	Any secondary mineral deposit or cave formation that is formed by the action of water. Examples are stalagmites, stalactites, flow stone, bacon rind drapery, helictites, soda straws, and crystal growths.
Split lines	The process of separating the direction of timber harvest yarding into opposite directions.
SRI	See Soil Resources Inventory.

Stabilization The process of arresting the deterioration of a damaged cultural resource in order to prevent further damage from occurring. Stabilization may include reconstructing portions of the cultural resource.

Stand A group of trees occupying a specific area and sufficiently uniform in composition, age arrangement, and condition as to be distinguishable from the trees in adjoining areas.

Standard A course of action or level of attainment required by the forest plan to promote achievement of goals and objectives.

State Historic Preservation Officer (SHPO) The official appointed or designated pursuant to Section 101(b)(1) of the National Historic Preservation Act of 1966, as amended, to administer the State Historic Preservation Program.

State selection (from National Forest System lands) Application by Alaska Department of Natural Resources to the USDI Bureau of Land Management for conveyance of a portion of the 400,000 acre State entitlement from vacant and unappropriated National Forest System lands in Alaska, under authority of Section 6(a) of the Alaska Statehood Act of 1959 (Public Law 85-508, 72 Stat. 340). For lands to be conveyed, State selections must be approved by the USDA Forest Service, Regional Forester, Alaska Region under criteria of the Statehood Act. Until approved by the Regional Forester, the State application is not considered a valid selection. The State can select up to 25 percent in excess of its remaining entitlement.

Strata The aggregation of areas with similar resource conditions into broad categories for analysis purposes. The term is most commonly used for categorizing forested areas.

Stratigraphic Depositional units or layers of sediment distinguished by composition or appearance that are associated with archaeological and historic sites.

Stream bed The substrate plane bounded by the stream banks, over which the water column moves. Also called the stream bottom.

Stream bank The portion of the channel cross section that restricts lateral movement of water at normal water levels. The bank often has a gradient steeper than 45 degrees and exhibits a distinct break in slope from the stream bottom. An obvious change in substrate may be a reliable delineation of the bank.

Stream class A means to categorize stream channels based on their fish production values. There are four stream classes on the Tongass National Forest. They are:

Class I. Streams and lakes with anadromous or adfluvial fish habitat; or high quality resident fish waters listed in Appendix 68.1, Region 10 Aquatic Habitat Management Handbook (FSH 2609.24), June 1986; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

Class II. Streams and lakes with resident fish populations and generally steep (6-15 percent) gradient (can also include streams from 0-5 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of migration barriers or have other habitat features that preclude anadromous fish use.

Class III. Perennial and intermittent streams with no fish populations but which have sufficient flow or transport sufficient sediment and debris to have an immediate influence on downstream water quality or fish habitat capability.

These streams generally have bankfull widths greater than 5 feet and are highly incised into the surrounding hillslope.
Class IV. Intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality or fish habitat capability. These streams generally are shallowly incised into the surrounding hillslope.
Non-streams. Rills and other watercourses, generally intermittent and less that 1 foot in bankfull width, little or no incisement into the surrounding hillslope, and with little or no evidence of scour.

Streamflow The discharge of water from a watershed that occurs in a natural stream channel.

Stream order First order streams are the smallest unbranched tributaries; second order streams are initiated by the point where two first order streams meet; third order streams are initiated by the point where two second order streams meet, and so on.

Structure A term in ecology referring to the arrangement of plant communities or ecosystems across a landscape and how they are connected, and to variations in tree heights and diameters within a stand or between stands.

Subsistence Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as, "the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade."

Subspecies An aggregate of similar populations of a species generally inhabiting a geographic subdivision of the range of the species and differing taxonomically (e.g. different size or color) from other populations of the species.

Substrate The size of rock in the bed (bottom) of rivers and streams.

Suitable forest land Forest land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions, and for which there is reasonable assurance that such lands can be adequately restocked, and for which there is management direction that indicated that timber production is an appropriate use of that area.

Supplemental Funds Funds or materials used to finance the additional cost of a road to a higher standard than is needed for a timber sale, and which cannot be legally paid for by purchaser credits.

Suppression The act of extinguishing or confining a fire.

Surface rights All rights in the surface of the land except oil, gas, and other mineral or subsurface rights.

Suspended sediment The very fine soil particles which remain in suspension in water for a considerable period of time without contact with the stream or river channel bottom.

Sustained yield The amount of renewable resources that can be produced continuously at a given intensity of management.

Swale A slight, marshy depression in generally level land. A depression in glacial ground moraine.

T

Taxa For the purposes of this Plan, taxa is defined as animal species or sub-species.

Temporary facility Any structure or other human-made improvement which can be readily and completely dismantled and removed from the site when the authorized use terminates.

Temporary roads Low-level roads constructed for a single purpose and short-term use. Once use of the road has been completed, it is obliterated, and the land it occupied is returned to production.

Tentatively suitable forest land Forest land that is producing or is capable of producing crops of industrial wood and: (a) has not been withdrawn by Congress, the Secretary of Agriculture or the Chief of the Forest Service; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within 5 years after final harvest; and (d) adequate information is available to project responses to timber management activities.

Terrestrial ecosystems Plant communities that are not dependent on a perpetual source of water to grow.

Thinning The practice of removing some of the trees in a stand so that the remaining trees will grow faster due to reduced competition for nutrients, water, and sunlight. Thinning may also be done to change the characteristics of a stand for wildlife or other purposes. Thinning may be done at two different stages:

Precommercial. Removing trees that are too small to make a merchantable product to improve tree spacing and promote more rapid growth.

Commercial. Removing trees that have reached sufficient size to be manufactured into a product to improve tree spacing and promote more rapid growth.

Threatened species A plant or animal species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

Threshold The point or level of activity beyond which an undesirable set of responses begins to take place within a given resource system.

Tiering Elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmental impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.

Timber A general term for the major woody growth of vegetation in a forest area.

Timber classification Forested land is classified under each of the land management alternatives according to how it relates to the management of the timber resource. The following are definitions of timber classifications used for this purpose.

Nonforest. Land that has never supported forests and land formerly forested where use for timber production is precluded by development or other uses.
Forest. Land at least 10-percent stocked (based on crown cover) by forest trees of any size, or formerly having had such tree cover and not currently developed for nonforest use.
Suitable. Land to be managed for timber production on a regulated basis.
Unsuitable. Forest land withdrawn from timber utilization by statute or administrative regulation (for example, wilderness), or identified as inappropriate for timber production in the Forest planning process.
Commercial forest. Forest land tentatively suitable for the production of continuous crops of timber and that has not been withdrawn.

Timber dispersion — When an opening created from a final timber harvest is no longer considered an opening for the purpose of scheduling adjacent timber harvest. This is often expressed as the maximum amount of disturbance in a watershed at any given time.

Timber harvest schedule — The quantity of timber planned for sale and harvest, by time period, from the area of land covered by the Forest Plan.

Timberlands — Forest lands producing or capable of producing crops of industrial wood. Areas qualifying as timberland can produce more than 20 cubic feet per acre per year of industrial wood at culmination of mean annual increment.

Timber production — The purposeful growing, tending, harvesting, and regeneration of trees for industrial or consumer use.

Timber Stand Improvement (TSI) — All noncommercial intermediate cuttings and other treatments to improve composition, condition, and volume growth of a timber stand.

Timed meander — A proven floristic survey method where the surveyor enters the field, records the time, and records all species, while moving through the unit in a meandering search path covering all habitat variations. If after a certain time no new species are found, the survey is considered complete.

Tongass Resource Use Cooperative Survey(TRUCS) — A study done to gather information on subsistence uses of the Forest.

Top filing — The filing of a future selection application by the State of Alaska, subject to valid existing rights, for lands which are not available for selection on the date of filing. If otherwise valid, these applications become an effective selection, without further action by the state, upon the date included lands become available for selection. Top filings for the State of Alaska are authorized by Section 906(e), ANILCA.

Total stream discharge — Total water outflow from stream or river.

Traffic Service Level (TSL) — Describes a road's significant traffic characteristics and operating conditions. The levels reflect a number of factors, such as speed, travel time, traffic interruptions, freedom to maneuver, safety driver comfort, convenience, and operating costs. These factors, in turn, affect design elements such as number of lanes, turnout pacing, lane widths, type of driving surface, sight distances, design speed, clearance, horizontal and vertical alignment, curve widening, and turnarounds.

TSL A. Reflects transportation efficiency and mobility with few interruptions to flow and a stable smooth driving surface.

TSL B. Generally would have alignment more influenced by topography, more interruptions but still usually a stable smooth driving surface.
TSL C. One could expect much more sinuous alignment to reduce construction costs with a surface that may not be stable under all traffic or weather conditions.
TSL D. Generally constructed for a single purpose and traffic is discouraged for other purposes; surface and alignment is rough and irregular; very low speeds are anticipated to be able to safely negotiate the road.

Transportation and Utility System (TUS)

Significant corridors, with their associated sites used to accommodate public transportation and energy transmission needs.

Avoidance Area. An area where the establishment and use of transportation or utility corridors and sites is not desirable given the land use designation emphasis. A search for "windows" should be exhausted before TUS facilities are considered in avoidance areas. When practical, these areas should be avoided through site-specific analysis during project-level planning. Avoidance areas often include Congressionally and administratively designated areas. Although special environmental and procedural considerations may be required for these areas, these special designations do not preclude consideration and use as a TUS. Avoidance areas are designated through the allocation of lands to management prescriptions specifically identified as TUS avoidance areas in their standards and guidelines.
Exclusion Area. A large area (large enough to cause significant barriers) which legislatively precludes transportation and utility systems. Due to special authorities provided in Title XI, ANILCA, there will be no exclusion areas on the Tongass.
Window. An area potentially available for the location of transportation or utility corridors and sites.

Transportation/Utility corridor

A linear strip of land identified for the present location of transportation or utility rights-of-way within its boundaries (USDA Forest Service, Region 6 memo dated December 2, 1987 from Director of Lands and Minerals to Director of Planning).

Travel management

Providing for the safe, environmentally responsible, and customer responsive movement of vehicles and people to and through public lands (social attributes).

TRUCS

See Tongass Resource Use Cooperative Survey.

Trust

A right of property, real or personal, held by one party for the benefit of another (Black 1979).

TSI

See Timber Stand Improvement.

TSL

See Traffic Service Level.

TTRA

Tongass Timber Reform Act of 1990.

Turbidity

An expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through a water sample; turbidity in water is caused by the presence of suspended matter such as clay, silt, finely divided organic and inorganic matter, plankton, and other microscopic organisms.

TUS

See Transportation and Utility System.

Two-aged management

A silvicultural method in which the majority of the trees in a harvest unit are cut in one entry, and the rest are left as residual trees, either singly or in patches. The residual trees remain unharvested to provide structural diversity and older-aged trees within the second-growth stand. See "Two-aged System" in the Timber Forest-wide Standards & Guidelines for guidance.

Type conversion

The act of converting a plant community from one vegetative type to another. In forestry, it is the act of changing the existing dominant tree species from one type to another.

U

Ultramafic soil

A soil that is very low in silica and rich in iron and magnesium.

Unconfined streams

Streams that, due to lack of stream incision, and effects of geomorphic landform characteristics and local geologic conditions, result in streams overflowing their banks, changing flows to other channels, and establishing new channels during flood conditions.

Understory vegetation

Grass, small trees, shrubs, and other plants found beneath the overstory (the trees comprising the forest).

Undertaking

In cultural resources, any project, activity, or program that can result in changes in the character or use of historic properties, if any such properties are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of a Federal Agency or be licensed or assisted by a Federal agency. Undertakings include new and continuing projects, activities, or programs and any of their elements not previously considered under Section 106, National Historic Preservation Act of 1966, as amended.

Uneven-aged management

The application of actions needed to maintain high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes. Cutting methods that develop and maintain uneven-aged stands are single-tree and group selection.

Unprogrammed timber harvest

Timber harvest that occurs on unsuitable forested lands and is not chargeable to (does not contribute to) the Allowable Sale Quantity.

Unsuitable lands

Forest land not managed for timber production because: 1) Congress, the Secretary, or the Chief has withdrawn it; 2) it is not producing or capable of producing industrial wood; 3) technology is not available to prevent irreversible damage to soils productivity, or watershed conditions; 4) there is no reasonable assurance, based on existing technology and knowledge, that it is possible to restock lands within 5 years after final harvest; 5) there is, at present, a lack of adequate information about responses to timber management activities; or 6) timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives specified in the Forest Plan.

Unsuppressed

A fire that remains unextinguished or unconfined. The spread has not been halted.

Upland

Not immediately adjacent to a stream.

Utility volume

Logs that do not meet minimum requirements for sawtimber but are suitable for the production of usable chips.

Utilization standards Standards guiding the use and removal of timber. They are measured in terms of diameter at breast height (DBH), top of the tree inside the bark (top DIB), and the percentages of "soundness" of the wood.

V

VAC See Visual Absorption Capability.

Valid Having legal strength or force, executed with proper formalities, incapable of being rightfully overthrown or set aside (Black 1979).

Valley An elongated, relatively large, externally drained depression of the earth's surface that is primarily developed by stream erosion.

Valley bottom A general term for the nearly level to gently sloping part of a valley. Also referred to as the valley floor.

Value Comparison Unit (VCU) First developed for the 1979 Tongass Land Management Plan as distinct geographic areas that generally encompass a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. There are 926 units established to provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.

VCU See Value Comparison Unit.

Vegetation release The freeing of vegetation (grass, forbs, brush, trees) by eliminating the competition for nutrients, water, and sunlight. Once competition for these items has been eliminated, subdued, or stagnated, vegetation will display vigor and growth.

Veneer log A log considered suitable in size and quality for producing veneer which is a thin sheet of wood of uniform thickness.

Very poorly drained soils Water is removed from the soil so slowly that the water table remains at or on the surface the greater part of the time. Soils of this drainage class usually occupy level or depressed sites and are frequently ponded.

Viable population For forest planning purposes a fish or wildlife population which has the estimated number and distribution of reproductive individuals to insure its continued existence is well distributed in the National Forest.

Viewshed An expansive landscape or panoramic vista seen from a road, marine water way or specific viewpoint.

Visual Absorption Capability (VAC) The capability of the landscape to visually absorb management activities. Landscapes are rated with high, moderate or low abilities to absorb management activities. These ratings reflect the degree of landscape variety in an area, viewing distance and topographic characteristics. As an example, steep, evenly sloped landscapes viewed in the foreground to middleground are typically given a low VAC rating.

Visual Quality Objective (VQO) A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.

Inventory VQO. Derived through application of the USDA Visual Management System. Uses three elements to determine the inventory: Sensitivity levels, distance zones and landscape variety class. Provides a benchmark and illustrates the optimum objective based on current use patterns and sensitivity.
Adopted VQO. The VQO to be achieved as a result of management direction identified in the approved forest plan. Adopted VQO's represent the visual resource objective for the Forest Land Management Plan period, normally 10 years. (FSH 2309.22, R-10 Landscape Management Handbook.)
Preservation. Management activities are generally not allowed in this setting. The landscape is allowed to evolve naturally.
Retention. Management activities are not evident to the casual Forest visitor.
Partial Retention. Management activities may be evident, but are subordinate to the characteristic landscape.
Modification. Management activities may dominate the characteristic landscape but will, at the same time, use naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed as middleground (1/4 to 5 miles from viewer).
Maximum Modification. Management activities may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

V-Notches A deeply incised valley along some waterways that would look like a “V” from a frontal view. These abrupt changes in terrain features are often used as harvest unit or yarding boundaries.

Volume strata Divisions of old-growth timber volume derived from the interpreted timber type data layer (TIMTYP) and the common land unit data layer (CLU). Three volume strata (low, medium, and high) are recognized in the Forest Plan for each Administrative Area.

VQO See Visual Quality Objective.

W

WAA

See Wildlife Analysis Area.

Watershed

The area that contributes water to a drainage or stream. Portion of the forest in which all surface water drains to a common point. Watersheds can range from tens of acres that drain a single small intermittent stream to many thousands of acres for a stream that drains hundreds of connected intermittent and perennial streams.

Third order watershed. A watershed where there are (generally) two major branches to the mainstream of the watershed. (Also see Stream order.)

Fourth order watershed. A watershed which contains at least two third order watersheds.

Watershed analysis

A systematic procedure for characterizing and evaluating ecological processes within a watershed, for use in ecosystem management and project planning. Forest Plan Appendix J characterizes watershed analysis from an aquatic perspective.

Water table

The upper surface of the ground water or that level below which the soil is saturated with water.

Well-drained soils

Water is removed from the soil readily, but not rapidly.

Wetlands

Areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include peatlands, muskegs, marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

WFUD

See Wildlife and Fish User Day.

Wild and Scenic Rivers

Rivers or sections of rivers designated by congressional actions under the 1968 Wild and Scenic Rivers Act. Wild and scenic rivers may be classified and administered under one or more of the following categories:

Wild river areas. Rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic river areas. Rivers or sections of rivers that are free of impoundments, with watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational river areas. Rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Wilderness

Areas designated by congressional action under the 1964 Wilderness Act or subsequent Acts. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historic value as well as ecologic and

	geologic interest. On the Tongass National Forest, Wilderness has been designated by ANILCA and TTRA.
Wildfire	Any wildland fire not designated and managed as a prescribed fire within an approved prescription. All wildfires will be given an appropriate suppression action.
Wildlife Analysis Area	A division of land used by the Alaska Department of Fish and Game for wildlife analysis (WAA).
Wildlife and Fish User Day (WFUD)	One Wildlife and Fish User Day (WFUD) consists of 12 hours of recreation viewing or utilizing fish or wildlife.
Windfirm	Trees not likely to be blown over by the wind. These are usually trees that have been exposed to the wind throughout their life and have developed a strong root system or trees that are protected from the wind by terrain features or other trees.
Windthrow	The act of trees being uprooted by the wind. In Southeast Alaska, Sitka spruce and hemlock trees are shallow rooted and susceptible to windthrow. There are generally three types of windthrow - endemic where individual trees are blown over; catastrophic where a major windstorm can destroy hundreds of acres; and management related, where the clearing of trees in an area make the adjacent standing trees vulnerable to windthrow.
Windthrow management area	A managed area designed to minimize windthrow within an adjacent no-harvest area.
Winter range	An area, usually at lower elevation, used by big game during the winter months; usually smaller and better-defined than summer ranges.
Withdrawal	The withholding of an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws for the purpose of limiting activities under those laws in order to maintain other public values in the area.

Appendix A

Timber Resource Land Suitability

Introduction

This appendix describes the process used to identify the lands of the Tongass National Forest which are suitable for timber production. This is accomplished in two steps: 1) the identification of lands which are legally and practicably capable of timber production, called *tentatively suitable* lands, and 2) from the tentatively suitable lands, the selection of lands which are *suitable* for timber production based on all the multiple-use objectives for the Forest.

Tentatively Suitable Lands

On October 23, 1987 a task force was established to determine the criteria for the tentatively suitable forest land in conjunction with the Revision of the Tongass National Forest Land Management Plan. The task force was comprised of a technical working group and consultant/reviewers. Working group members were:

Bill Wilson	IDT Timber Planner - Chairman
Bob Gerdes	Stikine Area Forester
Dave Loggy	Ketchikan Area Soils Scientist
Jim Russell	Chatham Area Silviculturist
Jim Douglas	SAF Representative

Consultant/reviewers were:

Paul Alaback	Forest Science Lab
Don Finney	Alaska Loggers Association
Bart Koehler	SEACC

The role of the task force was limited to identifying the biologic criteria and availability of forest lands to be considered as suitable for producing industrial wood products as described in the National Forest Management Act (NFMA) Regulations 36 CFR 219.14 (a)(1) through (4). The determination of lands actually suitable for timber production begins in the analysis of the management situation (AMS) and culminates with the Forest Plan. Suitable lands in the Forest Plan constitute the land base for determining the allowable sale quantity (ASQ) and all vegetation management practices associated with timber production. The AMS and each alternative in the Forest Plan are limited to no more than the acres identified as tentatively suitable.

National Forest Management Act Regulations 36 CFR 219.14 - Timber Resource Land Suitability were used. The task force was responsible for Section (a)(1) through (4).

36 CFR Part 219

NATIONAL FOREST SYSTEMS LAND AND RESOURCE MANAGEMENT PLANNING

36 CFR Part 219.14 - Timber Resource Land Suitability
During the forest planning process, lands which are not suited for timber production shall be identified in accordance with the criteria in paragraphs (a) through (d) of this section.

Tentatively Suitable (Biologically Capable)

(a) During the analysis of the management situation, data on all National Forest System lands within the planning area shall be reviewed, and those lands within any one of the categories described in paragraphs (a)(1) through (4) of this section shall be identified as not suited for timber production

(1) The land is not forest land as defined in 219.3.
(2) Technology is not available to ensure timber production from the land without irreversible resource damage to soils productivity, or watershed conditions.
(3) There is not reasonable assurance that such lands can be adequately restocked as provided in 219.27(c)(3).
(4) The land has been withdrawn from timber production by an Act of Congress, the Secretary of Agriculture or the Chief of the Forest Service.

Suitable by Management Objectives

(c) During formulation and evaluation of alternative as required in 219.12 (f) and (g), combinations of resource management prescriptions shall be defined to meet management objectives for the various multiple uses including outdoor recreation, timber, watershed, range, wildlife and fish, and wilderness. The formulation and evaluation of each alternative shall consider the costs and benefits of alternative management intensities for timber production as identified pursuant to paragraph (b) of this section in accordance with 219.12 (f). Lands shall be tentatively identified as not appropriate for timber production to meet objectives of the alternative being considered if -

(1) Based upon a consideration of multiple-use objectives for the alternative, the land is proposed for resource uses that preclude timber production, such as wilderness;
(2) Other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 219.27 cannot be met; or
(3) The lands are not cost-efficient, over the planning horizon, in meeting forest objectives, which include timber production.

Review of Not Suited

(d) Lands identified as not suited for timber production in paragraph (a) of this section and lands tentatively identified as not appropriate for timber production in paragraph (c) of this section shall be designated as not suited for timber production in the preferred alternative. Designation in the plan of lands not suited for timber production shall be reviewed at least every 10 years. Such lands may be reviewed and redesignated as suited for timber production due to changed conditions at any time, according to the criteria in paragraphs (a) and (c) of this section, and according to the procedures for amendment or revision of the forest plan in 219.10 (f) and (g).

NFMA Sections cited in Part 219.14 (a)(1) through (4) -

219.3 Definitions and Terminology
Forest Land: Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for

non-forest use. Lands developed for non-forest use include areas for crops, improved pasture, residential, or administrative areas, improved roads of any width, and adjoining road clearing and powerline clearing of any width.

219.27 Management Requirements - (c) Silvicultural Practices
(3) When trees are cut to achieve timber production objectives, the cuttings shall be made in such a way as to assure that the technology and knowledge exists to adequately restock the lands within 5 years after final harvest. Research and experience shall be the basis for determining whether the harvest and regeneration practices planned can be expected to result in adequate restocking. Adequate restocking means that the cut area will contain the minimum number, size, distribution, and species composition of regeneration as specified in regional silvicultural guides for each forest type. Five years after final harvest means 5 years after clearcutting, 5 years after final overstory removal in shelterwood cutting, 5 years after the seed tree removal cut in seed tree cutting, or 5 years after selection cutting.

Forest Service Planning Handbook FSH 2409.13 contains criteria for identifying tentatively suitable and suitable forest lands in accordance with 36 CFR 219.14. The process for identifying suitable lands using these criteria is summarized in the following chart.

Modifications to Process for Identification of Lands Suitable for Timber Production

Modifications to the timber resource land suitability process.

There have been several changes to the 1987 timber resource land suitability process; these changes are:

1. Process 3: Is Irreversible damage likely to occur?

   Extreme Hazard Soils. On July 5, 1995, the Forest Service published an overview of the characteristics controlling hillside stability in Southeast Alaska. The paper concluded, based on the findings, that Mass Movement Index 3 and 4 (MMI 3 and MMI 4, respectively) should be adjusted for the TLMP Revision. MMI 3 should be from 51 to 72 percent slope and MMI 4 should be slopes greater than 72 percent. Previously, 75 percent slope had been used for the cutoff.

2. Process 4: Can the area be restocked within 5 years?

   McGilvery Soils. In the 1987 process, soils which contained greater than 41 percent McGilvery soil series were removed from the tentatively suitable land base. The Area Supervisors decided (July 25, 1996) that these soils should be included in the tentatively suitable land base and harvest may occur on McGilvery soils on a case-by-case basis. The areas were included in the tentatively suitable land base since previous harvest using partial suspension on these soil series has been certified as regenerated, and are moderately productive.

PROCESS FOR IDENTIFICATION OF LANDS SUITABLE FOR TIMBER PRODUCTION (FSH 2409.13-92-1)

Is land forested? YES	NO	Unsuitable (non-forest)
Is land capable of producing crops of industrial wood? YES	NO	Unsuitable (non -industrial wood)
Is irreversible damage likely to occur? NO	YES	Unsuitable (irreversible damage)
Can area be restocked within 5 years? YES	NO	Unsuitable (restocked)
Is adequate response information available? YES	NO	Unsuitable (no information)
Is land withdrawn from timber production? NO - Then land is tentatively suitable for timber production	YES	Unsuitable (withdrawn)
Is land selected in alternative for timber production? YES - Then land is suitable for timber production	NO	Not appropriate (unsuitable in preferred alternative and Forest Plan).

Process 1.

Is Land Forested?

Forest Land. Land at least 10-percent occupied by forest trees or formerly having had such tree cover and not currently developed for non-forest use. Forest trees are defined as woody plants having a well-developed stem and usually more than 12 feet in height at maturity. Lands developed for non-forest use include areas for crops, improved pasture, residential or administrative areas, improved (constructed) roads of any width and adjoining road clearing, and powerline clearing of any width. The term occupancy, when used to define forest land, shall be measured by canopy cover of live forest trees at maturity. The minimum area for classification of forest land is 5 acre or greater, consistent with Regional mapping standards. Unimproved roads, trails, streams, and clearings in forest areas are classified as forest, if they are less than 120 feet in width.

Tentatively Suitable Criteria

1. Tongass National Forest lands meeting the definition will be classified as forested.

    a. Vegetative Inventory - National Forest lands identified as having a forested Cover Type (CT) in the Forest Plan Geographic Information System (GIS) Data Base includes all existing forest types meeting the 10% crown cover and currently non-stocked forest land formerly having had 10% crown cover.

Code	*Description*
F	Forested

b. Soils Inventory - National Forest lands with soils inventoried as having forested plant association in the Forest Plan GIS Data Base will be compared to the vegetative inventory to insure all nonwilderness forested lands are identified. Forested lands in the Soil Mapping Unit (SMU) are identified in the Cover Type of the SMU look-up table (SMUT).

Code	*Descriptions*
F	Forested

c. Lands Inventory - National Forest lands currently developed for non-forest use, including administrative sites and powerline clearings, will be identified in the Forest Plan GIS Data Base and classified as unsuitable. Forested encumbered National Forest lands satisfy the forested criteria until selections are conveyed to the State of Alaska or Native Corporations.

d. Roads Inventory - Existing specified roads and adjoining road clearings on National Forest lands will be identified in the Forest Plan GIS Data Base and classified as unsuitable. The existing road status (STATUS) is:

Code	*Description*
E	Existing

NOTE: All resource inventory information will not be available for existing Wilderness. As a minimum, the vegetative inventory will be used to identify forested lands within Wilderness.

Process 2. Is Land Capable of Producing Crops of Industrial Wood?

Forest Land Capable of Producing Industrial Wood. Lands that are not capable of producing crops of industrial wood are by definition to be classified as unsuitable for timber production. Species of trees which are not currently utilized or not expected to be utilized within the next 10 years, constitute the primary criterion for assigning lands to this category. This does not preclude, however, the formulation of an alternative to display management opportunities, if a demand develops.

Tentatively Suitable Criteria

1. Tongass National Forest lands meeting the criteria of forested (Process 1), but are not capable of producing industrial wood products, will be classified as unsuitable.

   a) Vegetative Inventory - Mature stands of non-industrial forest types will be identified in the Forest Plan GIS Data Base and classified as unsuitable. Forest Type (FT) codes are:

Codes	*Description*
P	Black Cottonwood
L	Lodgepole Pine
A	Alder

NOTE: A review of the soils GIS inventory indicates that there are no SMU's which have occurrences of Plant Associations with 50% or greater of the noncommercial species listed above on the Tongass National Forest. The vegetation inventory will be used to identify unsuitable lands in both wilderness and nonwilderness.

Physically Suitable Forest Land. Forest lands physically suitable for timber production are lands where technology is available to ensure timber production, without irreversible resource damage to soil productivity or watershed conditions and lands where there is reasonable assurance that they can be adequately restocked within 5 years. The latest developments in technology that are documented in current research and experience are to be considered in these determinations. Economic efficiency is not a factor in the determination of physical suitability.

The next two steps (Process 3 and Process 4) are subparts of the Physically Suitable screen.

Process 3.

Is Irreversible Damage Likely to Occur?

Irreversible Damage. The first test of physically suitable forest land is for irreversible damage. This test shall be performed by an interdisciplinary team. It shall determine if activities involved in timber production can be carried out on forest land without irreversible resource damage to soil productivity or watershed conditions. As a minimum, activities considered should include access, harvesting, slash disposal, and regeneration. If these items can be accomplished with available technology and without impairment to the site or drainage, the land shall be considered tentatively suitable. Available technology is that technology that is in use or which current research and experience indicates is feasible to use. Current research and experience should indicate that the technology is feasible to use successfully for the site, species, and other factors involved. Current does not have to be within the Forest or Region.

Tentatively Suitable Criteria

1. Tongass National Forest lands meeting the criteria of forested (Process 1) and capable (Process 2), but cannot be managed for industrial wood products without irreversible resource damage, will be classified as unsuitable.

    a) Soil Inventory - Soils identified as meeting criteria for irreversible resource damage will be identified in the Forest Plan GIS Data Base and classified as unsuitable.

        i) SMU's that are unsuitable will be identified in an interpretation lookup table for very high (code 4) mass movement probability rating.

        ii) Those SMU's in the table having high (code 3) mass movement probability ratings will be identified as needing technology capable of supplying partial or full suspension over nearly the entire length of the yarding distance to ensure timber production without irreversible

resource damage to soil productivity or watershed conditions. These lands satisfy the criteria for tentatively suitable, but will continue to be tracked to insure that alternatives include the appropriate logging system.

iii) SMU's with any occurrence of McGilvery soils will meet the criteria for tentatively suitable in this process, but will be identified as requiring harvest systems capable of at least partial suspension over nearly the entire length of the yarding distance.

Classes of McGilvery Soils
HOCL
MCG
MCGF
MCGC

iv) SMU's with slopes 72 percent or greater will be classified as unsuitable.

NOTE: The soils inventory is not available for all existing Wilderness. As a minimum, the Digital Elevation Model (DEM) will be used to identify forested lands (from the vegetative inventory) with slopes 75% or greater. These lands will be classified as unsuitable.

Process 4. Can Area be Restocked Within 5 years?

Restocking Within 5 years. The second test of physically suitable forest land (after irreversible damage discussed in Process 3) is whether there is reasonable assurance that the remaining forest lands can be adequately restocked within 5 years of final harvest, based on existing technology and knowledge. Current research and experience shall be the basis for determining whether the practice planned can be expected to be successful at the time final harvest is planned. If existing knowledge is inadequate to determine which practices will be successful on certain lands, but research is underway which should resolve this question prior to when final harvest is planned; then, the applicable lands may be included as tentatively suitable, but shall be maintained as a separate, noninterchangeable component of the allowable sale quantity. For the purpose of this test, final harvest is defined in 36 CFR 219.27(c)(3). Such assurance applies to normal conditions for the site and does not constitute a guarantee. Abnormal conditions, such as drought, disease, or other unplanned events, may preclude meeting this requirement. Forest lands failing to meet this test shall be classed as unsuitable for timber production.

Tentatively Suitable Criteria

1. Tongass National Forest lands meeting the criteria of forested (Process 1), capable (Process 2), and not causing irreversible resource damage (Process 3), but restocking cannot be assured within 5 years, will be classified as unsuitable.

    a) Soils Inventory - Soils Mapping Units not restockable will be identified in the Forest Plan GIS Data Base and are classified as unsuitable. These include:

        i) SMU's in the data base identified with the dominant plant associations as listed below can be restocked but require special

technology to meet restocking within 5 years. These plant associations will satisfy the restocking criteria for tentatively suitable, but will be tracked to insure that alternatives include the cost of these special restocking requirements (planting and site preparation).

Code	*Description*
330	Spruce - Devils Club
335	Spruce - Devils Club/Salmon Berry
340	Spruce - Devils Club/Skunk Cabbage
350	Spruce - Alder
380	Spruce - Salmon Berry
800	Spruce - Black Cottonwood/Alder
810	Spruce - Black Cottonwood/Willow
830	Spruce - Cottonwood/Devils Club
840	Spruce - Cottonwood/Alder - Devils Club
850	Spruce - Cottonwood/Blueberry - Devils Club

NOTE: The soils inventory is not available for all existing Wilderness. The vegetation layer will be used to establish a correlation between soils and vegetation outside of wilderness to be applied within wilderness.

Process 5.

Is Adequate Response Information Available?

Inadequate Response Information. Forest land shall be classified as unsuitable for timber production, if there is not adequate information available, based on current research and experience, to project response to timber management practices. These lands shall be identified as needing further inventory, research, or information and shall not be considered as part of the tentatively suitable land base, until such time that adequate response data are available. Give special attention to lands classified as incapable of producing 20 cubic feet/acre/year if they formerly met this criterion and were included in the timber base. In those situations where significant acreages are involved, the lands shall be considered tentatively suitable for timber production. The yield projections for these lands shall be limited to regeneration harvest practices, where response data to intensive management practices is inadequate, during the development of management prescriptions.

Tentatively Suitable Criteria

1. Tongass National Forest lands meeting the criteria of forested (Process 1), capable (Process 2), not causing irreversible resource damage (Process 3), and restocking assured within 5 years (Process 4), but have inadequate response information, will be classified as unsuitable.

    a) Vegetative Inventory - Low site forested lands that have never been managed for industrial wood products have no response information and will be identified in the Forest Plan GIS Data Base and classified as unsuitable. These include forested lands with Forest Productivity (FPROD) identified as:

Code	Description
A	Low Productivity due to Alder
G	Low Productivity due to Glacier Forest
H	Low Productivity due to High Elevation
M	Low Productivity due to Muskeg
R	Low Productivity due to Rock cover
S	Low Productivity due to Recurrent Slide Zone
T	Low Productivity due to Willow
L	Low Productivity due to Low Site Index

b) Soils Inventory - Soils with inadequate response information will be identified in the Forest Plan GIS Data Base and classified as unsuitable. These include:

(1) All Soil Mapping Units having site index of less than 40 (on a 50 year base).

(2) Soil Mapping Units which have never been logged and have no response information available.

Code	Description
305	Spruce - Myrica Gale/Sedge
315	Spruce - Willow
325	Spruce - Blueberry/Willow

NOTE: The soils inventory will not be available for all existing Wilderness. As a minimum, the vegetative inventory will be used to identify land with inadequate response information.

Process 6.

Is Land Withdrawn from Timber Production?

Forest Land Withdrawn From Timber Production. Lands designated by the Congress, the Secretary, or the Chief for purposes that preclude timber production are to be classified as unsuitable. The act, order, or decision must include a legal description of the designated land, or a reference to a map, pending boundary survey and description, and include an effective date. Congressionally designated wilderness study areas and roadless areas endorsed by the Administration for wilderness classification are also withdrawn from timber production. Examples are units of the National Wilderness Preservation System, Primitive Areas, Research Natural Areas, and areas withdrawn by the Tongass Timber Reform Act. No other RARE II lands shall be considered withdrawn unless an individual State wilderness act so designates. Lands not withdrawn shall be further considered for timber production suitability.

Management objectives for Experimental Forests shall be obtained from the Station Director. Where objectives preclude timber production, the areas shall be considered withdrawn.

Tentatively Suitable Criteria

1. Tongass National Forest lands meeting the criteria of forested (Process 1), capable (Process 2), not causing irreversible resource damage (Process 3), restocking assured within 5 years (Process 4), and having adequate response

information (Process 5), but are withdrawn from timber management, will be classified as unsuitable.

a) Administrative Inventory - National Forest Wilderness and Monument Areas identified in the Forest Plan GIS Data Base. Forested land within these areas will be classified as unsuitable.

b) Boundaries Inventory - Existing Research Natural Areas, Enacted Municipal Watersheds, and Experimental Forests identified in the Forest Plan GIS Data Base are classified as withdrawn. These include:

Research Natural Areas	***Municipal Watersheds***
Cape Fanshaw	Ketchikan
Dog Island	Petersburg
Limestone Inlet	Sitka
Old Tom Creek	
Pack Creek	***Experimental Forests***
Red River	Young Bay
Gambier Bay	Maybeso

c) Tongass Timber Reform Act:

- Lands within 100 feet of either side of all Class I streams, and Class II streams that flow directly into Class I streams
- Lands given a Congressional designation of "Land Use Designation II"
- Additional Wilderness

Summary of Tentatively Suitable

Tentatively Suitable Forest Lands. Tentatively suitable lands, identified in accordance with this process, is fixed input to the Forest planning model in the establishment and evaluation of benchmarks and alternatives, unless trade-offs, such as wilderness areas, are to be analyzed. Acres of tentatively suitable lands are shown in Table A-1.

Suitable Lands

This section describes the process used to identify the suitable lands, or more precisely, the portion of tentatively suitable lands that are not appropriate for timber production. The criteria used for this process are contained in 36 CFR 219.14 (c) and (d).

Lands identified as appropriate for timber production are classified as *suitable* lands. The lands identified as not suitable for timber production are classified as *unsuitable*. The number of acres assigned to each of these categories is displayed in Table A-1 for each of the alternatives.

Suitable lands are those lands identified from the tentatively suitable land base as appropriate for timber production. Tentatively suitable lands not appropriate for timber production were identified (36 CFR 219.14(c)) using the following criteria:

(1) *Multiple-use Objectives.* These lands are identified as not appropriate for timber production because of other multiple-use values, or the land is proposed for resource uses that preclude timber production. Land Use Designations that preclude timber production include Old-growth Habitat, Remote Recreation, Semi-remote Recreation, proposed Research Natural Areas, Special Interest Area, proposed Wild Rivers, and others. Beach fringe and estuarine areas

may also be unavailable for timber production depending on the alternative.

(2) *Management Requirements.* These lands are identified as not appropriate for timber production activities because it is anticipated that the management requirements of 36 CFR 219.27 cannot be met. 36 CFR 219.27 includes direction for resource protection, vegetative manipulation, silvicultural practices, even-aged management, riparian areas, soil and water, and diversity. Most lands that would have met these criteria, such as: 1) the 100 feet on either side of class I streams and 100 feet on either side of those class II streams that flow directly into class I streams (as a result of the Tongass Timber Reform Act), and 2) lands with extreme mass movement hazard soils, were removed from timber harvest consideration in the analysis of tentatively suitable timber lands (36 CFR 219.14(a)).

The classification of unsuitable lands will be reviewed at least every 10 years (36 CFR 219.14(d)). This review is part of a monitoring item contained in Chapter 6 of this Forest Plan. Land suitability may be adjusted at any time due to changed conditions; monitoring will assess the magnitude of any changes and could lead to amendments to the Plan.

Table A-1 displays the results of the tentatively suitable process (36 CFR 219.14(a)) and lists those lands identified as not appropriate for timber production in accordance with 36 CFR 219.14(c) and (d).

Table A-1
Timber Resource Land Suitability (Thousands of Acres)

Classification	Stikine	Chatham	Ketchikan	Tongass
Total National Forest land (item 1 & 2)	**3,579**	**8,140**	**5,164**	**16,883**
1. Non-forest land (includes water)	1,227	4,499	1,223	6,949
2. Forest land	2,352	3,641	3,940	9,933
3. Forest land withdrawn from timber production	475	1,841	1,862	4,179
4. Available Forest land (item 2 minus item 3)	**1,876**	**1,800**	**2,078**	**5,755**
5. Forest land not capable of producing crops of industrial wood	829	725	847	2,400
6. Available Timberlands (PFL) (item 4 minus item 5)	**1,047**	**1,075**	**1,231**	**3,354**
7. Timberlands physically unsuitable	205	163	157	524
8. Timberlands - inadequate information	158	138	133	429
9. Tentatively suitable timberlands (item 6 minus items 7 and 8)	**684**	**774**	**942**	**2,400**
10. Tentatively Suitable lands not appropriate for timber production				
a. Research Natural Areas	1	0	0	2
b. Remote Recreation	28	32	16	76
c. Old Growth	105	167	171	443
d. Municipal Watersheds	1	2	0	4
e. Semi-Remote Recreation	100	187	172	459
f. Scenic Viewsheds (Beach Fringe, Riparian)	27	22	6	55
g. Modified Landscapes (Beach Fringe, Riparian)	14	12	39	65
h. Timber Production (Beach Fringe, Riparian)	30	32	67	129
I. Wild, Scenic or Recreational Rivers	16	3	22	40
j. Special Areas	3	10	22	35
k. Other Beach Fringe	6	7	3	17
Total for Item 10	***331***	***474***	***518***	***1,324***
11. Model Implementation Reduction Acres[1]	91	148	106	345
12. Net Remaining (Item 9 minus items 10 and 11)	**262**	**152**	**318**	**732**
13. Scheduled (Suitable)	**247**	**140**	**289**	**676**

[1] See Appendix B of the FEIS for a description of Model Implementation Reduction Factors (MIRF).
Totals may be off due to rounding errors.

Appendix B

Information Needs

I. Introduction

This appendix identifies priority research important for further forest plan amendment or revision and lists additional data and information needs that will help to implement the Tongass National Forest Land and Resource Management Plan. While not essential to the completion of this Revision, results of the priority research items, prior to completion of the next revision of the forest plan, will substantially strengthen the scientific information base needed to support alternative development. An important element of the priority research items and additional information needs is an "adaptive management" feed-back loop to evaluate current plan direction, design monitoring programs to measure effects, and adjust future management activities to better address economic, social, and environmental concerns on the Tongass National Forest. As a part of this process, statistically sound sampling design and analysis techniques need to be developed to assure reliability of monitored data and interpretations. This additional research component will be important to maintaining the scientific creditability of the plan.

The appendix also recognizes additional information needs which, when filled, will be useful for Plan implementation at the project level. A few of the identified and listed data and inventory items needed to further improve the information base overlap with the planned and ongoing validation and effectiveness monitoring specified in the Monitoring and Evaluation Plan (see Chapter 6 of the Tongass Land Management Plan). Funding for some items are already included in Forest or Regional budgets. Additional funding will vary depending on the resource emphasis and needs in any given year.

II. Priority Research Needs

With the assistance of planning team scientists, and considering input from other Federal agencies, state and local governments and universities, and other public comment, ten priority research needs have been identified. Each of the needs will be addressed within the next several years through an accelerated research program carried on by Pacific Northwest Research Station research scientists and through other cooperative research within and outside of the Forest Service.

These priority research needs, with objectives, estimated costs, and duration, are listed in order of priority:

1. TIMBER PRODUCTIVITY AND RESPONSE TO HARVEST OF FORESTED WETLANDS IN SOUTHEAST ALASKA

Objectives: a) Examine the response of forested wetlands following timber harvest on Kaikli, Karheen, Kitkun, and Maybeso Series soils and a Lithic Cryosaprist soil; b) document the effects of timber harvest on stocking (tree numbers, species, distribution) and growth response (timber volume).

Estimated cost: $270,000.00
Duration: 3 years

2. DETERMINE THE RELATIONSHIP BETWEEN SOCIOECONOMIC CONDITIONS IN RURAL COMMUNITIES AND RESOURCE ALLOCATIONS ON THE TONGASS NATIONAL FOREST

Objectives: a) Develop baseline data to better identify the social and economic conditions within Southeast Alaska communities. These conditions include perceived needs and desires of local residents as well as basic social and economic trends; b) determine linkages between resource allocations and social and economic conditions in Southeast Alaska communities on the Tongass National Forest; c) test the applicability of current social and economic models to Southeast Alaska communities; and, d) determine effects of National Forest planning decisions (TLMP) on these community-level conditions and desires, focusing on changes related to plan implementation.

Estimated cost: $250,000.00
Duration: 3 years

3. DETERMINE SUBSISTENCE RESOURCE PATTERNS IN SOUTHEAST ALASKA

Objectives: a) Update community traditional resource use patterns survey (TRUCS) through a series of community self-assessment surveys integrating standard scientific methodologies and traditional environmental knowledge; b) Identify and monitor ongoing subsistence needs and uses through available data [e.g. Alaska Department of Fish and Game (ADF&G) surveys] and the process outlined in a) above.

Estimated cost: $250,000.00
Duration: 3 years

4. IDENTIFY AND MEASURE THE INTERACTIONS BETWEEN AQUATIC/RIPARIAN HABITAT AND PERTURBATIONS IN UPLAND AREAS AND THE RESPONSE OF ANADROMOUS AND RESIDENT SALMONIDS

Objectives: a) Systematically evaluate existing habitat and its relationship to salmonid populations in old-growth (unmanaged watersheds) and managed watersheds (logged watersheds); b) evaluate interactions between aquatic habitat, salmonid productivity, and geomorphic processes in stream channels and in watersheds; c) evaluate the effects of land management activities on geomorphic processes in high gradient channels and on downstream aquatic habitat; d) further develop the fish habitat objectives system used to measure changes in the natural range and frequency of aquatic habitat conditions.

Estimated cost: $400,000.00
Duration: 5 years

5. DETERMINE THE GEOGRAPHIC AND HABITAT DISTRIBUTION OF ENDEMIC MAMMALS ON THE TONGASS NATIONAL FOREST

Objectives: a) For several recognized mammalian taxa with limited historical ranges, continue to document geographic extent and habitat distribution within and across islands and the mainland portion of the Tongass National Forest; b) determine population levels and associated distribution of mammalian endemics on islands and portions of the mainland that have had timber harvest.

Estimated total cost: $485,000.00
Duration: 5 years

6. EVALUATE THE FUTURE TIMBER PRODUCTIVITY OF YOUNG-GROWTH STANDS ON THE TONGASS NATIONAL FOREST

Objectives: a) Conduct baseline studies on the future timber productivity of young-growth stands including distribution of site indexes, modeling (SEAPROG) routines, stem quality, intermediate treatments, harvesting standards, and alternative harvest systems; b) evaluate these factors in terms of future timber production projections on the Tongass National Forest; and c) evaluate the influence of these factors on restoration and enhancement of deer and other wildlife habitat.

Estimated cost: $250,000.00
Duration: 3 years

7. EVALUATE ALTERNATIVES TO CLEARCUT TIMBER HARVEST ON THE TONGASS NATIONAL FOREST

Objectives: a) Conduct baseline studies on the effects of alternative silvicultural, logging, and regeneration systems on the ecology of late-successional commercial forest stands; b) evaluate the effectiveness, operability, costs, and ability to meet management needs and social desires of these alternatives; and c) determine the influence of alternative silvicultural systems on restoration and enhancement of deer and other wildlife habitat.

Estimated cost: $500,000.00
Duration: 5 years

8. DETERMINE ALASKA TIMBER PRICES AND MARKET ARBITRAGE IN THE PACIFIC NORTHWEST

Objectives: a) Examine the relationship between timber prices in Alaska (sold price, Tongass NF) and timber prices in the Pacific Northwest; b) describe factors common to both markets, and factors unique to each market; c) review statistical models that forecast the price of timber sold in Alaska (Tongass NF); d) based on this review, revise existing models, or develop new models that can forecast Alaska prices as a function of explanatory factors for which forecast values are available.

Estimated cost: $10,875.00
Duration: 6 months

9. DETERMINE PRICES AND COSTS IN ALASKA TIMBER PRODUCTION AND PRODUCT SUPPLY

Objectives: a) Compile data and assess patterns and trends in key factors that determine competitiveness in forest products industries; compare data for Alaska to that for the Pacific Northwest, Canada, and major overseas competitors; b) conduct a preliminary analysis to estimate export supply relationships for Alaska, to determine the change in quantity exported in response to changes in export and domestic prices, costs, exchange rates, and other factors; c) review the data from the Tongass NF on logging costs and timber availability; if possible, develop a preliminary method to incorporate these data in projections of demand for Tongass NF timber.

Estimated cost: $40,750.00
Duration: 12 months

10. STUDY LUMBER RECOVERY OF SECOND GROWTH TIMBER FROM SOUTHEAST ALASKA

Objectives: a) Conduct a baseline lumber recovery study on second-growth western hemlock and Sitka spruce from Southeast Alaska. This will provide estimates of the timber volume, lumber volume by grade, and lumber value recovery by diameter class and species; b) evaluate the characteristics of second-growth timber (wood density, juvenile wood, etc.) for their significance in the product potential of trees from Southeast Alaska.

Estimated cost: $41,670.00
Duration: 12 months

III. Additional Information Needs

The items listed in this section define a number of information needs identified by resource specialists on the Tongass, considering input from within the Forest Service, other Federal agencies, state and local governments and universities, and the public comment. Filling these needs may considerably improve the knowledge base on which the next Revision is developed and on which this plan is implemented.

A. **AIR**

1. Determine air quality conditions on Tongass National Forest lands (Consult FSM 2580).
2. Assess and document the potential effects, if any, of air pollution on forest resources.
3. Assess use of lichens as indicators of forest health and air quality conditions.
4. Establish the role and contribution of lichens to the fixed nitrogen supply available for nutrient cycling in forest ecosystems.
5. Develop seasonal surface and aloft airflow (wind) maps.
6. In order to help understand global warming, basic research is needed to better understand the productivity potential (in the sense of carbon utilization) of the full range of temperate rain forest sites, and to better predict what impact land-use practices may have on atmospheric carbon.

B. **FISH**

1. Continue to maintain and update channel type and stream class inventories.
2. Continue to inventory aquatic habitats for fish improvement opportunities.
3. Determine success, in terms of habitat capability and numbers of fish, of fish improvement projects.
4. Develop a model using channel types to indicate potential locations for stream improvement.
5. Develop a lake classification system which complements the channel type inventory.
6. Collect information to validate or change habitat management standards and guidelines for streams, lakes, and estuaries. Information which might be needed includes: use of, and interactions between, coho, sockeye and cutthroat trout; cumulative effects from upstream influences; and, nutrient cycling resulting from salmon spawning.

7. Continue to address the information needs identified by the Alaska Cooperative Working Group on Forestry/Fisheries Research (Alaska Working Group on Cooperative Forestry/Fisheries Research, Information Document 91-02, 1991). These include:
   a. Determine the downstream effects of forest management activities including road construction, streams crossings, and riparian vegetation removal on water quality, stream flow, and fish habitat;
   b. Assess the effectiveness of restoration efforts in increasing habitat and fish production;
   c. Define the various riparian functions important to fish and wildlife in Southeast Alaska;
   d. Determine how to design buffer strips to minimize blowdown;
   e. Develop appropriate techniques and parameters for rapid bio-assessment (such as indicator species) for monitoring cumulative effects.

8. Better understand the interaction and effect of introduced fish on resident fish, especially above major barriers where there may be unique populations of cutthroat trout or Dolly Varden char, to better predict the potential impacts of fish improvement projects.

9. Learn more about the genetics of wild stocks of fish which our management activities may affect, to know whether stocks have unique attributes.

10. Learn why, among the islands of Southeast Alaska, only Admiralty Island (King Salmon River & Wheeler Creek) has endemic stocks of chinook (king) salmon.

11. Acquire information on the biological, geological, and hydrological functions and processes occurring at the watershed scale which define the natural range of variation of fish habitat conditions.

12. Acquire information on the efficacy of watershed restoration in increasing fish habitat and production.

13. Determine if there is a relationship between harvest practices in watersheds and the rate of lateral migration of distributary streams in estuaries.

14. Using aerial photo data, determine whether there exists a correlation between historic harvest activity and significant changes in distributary channel distribution.

C. HERITAGE RESOURCES

1. Document all discovered sites and maintain a current automated database in conjunction with Alaska Heritage Resource Surveys (AHRS).

2. Develop a comprehensive compilation of known cultural resources information in overview form which provides a description, status and management data for decisions.

3. Land Use:
   a. Develop correlations between landform class and cultural site type and determine whether this relationship changes with time;
   b. Develop a predictable, village-based spatial pattern of use that can be used to model communities.

4. Early Peopling of North America:
   a. Determine if the southward migration of coastally adapted people was responsible, in any part, for the first human occupation of the Americas;
   b. Determine if archaeological sites representing human occupation prior to 9,500 BP existed in Southeast Alaska;
   c. Determine if early, coastally adapted hunter/gatherer groups ventured inland in search of terrestrial resources;
   d. Determine if the extensive littoral and solution cave systems of Southeast Alaska were utilized for shelter and other cultural purposes during the late Pleistocene and early Holocene.

5. Paleoenvironmental Reconstruction:
   a. Identify the location of the shoreline at different points in the past (e.g. 17,000 BP, 14,000 BP, 10,000 BP, 8,000 BP, 6,000 BP, 5,000 BP);
   b. Define the rate, and variations in rate, of sea level change during the late Pleistocene and Holocene;
   c. Determine how the forest plant community composition changed through time (17,000 BP - present);
   d. Determine how wildlife populations changed with time and what fauna were available to human populations during different Holocene periods;
   e. Determine when and where anadromous fish runs were first established;
   f. Determine what fish species (and corresponding relative abundance) are represented in occupational middens. Discover if species representation varies with time;
   g. Determine how habitats change through time in Southeast Alaska; For example: (1) landscape alteration by beavers; (2) in filling of bays and changing shellfish habitat.

6. Development of Complex Societies:
   a. Determine how complex societies develop in response to the increased abundance, reliability, and predictability of subsistence resources which accompanied stabilization of sea level ca 5,000 BP;
   b. Define how the development of moieties, clans, and other social divisions can be recognized in the archaeological assemblage of the region. Determine if the evolution of these societal concepts can be traced through controlled excavation and structural analysis of a carefully chosen sample of sites;
   c. Determine if contrasts in site structure, reflecting a change from egalitarian gatherer/hunter/fisher to tribal society, are recognizable in the archaeological record;
   d. Determine if burial styles vary through time and if styles and accompanying grave goods reflect a developing social hierarchy.

7. Historical Subsistence:
   a. Define which ecosystems were exploited at different times in the past (i.e., plant and animal remains in sites);
   b. Define the change in the subsistence resource base through time (earliest occupation through present);
   c. Determine if there is an archaeologically recognizable change in social structure (cultural complexity) which correlates with the change in resource base;
   d. Determine if changes in food processing and storage strategies are reflected in archaeological features;
   e. Determine the proportions of shell, fish, bird, sea mammal, and terrestrial mammals represented in middens;
   f. Determine at what seasons sites were occupied.

8. Settlement Patterns:
   a. Determine what site types (villages, fish camps, quarries, mines, fish traps, burials/cemeteries) existed for different periods in time (Paleomarine through historic);
   b. Determine how human population density of various islands has changed through time;
   c. Determine if village demographic and social structure changed through time and from place to place reflecting cultural and environmental diversity;
   d. Determine how internal house layout varies through time and from place to place and if this reflects cultural complexity, differences between culture groups, or adaptation to environmental variables.

9. Rock Art:
   a. Determine if there are design similarities between Southeast Alaska rock art and other culture areas of Alaska and the northwest coast;
   b. Determine if Haida and Tsimshian rock art styles can be distinguished;
   c. Determine if rock art styles and design motifs vary through time;
   d. Determine if pictographs and petroglyphs tend to be associated with other site types.

10. Develop baseline information on cultures and behavioral traditions.

11. Establish baseline information on development of languages.

12. Initiate archival studies (in conjunction with historic thematic overviews).

D. **FACILITIES**

1. Determine the type and location of facilities required to efficiently provide administrative support for Forest management activities.

E. **FIRE**

1. Evaluate changes in vegetative/fuel component(s) and site productivity as a result of the presence of prescribed fire versus areas with prescribed fire absent.

2. Evaluate changes in vegetative/fuels component(s) and site productivity as a result of the non-treatment of activity generated fuels.

3. Evaluate the effects of prescribed fire as it relates to such areas as intensity, duration, scorch height, etc.

F. **FOREST HEALTH**

1. Evaluate incidence and impact of insects and diseases in even-aged young-growth stands.

2. Determine the influence that selection cutting and the retention of wildlife trees will have on the presence, spread, and impact of hemlock dwarf mistletoe.

3. Determine the abiotic factors that cause or contribute to yellow-cedar decline.

4. Identify and resolve problems related to the natural regeneration of yellow-cedar.

5. Evaluate the feasibility of salvaging dead yellow-cedar across the 400,000 acres where cedar decline is known to occur. Determine the volume of salvageable timber.

6. Determine the impact of wood decay fungi on residual trees that are wounded during partial cuts or commercial thinnings.

7. Evaluate bark beetle activity in slash from partial cuts and commercial thinnings.

8. Determine impact due to porcupine damage in managed stands including tree death, bole deformity, growth loss and introduction of wood decay fungi.

G. **KARST AND CAVES**

1. Develop an understanding of the paleoecology and prehistory of Southeast Alaska through studies of the geology, paleontology, and cultural resources within the karst landscape.

2. Determine the relationships between forest regeneration and position in the karst landscape.

3. Document and describe the biospeleology of karst systems.

4. Determine the relationship between karst development and soil erosion within harvested lands.

5. Determine the contribution of karst groundwater systems to productivity of aquatic communities.

6. Determine the influences of forest road construction on sediment and woody debris delivery to karst drainage systems.

7. Evaluate the effects of sediment and woody debris delivered to karst drainage systems on flooding, erosion, and surface discharge.

8. Define the relationship of peatlands to karst development.

9. Analyze the geochemistry of karst host rocks to better understand karst development and identify possible areas suitable for mineral development.

10. Determine differences in productivity of anadromous fish streams draining karst terrain.

H. **MINERALS AND GEOLOGY**

1. Maintain the U.S. Bureau of Land Management mineral resource inventory; create a GIS layer, in cooperation with the U.S. Geological Survey, of undiscovered mineral potential areas.

2. Develop and maintain a Geologic Resource Inventory. Inventories may include mineral material sources, unique geology or paleontology sites, geological hazards, caves, and groundwater resources.

3. Determine the relationship between karst development and forest regeneration rates and soil loss within harvested lands.

I. **OLD-GROWTH FORESTS**

1. Develop a Forest-wide vegetative inventory which allows accurate quantification and mapping of old-growth forest types, based on the 1991 Regional old-growth definitions. (See also Wildlife #2).

2. Document the amount of blowdown, other natural events, and other habitat disturbing activities within old-growth forests.

3. Continue to examine the temporal dynamics of natural disturbances, particularly blowdown, in Southeast Alaska.

4. Prepare a handbook that focuses on considerations of wind damage in managed forest landscapes in Southeast Alaska.

J. **RECREATION**

1. Further develop and apply methods for determining rates of recreation use stratified by activity and for specific locations on the forest.

2. Assess customer satisfaction, and those attributes which contribute to customer satisfaction, of both resident and non-resident recreationists.

3. Evaluate the long-range demand (as assessed in the Plan) for recreation activities, opportunities, and setting preferences.

4. Update and refine the Recreation Places inventory and database.

5. Identify capacities, both physical and social, for Recreation Places consistent with management objectives for the Land Use Designation and Recreational Opportunity Spectrum (ROS) class.

6. Update information on benefits realized by recreationists, and the values of recreation to local and regional economies.

7. Periodically update the Southeast Alaska Pleasure Visitor Research Program. Cooperate with the State and other groups or agencies on conducting recreation or tourism studies.

8. Assess the importance of the tourism, outfitting, and guiding industries, such as numbers of clients, activities, trends, economic values, and relationship to resident recreationists in terms of competition and displacement.

9. Develop information about the effects of landscape modification and forest management activities on residents and tourists, including on the cruise ship and flightseeing industries.

10. Determine differential demand for recreational settings by community.

11. Identify and evaluate possible locations for resort lodges in Southeast Alaska.

K. **RESEARCH NATURAL AREAS**

1. Identify plant and animal communities and features still needing representation in Research Natural Areas.

L. **RIPARIAN**

1. Continue on-the-ground inventories and studies of riparian areas on which to base management actions.

2. Develop a comprehensive study to better understand the need for no-timber-harvest buffers on Class III streams.

3. Determine methods to maintain or enhance riparian associated resources, including intensively developed areas.

M. **RIVERS**

1. Develop wild, scenic, and recreational river information needs as rivers are designated by Congress, and display in the river management plan.

N. **SCENERY**

1. Conduct inventories necessary to implement the new Scenery Management System (SMS). These inventories include:
   a. Work with Area ecologists to identify how ecological land units have been categorized in the Region, and use these to the extent possible to delineate new broad landscape character zones. Develop comprehensive landscape character descriptions for these areas.
   b. Develop new Inherent Scenic Attractiveness ratings using these new ecological land units as a frame of reference. This will in effect refine or replace the Variety Class inventory in the old Visual Management System (VMS).
   c. Refine concern level ratings (sensitivity level ratings in the old VMS) using a constituent analysis as outlined in the new handbook. This analysis can entail a review of all current resident and visitor surveys and the results of scoping efforts, a compilation of Ranger District level and other local knowledge of visitor and resident use patterns and concerns, and possibly additional surveys.
   d. Refine viewshed mapping and delineation of foreground, middleground, and background based on (c) above. This also needs to include mapping viewsheds from level 3 areas.
   e. Using guidelines in the new handbook, combine inherent scenic attractiveness ratings and visibility mapping form (d) above to come up with scenic classes.

2. Using the guidelines in the present Region 10 Visual Management Handbook (which are consistent with direction of the new SMS), create a more accurate Visual Absorption Capability (VAC) inventory to replace the current Forest VAC inventory that was computer derived from other resource information.

3. Continue to update annually the existing visual condition inventory (called Existing Scenic Integrity in the new system) to reflect the new Forest development activities.

4. Map Visual Priority Routes and Use areas and create a layer in GIS.

5. Identify use areas, boat routes, trails, anchorages, etc. in Wilderness areas (all considered Scenic Level I) so that the impacts of proposed development in areas adjacent to Wilderness, and visible from these Wilderness use areas, may be more easily assessed.

O. **SOCIAL AND ECONOMIC**

1. Study the potential influence on forest management resulting from the establishment of additional value-added forest products-processing industries into Southeast Alaska.

2. Develop and maintain a community-level database of available statistics which have been collected by State and Federal agencies. Make the database available for project level planning. (This item coincides, in part, with priority research item #2.)

3. Obtain employment and income information for the salmon harvesting and seafood processing industries. Develop employee ratios based on the information obtained.

4. Accurately determine the percentage of Southeast Alaska's salmon harvest resulting from the Tongass National Forest, and the associated harvesting and processing employment.

5. Accurately determine the percentage of Southeast Alaska's tourism and recreation resulting from the Tongass National Forest. Include viewing scenery of the Tongass in the calculations.

6. Identify and measure local, regional, and national values associated with the existence of Southeast Alaska resources and settings (apart from values associated with direct use of those resources and settings).

7. Better understand the human dimensions of natural resource decisions, allocations, and regulations in Southeast Alaska.

P. **SOIL AND WATER**

1. Conduct a systematic review of existing soil and water related data available for the Forest.

2. Continue to obtain soil and water baseline data to assess land-disturbing activities on soils (e.g. productivity, erosion), water quality and quantity, and sediment yield.

3. Conduct Watershed Condition Surveys to determine improvement needs as part of the development of the watershed improvement plan.

4. Determine whether native or non-native seed mixtures are more useful for erosion control and for wildlife forage plantings. Determine if non-native seed mixtures invade and threaten any native species or the function of natural ecosystems.

5. Develop and validate cumulative watershed effects models.

6. Develop a scientifically based, cost effective, issue driven watershed analysis protocol. This protocol should be designed to provide methods and procedures for linking watershed analyses with broader level landscape analyses to provide for effective integrated management at multiple scales.

7. Determine appropriate or allowable development and forest uses in municipal watersheds.

Q. **THREATENED, ENDANGERED, AND SENSITIVE SPECIES**

1. Continue to expand the knowledge base on the distribution, life-history, genetics, habitat requirements, populations, and population trends of the threatened, endangered, and sensitive species, as well as candidate species. Priority for obtaining this information is as follows:
   a. Endemic terrestrial species considered most sensitive to forest management activities;
   b. Other terrestrial species most sensitive to forest management activities;
   c. Fresh water aquatic species considered most sensitive to forest management activities (including anadromous fish species);
   d. Marine species which utilize upland forest habitats for a portion of their habitat needs;
   e. Other marine species affected primarily by activities in the marine environment. The threatened and endangered species information gathering will use National Marine Fisheries Service and U.S. Fish and Wildlife Service Recovery Plans as guidance, as they are developed.

2. Evaluate levels of lead in habitat areas, and effects on trumpeter swan populations.

R. **TIMBER**

1. Conduct an existing vegetation inventory for the entire Forest every 10 to 15 years. Timber attributes will be derived from this integrated inventory.

2. Complete inventories of forested plant associations.

3. Assess areas that have received precommercial thinning or release and weeding treatments to insure management objectives have been met.

4. Design and evaluate methods to provide for windfirm timber harvest areas, especially in the vicinity of riparian areas. Determine whether feathering of clearcut edges increases the windfirmness of the uncut stand.

S. **TRANSPORTATION**

1. Maintain an inventory of all Forest development transportation facilities including roads, bridges, and major culverts, log transfer facilities, and airfields.

T. **WILDERNESS**

1. Develop information on direct effects of human activity on wilderness ecosystems, including the effect of wildlife viewing activities on wildlife use and behavior.

2. Continue and expand ongoing ecological studies, such as lichen research, migratory bird use, and brown bear population dynamics.

3. Study effects of frequent aircraft over-flights on primitive recreation settings.

4. Develop information on the amount and location of recreation, subsistence, and other uses in wilderness.

5. Develop information on customer satisfaction (see also Recreation Information Needs).

6. Identify indicators and establish Limits of Acceptable Change (LAC) for designated Wilderness areas.

U. **WILDLIFE**

1. Work towards a Forest-wide habitat inventory program to accomplish the following objectives:
   a. Obtain and establish "baseline" habitat conditions in important habitat areas;
   b. Provide documentation of natural and/or modified habitat conditions;
   c. Identify opportunities for management actions which will help maintain or improve habitats;
   d. Identify corridor requirements (if they exist) for mobility; and,
   e. Develop a better understanding of wildlife viability on the Tongass.

   Important habitats are: marine mammal haul outs, old-growth conifer habitats, Regional sensitive species habitats, marine bird rookeries and colonies, important seasonal habitats and concentration areas for the Management Indicator Species, and moose habitats. Coordinate the inventory work with other appropriate agencies and institutions.

2. Inventory vegetative conditions in moose habitat areas to help identify short and long-term changes in habitat conditions; identify the relationship of these habitat changes to moose population trends; assess the effects of various management activities in changing habitat conditions and moose populations. (May be in conjunction with item #1).

3. Identify opportunities for management actions which will help maintain or improve habitats for:
   a. Important waterfowl;
   b. Marine mammals (e.g., haulouts);
   c. Introduced elk;
   d. Marine bird rookeries and colonies;
   e. Important seasonal habitats for Management Indicator Species.

4. Cooperate with other agencies and institutions to inventory the geographic distribution of small mammals, birds, and herpetofauna throughout the Forest (to increase our understanding of the island biogeography of Southeast Alaska) (work currently underway through priority research item #5).

5. Obtain information on snow-pack conditions, Forest-wide, within second-growth and old-growth timber stands. The objectives of this are:
   a. To gain a better understanding of the influence of stand age and canopy closure on snow interception; and,
   b. To assess snow accumulation on winter ranges to obtain a Forest-wide index of winter conditions.

6. Continue to assess the second-growth management program and methods to enhance second-growth habitat conditions for wildlife.

7. Determine effectiveness of wildlife enhancement projects, in terms of habitat capability and populations or population trends.

8. Continue to obtain information on the distribution, life history, genetics, habitat requirements, populations, and population trends of hawks, owls, and murrelets, with special emphasis on those species associated with old-growth forests. Develop protocol and inventory standards (Forest Service is currently funding studies on the Queen Charlotte goshawk and the marbled murrelet).

9. Continue to obtain information on the effectiveness of old growth stands of various sizes to provide for wildlife habitat. Questions to ask include:
   a. What species are associated with various stand sizes?
   b. How do you measure and assess the effects of fragmentation?
   c. What is the function and value of edge between old growth stands and younger successional stages?

10. Obtain information on whether individual trees, snags, or clumps of trees retained within clearcuts provide useful wildlife habitat, and for what period of time. Assess the percent of clumps that blow over.

11. Determine whether wintering bird and breeding bird populations vary over the long-term.

12. Determine whether roads and the human use of roads affect: old-growth habitat ecosystems; the usefulness of old-growth blocks to dependent wildlife; and the value of forested corridors designed to provide wildlife/landscape connectivity between blocks of old-growth habitat.

13. Replicate the Southeast Alaska murrelet sea survey.

14. Determine the current status, habitat distribution and habitat needs for the spotted frog.

15. Determine the upland habitat use by marbled murrelets (Forest Service is currently funding marbled murrelet research).

16. Expand baseline information on neotropical migratory bird species habitat distribution and relative abundance.

17. Continue and expand wolf research to include effects of forest management on deer populations through proximate influences on forage quality and availability and ultimate effects on deer demography and population dynamics.

18. Intensify efforts to determine goshawk habitat relationships with emphasis on determining habitat needs of key prey species (Forest Service is currently funding studies on the Queen Charlotte goshawk).

19. Develop and expand waterfowl research to:
    a. Establish baseline populations for Vancouver Canada Goose and trumpeter swans wintering in Southeast Alaska;
    b. Establish baseline population for sea ducks and other waterbirds wintering and breeding in Southeast Alaska;
    c. Identify, locate, and map in a GIS significant molting areas of Vancouver Canada geese;
    d. Determine critical food resources for wintering sea ducks and identify potential significant problems;
    e. Determine critical food resources for wintering, breeding, and molting Vancouver Canada geese and identify potential significant problems;
    f. Determine seasonal habitat distribution and critical food resources for harlequin ducks and identify any potential significant problems;
    g. Determine habitat distribution and relative abundance and habitat and food requirements of migrating (spring and fall) snow geese, swans (trumpeter and tundra), and pacific brants and identify any potential significant problems;
    h. Determine habitat distribution and relative abundance and habitat and food requirements for migrating sandhill cranes and identify any potential significant problems.

20. Determine the effectiveness of forested corridors of various ecological characteristics and sizes in providing landscape connectivity. Determine the role of forested corridors in providing for viable populations (well distributed) of old-growth associated species. (Note: there may be overlap with Wildlife Information Needs #1 and #12.)

21. Determine marten habitat relationships, particularly the role of down material and of large standing live and dead trees at the stand scale. Examine the contribution of forest structure retained within harvest units and its role in facilitating marten movement and dispersal.

Appendix C

Best Management Practices

The Clean Water Act of 1972 (Public Law 92-500), as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4), has the objective to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The Act provides a means to protect and improve the quality of the water resources and maintain their beneficial uses. Sections 208 and 319 of The Clean Water Act recognize the need for control strategies for nonpoint source pollution.

To provide environmental protection and improvement emphasis for water and soil resources and water-related beneficial uses, the National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) were developed. Best Management Practices (BMP's) were recognized as the primary control mechanisms for nonpoint sources of pollution on National Forest System lands.

In order to comply with State water quality standards, the Forest Service applies BMP's that are "consistent" with the Alaska Forest Resources and Practices Act (1990) and other applicable State water quality regulations. In recognition of the importance of BMP's, they are identified as one portion of the "Forest Service Alaska Region Water Quality Management Plan," as described in the USDA Forest Service/Alaska Department of Environmental Conservation Memorandum Of Agreement (1992).

Best Management Practices may be defined as: land management methods, measures or practices intended to minimize or reduce water pollution including, but not limited to, structural and nonstructural controls, operation and maintenance procedures, other requirements, and scheduling and distribution of activities. The site-specific application of the BMP's is designed with the consideration of geology, land type, hydrology, soil type, erosion hazard, climate, cumulative effects, and other factors in order to fully protect and maintain soil, water, and water-related beneficial uses, and to prevent or reduce nonpoint source pollution.

Direction for the use of BMP's on National Forest System lands in Alaska is included in Chapter 10 of FSH 2509.22, The Soil and Water Conservation Handbook. The handbook describes the application, monitoring, evaluation, and refinement of these BMP's. The following list is a summary of the BMP's, and includes the practice number (from the Soil and Water Conservation Handbook), name, and objective of the Best Management Practices used in the Alaska Region. This summary represents the most recent update to the BMP's (October 31, 1996); the BMP's will likely continue to be updated throughout the planning period.

No.	PRACTICE	OBJECTIVE
12.1	Cumulative Watershed Effects Analysis	To determine the Cumulative Watershed Effects (CWE) on the beneficial uses of water caused by multiple land management activities, distributed over both time and space.
12.2	Rehabilitation After Mass Wasting	To identify actions to be taken where mass wasting threatens water quality.
12.3	Watershed Rehabilitation Planning, and Implementation	To identify degraded watershed conditions, to plan and prioritize watershed rehabilitation projects, and to minimize soil erosion and improve water quality.
12.4	Floodplain Identification, Evaluation, and Protection	To identify floodplain values and, where practicable, avoid the adverse impacts to soil and water resources associated with the occupancy and modification of floodplains.
12.5	Wetland Identification, Evaluation, and Protection	To identify wetland functions and value, and provide appropriate protection measures designed to avoid adverse hydrologic impacts.
12.6	Riparian Area Designation and Protection	To identify riparian areas and their associated management activities.
12.6a	Buffer Design and Layout	To design streamside buffers to meet objectives defined during the implementation of BMP 12.6.
12.8	Oil Pollution Prevention and Servicing/Refueling Operations	To prevent contamination of surface and subsurface soil and water resources from spills of petroleum products.
12.9	Oil and Hazardous Substances Pollution Contingency Planning	To prevent the contamination of waters from accidental spills of oil and hazardous substances (including pesticides) at sites where a Spill Prevention Control and Countermeasure (SPCC) plan or hazardous substances contingency plan is required.
12.10	Control of Activities Under Special Use Permit	To ensure water resource protection measures are incorporated within special-use permits.
12.13	Administrative Site Planning and Management	To consider water pollution and other adverse environmental and health impacts in the location, design, and management of administrative sites.
12.14	Planning, Design, and Management of Utility Corridors	To ensure water resource protection measures are incorporated into the construction and maintenance of utility corridors.
12.15	Management of Sanitary Facilities and Sanitary Guidelines for Temporary Camps and Primitive Developments	To comply with regulations for the disposal of sewage at administrative sites, facilities under special-use permit, temporary camps, and primitive developments of all types.
12.16	Control of Solid Waste Disposal	To protect surface and subsurface soil and water resources from harmful nutrients, bacteria, and chemicals through proper disposal of solid waste and use of alternative construction materials.
12.17	Revegetation of Disturbed Areas	To provide ground cover to minimize soil erosion.
13.1	Timber Sale Planning	To incorporate soil and water resource considerations into Timber Sale Planning.
13.2	Timber Harvest Unit Design	To incorporate site-specific soil and water resource considerations into integrated timber harvest unit design criteria.
13.3	Designating Water Quality Protection Needs on Sale Area/Unit Release Maps	To delineate the location of protection areas and to ensure their recognition, proper consideration, and protection on the ground.

No.	PRACTICE	OBJECTIVE
13.4	Timber Sale Operating Schedule	To ensure that erosion control and timing responsibilities are incorporated into the Operating Schedule.
13.5	Identification and Avoidance of Unstable Areas	To avoid triggering mass movements and resultant erosion and sedimentation by excluding unstable areas from timber harvest.
13.9	Determining Guidelines for Yarding Operations	To select appropriate yarding systems and guidelines for protecting soil and water resources.
13.10	Log Landing Location and Design	To design and construct landings to minimize soil erosion and water quality degradation.
13.11	Scheduling and Enforcement of Erosion Control Measures During Timber Sale Operations	To ensure that the Purchaser's operations are conducted according to the Timber Sale Contract with respect to soil and water resource protection.
13.12	Site Preparation	To maintain sufficient ground cover to minimize soil erosion.
13.14	Completion of Erosion Control for Unit Acceptance and Sale Closure	To assure that the required erosion control work is completed before unit acceptance.
13.16	Stream Channel Protection (Implementation and Enforcement)	To provide site-specific stream protection prescriptions consistent with objectives identified under BMP's 12.6 and 12.6a. Objectives may include the following: (1) maintain the natural flow regime; (2) provide for unobstructed passage of stormflows; (3) maintain integrity of the riparian buffer to filter sediment and other pollutants; (4) restore the natural course of any stream that has been diverted as soon as practicable; (5) maintain natural channel integrity to protect aquatic habitat and other beneficial use, and (6) prevent adverse changes to the natural stream temperature regime.
13.17	Nonrecurring "C" Provisions For Soil and Water Quality Protection	To insert nonrecurring (Special) "C" provisions into the Timber Sale Contract to protect soil and water resources, where standard "B" or "C" provisions do not apply or are inadequate to protect watershed values.
13.18	Modification of the Timber Sale Contract	To seek an Environmental Modification of the Timber Sale Contract if new circumstances or conditions indicate that the timber sale will cause irreparable damage to soil, water, or watershed values.
14.1	Transportation Planning	To assure soil and water resources are considered in transportation planning activities.
14.2	Location of Transportation Facilities	To ensure soil and water resources protection measures are considered when locating roads and trails.
14.3	Design of Transportation Facilities	To incorporate site-specific soil and water resource protection measures into the design of roads and trails.
14.4	Location, Permitting, and Design of Log Transfer Facilities (LTFs)	Locate and design log transfer facilities (LTFs) to minimize impacts on soil and water quality.
14.5	Road and Trail Erosion Control Plan	Develop Erosion Control plans for road or trail projects to minimize or mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities. Ensure compliance through effective contract administration and timely implementation of erosion control measures.
14.6	Timing Restrictions for Construction Activities	Minimize erosion potential by restricting the operating schedule and conducting operations during lower risk periods.
14.7	Measures to Minimize Mass Failures	To minimize the chance and extent of road-related mass failures, including landslides and embankment slumps.

No.	PRACTICE	OBJECTIVE
14.8	Measures to Minimize Surface Erosion	To minimize the erosion from cutslopes, fillslopes, and the road surface and consequently reduce risk of sediment production.
14.9	Drainage Control to Minimize Erosion and Sedimentation	To minimize the erosive effects of concentrated water flows from transportation facilities and the resulting degradation of water quality through proper design, and construction of drainage control systems.
14.10	Pioneer Road Construction	To minimize sediment production associated with the pioneer road construction.
14.11	Timely Erosion Control Measures for Incomplete Projects	To minimize erosion of and sedimentation from disturbed ground on incomplete projects by completing erosion control work prior to seasonal or extended shutdowns.
14.12	Control of Excavation and Sidecast Material	To reduce sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance activities.
14.14	Control of In-Channel Operations	To minimize stream channel disturbances and related sediment production.
14.15	Diversion of Flows Around Construction Sites	To identify and implement diversion and de-watering requirements at construction sites to protect water quality and downstream uses.
14.17	Bridge and Culvert Design and Installation	To minimize the impact on water quality, streamcourses, and fisheries resources from the installation of bridges, culverts, and other stream crossings.
14.18	Development and Rehabilitation of Gravel Sources and Quarries	To minimize sediment from borrow pits, gravel sources, and quarries, and to limit channel disturbance from gravel sources permitted for development within floodplains.
14.19	Disposal of Construction Slash and Stumps	To ensure that debris generated during construction is prevented from obstructing channels or enroaching on stream, and sensitive karst features.
14.20	Road Maintenance	To maintain all roads in a manner which provides for soil and water resource protection by minimizing rutting, road prism failures, sidecasting, and blockage of drainage facilities.
14.22	Access and Travel Management	To control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions.
14.23	Snow Removal Operations	To minimize impacts of snow removal operations on road surfaces and embankments and to reduce the probability of sediment production.
14.24	Road Obliteration	To reduce sediment generated from temporary or short-term roads and return the land to production by obliterating roads at the completion of their intended use.
14.25	Surface Erosion Control at Facilities	To minimize the amount of erosion and sedimentation at non-silvicultural facilities through implementation of a pollution prevention plan.
14.26	Daily LTF Cleanup	Assure cleanup of bark, debris, or other solid materials daily when accumulations are present. Dispose of the materials in an acceptable manner, to prevent water quality degradation.
14.27	Log Storage/Sort Yard Erosion Control	To avoid generation of fine particles, and control the overland flow of particles carrying hazardous materials into waterways.
15.1	Pesticide-Use Planning	To incorporate water quality and hydrologic considerations into the pesticide-use planning process.

No.	PRACTICE	OBJECTIVE
15.2	Follow Pesticide Label and EPA Registration Directions	To prevent water contamination and risk to humans from pesticide application, cleaning of equipment, and disposal of pesticide containers.
15.4	Pesticide Spill Contingency Planning	To provide a response strategy for mitigating contamination of water from accidental pesticide spills.
15.5	Protection of Water Quality, Wetlands, and Riparian Areas During Pesticide Application	To minimize the risk of pesticide contamination of surface or subsurface waters, by identifying and protecting riparian areas, wetlands, and non-target areas. To determine and document that pesticides have been applied safely.
16.1	Recreation Facilities Planning and Location	To protect soil and water resources through appropriate planning, design and location of recreational facilities.
16.4	Trail Construction and Maintenance	To minimize soil erosion and water quality problems originating from trails and their drainage structures.
16.5	Management of Off-Highway Vehicle Use	To control Off-Road Vehicle (OHV) use which is causing soil erosion and adverse effects on water quality and to identify corrective measures.
17.1	Mining Site Conditions, Planning, and Design	To incorporate soil and water resource considerations into the Plan of Operations for exploration and extraction of locatable and salable minerals.
17.2	Placer Mining (NPDES) Permits	To incorporate soil and water resource considerations into NPDES Permits for placer mining plans of operation for placer mining.
17.3	Hard Rock Mining	To incorporate soil and water resource considerations into the planning process for mining plans of operation for lode mining operations.
17.4	Permits and Administration of Geophysical Operations	To protect the quality of surface and ground water from degradation resulting from geophysical activities on National Forest System lands.
17.5	Site Closure and Rehabilitation	To incorporate soil and water resource considerations into the planning process for mining Plan of Operation.
17.6	Abandoned Mine Land Reclamation	To reduce erosion and water quality degradation by sediment and toxic substances from abandoned mined lands and mining facilities through reclamation of these lands.
18.1	Fish and Wildlife Habitat Improvement Planning	To incorporate soil and water resource considerations into planning for fish and wildlife improvement projects.
18.2	Development of Ground water-fed Spawning and Rearing Habitat from Gravel Extraction and Other Sites	To minimize sediment production from gravel extraction and/or ground reshaping during and following construction of groundwater-fed spawning and rearing streams and ponds.
18.3	In-Channel Excavation or Disturbance During Fish and Wildlife Habitat Improvement Projects	To minimize stream channel disturbances and related sediment production from fish and wildlife habitat improvement projects through identification of, and compliance with project specifications.
18.4	Ground Fertilization for Wildlife Habitat Improvement	To minimize impacts to water quality in stream systems and lakes within and adjacent to areas being fertilized.
18.5	Lake Fertilization for Fish Habitat Improvement	To limit eutrophication in Forest lakes.
19.1	Fire and Fuel Management Activities and Prescriptions	To reduce flooding and erosion by controlling the frequency, intensity, and destructiveness of wildfire.
19.2	Protection of Water Quality Through Prescribed Burning Prescriptions	To maintain soil productivity, minimize erosion, and the introduction of ash, sediment, nutrients, and debris into surface waters, through the formulation of the burning prescription.

No.	PRACTICE	OBJECTIVE
19.3	Minimizing Watershed Impacts from Fire Suppression Efforts	To minimize watershed impacts caused by fire-related suppression activities.
19.4	Stabilization of Fire Suppression Related Watershed Damage	To stabilize all areas that have had their erosion potential significantly increased, or their drainage pattern altered by suppression related activities.
19.5	Emergency Watershed Rehabilitation	To minimize the loss of soil and, the deterioration of water quality, both on and off site.

Appendix D

Stream Process Groups

Introduction

In the early 1980's a method of inventorying channel types was developed for the Tongass National Forest to identify, classify, and map the distinguishing parts of stream and river (fluvial) systems. This inventory system, which was finalized for the Tongass National Forest in 1992 (Paustian et. al., 1992), allows for the logical categorization of fluvial channels and provides a process for predicting channel response to management- or naturally-caused changes.

The inventory groups channels into nine basic fluvial process groups (Table D-1). These process groups describe streams and rivers with similar physical "processes," that is with similar interrelationships between watershed runoff, landform relief, geology, and glacial or tidal influences on fluvial erosion and deposition.

Each process group includes a number of channel types. Channel types represent a finer delineation than process groups. They more precisely characterize a channel and help predict the probable responses to natural and human influences. Like process groups, channel types are defined by physical attributes, but channel types also incorporate other aspects of channel gradient, channel pattern, stream bank incision and containment, and riparian community composition. A description of each channel type is listed in Table D-2.

Channel types and process groups are used for guiding land management activities and for predicting the effects of those activities along all stream and river systems of the Tongass National Forest. In this Plan, channel types and process groups are central to the direction for Riparian Area management (see the Riparian Forest-wide Standards & Guidelines in Chapter 4). For further information on riparian management considerations for each of the channel types, consult Paustian et. al. (1992).

Process Groups

Beginning on page D-5 is a discussion of each process group, including a listing of the channel types which are incorporated within the process group. A summary of process group characteristics can be found in Table D-3. An illustration of the typical setting of each of the process groups, and their relationship within a watershed, is provided in Figure D-1.

Table D-1
Stream Classification and Stream Length by Process Group

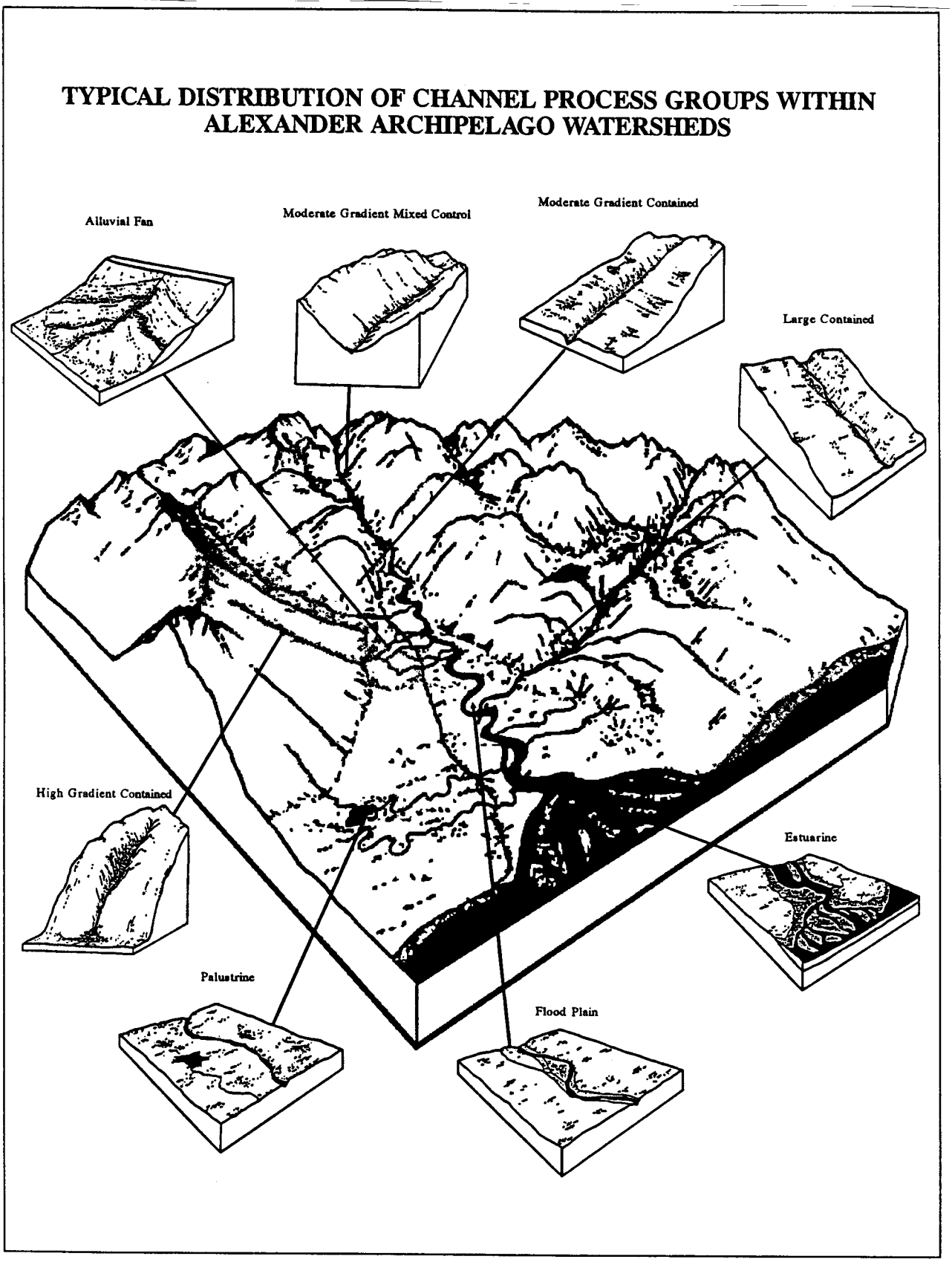
Stream Process Groups	Channel Type Classification	Miles
Flood Plain	FP1, FP2, FP3, FP4, FP5	4,303
Glacial Outwash	GO1, GO2, GO3, GO4, GO5	1,189
Alluvial Fan	AF1, AF2, AF8	1,564
Large Contained	LC1, LC2	695
Moderate Gradient, Mixed Control	MM1, MM2	4,827
Moderate Gradient Contained	MC1, MC2, MC3	3,238
High Gradient Contained	HC1, HC2, HC3, HC4, HC5, HC6, HC8, HC9	35,403
Palustrine	PA1, PA2, PA3, PA4, PA5	1,824
Estuarine	ES1, ES2, ES3, ES4, ES8	646

Source: Paustian et. al. (1992) & Revision GIS Database Query #Q3012E. Miles are adjusted for estimates of channels missed in the inventories.

Table D-2
Channel Type Descriptions

Channel Type	Description
AF1	Moderate Gradient Alluvial Fan Channel
AF2	High Gradient Alluvial Cone Channel
AF8	Glacial Alluvial Cone Channel
ES1	Silt Substrate Estuarine Channel or Slough
ES2	Narrow Small Substrate Estuarine Channel
ES3	Narrow Large Substrate Estuarine Channel
ES4	Large Estuarine Channel
ES8	Braided Glacial Outwash Estuarine Channel
FP1	Uplifted Beach Channel
FP2	Uplifted Estuarine Channel
FP3	Narrow Low Gradient Flood Plain Channel
FP4	Low Gradient Flood Plain Channel
FP5	Wide Low Gradient Flood Plain Channel
GO1	Glacial Outwash Flood Plain Side Channel
GO2	Large Meandering Glacial Outwash Channel
GO3	Large Braided Glacial Outwash Channel
GO4	Moderate Width Glacial Channel
GO5	Cirque Channel
HC1	Shallowly Incised Muskeg Channel
HC2	Shallowly to Moderately Incised Footslope Channel
HC3	Deeply Incised Upper Valley Channel
HC4	Deeply Incised Muskeg Channel
HC5	Shallowly Incised Very High Gradient Channel
HC6	Deeply Incised Mountain Slope Channel
HC8	Moderate/High Gradient Glacial Cascade Channel
HC9	High Gradient Incised Glacial Torrent Channel
LC1	Low Gradient Contained Channel
LC2	Moderate Gradient Contained Channel
MC1	Narrow Shallow Contained Channel
MC2	Moderate Width and Incision Contained Channel
MC3	Deeply Incised Contained Channel
MM1	Narrow Mixed Control Channel
MM2	Moderate Width Mixed Control Channel
PA1	Narrow Placid Flow Channel
PA2	Moderate Width Placid Flow Channel
PA3	Shallow Groundwater Fed Slough
PA4	Flood Plain Backwater Slough
PA5	Beaver Dam/Pond Channel

Figure D-1


TYPICAL DISTRIBUTION OF CHANNEL PROCESS GROUPS WITHIN ALEXANDER ARCHIPELAGO WATERSHEDS
Alluvial Fan
Moderate Gradient Mixed Control
Moderate Gradient Contained
Large Contained
High Gradient Contained
Estuarine
Palustrine
Flood Plain

Flood Plain

Stream channels in this process group include: FP1 (uplifted beach), FP2 (uplifted estuary) foreland channel types, and FP3 - FP5 (narrow to wide) flood plain channel types. Generally lowland and valley bottom streams and rivers, alluvial deposition is prevalent in these low gradient (less than 2 percent gradient) channels. High stream flows often are not contained within channel banks resulting in flood plain development. In larger stream and river systems the riparian area width may extend well beyond 100 feet from the streambanks.

Flood plain streams are relatively efficient at trapping nutrients from riparian forest detritus and inorganic sediment delivered from headwater areas. These streams also buffer against flood disturbances by spreading runoff across densely vegetated flood plains and into numerous side channels and sloughs. Shallow alluvial aquifers associated with these streams store runoff from flood flows and hillslope tributaries and slowly release groundwater to surface channels during periods of low rainfall. The ability of flood plain channels to dampen the effects of runoff extremes and to store nutrients are primary factors contributing to productive aquatic communities found in these streams.

Channel materials are composed of fine sediments, small boulders and cobble which are deposited by the stream. Streambanks consist of unconsolidated materials such as sand, gravel, or organic materials and are often unstable. Channel migration and braiding may occur. Root networks of trees and shrubs have an important role in holding unconsolidated streambanks together. Large woody debris (LWD) also plays a role in controlling streambed and bank stability by regulating the stream's energy dissipation. Pools and cover from LWD provides good fish habitat.

Glacial Outwash

Glacial outwash channel types are alluvial channels with stream gradients usually less than three percent. This process group includes GO1 (glacial side channel), GO2 (large meandering), GO3 (large braided), GO4 (moderate width, and GO5 (cirque channel) glacial outwash channel types. With the exception of high elevation, cirque basin channel types (GO5), there are generally valley or lowland streams. Because mountain glacier meltwater is the source of runoff to these streams, they carry extremely high sediment loads and have very turbid water. Riparian areas are wide and may extend for many hundred feet in large braided river systems.

Glacial outwash channel types share many of the attributes of the flood plain process group. However, glacial streams tend to have larger seasonal variations in stream flow and large sediment loads that result in more dynamic or unstable channels and flood plains. These factors, along with colder water temperatures, tend to limit overall aquatic productivity.

Alluvial Fan

This process group includes AF1 (moderate gradient), AF2 (high gradient), and AF8 (glacial) alluvial fan/cone channel types. These are generally tributary streams that are located on footslope landforms in a transitional area between valley flood plains and steep mountain slopes. They are low to moderate gradient (generally less than 5 percent gradient) stream channels that are strongly influenced by sediment deposition processes. Alluvial fans are formed by the rapid change in sediment transport capacity as the high energy mountain slope stream segments spill onto the valley bottoms. Stream channels change course frequently, resulting in a multi-branch stream network. Sediment deposition tends to create elongated islands of bare cobbles and gravel between these multi-branched channels. Alluvial fan stream channels are often unstable. Streamflow may be intermittent during the summer and winter months due to infiltration of water into coarse gravel substrate. Riparian areas commonly associated with these poorly contained streams are very

narrow at the top of the fans and become wider as the fan spreads out. Due to the complex stream network, riparian areas for alluvial fan channels may be extensive.

Large woody debris can play a major role in trapping sediment on the fan surface and within stream channels. Scour and dam pools formed by LWD can be very important for fish rearing habitat in alluvial fan streams. Gravel aquifers associated with alluvial fan drainages are commonly an important source of groundwater discharge to adjacent valley bottom streams.

Moderate Gradient Mixed Control

This process groups includes MM1 (narrow) and MM2 (moderate width) channel types are a mixture of stream channel containment. These channel types are moderate gradient (2-6 percent) streams where sediment deposition processes are limited. Some segments are constrained by bedrock outcrop or the valley walls, while other areas develop narrow flood plains. Streambanks are dominated by coarse alluvium (boulders, cobbles) or bedrock. These stream segments generally have a balance between sediment transport and deposition. Riparian vegetation is important in regulating stream energy losses through large woody debris input. LWD forms such water energy dissipaters as log step pools and lateral scour pools. LWD can strongly influence channel form, sediment storage and pool and cover habitat in streams with minor bedrock control. Riparian areas seldom extend beyond 100 feet from stream banks.

Large Contained

Stream flow in channels in this process group are well contained by adjacent landforms. Bedrock outcrops that constrain or control channel migration and downcutting are common. This process group includes LC1 (low gradient) and LC2 (low to moderate gradient 1-3 percent) large contained channel types. The riparian influence zone often extends over 100 feet up channel side slopes on these entrenched streams. Channel side slope vegetation plays a major role in controlling the rate of downslope soil movement and large woody debris into stream channels. LWD accumulations also dissipate stream energy (slow its velocity) and store sediment within the stream channel. The larger valley and lowland streams often have narrow alluvial terraces within the river gorge. Riparian areas are discontinuous, and are generally less than 150 feet wide. Streambed and banks are dominantly composed of coarse alluvium (cobble to boulder size) and occasional bedrock outcrops. These streams generally have a balance between sediment transport and deposition. Waterfalls and cascades that form at bedrock knick points can be barriers to upstream anadromous fish migration.

Moderate Gradient Contained

This process group includes MC1 (narrow, shallow incision), MC2 (moderate width and incision), and MC3 (deeply incised) moderate gradient contained channel types. Streamflow in this process group is completely contained by adjacent landforms and channel side slopes. Streambank and streambed erosion are frequently controlled by bedrock outcrops. These channels have balanced or transport oriented sediment regimes. Gravel bars are infrequent channel features (plain bed channels). Large woody debris within the wetted channel provide localized sediment storage sites and habitat diversity. Riparian areas are limited to the bank influence zone and are generally less than 100 feet.

High Gradient Contained

Channels in this process group (HC1, HC2, HC3, HC4, HC5, and HC6 channel types that are shallowly to deeply incised, high gradient (over 6 percent), mountain slope streams. High gradient glacial meltwater streams, HC8 and HC9 channel types, are also included in this process group. These steep, headwater streams are important source areas for runoff, organic and inorganic sediment transported to downstream riparian and fish habitats. Stream channels are well contained within the narrow valley bottoms or ravines. Channel substrate is mostly comprised of large material, either bedrock or well-packed boulders and cobbles. High stream

energy enables these streams to transport large sediment loads during spring and fall flood events. Riparian areas generally extend to the upper stream side slope break. Riparian vegetation consists of narrow strips (often less than 50 feet wide) of alder, salmonberry, devil's club, or currant/shrub communities. Spruce and hemlock forests are also present on ravine side slopes. These channels are predominantly influenced by hillslope erosion processes. Soils in the adjacent upland area are shallow and subject to mass wasting. Although these are dominantly transport or erosive channels, significant amounts or forest litter and sediment can be trapped and stored temporarily behind woody debris jams.

Palustrine

This process group includes PA1 through PA5 palustrine channel types. Streams within this process group are low gradient (less than 1 percent slope) and associated with low relief landforms dominated by wetlands. Water movement and sediment transport rates are low. These channel types typically act as storage areas for fine sediments. Streambanks are composed of dense organic root mats that are resistant to bank erosion. Streambeds consist of fine alluvial gravel and sand, and organics. Flood waters spread out across adjacent wetlands to buffer against downstream flooding. Another important function of these channels is to sustain streamflows during dry periods. Slow flowing palustrine streams can have elevated water temperatures that can be detrimental to some aquatic species during summer months. Riparian areas are usually wider than 100 feet and can be very wide in peatland landscapes.

Estuarine

This process group includes ES1 (silt substrate) ES2 (narrow sand substrate), ES3 (narrow cobble substrate), ES4 (large estuary), and ES8 (glacial outwash) estuarine channel types. These channel types occur at the mouths of watersheds with estuarine landforms (located along inlets and deltas at the head of bays). Water level fluctuations, channel morphology, sediment transport, water chemistry are influenced to some degree by saltwater inundation in these channel types. Riparian areas consist of saltwater marches, meadows, mudflats, and gravel deltas that are depositional environments. Estuarine channels are usually single to multiple thread channels, shallowly entrenched, and poorly constrained. Stream substrate is fine textured alluvium that is easily eroded by currents and wave action. Much of the sediment produced from any given watershed is ultimately deposited in or along the estuarine channel types, consequently, these channels are highly sensitive to upstream disturbances. Sedge and grass communities dominate the riparian vegetation. The amount of stream migration and channel braiding vary, depending on bank and bed materials and upstream erosion and sediment transport regimes. Riparian areas are normally more than 100 feet wide and are often several hundred’s of feet wide on large river deltas.

Table D-3
Stream Process Group Characteristics, Alaska Region. (Paustian and others, 1992)

	Glacial Outwash	Palustrine	Estuarine	Flood Plain and Alluvial Fan	Large Contained	Moderate Gradient Mixed Control	Moderate Gradient Contained	High Gradient Contained
Landform	Glacial River Flood Plain	Lowland/ Wetlands	Estuary/Delta	Flood Plain/ Alluvial Fan-Cone	Canyon or Entrenched in Lowlands	Footslope/ Narrow Valleys	Entrenched in Hills or Lowlands	Mountain Slope
Flood Plain Width	>2 times Channel Width	>2 times Channel Width	>2 times Channel Width	>2 times Channel Width	<1.5 times Channel Width	1 to 2 times Channel Width	<1 times Channel Width	<1 times Channel Width
Stream Gradient	<6%	<1%	0.5% to 1%	0.5% to 2% (fans can be steeper)	1% to 3%	2% to 6%	2 to 6%	>6%
Channel Form	Meandering/ Braided	Meandering (high sinuosity)	Meandering/ Anabranch	Meandering/ Multi-branch	Straight, Single Thread	Straight	Straight, Single Thread	Straight, Single Thread
Water Source	Glacial Meltwater	Peatland Runoff/ Groundwater	Mountain slope source area runoff dominates in these stream segments. Groundwater discharge is also significant in flood plain and alluvial fan segments.					
Sediment Regime	Deposition/ Aggrading	Deposition	Deposition/ Aggrading	Deposition/ Aggrading	Balanced	Balanced	Erosive	Erosive
Stream Class	Class I & Class II	Class I & Class II	Class I	Class I & Class II	Class I & Class II	Class I & Class II	Class I & Class II	Class II, Class III & Class IV

Appendix E

Electronic Sites

Tables 1, 2, 3, and 4 provide a listing of existing and proposed electronic sites on the Tongass National Forest. These sites are used for electronic communication systems, including electronic transmitters, receivers, and resource monitoring equipment. An electronic site is a parcel of National Forest System land on which buildings, antenna towers, and other electronic equipment designed for communication are located. These uses are authorized by the Federal Land Policy and Management Act of 1976 (FLPMA, 43 U.S.C. 1761) (FSM 2720).

Table 1 is an update of the listing of designated sites included in Appendix E of the 1985-86 Amendment to the Tongass Land Management Plan (USDA Forest Service, 1985-86, Alaska Region Admin. Doc. Number 147). Errors in that previous listing have been corrected. Table 2 lists sites that were existing prior to 1985 but were inadvertently omitted from Appendix E of the 1985-86 Amendment. Table 3 lists additional existing electronic sites that were designated through other means than the Forest Plan. Table 4 lists sites that have not yet been designated as electronic sites and which will require a separate analysis for designation. If not already identified in documents designating individual electronic sites, the primary types of use at each site will be identified in the individual site plans.

Electronic sites have been analyzed during the Forest Plan Revision to determine geographic areas of coverage within the Forest. Results of this study are contained in the Tongass Plan Revision planning record. This analysis identified areas adequately covered by existing and proposed electronic sites, and areas where such coverage is lacking and which may require additional future sites. The study was accomplished using computer modeling with the assistance of the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA). Although this study will not directly result in the designation of new electronic sites, it will provide data necessary for site-specific analyses that may result in the designation of new electronic sites in the future.

Table 1.
Electronic sites previously designated in the Forest Plan.[1]

Area and District	Site Name	Site Location	Site Size (in acres)	Permittee or Owner	Elevation (in feet)
STIKINE AREA:					
Petersburg	Lindenberg Peak	SW4NE4, Sec. 23, T59S, R78E, CRM 56° 44´ 38" N, 133° 04´ 30" W	1	Forest Service Communications Unlimited (VHF/UHF)	3,249
Petersburg	Farragut Peak (Previously designated as Franklin Peak)	NE4, Sec. 8, T55S, R78E, CRM 75° 07´ 22" N, 133° 02´ 35" W	1	Forest Service (VHF repeater)	3,810
Petersburg	Kuiu Mtn. #2	NW4, Sec. 9 T61S, R73E, CRM 56° 36´ 42" N, 132° 02´ 50" W	1	Forest Service, Icicle (VHF)	3,355
Petersburg	Duncan Canal	SW4NW4, Sec. 17, T59S, R78E, CRM 56° 45´ 12" N, 133° 09´ 50" W	2	ATT/Alascom, Coast Guard	2,606
Petersburg	Petersburg Mtn.	SW4SW4, Sec. 21, T58S, R79E, CRM 56° 49´ 33" N, 132° 59´ 10" W	1	ATT/Alascom (passive microwave)	1,600
Wrangell	Horn Cliff	SW4NW4, Sec. 14, T58S, R80E, CRM 56° 50´ 50" N, 132° 46´ 35" W	1	ATT/Alascom (passive microwave)	2,880
Wrangell	Elbow Mtn.	NW4, Sec. 3, T60S, R86E, CRM 56° 42´ 12" N, 133° 52´ 45" W	1	Forest Service (micro wave/VHF)	3,900
Wrangell	Fools Peak	SW4, Sec. 21, T65S, R87E, CRM 56° 13´ 02" N, 131° 58´ 27" W	1	Forest Service (VHF repeater)	3,133
Wrangell	Kashevarof (Shrubby Island)	NW4, Sec. 13, T65S, R80E, CRM 56° 04´ 10" N, 132° 58´ 35" W	1	ATT/Alascom (microwave)	500
Wrangell	Navy Peak	NW4SW4, Sec. 15, T66S, R84E, CRM 56° 08´ 45" N, 132° 24´ 37" W	2	unoccupied	3,665
CHATHAM AREA:					
Sitka	Moore Mtn.	NW4NE4, Sec. 31, T49S, R64E, CRM 57° 35´ 04" N, 135° 11´ 58" W (NTIA run at both 200 MH and 450 MH.)	1	Alaska Pulp Corp., Forest Service	3,075
Sitka	Steelhead	NW4SE4, Sec. 13, T47S, R59E, CRM 57° 47´ 27" N, 135° 56´ 26" W	1	Forest Service	2,339
Sitka	South Passage	Sec. 36, T47S, R64E, CRM 57° 44´ 48" N, 134° 58´ 04" W	5	ATT/Alascom	2,031
Sitka	Rodman Bay	SW4, Sec. 4, T52S, R63E, CRM 57° 22´ 55" N, 135° 18´ 45" W	2	ATT/Alascom	3,100
Sitka	Upper Kruzof	SE4NW4, Sec. 18, T53S, R61E, CRM 57° 16´ 30" N, 135° 46´ 36" W	1	Forest Ser., Island Communications	2,350
Sitka	Mud Bay	SE4SW4, Sec. 25, T54S, R61E, CRM 57° 09´ 09" N, 135° 38´ 45" W	1	ATT/Alascom, Forest Ser., Coast Guard (VHF/FM)	1,055
Sitka	Manley Mtn.	Sec. 7, T55S, R66E, CRM 57° 06´ 55" N, 134° 18´ 30" W (NTIA run was with incorrect lat/long)	5	Alascom, Forest Service	2,214
Sitka	Mt. Furuheim Area	SW4SW4, Sec. 18, T56S, R66E, CRM 57° 00´ 52" N, 134° 59´ 17" W	1	Forest Service	5,328
Sitka	Biorka Island	NE4, Sec. 7, T58S, R63E, CRM 56° 51´ 32" N, 135° 33´ 40" W Non-NFS land administered by FAA.	151	FAA, Forest Service	230
Hoonah	Pelican	SE4SE4, Sec. 26, T44S, R55E, CRM 58° 01´ 08" N, 136° 22´ 04" W	1	ATT/Alascom	2,095
Hoonah	Adolphus	NE4NE4, Sec. 6, T49S, R59E, CRM 58° 15´ 06" N, 135° 48´ 42" W	0.43	ATT/Alascom	1,670
Hoonah	Neka Mtn.	SW4NW4NW4, Sec. 33, T43S, R59E, CRM 58° 06´ 11" N, 135° 47´ 15" W	1	Forest Service	3,139
Hoonah	Sisters Island	E2NW4, Sec. 3, T43S, R62E, CRM 58° 10´ 20" N, 135° 15´ 24" W	42	FAA	30
Juneau	Bessie Mtn.	SW4, Sec. 16, T38S, R64E, CRM 58° 34´ 43" N, 134° 51´ 16" W	0.9	ATT/Alascom	2,850

Area and District	Site Name	Site Location	Site Size (in acres)	Permittee or Owner	Elevation (in feet)
Juneau	Auke Mtn. #1	NW4NE4, Sec. 20, T40S, R65E, CRM 58° 23´ 26" N, 134° 42´ 37 W	0.7	Forest Service, ATT/Alascom	1,870
Juneau	Beezer Mtn.	SE4, Sec. 13, T49S, R74E, CRM 57° 37´ 06" N, 133° 27´ 25" W	1	Forest Service	4,100
Juneau	William Henry Peak	SE4SW4, Sec. 17, T36S, R61E, CRM 58° 44´ 50" N, 135° 17´ 00"W	1	Forest Service	3,458
Juneau	Point Howard	E2, Sec. 3, T41S, R63E, CRM 58° 20´ 23" N, 135° 04´ 38" W	1.3	ATT/Alascom	1,748
Juneau	Mt. Robert Barron	SE4, Sec. 18, T42S, R65E, CRM 58° 13´ 38" N, 134° 50´ 21" W	1	Forest Ser., Coast Guard, FAA, AK Div. Telecom., Temsco Helicopters (VHF/FM)	3,475
Admiralty	Washburn Peak (Previously designated as Randolph Peak)	NE4SW4, Sec. 14, T46S, R70E, CRM 57° 49´ 51" N, 133° 56´ 52" W	1	Snettisham	1,400
Admiralty	Wheeler Creek	NW4, Sec. 28, T44S, R65E, CRM 58° 01´ 58" N, 134° 41´ 49" W	1	ATT/Alascom	100
Admiralty	Windfall Harbor	SW4NW4, Sec. 34, T47S, R69E, CRM 57° 45´ 15" N, 134° 13´ 30" W	1	Forest Service	2,920
Admiralty	Angoon Admin. Site	SW4, Sec. 31, T50S, R68E, CRM 57° 30´ 02" N, 134° 34´ 44" W. Most of site is either city or Kootznoowoo land, except for a small sliver of NFS.	1	ATT/Alascom	100
Yakutat	Russell Fiord #1	NW4NE4, Sec. 3, T24S, R34E, CRM 59° 51´ 33" N, 139° 36´ 20" W	1	unoccupied	3,950
Yakutat	Akwe River	SW4SW4, Sec. 9, T30S, R39E, CRM 59° 20´ 40" N, 139° 53´ 50" W	5	FAA, Forest Service	1,210
KETCHIKAN AREA:					
Craig	1/2 Mile	SW4NW4, Sec. 6, T73S, R82E, CRM 55° 34´ 13" N, 133° 00´ 54" W. Located on private land owned by Klawock Heenya Corp.	1	ATT/Alascom	2,166
Craig	Hill 1400	Section 31, T75S, R82E, CRM 55° 19´ 25" N, 133° 00´ 21" W	1.25	ATT/Alascom	1,399
Ketchikan	Bell Island	SE4, Sec. 11, T68S, R89E, CRM 55° 54´ 30" N, 131° 42´ 05" W	0.5	unoccupied	2,000
Ketchikan	Black Mountain #1	NW4, Sec. 14, T75S, R92E, CRM 55° 17´ 30" N, 131° 22´ 00" W	0.25	Rainbird Broadcasting	2,052
Ketchikan	Betton Head	SE4, Sec. 25, T73S, R89E, CRM 55° 30´ 32" N, 131° 49´ 21" W	0.46	Rainbird Broadcasting	1,138
Ketchikan	High Mtn. (Gravina)	SW4, Sec. 18, T75S, R90E, CRM 55° 21´ 45" N, 131° 45´ 15" W (NTIA run at both 200 MH and 450 MH.)	0.01	Rainbird Broadcasting Alaska Aviation, KPU, Pond Reef Fire Dept., Forest Service, Temsco, Communication, FAA, Coast Guard	2,506
Thorne Bay	Cape Pole	NE4SE4NW4, Sec. 22, T68S, R75E, CRM 55° 57´ 57" N, 133° 47´ 33" W	0.04	ATT/Alascom	10
Thorne Bay	Ratz Mtn. #1	SE4, Sec. 9, T70S, R83E, CRM 55° 37´ 07" N, 132° 22´ 39" W	0.1	ATT/Alascom	2,862
Thorne Bay	Ratz Mtn. #2	SE4SE4, Sec. 26, T69S, R82E, CRM 55° 51´ 10" N, 132° 47´ 30" W	0.005	South Coast	3,161
Thorne Bay	Ratz Mtn. #3	SE4, Sec. 26, T69S, R82E, CRM 55° 51´ 10" N, 132° 47´ 30" W	1	Alaska Aviation, Alaska Loggers	3,156
Thorne Bay	Coffman	SE4, Sec. 35, T67S, R81E, CRM 56° 48´ 02" N, 132° 48´ 16" W	0.156	ATT/Alascom, Sitka Telephone	30
Thorne Bay	Thorne Bay	NW4NW4, Sec. 27, T71S, R84E, CRM 55° 41´ 30" N, 132° 31´ 30" W Located on private land.	0.45	ATT/Alascom	87
Thorne Bay	Tolstoi II	Section 16, T72S, R85E, CRM 55° 37´ 07" N, 132° 22´ 39" W	1	ATT/Alascom	2,210
Misty Fiords	Quartz Hill	SE4, Sec. 35, T74S, R98E, CRM 55° 18´ 10" N, 130° 32´ 10" W	0.1	Cominco	3,800

Electronic Sites

Area and District	Site Name	Site Location	Site Size (in acres)	Permittee or Owner	Elevation (in feet)
Misty Fiords	High Mtn. (Revilla)	NE4, Sec. 19, T80S, R97E, CRM 54° 55´ 05" N, 130° 50´ 26" W	0.459	ATT/Alascom (Proposed for Forest Service)	1,976
Misty Fiords	Mt. Dolly	NE4, Sec. 18, T68S, R100E, CRM 55° 58´ 16" N, 130° 00´ 30" W	0.5	Tenajon Resources (Proposed for Forest Service)	5,475

[1] The sites described in Table 1 were previously designated as electronic sites in Appendix E of the 1985-86 Amendment to the Tongass Land Management Plan (USDA Forest Service, 1985-86, Alaska Region Admin. Doc. Number 147). These previous designations are hereby confirmed for those sites located on lands which are still within the National Forest System.

Table 2.
Electronic sites existing prior to 1985 which were inadvertently omitted from the 1985-86 Forest Plan Amendment.[1]

Area and District	Site Name	Site Location	Site Size (in acres)	Permittee or Owner	Elevation (in feet)
STIKINE AREA:					
Petersburg	Cape Fanshaw	SE4, Sec. 10, T54S, R75E, CRM 57° 12´ 22" N, 133° 28´ 07" W. State selection. Occupancy authorized by Regional Forester in MOU with Coast Guard dated 9/4/74.	2	FAA, Coast Guard (VHF/FM)	2,100
Petersburg	Level Island	Section 28, T62S, R79E, CRM 56° 28´ 05" N, 133° 05´ 00" W. Site was established in 1964 and authorized by MOU.	120	FAA (VHF)	25
Petersburg	Kuiu Mtn. #1	SW4NW4, Sec. 5, T61S, R73E, CRM 56° 36´ 45" N, 134° 02´ 07" W. Site was established prior to 1980 and authorized by MOU.	2	FAA (VHF)	3,500
Wrangell	Etolin (Keating)	W2SW4, Sec. 17, T66S, R83E, CRM 56° 08´ 50" N, 132° 37´ 20" W Site was established approximately 1979.	1	Forest Service (VHF repeater)	3,051
Wrangell	Zarembo	SE4SW4, Sec. 1, T64S, R80E, CRM 56° 20´ 45" N, 132° 51´ 35" W Under permit to TEMSCO prior to 1985.	2	Coast Guard (micro wave/ VHF)	2,444
Wrangell	Etolin Island Comm. Site	NW4, Sec. 22, T66S, R84E, CRM 56° 08´ 12" N, 132° 24´ 08" W. Site was established in middle 1960s for ATT/ALASCOM, who occupied it until 1983, at which time Alaska Energy Authority began occupancy of site.	1	AK Energy Authority, Communications Unlimited	3,500
CHATHAM AREA:					
Hoonah	Point Althorp	E2, Sec. 33, T44S, R55E, CRM 58° 05´ 36" N, 136° 24´ 46" W. Site was established October 1979. Coast Guard requested the site be added to MOU, in letter dated 9/8/86.	2	Coast Guard (VHF/FM)	2,393
Juneau	Point Bishop	NW4, Sec. 28, T42S, R69E, CRM 58° 12´ 12" N, 134° 08´ 36" W. Uses were approved by 9/2/82 Regional Forester letter.	0.1	National Weather Service	20
Juneau	Heintzleman Ridge	SW4, Sec. 29, T40S, R66E, CRM 58° 22´ 12" N, 134° 32´ 54" W Site was established 9/9/68.	1	KJUD, KSUP	1,400
Juneau	Speel Point	NW4, Sec. 19, T43S, R72E, CRM Site was constructed in 1968 under MOU with DOA Corps of Engineers (Supplemental MOU Amend. #1 4/26/68).	0.1	Alaska Power Administration	1,400
Juneau	Sullivan River	NE4, Sec. 23, T34S, R60E, CRM 58° 54´ 31" N, 135° 21´ 18" W Site was established 4/6/81.	0.9	ATT/Alascom	182
KETCHIKAN AREA:					
Craig	Sukkwan Island VHF-FM Site	NE1 4NW1 Sec. 21, T78S, R82E, CRM 55° 06´ 36" N, 132° 46´ 22" W	2	Forest Service, Coast Guard	2,160
Ketchikan	Shoal Cove	Secs. 22 and 23, T74S, R93E, CRM 55° 26´ 26" N, 131° 15´ 25" W. Site was authorized by R-10/USCG MOU of 12/7/75.	241	U.S. Coast Guard (Loran C Station)	300

[1] The sites listed in Table 2 were existing prior to 1985 but were inadvertently omitted from the listing in the 1985-86 Forest Plan Amendment which designated then-existing sites. Those sites in Table 2 which are located on lands still within the National Forest System are hereby designated as electronic sites for future additional joint occupancy and use, as provided in Forest Service Manual 2728.

Table 3.
Electronic sites designated other than in the Forest Plan or through analysis and amendment to the Forest Plan separate from those listed and discussed above.[1]

Area and District	Site Name	Site Location	Site Size (in acres)	Permittee or Owner	Elevation (in feet)
STIKINE AREA:					
Petersburg	Crystal Mountain	SW4NW4, Sec. 13, T61S, R80E, CRM 56° 35´ 05" N, 132° 51´ 55" W. Analyzed in an FEIS titled Crystal Mountain Communication Site Designation (Alaska Region Doc. R10-MB-147, dated August 1991) and designated by Deputy Regional Forester in ROD, 8/6/91.		Crystal Mtn. Comm. (VHF/UHF)	3,317
CHATHAM AREA:					
Juneau	Salisbury Ridge	SE4SE4, Sec. 5, T42S, R69E, CRM EA/DN/FONSI signed by Forest Supervisor on 12/27/93 designated site in a non-significant amendment to the Forest Plan.		Forest Service radio repeater	3,000
Juneau	Williams Mtn. (Proposed)	SW4, Sec. 7, T43S, R70E, CRM 58° 09´ 09" N, 134° 01´ 55" W. Designated by EA approved 6/5/91 by Regional Forester.	1	FAA	3,336
Admiralty	Greens Creek	Three sites for microwave use by KGCMC. (1) SE4, Sec. 11, T44S, R65E, CRM 58° 03´ 28" N, 134° 44´ 15" W. Repeater tower on ridge south of Greens Creek. (2) SW4, Sec. 4, T44S, R66E, CRM 59° 05´ 05" N, 134° 37´ 54" W. Tower and dish at millsite. (3) Private land at Hawk Inlet. Both NFS sites designated by EA approved 5/26/93 by Forest Supervisor. (Sites have not been analyzed by NTIA)	.17 100 sq. ft.	KGCMC	1,550
Yakutat	Russell Fiord #2	Section 7, T26S, R36E, CRM 59° 40´ 40" N, 139° 22´ 35" W. Designated by EA approved 8/28/87 by Regional Forester.	1	Forest Service	2,505
KETCHIKAN AREA:					
Ketchikan	Mt. Lazaro (Duke Island)	S2, Secv. 35, T80S, R93E, CRM 54° 52´ 40" N, 131° 22´ 35" W. Designated by DN & FONSI approved by Forest Supervisor on 12/6/94.	.01	Coast Guard	1,720
Ketchikan	Saw Ridge	NE4, Sec. 25, T76S, R93E, CRM 55° 15´ 25" N, 131° 12´ 22" W. Designated by an EA titled "FAA Remote Communication Outlet (RCO)", approved by Regional Forester on 5/27/88.	1	FAA	2,250

[1] The sites listed in Table 3 have been designated as electronic sites through separate analysis and designation.

Table 4.
Sites not yet designated as electronic sites.

Area and District	Site Name	Site Location	Site Size (in acres)	Permittee or Owner	Elevation (in feet)
STIKINE AREA:					
Petersburg	Rowan Mountain (Proposed)	SW4, Sec. 6, T60S, R71E, CRM 56° 42´ 08" N, 134° 17´ 50" W. Categorically Excluded by Stikine Area in SA letter of 1/9/92.		Forest Service-CA, APC (VHF)	3,210
Wrangell	Tyee (Proposed)	NE4, Sec. 26, T65S, R90E, CRM 56° 12´ 25" N, 131° 26´ 15" W		AK Power Authority	4,716
Wrangell	Woronkofski	NW4SE4, Sec. 20, T63S, R83E, CRM 56° 23´ 15" N, 132° 29´ 15" W. Being analyzed for communication site designation in a separate site-specific analysis.			3,204
CHATHAM AREA:					
Sitka	Sukoi	SW4, Sec. 9, T53S, R61E, CRM 57° 17´ 01" N, 135° 43´ 39" W. Uses were approved by a 3/10/83 Forest Supervisor Decision Notice/FONSI.	1	FAA	1,897
Sitka	Doolith Mountain (Proposed)	SW4, Sec. 25, T48S, R57E, CRM 57° 40´ 30" N, 136° 06´ 40" W. Non-NFS patented mining claim.		Forest Service	2,159
Sitka	Catherine Island	NE4, Sec. 19, T52S, R62E, CRM 57° 20´ 51" N, 134° 52´ 00" W	1	Forest Service	2,256
Hoonah	Seal Mtn.	NE4, Sec. 11, T45S, R63E, CRM 57° 59´ 35" N, 135° 09´ 12" W	5	Forest Service	3,250
Juneau	Lynn's Intersection (Pt. Howard)	W2SW4, Sec. 31, T40S, R63E, CRM 58° 21´ 32.40" N, 135° 04´ 58.20" W	0.5	FAA	1,480
Juneau	Saddle Mtn. (Proposed)	SE4, Sec. 19, T41S, R67E, CRM 58° 17´ 52" N, 134° 30´ 30" W. Site was conveyed to the State of Alaska.	1	AK State Troopers (VHF radio relay)	3,068
KETCHIKAN AREA:					
Craig	12-Mile	55° 18´ 50" N, 132° 47´ 10" W		Forest Service	2,351
Craig	Sunny Hay Mountain (Proposed)	55° 28´ 05" N, 133° 05´ 10" W. Non-NFS Native land.		Forest Service	2,500
Craig	Polk (Proposed)	55° 22´ 30" N, 132° 33´ 00" W		Forest Service	2,925
Ketchikan	Black Mountain #2	55° 16´ 50" N, 131° 23´ 55" W		Forest Service	2,058
Ketchikan	Mount Burnette	55° 44´ 50" N, 132° 05´ 20" W		Forest Service	2,450
Ketchikan	Orchard	55° 50´ 10" N, 131° 21´ 05" W		Forest Service	2,850
Ketchikan	Gedney Pass	55° 49´ 30" N, 131° 36´ 00" W	.01	Communications Unlimited, Inc.	3,014
Ketchikan	Swan Lake	55° 36´ 54" N, 131° 23´ 10" W	.01	Ketchikan Public Util.	3,020
Ketchikan	Behm Canal/ Cleveland Peninsula	55° 46´ 45" N, 131° 47´ 00" W	.01	Forest Service	2,850
Thorne Bay	Twin Peaks	55° 46´ 00" N, 133° 08´ 30" W		Forest Service	2,271
Thorne Bay	Setters Lake	SE4, Sec. 32, T71S, R84E, CRM 55° 40´ 02" N, 132° 33´ 18" W	0.92	Alascom	800
Thorne Bay	Thorne Bay Hill	55° 44´ 30" N, 132° 45´ 30" W		Forest Service	1,100
Thorne Bay	Red Bay Mountain	56° 15´ 20" N, 133° 24´ 30" W. (Stikine Area analyzed this site through NTIA.)		Forest Service	2,800
Misty Fiords	Boca	55° 22´ 15" N, 130° 28´ 00" W		Forest Service	3,645
Misty Fiords	Punchbowl	55° 30´ 45" N, 130° 48´ 32" W		Forest Service	2,450
Misty Fiords	Bakewell	55° 16´ 30" N, 130° 41´ 30" W		Forest Service	2,000
LANDS LOCATED OUTSIDE THE TONGASS N.F.:					
Haines State Forest	Rainbow Glacier (Proposed)	SW4, Sec. 33, T31S, R59E, CRM 59° 08´ 26" N, 135° 29´ 31" W. Non-NFS State land.		Forest Service-CA	3,472

[1] The sites listed in Table 4 have not yet been designated as electronic sites. Future designation (if desirable) will require a separate analysis.

Electronic Sites

Appendix F

Visual Priority Routes and Use Areas

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Note: Admiralty and Misty Fiords National Monuments are also administrative units on the Tongass National Forest. They both have an adopted visual quality objective of Retention (activities not to be visually evident to the casual observer) throughout the area within the boundaries of the National Monument.

Visual Priority Routes & Use Areas

Introduction

This appendix lists viewpoints from which scenery will be emphasized. Viewpoints are either "routes" or "use areas," and are the viewpoints used to assess the existing visual condition of any given project area and to develop project designs that will be consistent with the adopted visual quality objectives for each land use designation. (See the Scenery Forest-wide Standards & Guidelines in Chapter 4 for a listing of the adopted visual quality objectives for foreground, middleground, and background views by land use designation.)

Visual priority routes and use areas are arranged by each of the Ranger Districts within each of the three Tongass Administrative Areas: Stikine, Chatham, and Ketchikan. The Wildernesses are not listed because they have an adopted visual quality objective of Retention that applies throughout the area within the boundaries. Routes are separated into several categories: Alaska Marine Highway, Tour Ship Routes, Roads, and Hiking Trails. Use areas are categorized into: State Marine Parks, Recommended Wild, Scenic, and Recreational Rivers, Saltwater Use Areas, Dispersed Recreation Areas, Communities, Forest Service Cabins, Developed Recreation Sites, and Boat Anchorages.

The adopted visual quality objectives (VQO's) and the following list provide some of the tools needed to institute the design art of landscape architecture in projects. The VQO's and this list also help convey to the interested public how scenery will be considered in project design for any given area on the Forest.

Example:

The following description illustrates how these visual priority areas and routes are used in project planning to identify the scenery management objectives for a specific area.

A proposed timber sale is to be located within a Modified Landscape Land Use Designation (LUD). The Scenery component of the prescription for this LUD directs that foreground areas will be managed for a partial retention visual quality objective and that middleground and background areas will be managed for a modification VQO. (See chart in the Scenery Forest-wide Standards & Guidelines and direction under "Scenery Operations" of Modified Landscape LUD in Chapter 3.)

Within the area defined for this timber sale, identify all the visual priority routes and use areas within the project area or from which one may look into the project area. Using the GIS data base, identify all the foreground, middleground, and background seen areas (viewsheds) from these visual priority routes and use areas. Proposed harvest units and other timber sale associated activities located in the foreground areas are then designed to meet the visual quality objective of partial retention as seen from these visual priority routes or areas. Proposed activities in the middleground and background zones are designed to meet the modification visual quality objective as seen from these visual priority routes or areas.

STIKINE AREA
Petersburg Ranger District

Travel Routes

Alaska Marine Highway

Wrangell Narrows
Frederick Sound from LeConte Bay to Chatham Strait

Other Marine Travel Routes

Dry Strait
Decision Passage
Affleck Canal

Tour Ship Routes

Frederick Sound from LeConte Bay to Chatham Strait
Sumner Strait between Wrangell and Cape Decision
Wrangell Narrows
Chatham Strait from Cape Decision to Frederick Sound
Keku Strait from Frederick Sound to Big John Bay

Public Use Roads

Mitkof Island:

Mitkof State Highway: Petersburg to Blaquiere Point
Road 6235 Three Lakes Loop

State Marine Parks

Security Bay
Ernie Haugen Public Use Area
Beecher Pass

Recommended Wild, Scenic and Recreational Rivers

Blind River
Fall Dog Creek
Kutlaku Creek and Lake
Petersburg Creek
Kah Sheets Creek and Lake
Farragut River
Kadake Creek

Small Boat Routes

Beecher Pass
Whiskey Pass
Rocky Pass from Beacon Island south to Meadow Island
Keku Strait
Duncan Canal to Salt Chuck
Towers Arm
McDonald Arm

Saltwater Use Areas

Thomas Bay
Port Camden
Scenery Cove
Kadake Bay
Kah Sheets Bay
Sukoi Islets
Frederick Sound
Hamilton Bay
Port Malmesbury
Port Beauclearc
Seclusion Harbor
Reid Bay
Alvin Bay
Three Mile Arm
Little Duncan Bay
Bock Bight
Tebenkof Bay
No Name Bay
Pt. Barrie to Totem Bay
Kell Bay
Port McArthur
Douglas Bay
Rowan Bay
Security Bay
Saginaw Bay
Washington Bay
Bay of Pillars
Ideal Cove
Bear Harbor
Portage Bay
Head of Affleck Canal north of Bear Harbor
Point Vandeput east to Thomas Bay
Blind Slough, Mitkof Island
Farragut Bay (North & South Arms)
Duncan Canal to Indian Point
Totem Bay east to Mitchell Point

Visual Priority Routes & Use Areas

Dispersed Recreation Areas

Tebenkof Bay	Kah Sheets Lake	Spurt Point Lake
Petersburg Creek	Swan Lake	Crystal Lake and Mountain
Scenery Lake	Petersburg Lake	Kutlaku Lake
Kadake Creek	DeBoer Lake	Alecks Lake
Agate Beach, west of Totem Bay	Colp Lake	Hatchery Lake
Farragut River to Section 21	Glory Lake	Scenery Creek to Scenery Lake
Agate Beach, west of Totem Bay	Farragut Lake	Hamilton Creek
Goose Marsh Lake (Kupreanof Island)	Dry Bay	Stanton Lake

Hamilton Creek from Cathedral Falls to 2 miles inland

Communities

Petersburg	Kake	Rowan Bay
Kupreanof		

Forest Service Cabins

Beecher Pass	Indian Point	Towers Arm
Big John Bay	Kadake Bay	Towers Lake
Breiland Slough	Kah Sheets Bay	Devil's Elbow
Cascade Creek	Petersburg Lake	Swan Lake
Castle Flats	Kah Sheets Lake	Spurt Cove
Castle River	West Point	Salt Chuck East
DeBoer Lake	Portage Bay	Ravens Roost
Harvey Lake		

Developed Recreation Sites

Mitkof Island Sites:

Blind Slough Complex:
- Blind Slough Swan Observatory
- Ohmer Creek Campground
- Blind Slough Picnic Area
- Man Made Hole Picnic Area

Three Lakes Picnic Area, Shelter and Loop Trail
Snake Ridge Picnic Area adjacent to Road #4006
Bay of Pillars Shelter
Twin Creek Shelter

LeConte Overlook Picnic Area adjacent to Road #6235

Hiking Trails

Mitkof Island:

Ideal Cove Trail (#508)
Bear Creek Trail
Blind River Rapids Trail (#454)
Three Lakes Loop Trails (#600-602)
Raven Trail (#607)
Ohmer Creek Trail (#603)

Kupreanof Island:

Kahsheets Lake Trail (#503)
Goose Lake Trail (#462)
Petersburg Lake Trail (#534)
Petersburg Mountain Trail (#585&586)
Castle River Trail (#459)
Colp Lake Trail (#461)
Hamilton Creek Trail (#463)
Cathedral Falls Trail (#467)
Big John Bay Trail (#465)
Hooter Trail (#445)

Petersburg Lake Trail to Portage Bay & to Duncan Salt Chuck Trails (#534 & 469)

Other Locations on the District:

Harvey Lake Trail (#488)
Kuiu Island Canoe/Kayak Portages
Spurt Lake Trail (#457)
Cascade Creek Trail (#458) & Falls Lake Shelter

Boat Anchorages

Portage Bay	Spurt Cove	Cape Fanshaw: Whitney Island area
Thomas Bay	Bay of Pillars	Alexander Bay

Routes not constructed nor NEPA cleared: Planned or Opportunities

Cabin Creek to Petersburg Road (#6204)

STIKINE AREA
Wrangell Ranger District

Travel Routes

Alaska Marine Highway & Tour Ship Routes

Clarence Strait
Stikine Strait
Chichagof Pass
Sumner Strait between Wrangell and Cape Decision
Frederick Sound from LeConte Bay to Chatham Strait
Blake Channel
Zimovia Strait
Eastern Passage
Ernest Sound
Snow Passage

Other Travel Routes

Bradfield Canal
Dry Strait
Canoe Passage
Snow Pass to Macnamara Pt. to St. John's Harbor (NW Zarembo)
Chatham Strait from Cape Decision to Frederick Sound
Kashevarof Passage
Mosman Inlet
Burnett Inlet
Seward Passage

Public Use Roads

Wrangell Island Road System:

McCormick Creek to Earl West Cove (#6265)
Thoms Lake Access (#6290)
Big Hallow (#50060)
Zimovia Highway: Wrangell to McCormick Creek Bridge (FH#16)
Fools Inlet (#6270)
Thoms Creek Crossing (#6299)
Long Lake Access (#6271)
Salamander Rd. to Salamander Creek (#50050)

State Marine Parks

Thoms Place

Recommended Wild, Scenic and Recreational Rivers

Aaron, Oerns, Berg Creeks
Harding River
Santa Anna Creek and Lake
Anan Creek
LeConte Glacier
Virginia Creek and Lake

Saltwater Use Areas

Anan Bay
Berg Bay/Aaron Creek
Kashevaroff Island Group
McHenry Inlet
Steamer Bay
Santa Anna/Lake Helen
Harding River
Cannery Cove
Eagle Bay/River
Thoms Place
Snow Pass to Macnamara Point to St. John's Harbor (NW Zarembo)
Burnett Inlet
Fisherman Chuck
South Brownson Island
Sunny Bay
Kindergarten Bay
Quiet Harbor
Stone Harbor
Frosty Bay
Olive Cove
Anita Bay
Fools Inlet
Menefee Inlet
Whaletail Cove
Johnson Cove
Earl West Cove
Turn Island
Paradise Cove, Woronofski Island
King George

Dispersed Recreation Areas

Hatchery Lake
Marten Lake
Virginia Lake
Kunk Lake
Anan Lake
Boulder Lake
Goat Lake
Tyee Lake
Shakes Lake
Eagle Lake

Visual Priority Routes & Use Areas

Communities
Wrangell

Forest Service Cabins		
Anan Bay	Harding River	Virginia Lake
Berg Bay	Koknuk Flats	Twin Lakes
Binkley Slough	Little Dry Island	Steamer Bay
Eagle Lake	Frosty Bay	Shakes Slough #1 and #2
Garnet Ledge	Marten Lake	Sergief Island
Gut Island #1 & #2	Mallard Slough	Mount Rynda
Mount Flemer		

Developed Recreation Sites	
Thoms Creek Picnic Area	Kunk Lake Shelter
Earl West Picnic Area	Long Lake Shelter
Salamander Creek Picnic Area	Fools Pass Recreation Parking
Lower Salamander Creek Picnic Area	Highbush Lake Day Use Site
Anan Bay Complex: Bear Observatory and Cabin	Chief Shakes Hot Springs
Rainbow Falls Viewing Platforms	Institute Creek/Shoemaker Overlook Shelter Site
Salamander Ridge Recreation Parking Site	Nemo Camp Sites
Twin Lakes Picnic Site	

Hiking Trails	
Kunk Lake Trail (#506)	Anan Bay Trail (#448 & #557)
Long Lake Trail (#574)	Rainbow Falls Trail (#536)
Highbush Lake Trail (#572)	Institute Creek Trail (#537)
Mill Creek Trail (#515)	Aaron Creek/Berg Bay Trail (#527)
Salamander Ridge Trail (#520)	Mallard Slough Trail (#626)

Boat Anchorages		
Anan Bay	Steamer Bay	N. Canoe Passage
Thoms Place	Kashevaroff Island Group	S. Brownson Island
Berg Bay	Fisherman Chuck	Fisherman Chuck
Quiet Harbor	Johnson Cove	Frosty Bay
Kindergarten Bay	Bushy Island	Sunny Bay
Stone Harbor	Roosevelt Harbor	S. Deer Island
Cannery Cove	Fools Inlet	St. John's Harbor, Zarembo Island
Anan Bay	Anita Bay	McHenry Inlet

Routes not constructed nor NEPA cleared: Planned or Opportunity
Wrangell Island: Nemo Point Loop Connection Road

CHATHAM AREA
Juneau Ranger District

Travel Routes

Alaska Marine Highway

Skagway to Juneau via Taiya Inlet, Chilkoot Inlet, Lynn Canal, Favorite Channel, & Auke Bay.
Juneau to Hoonah via Auke Bay, Stephens Passage, Saginaw Channel, Lynn Canal, & Icy Strait.
Juneau south via Auke Bay, Stephens Passage, and Frederick Sound.

Tourship Routes

Juneau to Glacier Bay via Lynn Canal &Icy Strait
Juneau via Stephens Passage & Gastineau Channel
Juneau to Skagway/Haines via Lynn Canal
Juneau to Tracy Arm via Stephens Passage, Holkham Bay, & Tracy Arm.

Public Use Roads

Montana Creek Road (#8452)
Mendenhall Glacier Road (FH#37)
Peterson Creek (#8442)
Glacier Highway (FH#2)
Whitepass/Yukon Railroad
North Douglas Road (FH#31 & #8467)
Fish Creek Road (#8471)

State Marine Parks

Chilkat Island
Sullivan Island
St. James Bay
Taku Harbor
Shelter Island
Funter Bay
Oliver Inlet (Adm. NM)

Recommended Wild, Scenic and Recreational Rivers

Katzehin River
Gilkey River

Saltwater Use Areas

Berners Bay
Shelter Island (Saginaw Channel)
Mansfield Peninsula, West Shore between Point Retreat & the Kittens
Favorite Channel (Breadline) from Pearl Harbor to Tee Harbor
Homeshore (Icy Strait) 4 miles in length along shoreline near the Couverden Log Transfer Facility
Sandborn Canal
Barlow Island (Saginaw Channel)
Couverden Island and surrounding waters from No Use Ledge to Point Howard.
Lynn Canal from Mount Golub to Tidal Flats south of St. James Point
Stephens Passage (Douglas Island) between Dornin Rock & Bishop Point, including Gastineau Channel.

Visual Priority Routes & Use Areas

Small Boat Routes

- Stephens Passage including
  - Taku Inlet
  - Gastineau Channel
  - Taku Harbor
  - Slocum Inlet
  - Hilda Creek (S. Douglas Island)
  - Admiralty Cove
  - Fritz Cove
  - Auke Bay
  - Favorite Channel
  - Lena Cove
  - Saginaw Channel
  - Russian Cove (Robert Island)
  - Holkham Bay
  - Windham Bay
  - Twin Point
  - Limestone Inlet
- Icy Strait including
  - Excursion Inlet
  - Sawmill Bay
- Lynn Canal including
  - Barlow Cove
  - Saginaw Channel
  - North Pass
  - Howard Point
  - St. James Bay
  - Boat Harbor
  - William Henry Bay
  - Berners Bay
  - Tee Harbor
  - Rescue Harbor
  - Berners Bay
  - West Lynn Canal
- Chatham Strait including
  - Hawk Inlet
  - Funter Bay
- Icy Strait including
  - North Ansley Island
  - Couverden Island
- Taku River and Inlet including
  - Turner Creek
  - Hole in the Wall Glacier
  - Twin Glacier Lake
  - Yehring Creek
  - Wright River
- Berners Bay including
  - Berners River
  - Lace River
  - Antler River
  - Gilkey River
- Tracy Arm including
  - Holkham Bay
  - Williams Cove
  - Endicott Arm
- Endicott Arm including
  - Fords Terror
- Port Snettisham including
  - Gilbert Bay
  - Whiting Inlet
  - Whiting River
- Stephens Passage including
  - Port Houghton
  - Hobart Bay
  - Port Snettisham
  - Port Houghton Salt Chuck
  - Sandborn Canal

Dispersed Recreation Areas

- Symonds Point (Saginaw Channel)
- Katzehin River
- Laughton Glacier
- Endicott Arm Native Village Site
- Spaulding Meadows Alpine Recreation Area
- Barlow Cove (Saginaw Channel)
- Funter Bay (Lynn Canal)
- Portland Island (Stephens Pass.)
- Benjamin Island (Favorite Island)
- Echo Cove/Sawmill Cove (Berners Bay)
- Speel River
- Groundhog Bay Historic Native Village Site
- Mansfield Peninsula, East Shore Lone Mountain to Young Bay
- Berners Bay Head Water System (Lace, Antler, Gilkey Rivers)
- St. James Bay
- Wright River
- Taku River
- Sumdum Mine Site
- Chuck River (Windham Bay)
- Turner Creek and Lake
- Fish Creek Recreation Area
- Shelter Island from Halibut Cove to Shelter Cove
- Gilbert Creek/Sweetheart Flats
- Sullivan Island Fox Farm
- Salt Chuck River (2 locations)
- Whiting River
- Couverden Island and Mainland No Use Ledge to Point Howard

Communities		
Taku Harbor	Haines	Douglas
Juneau	Hobart Bay	Skagway
Excursion Inlet		

Forest Service Recreation Cabins		
Peterson Lake	Dan Moller	Taku Inlet
John Muir	Berners Bay	White Pass Caboose
Eagle Glacier	Laughton Glacier	Turner Lake West
Turner Lake East		

Private or Public Resorts		
Eaglecrest Ski Area	Methodist Camp	Eagle Valley Lodge
Taku Lodge	Scout Camp	

Developed Recreation Areas		
Mendenhall Recreation Area	Mendenhall Campground	Auke Bay Recreation Area
Lena Cove Picnic Area	Eagle Beach Picnic Area	Portland Island Picnic Area
Auke Village Campground		

Hiking Trails		
Bishop Trail (#554)	Photo Point	Lemon Creek (#525)
Salmon Creek	Mount Juneau	Blackerby Ridge
Sheep Creek	Sumdum Glacier	Dan Moller Trail (#518)
Montana Creek (#511)	Lake Dorothy	Peterson Lake (#535)
West Glacier (#513)	Bessie Creek (#565)	Amalga Trail (#447)
East Glacier (#526)	Yankee Basin	Laughton Glacier (#509)
Lake Creek	Mount Roberts	Herbert Glacier (#480)
Spaulding Trail (#547)	Mount Bradley	Windfall Lake (#494)
Nugget Creek (#525)	Hawk Inlet (#491)	Denver Glacier (#465)
Auke Nu (#680)	Moraine Ecology (#543)	

Boat Anchorages		
Entrance Island (Hobart Bay)	Tee Harbor	Hilda Creek (South Douglas Island)
No Name Cove (Tracy Arm)	Gastineau Channel	Amalga Harbor (Favorite Channel)
Sanford Cove (Endicott Arm)	Bridget Cove	Limestone Inlet (Stephens Passage)
Funter Bay (Chatham Strait)	Fritz Cove	Sullivan Mountain Cove (Chilkat Pen.)
St. James Bay (3 locations)	Tracy Arm	Lincoln Anchorage (Favorite Channel)
North Arm (Port Houghton)	Hawk Inlet (2 locations)	Slocum Inlet (Stephens Passage)
Couverden Island (Icy Strait)	Ansley Island (Icy Strait)	Hawk Inlet Cannery (Hawk Inlet)
Lena Cove (Favorite Channel)	East End Endicott Arm	Echo Cove (Favorite Channel)
Gilbert Bay (Port Snettisham)	Hobart Bay	William Henry Bay (Lynn Canal)
Horse Island (Stephens Pass.)	Benjamin Island	West of Sullivan Island (Lynn Canal)
Star Point (Port Snettisham)	North Arm Hobart Bay	Taku Harbor (Stephens Passage)
Mallard Cove (Port Snettisham)	Boat Harbor (Lynn Canal)	Barlow Cove (Saginaw Channel)
Endicott Arm (Native Village)	Holkham Bay (2 locations)	Sandborn Canal (Port Houghton)
Auke Bay (Stephens Passage)	Windham Bay (2 locations)	Russian Cove (Stephens Pass.)
Rescue Harbor (Sullivan Island)		West and East Arm Fords Terror
Slate Creek Bay (Berners Bay)		Young Bay (Stephens Passage)

CHATHAM AREA
Sitka Ranger District

Travel Routes

Alaska Marine Highway

Angoon to Sitka via Peril Strait, Neva Strait, Olga Strait, Sitka Sound, and Starrigaven.
Angoon to Tenakee Springs via Chatham Strait and Tenakee Inlet.
Sitka to Petersburg via Starrigaven, Peril Strait, Chatham Strait and Frederick Sound.

Tourship Routes

Sitka to Pacific Ocean via Eastern Channel and Sitka Sound to the Pacific Ocean.
From Sitka southbound: along West Coast of Baranof Island
From Sitka northbound: along West Coast of Kruzof and Chichagof Islands
Sitka via Peril Strait, Chatham Strait, to Coronation Island.

Public Use Roads

Harbor Mountain Road (#7576)
Sawmill Creek Road (FH #11)
Corner Creek Road (#7540)
Halibut Pt. Road (FH#11)
Kruzof Island Roads (#7590)

State Marine Parks

Big Bear/Baby Bear Bays
Magoun Islands

Recommended Wild, Scenic and Recreational Rivers

Kadashan River
Glacial River
Lisianski River

Small Boat Routes

Whale Bay including
- Great Arm
- Port Banks
- Small Arm
- Still Harbor

Walker Channel to Crawfish Inlet & DeGroff Bay
Sitka Sound to:
- Biorka Channel
- Redoubt Bay
- Kanga Bay
- Hot Springs Bay

St. John Baptist Bay
Crawfish Inlet to
- Cedar Pass
- Ushk Bay

Big Bay to West Crawfish Inlet and Suloia Bay
West Crawfish Inlet to Shamrock Bay
Redoubt Bay to Redoubt Lake
Eastern Channel to:
- Deep Inlet
- Silver Bay
- Camp Coogan Bay
- Sitka Harbor
- Kalinin Bay

Chatham Strait to:
- Red Bluff Bay
- Warm Springs Bay
- Cosmos Bay

Sitka Ferry Terminal to Katlian Bay
Nakwasina Strait/Passage
Olga Strait
Hoonah Sound, North Arm
Hoonah Sound, South Arm
Surveyor Passage to: Black Bay & Kimshan Cove
Peril Strait to Chatham Strait
Peril Strait to:
- Sitkoh Bay
- Lindenberg Harbor
- Saook Bay
- Appleton Cove
- Rodman Bay

Chatham Strait to:
- The Basin
- Middle Arm (Kelp Bay)
- Deep Cove
- Echo Cove
- Portage Arm (Kelp Bay)

Sitka Harbor
Port Walter
Port Armstrong
Port Alexander to Puffin Bay
Sitka Harbor to Vitskari
Sitka Point to Hayward Strait
Hayward Strait to Peril Strait
Necker Bay to
- Secluded Bay
- Dorothy Cove

Sukoi Inlet
Portlock Harbor
Kamenoi Point to Eastern Point
Pacific Ocean to:
- Piehle Passage
- Khaz Bay
- Imperial Passage

Peril Strait to
- Bear Bay
- Deep Bay
- Hanus Bay
- Fish Bay

Tenakee Inlet
Hoonah Sound, South Arm to Patterson Bay
Neva Strait to Salisbury Sound
Tawak Passage
Salisbury Sound to:
- Peril Strait
- Fortuna Strait
- West Chichagof Island
- Sukoi Inlet

Slocum Arm to:
- Waterfall Cove
- Ford Arm

Snipe Bay
Khaz Bay to:
- Slocum Arm
- Klag Bay
- Sister Bay
- Ogden Passage

Lisianski Strait to Stag Bay
Redfish Bay
Sitka Point to:
- Shelikof Bay
- Gilmer Bay
- Salisbury Sound

Tenakee Inlet to Corner Bay
Kadashan Bay
- Crab Bay
- Seal Bay
- Long Bay

Southeast Kruzof Island

Visual Priority Routes & Use Areas

Saltwater Use Areas	
Silver Bay	Olga Strait
Sitka Point to Beaver Point	Katlian Bay
Fish Bay	Sitka Sound
Port Walter (Chatham Strait)	Kelp Bay to Portage Arm
Redfish Bay (Pacific Ocean)	Florence Bay (Peril Strait)
Big Port Walter (Chatham Strait)	Point Amelia to Sea Lion Is.
Nakwasina Sound and Inlet	Peril Strait, from Kakul Narrows to Poison Cove
Rodman Bay (Peril Strait)	Deadman's Reach (Peril Strait)
Krestof Island, South shore from Brady Is. to Eastern Point	Necker Islands to Eastern Channel, including W. coast Baranof Island
Salisbury Sound; Searock to Sinitsin	Rodman Bay (Peril Strait)

Dispersed Recreation Areas		
Redoubt Lake	Kook Lake	Harbor Mountain Recreation Area
Salmon Lake	Iris Meadows	Mount Edgecumbe
Baranof Lake	Kadashan Bay	Lake Eva
Blue Lake	Port Frederick Portage	Sitkoh Creek
Magoun Islands	Long Bay (Tenakee Inlet)	Seal Bay (Tenakee Inlet)
Kruzof Island, East shore from	Tenakee Inlet S. Tidal Flats	Sealion Cove
Magoun Islands to Sitka Point	Fish Bay Creek	
Hidden Falls Hatchery & Archeology Site		

Communities		
Port Alexander	Tenakee Springs	Sitka
Corner Bay Logging Camp		

Forest Service Recreation Cabins		
Freds Creek	Baranof Lake	Shelikof
Plotnikof Lake	Brents Beach	Lake Eva
Davidof Lake	Salmon Lake	Lake Suloia
Avoss Lake	White Sulphur Hot Springs	Kook Lake
Redoubt Lake	Seven Fathom Bay	Sitkoh Lake (2 cabins)
Samsing Cove	Moser Island	North Beach
Piper Island	Goulding Lake	

Developed Recreation Sites	
Starrigavan Campground	Sawmill Creek Campground

Hiking Trails		
Mount Edgecumbe (#520)	White Sulphur Springs (#560)	Harbor Mountain (#499)
Davidof Lake (#463)	Sashin Lake (#668)	Iris Meadows (#521)
Salmon Lake (#566)	Port Banks (#580)	Lake Eva (#472)
Redoubt Lake/Goddard	Gavan Hill (#487)	Suloia Lake (#575)
Warm Springs Bay (#559)	Sealion Cove #508)	Sealion Cove (#508)
Beaver Lake (#522)	Dry Pass (#672)	Basket Bay (#451)
Indian River (#500)	Tenakee Trail (#553)	Sitkoh Lake (#553)
Mount Verstovia (State)		

Boat Anchorages

Ship Cove (Port Alexander)
Port Banks (Whale Bay)
Great Arm (Whale Bay)
Small Arm (Whale Bay)
Yamani Cove (Necker Bay)
Dorothy Cove (Necker Bay)
Still Harbor (Whale Bay)
Big Bay (Windy Passage)
Seven Fathom Bay (Windy Passage)
President Bay (Windy Passage)
Shamrock Bay (W. Crawfish Inlet)
Red Bluff Bay (Chatham Strait)
Tava Island (Biorka Channel)
Herring Bay (Elovot Island)
Kliuchsvoi Bay (Goddard)
Three Entrance Bay (Sitka Sound)
Samsing Cove (Eastern Channel)
Warm Springs Bay (Baranof Island)
Cosmos Cove (Hidden Falls)
Leesoffskaia Bay (Eastern Channel)
Crescent Bay (Eastern Channel)
Katlian Bay
Port Krestof (Hayward Strait)
Mud Bay (Krestof Sound)
DeGroff Bay (Krestof Sound)
Appleton Cove (Peril Strait)
Little Port Walter (Chatham Strait)
Puffin Bay (Pacific Ocean)
Ten Fathom Anchorage (Redfish Bay)
Redfish Bay (Pacific Ocean)
Snipe Bay (Pacific Ocean)
Port Armstrong (Chatham Strait)
Deep Cove (Chatham Strait)
Ell Cove (Chatham Strait)
Kasnyku Bay (Chatham Strait)
Takatz Bay (Chatham Strait)
Gilmer Bay (Pacific Ocean)
Whitestone Cove (Neva Strait)
Cedar Cove (Katlian Bay)
St. Lazaria Island
Dead Tree Island (Hanus Bay)
Point Moses (Hanus Bay)
Kalinin Bay (Salisbury Bay)
Leo Anchorage (Fortuna Strait)
Hidden Cove (Slocum Arm)
Island Cove (Slocum Arm)
Deep Bay (Peril Strait)
Suloia Bay (Peril Strait)
Schulze Cove (Fish Bay)
Baby Bear Bay (Peril Strait)
Ushk Bay (Peril strait)
Waterfall Cove (Slocum Arm)
Ford Arm
Moser Island
Black Bay (Surveyor Passage)
Kimshan Cove
Klag Bay (Chichagof)
Double Cove (Slocum Arm)
Tawak Passage (Ogden Passage)
Khaz Bay
Piehle Passage
Symonds Bay (Biorka Island)
Tenakee Inlet, North Extent
Cuvacan Cove (Shelikof Bay)
The Basin (Kelp Bay)
Pond Island (Kelp Bay)
Echo Bay (Chatham Strait)
Lindenberg Harbor (Peril St.)
Saook Bay (Peril Strait)
Goleta Cove (Shelikof Bay)
Corner Bay (Tenakee Inlet)
Crab Bay (Tenakee Inlet)
Seal Cove (Tenakee Inlet)
Long Bay (Tenakee Inlet)

National Wildlife Refuge

St. Lazaria National Wildlife Refuge

CHATHAM AREA
Yakutat Ranger District

Public Use Roads

Highway 10 (Yakutat to Dangerous R.)
Cannon Beach Road (#9963)
Situk Landing Road (#9969)
Alsek Bay/River Non System Rd.

Small Boat Routes

Alsek River
East Alsek River
Ahrnklin River
Mouth of Dangerous R. to Harlequin L.
Ankau Saltchucks to Summit Lake
Yakutat Bay to Disenchantment Bay
Mouth of Situk River to Situk Lake
Italio River
Tawah Creek
Shipyard Cove to: Gilbert Spite to: Eleanor Cove
Akwe River
Situk Lake to Russell Fiord canoe/kayak route
Mouth of Russell Fiord to Nunatak Fiord

Saltwater Use Areas

Phipps Peninsula

Dispersed Recreation Areas

Square Lake
Gines Creek
Alsek River Delta
Doame River
Harlequin Lake
Italio Lake Big Game Camp
Ahrnklin River
Dangerous River Guide Camp
Highway 10 Corridor
Gulf of Alaska Coastline
East Alsek River Delta
Pike Lakes
Tanis River Mesa Guide Camp
Italio River
Lower Dangerous River
Ahrnklin River
Cannon Beach
Middle Slough River
Dangerous River
Alsek River Big Game & Fish Camps
Alsek Bay Fish Camps & Buying Sta.

Communities

Yakutat

Forest Service Recreation Cabins

Square Lake
Tanis Mesa (2 cabins)
Alsek River
Harlequin Lake (2 cabins)
Middle Situk (2 cabins)
Situk Lake
Situk Weir
Middle Dangerous River
Lower Dangerous River
Italio River

Private Resorts

Alsek River Rafting Campsite

Hiking Trails

Dangerous River (#654)
Italio River (ATV)
Lower Dangerous River (#653)
West Situk (#664)
Lost River Trail (#670)
Harlequin Lake Trail (#655)
Situk River Cabin (#649)
Situk Lake (#659)
Mountain Lake (#652)

Boat Anchorages

Eleanor Cove

CHATHAM AREA
Hoonah Ranger District

Travel Routes

Alaska Marine Highway and Tour Ship Routes

Juneau to Sitka via Hoonah via Icy Strait, Port Frederick.
Hoonah to Pelican via Icy Strait, South Passage, South Inian Passage, and Lisianski Inlet.
Juneau to Sitka via Icy Strait, North Passage, Cross Sound, West Coast Chichagof Island to Sitka Sound.
Hoonah to Tenakee via Icy Strait and Chatham Strait

Public Use Roads

Hoonah to East Point (#8502, #8508, #8510, and #8513)
Hoonah to Whitestone Harbor & Iyoukeen Cove (#8502, #8530, and #8530-4)

Small Boat Routes

All of Icy Strait including
- Whitestone Harbor
- Spasski Bay
- Port Frederick
- South Passage
- North Passage
- Pinta Cove
- Mud Bay
- Icy Passage
- Idaho Inlet

South Passage including:
- Elfin Cove
- Port Althorp
- Cross Sound

Cross Sound including:
- Lisianski Inlet
- Soapstone Cove
- Bingham Cove
- to the Pacific Ocean

Port Frederick to:
- Halibut Creek
- Neka Bay
- The Narrows
- Tenakee Inlet via Portage
- Salt Lake Bay

Flynn Cove (Icy Strait)
Freshwater Bay

Pacific Ocean including:
- Surge Bay
- Takanis Bay
- Squid Bay
- Green Top Harbor
- Lisianski Strait

Lisianski Strait including:
- Stag Bay
- Lisianski Inlet

Chatham Strait to Pavlof
- Harbor via Freshwater Bay

Hoonah to Tenakee via Portage
Cedar Cove to Freshwater Creek

Saltwater Use Areas

Pleasant Island (Icy Strait)
Pulizzi Bay (Icy Strait)
Freshwater Bay
Lemesurier Island (Icy Strait)
Inian Island (Icy Strait)
Lacy Cove (South Inian Pass)
False Bay (Chatham Strait)
Neka Bay (Port Frederick)
Salt Chuck (Port Frederick)
South Bight (Port Frederick)
Iyoukeen Cove

Dispersed Recreation Areas

Port Althorp
Georges Island
Bear Paw Lake
Game Creek
Halibut Creek
Neka River
Pinta Cove
False Bay
Cann Creek
Three Hill Island
Bohemia Creek
Suntaheen Fish Viewing Area
Port Frederick/Tenakee Inlet
Portage
Mud Bay River
Humpback Creek
Trail River
Chicken Creek
Redcliff & Cedar Islands
Whitestone Harbor
Iyoukeen Cove
Pavlof Lake
Lisianski River
Gypsum Mine Site
Pavlof River Canoe Route
Sonyakay Ridge
Elephant Mountain
Point Adolphus
Porpoise Islands
Pavlof River
Vortex Ridge

Visual Priority Routes & Use Areas

Communities		
Hoonah	Mt. Bether	Elfin Cove
Pelican	Whitestone Logging Camp	Gustavus
Kennel Creek Logging Camp		

Forest Service Recreation Cabins	
Green Top	Salt Lake Bay

Hiking Trails		
Pelican/Sunnyside (State)	Limestone Mountain	Pavlof Lake (#531)
Lisianski River (#506)	Spasski Trail (#548)	Spasski Trail (Pvt.)
Greentop (#707)	Pavlof Marsh (#705)	Wukuklook (#706)
Tekanis (#710)	Stag Bay (#702)	Stag River (#713)

Boat Anchorages		
Whitestone Harbor (Icy Strait)	Kennel Creek (Freshwater Bay)	Surge Bay
Spasski Bay (Icy Strait)	Mud Bay (Icy Strait)	Takanis Bay
Port Althorp (Cross Sound)	Flynn Cove (Icy Strait)	Squid Bay
Soapstone Cove (Cross Sound)	Mite Cove (Lisianski Inlet)	Green Top Harbor
Bingham Cove (Cross Sound)	Neka Bay (Port Frederick)	Pinta Cove (Icy Strait)
Pavlof Harbor (Freshwater Bay)	Gull Cove (Idaho Inlet)	Cedar Cove (Freshwater Bay)
Bell Island (Port Frederick)	Goose Island (Icy Strait)	Hoonah Harbor (Port Frederick)
Lisianski Inlet at Lisianski River	Elfin Cove (Port Althorp)	North Bight (Port Frederick)
Deer Harbor	Salt Chuck Bay (Port Althorp)	Idaho Inlet (South Inian Passage)
Lost Cove (Lisianski Strait)	Hobbit Hole (South Inian Pass)	Stag Bay (Lisianski Strait)
Bohemia Creek (Lisianski Strait)	Earl Cove (Icy Strait)	Inian Cove (Icy Strait)
Bayhead (Freshwater Bay)	Hoktaheen Cove	Shaw Islands (Idaho Inlet)
Granite Cove (Port Athorp)	Salt Lake Bay (Port Frederick)	
Icy Passage Light Cove (Icy Passage)		
Jack's Cove (South Inian Passage)		
Willoughby Cove (South Inian Passage)		

KETCHIKAN AREA
Thorne Bay Ranger District

Travel Routes

Alaska Marine Highway

Clarence Strait from Ketchikan to Stikine Strait

Tour Ship Route

Sumner Strait from Snow Passage to Cape Decision

Public Use Roads

Thorne Bay to Sandy Beach Rd. (#30)
Klawock-Control Lake (FH#9)
Control Lake to Thorne Bay (FH#9)

State Marine Parks

Salmon Bay
Grindall Island

Recommended Wild, Scenic and Recreational Rivers

Salmon Bay Lake and Stream
Thorne River/Hatchery Creek/Barnes Lake
Sarkar Lakes

Small Boat Routes

Tuxekan Pass - Edna Bay
Tenass & Brockman Passages
Sea Otter Sound to Cape Pole
Karheen Pass to New Tokeen

Saltwater Use Areas

Port Protection
Marble Pass
Tokeen Bay
Davidson Inlet
Exchange Cove
Whale Pass
Waters inside Maurelle Island Wilderness
Thorne Bay to Snug Anchorage
West Coast Waterway: Shakan Bay & Shakan Strait (including Calder Bay) to Dry Pass to El Capitan Pass to Tenass Pass to Karheen Pass to San Cristoval Channel

Dispersed Recreation Areas

Salmon Bay
Sarkar Cove
Staney Creek (from rec. sites to mouth)
Mouth of Staney Creek and the cove to the south
Honker Canoe Route-Gold & Galligan Lagoon to Thorne Bay
Red Bay
Snakey Lakes
Eagle Creek
Gold & Galligan Lagoon
Beach Areas on north coast of Prince of Wales Island

Communities

Edna Bay
Whale Pass
Point Baker
Thorne Bay
Port Protection
Naukati
Coffman Cove
Cape Pole

Forest Service Recreation Cabins

Red Lake - incl. lake
Salmon Bay Lake - incl. lake
Sarkar Lake - incl. lake
Staney Creek - incl. estuary
Barnes Lake - incl. lake
Shipley Lake - incl. lake
Control Lake - incl. lake
Honker Lake - incl. lake
Sweetwater Lake - incl. lake

Visual Priority Routes & Use Areas

Developed Recreation Areas		
Thorne River Bridge Area	Sandy Beach Picnic Area	Staney Creek Campsites
Gravelly Creek Picnic Area	Neck Lake Boat Launch	Memorial Beach Picnic Site
Luck Lake Boat Launch		
Eagles Nest Campground (Balls Lake)		

Private Resorts	
Whale Pass Resort	El Capitan Lodge
Bear Valley Lodge	Boardwalk Wilderness Lodge (Thorne Bay)

Hiking Trails		
Red Lake Trail (#947720)	Sarkar Canoe Trail	Shipley Lake Trail(#947710)
El Capitan Cave Trail	Staney Creek Trail	Deweyville Trail (#947490)
Honker Divide Canoe Trail	Rio Roberts Trail	Salmon Bay Lake Trail (#947730)

Boat Anchorages		
Pole Anchorage	Windfall Harbor	Warm Chuck Inlet
Karta Bay	Salmon Bay	Nossuk Bay
Cyrus Cove	Salt Lake Bay	Hole-In-The-Wall (Prince of Wales)
Big Ratz Harbor	Little Ratz Harbor	

KETCHIKAN AREA
Craig Ranger District

Travel Routes

Alaska Marine Highway

Guard Island to Hollis via Kasaan Bay to Clark Bay

Public Use Roads

Craig to Klawock (FH #9)
Klawock to Hydaburg Jct. (FH#6)
Hydaburg Rd. - 12-Mile Arm (#21)
Hydaburg Rd. (FH#13)
Hydaburg Jct. to Hollis (FH#6)

Small Boat Routes

West Coast Waterway: San Cristoval Channel to Ulloa Channel
West Coast Waterway: Ulloa Channel to Hydaburg

Saltwater Use Areas

Port Refugio
Port Real Marina
Waters around Hydaburg and south through Sukkwan Strait
12-Mile Arm Campground site & estuary and head of bay adjacent to campground site.
Waters around Craig and Klawock including San Alberto Bay
Moira Sound-All of Niblack Bay and head of North Arm to Aiken Cove; Johnson Cove & Lake; Rest of Moira Sound up to mouth of West and South Arms
Buccarelli Bay
Portillo Channel
Trocadero Bay-near head of bay in general area where trail comes in.
About 1 mi. off shore from Skowl Arm to entrance of Chomly
West Arm-Cholmondeley Sound: including Sunny Cove

Dispersed Recreation Areas

Arena Cove - Cape Felix
Roller Bay

Communities

Craig
Klawock
Hydaburg
Hollis
Sunny Cove
Saltery Cove

Forest Service Recreation Cabins

Black Bear Lake - incl. lake
Kegan Lake - incl. lake
Josephine Lake - incl. lake
Kegan Cove - incl. cove
Trollers Cove - incl. cove
Essowah Lake - incl. lake
Pt. Amargura - incl. ½ mile radius around cabin

Developed Recreation Sites

One Duck Lake Shelter

Private Resorts

Waterfall Resort site & Ulloa Channel north & south of the resort
Clover Bay Resort

Visual Priority Routes & Use Areas

Hiking Trails	
One Duck Lake Trail (#9173600)	Soda Bay Trail
Trocadero Bay Trail	Harris River Trail

Recommended Wild, Scenic and Recreational River	
Essowah Lakes and Streams	Kegan Lake and Streams
Niblack Lakes and Streams	

Boat Anchorages		
Steamboat Bay	Security Cove	Pt. Garcia
Kelly Cove	Datzkoo Harbor	Port Asumcion
Port San Antonio	Kaigani Harbor	Port Refugio
Port Santa Cruz	Nichols Bay	Head of McLean Arm
Port Dolores	Rose Inlet	Kendrick Bay
Bobs Bay	Clover Bay	Dickman Bay
Hole-in-the-Wall (Dall Is.)	Mabel Bay	South Arm Moira Sound (mouth)
Waterfall Bay	Vesta Bay	West Arm Moira Sound (mouth)
Gold Harbor	Goose Bay	Kassa Inlet - area inside islands
Port Bazan		

Routes not constructed nor NEPA cleared: Planned or Opportunities	
One Duck Recreation Site	Harris River Campground

KETCHIKAN AREA
Ketchikan Ranger District &
Misty Fiords (outside monument)

Travel Routes

Alaska Marine Highway	*Tour Ship Route*
Clarence Strait to Stikine Strait	Revillagigedo Channel and Clarence Strait
Alternative Route (Clarence Strait & Ernest Sound)	
Main Passage, Tongass Passage & Portland Canal to Hyder	
Revillagigedo Channel from Main Passage to Clarence Strait	

Public Use Roads

Tongass Highway (State Highway #7)	Salmon River Hwy.-Hyder (#88)
Ward Lake-Hariett Hunt Lake Road (FH #39)	Ward Lake By-Pass Rd.
White River Road	

State Marine Parks

Grant Island	Dall Bay	Black Sands Beach

Recommended Wild, Scenic and Recreational River

Naha River	Orchard Creek and Lake
Wolverine Creek, McDonald Lake	Gokachin, Mirror, Fish, and Low Creeks

Saltwater Use Areas

Tongass Narrows	Bell Arm	George Inlet
Blind Pass	Bailey Bay	Hassler Pass
Yes Bay	Short Bay	Shrimp Bay
Clover Pass	Union Bay	Klu Bay
Naha Bay	Helm Bay	Neets Bay
Vallenar Bay - Vallenar Point	George Inlet	Traitors Cove
Revilla Channel to Thorne Arm	West Behm Canal	Carroll Inlet
Behm Narrows	Moser Bay	Port Stewart
Anchor Pass	Thorne Arm	Moth Bay
Felice Strait	Vixen Inlet	Bond Bay
Blank Inlet	Bostwick Inlet	Dall Bay
Bond Bay	Smugglers Cove	Spacious Bay
Gedney Pass including Convenient Cove		
Nichols Passage - Blank Inlet to Bostwick Inlet		
NE corner of Thorne Arm (Fish Creek to Gokachin Creek)		
About 1/2 mi. off shore Cleveland Peninsula from Caamano Point to Niblack Point		

Dispersed Recreation Areas

Mountain Ranges & Alpine Area between Ketchikan, Ward Lake-Hariett Hunt Lake Road, and George Inlet.	Lower Carroll Creek

Communities

Ketchikan	Meyers Chuck	Hyder
Metlakatla	Loring	Saxman

Visual Priority Routes & Use Areas

Forest Service Recreation Cabins		
Deer Mountain	Orchard Lake - incl. lake	Patching Lake - incl. lake
Jordan Lake - incl. lake	Plenty Cutthroat - incl. lake	Portage Cabin - incl. lake
Heckman Lake - incl. lake	Helm Bay - incl. bay	Fisheries Cabin - incl. lake
Blind Pass - incl. pass	Phocena Cove - incl. cove	Long Lake Shelter - incl. lake
Anchor Pass - incl. pass	Fish Creek - incl. around buoy	Wolf Lake Shelter - incl. lake
Reflection Lake & Shelter - incl. lake	Rainbow Lake - incl. lake	Shelokum Lake Shelter - area and lake
McDonald Lake & Shelter - incl. lake	Helm Lake - incl. stream and lake	Smugglers Cove Shelter - incl. lake

Private Resorts		
Yes Bay Resort	Bell Island Resort	Salmon Falls Resort
Clover Pass Resort	Silver King Lodge	

Developed Recreation Areas	
Ward Lake Recreation Area	Settlers Cove (State Campground)
Swan Lake Dock & Picnic Area	

Hiking Trails		
Deer Mountain Trail (#927060)	Long Lake Trail (#927190)	Wolf Lake Trail (#927440)
Reflection Lake Trail (#927310)	Connell Lake Trail	Gokachin Lake Trail (#927110)
Bell Island Trail (#927030)	Fish Creek-Low Lake Trail	Titan Trail (Hyder) (#957550)
Naha River Trail (#(929250)	Meyers Chuck Trail (#927830)	Orchard Lake Trail (#927320)
Silvis Lake Trail	Ward Creek Trail	Lunch Creek Trail
Ward Lake Nature Trail	Black Mountain Lakes Trail	McDonald Lake Trail (#927450)
Second Waterfall Creek Trail	Smugglers Lake Trail	Perseverance Lake Trail (#927260)
Bailey Bay-Shelokum Lake (#927010)		

Boat Anchorages	
Vixen Harbor	Ice House Cove

Routes not constructed nor NEPA cleared: Planned or Opportunities	
Potential Trail corridor between Hariet Hunt Lake & Leask Lake	
Saddle Lakes Recreation Area	Shelter Cove Boat Ramp
Slide Ridge Winter Sports Aera	Harriet Hunt - Shelter Cove Connection Road
Brown Mountain Alpine Trail	

Appendix G

Log Transfer Facility Guidelines[1]

Introduction

Log transfer facilities (LTF's) undergo a complex and rigorous permitting process involving four state and four Federal resource management and regulatory agencies as well as comments from other interested parties. Through the permitting process, the regulatory agencies may approve or disapprove permits with stipulations which govern the construction and operation of LTF's.

In seeking clarification of permit stipulations expected to be included in LTF permits, the timber industry recommended -- through Governor Sheffield's Timber Task Force report (12/13/84) -- that:

> "...the principal agency heads and industry representatives meet to agree upon a process which will result in a common set of log transfer facility guidelines..."

As a result of this request, a committee consisting of the principal agency and industry representatives met on April 15, 1985 to consider the Task Force recommendation. This committee created a Technical Subcommittee of industry, public, and resource agency personnel involved in permitting LTF's to develop LTF guidelines per the Timber Task Force recommendation that:

> "...it would be beneficial for all parties involved in the permitting, construction, and operation of log transfer facilities to have a common set of criteria (guidelines) from which to work when designing facilities and reviewing permit applications for these facilities."

The LTF guidelines are in three sections:

- Siting
- Construction and Operation
- Monitoring and Reporting

The Use of Guidelines

The guidelines for planning and permitting of LTF's delineate the physical requirements necessary to construct a log transfer and associated facilities and--in context with requirements of applicable law and regulations--methods to avoid or control potential impacts from these facilities on water quality, aquatic, and other resources. The guidelines emphasize facility siting as the best means of limiting most environmental impacts from LTF's, log raft, storage areas, and adjoining collateral facilities. Additional means of limiting environmental impacts occur through application of construction and operating guidelines. Monitoring and reporting guidelines are necessary to determine if a facility is meeting the permit stipulations.

These guidelines can be used in the existing permitting process which emphasizes best professional judgment of the agencies in close cooperation with the applicants when selecting sites and imposing permit

[1] The Log Transfer Facility Siting, Construction, Operation and Monitoring/Reporting Guidelines (1985) were developed by the Alaska Timber Task Force (ATTF) Log Transfer Facility Guidelines Technical Subcommittee. These guidelines are to be used when considering alternatives for the location and management of log transfer and associated facilities. The guidelines will also be used by the regulatory agencies for evaluating permit applications to ensure consistency with the Clean Water Act. See the log transfer facilities direction in the Transportation Forest-wide Standards & Guidelines (Chapter 4) for direction on the use of these guidelines.

stipulations. The process is preferred because it accommodates site-specific conditions and enables all participants to collectively evaluate the practicable alternatives and determine the best way to minimize impacts.

The guidelines are comprehensive and may apply to any site being evaluated for LTF permits. Since each site is different, in unusual circumstances, there may be need to develop more specific stipulations or limitations during the permit review process for a specific site.

Periodic updating of the guidelines will be necessary since changes may occur in both the timber industry and new information may become available on the effects of log transfer facilities on water quality and biotic communities.

The guidelines apply to log transfer, log raft storage, and collateral facilities, such as log raft make-up areas, airplane and boat docks and contiguous upland log storage and sort yards immediately adjacent to the LTF.

The guidelines do not identify which permitting agency(ies) have regulatory and permitting jurisdiction for any guideline. The objective is to provide a comprehensive listing of guidelines applicable to LTF's through state and Federal resource management and regulatory programs.

The siting and construction and operation guidelines identify the physical features the timber industry needs to safely and efficiently transport logs, and minimum requirements that are needed to mitigate for changes in water quality and adverse impacts on aquatic biota. When evaluating proposals for these log transfer and associated facilities, all guidelines must be considered. The objective is to consider all guidelines and develop a "best mix" which allows the activities to proceed while meeting all applicable statutory and regulatory requirements.

The following are the ATTF Guidelines.

Siting Guidelines

Proper siting of log transfer and log raft storage facilities is the single most important means of controlling adverse water quality and biotic impacts from the construction and operation of these facilities. The least biologically productive and sensitive area available which meets industry's physical and economic requirements is the preferred site. The need for regulatory agencies to impose additional permit stipulations above the minimum requirements to mitigate against environmental impacts is reduced to a level commensurate with the site-specific characteristics.

S1. **Proximity to Rearing and Spawning Areas:** Siting of log transfer and log raft storage facilities within 300 feet of the mouth of anadromous fish streams, or in areas known to be important for fish spawning or rearing is normally prohibited.

> **Discussion**: This LTF siting guideline is derived from the Alaska Forest and Resources Practices Regulations (11 AAC 95.150 (c)). The estuarine areas adjacent to the mouths of anadromous fish streams serve as important feeding areas for salmon fry and smolts while they acclimate to saltwater. Elimination of impacts to these areas can force outmigrants into deeper waters where there is greater risk for predation. Placement of LTF's in known spawning areas results in loss of spawning habitat.
>
> The outmigrant salmon fry are especially vulnerable and have particularly high value to the fishing industry. The concerns include the possibility of leachates entering fresh water or the possibility of sediments entering waters and affecting fish. Because of the high value of the fisheries resources, the Forest Practices Regulations of the state exclude LTF siting in these most valuable and highest risk locations.

S2. **Protected Locations:** Log transfer and log storage facilities should be sited in weather-protected waters with bottoms suitable for anchoring and with at least 20 acres for temporary log storage and log booming.

Discussion: Areas protected from adverse weather, tidal, and wave conditions are needed for the safety of the workers responsible for moving log bundles, building rafts, and similar water-oriented work activities. Log rafts and bag booms must be protected from adverse weather, tidal, and wave conditions that can damage the rafts and the bag booms.

Protected conditions are needed for control of the log bundles being placed in the water and the requirement to retain them in the bag booms and rafts so as to avoid hazards to navigation.

At least 20 acres of available space is needed to place log bundles into the water, sort bundles into log booms, construct log rafts and hold log rafts until moved by tug to the next destination. Additional space is needed for docks and floats, and movement of boats, floatplanes and other transportation. Most of the space involved is used for the movement of vessels and log rafts.

Log bundle storage with maneuvering space for vessels and rafts requires 3.6 + or - acres per MMBF gross timber volume. Approximately 8 acres is required for storage of a typical tow of four log rafts. An additional 8 acres is needed for booming of bundles including maneuvering space.

Consolidation and concurrent use of log transfer and storage sites will increase the amount of space required. Each owner of logs will need separate log booms and storage areas to provide for log accountability. Where National Forest and privately-owned logs are stored or transferred from a consolidated site this separation is required by regulation.

While the guidelines suggest 20 acres for normal situations, it is possible to operate in less space under some situations. For small timber harvest operations, with timber volumes of less than one MMBF, the need for space will be reduced dramatically. There is, however, a practical minimum space needed for even the smaller operations. This minimum is approximately five acres.

S3. **Upland Facility Requirements:** Log transfer facilities generally should be sited in proximity to at least five acres of relatively flat uplands. There should also be a body of water sufficient to provide a minimum of a 60 lineal foot facility face.

Discussion: This guideline has two operative portions: 1) space needed for upland operations near the transfer point; and 2) the length of available space needed at the operating face.

Relatively flat land is required to avoid extensive excavation. The space needed for upland operations adjacent to the LTF is directly related to the type of facility (see Use Descriptions in the Glossary), volume of timber that may be handled annually, and the life of the operation. The amount of space needed may include truck unloading (0.9 acres), log scaling (1.5 acres), log storage (1.6 acres per MMBF), sorting (0.5-2.0 acres), and additional space for incidental related operations. Equipment yard and repair areas are commonly in this vicinity (1.5-2.5 acres). The five-acre minimum would service intermittent use and some occasional use sites, with up to 35 to 40 acres needed for continuous use sites.

Unobstructed width required for the transfer of logs to the water needs to be adequate for the products being moved. The constructed length of the working face can be as little as 40 feet, under special circumstances, but the operating clearance must exceed 60 feet to accommodate the longest log lengths. 110 feet available face is most desirable.

S4. **Safe Access to a Facility from the Uplands:** To provide safe access to the log transfer facility and adjoining log sort yard, the facility should be sited where access roads to the facility can maintain a grade of 10 percent or less and 4 percent for specialized equipment.

Discussion: Vehicle access must be provided to the point where log bundles are transferred either to the log sort yard facility or to the receiving waters. The operating layout must provide for operations within safe limits for the equipment, operators and other personnel in the area. The maximum safe grade for log stackers is 4 percent. The maximum safe grade can be increased to 6 percent with special modifications to the log stacker. Prudent consideration of safety suggests a desirable grade less than the maximum be used.

Road grades entering the unloading facility in excess of the 10 percent will not allow the truck driver to safely stop the vehicle in emergencies.

S5. **Bark Dispersal:** Log transfer facilities should be sited along or adjacent to straits and channels or deep bays where currents may be strong enough to disperse sunken or floating wood debris. Siting log transfer facilities in embayments with sills or other natural restrictions to tidal exchange should be avoided.

Discussion: The Environmental Protection Agency and the Alaska Department of Environmental Conservation consider bark to be a pollutant. Problems with bark occur when it accumulates. The accumulated bark both physically smothers organisms and may create anoxic conditions or toxic gases.

In bays that have sills or natural restrictions to tidal exchange, there is a concern that bark may accumulate due to inadequate current velocities. The concern is that sufficient bark accumulation and lack of water exchange in the layer below the sill will cause anoxic conditions. While it is possible for sufficient bark to accumulate below sills to create anoxic conditions, this effect has not been documented at any existing log transfer site in Alaska.

S6. **Site Productivity:** Sites for in-water storage and/or transfer of logs should be located in areas having the least productive intertidal and subtidal zones.

Discussion: One of the siting methods used to limit the impacts that log transfer and log storage facilities may have on the environment has been to site the facilities in the least productive habitats. These habitats are often found along steep shorelines, where there is little substrate for plant or animal growth. Bark, because of the steep topography, seldom accumulates in such areas. Areas with a minimum bottom substrate in the euphotic zone are to be preferred.

S7. **Sensitive Habitats:** Log transfer facilities and log raft storage areas should not be sited on or adjacent to extensive tideflats, salt marshes, kelp or eelgrass beds, seaweed harvest areas or shellfish concentration areas.

Discussion: Tideflats, salt marshes, and aquatic vegetation beds support numerous biological communities, i.e., nursery and rearing areas for commercial species of crab and fish. The areas are usually shallow and high producers of planktonic organisms which support the aquatic food chain.

Woody debris from log transfer and water storage can be carried by currents and deposited on these plant and animal communities. Debris may cover the area and physically smother plants and animals. There is a concern that debris accumulation may reduce dissolved oxygen concentration in the water below the minimum level required by fish and other aquatic life. Bark debris is expected to reduce dissolved oxygen concentration in the bark interstices. One study found that the dissolved oxygen, pH, oxidation reduction potential, and concentration of toxic products of decomposition in the water column at 30 centimeters (12 inches) above the bark were not significantly different than at the control sites. Reductions in dissolved oxygen below Water Quality Standards have not been documented.

S8. **Safe Marine Access to Facilities:** Log rafting and storage facilities should be safely accessible to tugboats with log rafts at most tides and on most winter days.

Discussion: Tugboats gather log rafts for transshipment to mills and other loading facilities. The lack of safe access to log rafting areas will result in the tug operator refusing to accept or deliver log rafts.

S9. **Storage and Rafting:** Logs, log bundles, or log rafts should be stored in areas where they will not ground at low tide. A minimum depth of 40 feet or deeper measured at Mean Lower Low Water (MLLW) for log raft storage is preferred.

Discussion: Grounding of logs or log rafts compacts the substrate and decreases biota living in and on the substrate. The siting and design of log transfer facilities should provide sufficient water depth to avoid grounding of log bundles at the transfer facility and at log raft make-up areas.

Log rafting in depths greater than 40 feet (MLLW) is preferred because rooted aquatic macrophytes and algaes generally begin to decrease in density in Southeast Alaska below this depth. Rafting 40+ feet MLLW or more will protect these organisms and habitat (less than 40 feet MLLW) from bark accumulation and shading by log rafts. Log raft storage may occur at depths less than 40 feet (MLLW) depending on biological productivity, sensitivity to shading and potential risk of bark accumulations.

The logging industry retains the need to maintain existing sites which allow log rafts to ground or be stored in areas with low salinity, typically at the head of the bay, and in water less than 40 feet deep. The purpose is to protect logs from shipworm infestation, which can occur immediately after the logs are placed in the water.

Shipworms are an endemic problem because they cause economic loss to timber values, both from the holes they produce in sawtimber, and from the calcium deposits they leave in logs used for pulp purposes. The industry has observed that reductions in shipworms occurs in waters with low salinities and when logs are allowed to ground in cold weather. For this reason, the industry continues to seek the opportunity to have sites where logs will be allowed to ground in order to reduce shipworm damage.

The objective of regulatory agencies is to discontinue the practice of allowing logs to ground or be stored in areas less than 40 feet deep when they are biologically productive or are sensitive habitats.

There is a need for additional research into shipworms and possible ways to reduce infestation in log rafts. Research needs identified by Sedal & Duvall, if accomplished, could reduce the conflicts.

S10. **Bald Eagle Nest Trees:** Site log transfer facilities to avoid bald eagle nests. No project construction or operation should be closer than 330 feet to any bald eagle nest tree unless permitted by U.S. Fish and Wildlife Service. (See the Eagle MOU for details.)

Discussion: The Bald Eagle Protection Act (16 U.S.C.) protects bald and golden eagles. To provide guidance for the management and protection of bald eagles on National Forest Lands in Alaska, a Memorandum of Understanding was signed by the U.S. Forest Service (Region 10) and the U.S. Fish and Wildlife Service (Region 7). The Memorandum of Understanding states that a management zone of 5 chains (330 feet) around each eagle nest tree will be established and that all land use activity within the zone will be excluded. The Memorandum of Understanding includes provisions for variances from the requirement.

Construction and Operation Guidelines

The following guidelines apply to the construction and operation of the log transfer facilities and collateral upland facilities such as sort yards and upland log storage areas. Construction and operation guidelines have not been developed for log raft storage facilities since the only practical means of regulating raft storage is through proper siting. The degree of application of these guidelines to individual LTF's is based on the siting of the facility.

C1. **Log Transfer Facility Design:** Log transfer facility design should be the least environmentally damaging, practicable alternative. Factors to be considered in selection of design alternatives include: 1) economic practicability; 2) facility requirements; 3) physical site constraints; 4) timber volumes to be transferred (site usage and duration); 5) total potential effects on biota and water quality, (including biological productivity and sensitivity; and 6) other potential uses of the site and facility.

> **Discussion:** The preferred LTF design(s) should be those that represent the best practicable alternative and the least impact from placement of fill and associated impacts, such as bark accumulations. For example, emphasis on facility designs that minimize bark loss may result in a greater total coverage of the intertidal and subtidal areas by fill -- due to design requirements -- than would occur under another alternative which allows greater bark loss, but less fill.

C2. **Fill Structures:** Fill structures shall be designed and constructed to prevent erosion, pollution, and structural displacement.

> **Discussion:** The intent is to avoid introducing fine sediments and organic matter into the water. The guideline requires design and construction practices that minimize fine sediment plumes and prevent change in the substrate's composition near the structure as a result of lost fill material.
>
> This guideline is performance-based, by allowing the use of a range of materials within fills provided proper design, construction, and containment procedures are followed. The use of woody debris in fill structures is acceptable with containment.
>
> It is assumed in the guideline that timbers and logs used in construction are not classified as fine organic matter.

C3. **Timing of Inwater Construction:** In-water construction, blasting, and/or filling associated with LTF sites should be timed to limit adverse impacts to marine and estuarine fishery resources and avoid conflicts with other user groups.

> **Discussion:** Juvenile salmonids use shallow, near shore areas for feeding during the first few weeks after they leave freshwater. Construction activities during this outmigration period may cause direct mortality from blasting if the over pressure in the marine waters exceeds 2 psi. Increased water column turbidity related to construction or filling may decrease availability of prey organisms and cause physiological damage to fry during this critical period. Spawning herring are also susceptible to turbidity and effects of blasting.
>
> Generally the period from mid-March to mid-June is the period when in-water turbidity and over pressure restrictions will be needed in order to protect juvenile salmon and spawning herring. The actual times will vary depending on site and the presence or absence of juvenile salmon or spawning herring.
>
> Timing restrictions to avoid conflicts with existing user groups vary and would be evaluated on a site-by-site basis. Facility siting to avoid juvenile salmon nursery areas, herring spawning areas and areas utilized by other user groups will reduce the need for timing restrictions.

C4. **Bark Accumulation Management:** The siting, design, and operation of the LTF and contiguous collateral upland facilities shall utilize the best practicable procedures and methodologies to control intertidal and submarine accumulations of bark.

Discussion: Intertidal and submarine accumulations of bark impact infauna and epifauna primarily through smothering, but also through alteration of natural habitat and water quality. The extent of the impact is limited to the actual area of complete bark coverage. Through proper implementation of best practicable procedures and methodologies, such as siting, design selection, operation, and solid waste management, the level and impact of intertidal and submarine accumulations can be minimized. Selection of best practicable procedures and methodologies to limit intertidal and tidal bark accumulations for a specific site should be used.

C5. **Solid Waste Management:** Solid wastes, including wood and other solid waste generated from the LTF, contiguous and other collateral facilities shall be routinely removed from the log transfer facilities and adjacent facilities and disposed of at an approved upland solid waste disposal site.

Discussion: Disposal of solid wastes, cable, machine parts, and equipment, as well as wastes from logs in the sort yard, truck unloading and log transfer operations should occur in accordance with (18 AAC 60) which requires that solid wastes be properly disposed of at an approved disposal site. In order to prevent accidental introduction of materials into receiving waters, bull rails, or similar constraints to retain bark and wood waste on the upland improvements adjacent to the LTF, should be utilized. Bark and other solid waste should be periodically removed from uplands and intertidal areas around the log transfer system, depending on the site conditions.

C6. **Bark Accumulation:** The regulatory agency(ies) will impose an interim intertidal and submarine threshold bark accumulation level. When accumulations exceed the threshold level, cleanup -- if any -- will occur at the discretion of the permitting agency(ies). The interim threshold bark accumulation level is described as 100 percent coverage exceeding both one acre in size and a thickness greater than 10 cm (3.9 inches) at any point.

Discussion: This guideline is necessary because intertidal and submarine accumulations of bark impact infauna and epifauna primarily through smothering but also through alteration of natural habitat and water quality. The problem with bark occurs when it accumulates. Through siting, transfer system selection, and solid waste management, the amount of bark lost and accumulating in intertidal and submarine areas is prevented to significantly diminished. Bark accumulation is still expected to occur in some areas promoting the need for this guideline. This is an interim guideline developed by the Log Transfer Facility Guideline Committee. The committee developed this procedural guideline in order to be responsive to ongoing research, and at the same time raise site-specific problems to the respective decision-makers for appropriate action.

A interim guideline for threshold bark accumulation levels and cleanup when exceeding those levels is being used due to a lack of information. Technical data is needed to evaluate technical feasibility of various options for managing accumulations, such as removal or other control procedures. Water quality and biological information is needed to evaluate effects on water quality and biota from removal and disposal of bark accumulations and effects of other corrective options that may be used to manage bark accumulations.

C7. **Bundle Speed:** The speed of the log bundles entering receiving waters should be the slowest practicable speed available. Decisions on the allowable transfer system that can be used will occur on a site-specific basis during the permitting process.

Discussion: This guideline is necessary because the amount of bark lost during transfer of log bundles into receiving waters is directly correlated with the speed of log bundles entering receiving waters. These conclusions have been confirmed by an in-progress USFWS study. The loss of

bark into receiving and submarine areas can adversely effect aquatic biota through smothering and alteration of habitat.

The release of bark into receiving waters initiates a regulatory response that bark is a pollutant when discharged into receiving waters. To the extent practicable, its discharge should be eliminated.

This guideline was developed by the Log Transfer Facility Guidelines Committee. The Committee concluded that rather than pursue a uniform speed requirement for all LTF's, the guideline should emphasize the need to meet the slowest speed achievable after taking into consideration costs, existing technology, and logistics, in light of the overall project purposes.

There is insufficient information to agree upon a guideline which defines a practicable speed for various types and sizes of transfer operations. However, based on current information about existing transfer technology, a 3 foot per second entry velocity is an achievable entry speed and will serve as a reference point for discussion.

C8. **Surface Drainage Management:** The design, construction and operation of LTF's, contiguous sort yards and/or log storage yards shall utilize practicable procedures for control of surface water runoff from facilities.

Discussion: The surface water runoff from LTF's and adjacent contiguous sorting/storage areas has been observed to carry sediments, woody debris, and hydrocarbons. These pollutants can directly enter receiving waters. Surface runoff control can be accomplished with a variety of techniques. These include such practices as keeping overland flow from entering the LTF or adjacent facilities, collecting runoff from the facility in settling basins, or retaining vegetative buffer strips. The design, construction, and operation of LTF's, in conjunction with adjacent and contiguous sorting storage areas, will utilize practicable procedures for meeting Water Quality Standards for the State of Alaska and the Clean Water Act.

The Alaska Department of Environmental Conservation may require information on sort and/or storage yards contiguous to the LTF that is not routinely provided on permit applications in order to assist permittees in managing surface runoff so as to comply with Water Quality Standards.

C9. **Control of Hydrocarbons:** The log transfer system and adjacent sort yard handling equipment shall be operated and maintained to minimize petroleum and lubricating products from entering waters.

Discussion: The operation of certain log transfer systems and equipment used in any adjoining log unloading facility or log and sort yard storage facility, are a potential source of hydrocarbons and hydraulic fluids which can spill on the upland facilities and enter receiving waters. This equipment should be maintained and facilities managed to ensure lubricants and hydraulic fluids do not enter receiving waters. Continuous-chain log transfer systems require periodic lubrication and result in unavoidable introduction of hydrocarbons into receiving waters. Lubrication of these systems should use manufacturer's specified lubricants and lubrication should not exceed manufacturer's specifications.

C10. **Onshore Log Storage:** Where feasible, preference must be given to onshore storage and barging of logs.

Discussion: 11 AAC 95.150 of the Alaska State Forest Resources and Practices Regulations specifies preference to onshore storage and barging of logs where feasible.

C11. **Facility Maintenance and Reclamation:** The permittee shall maintain the structure or work authorized in good condition and in reasonable accordance with the approved plans and drawings. If and when the permittee desires to abandon the authorized activity herein, unless such abandonment is

part of the transfer procedure by which the permittee is transferring its interests to a third party, the permittee must restore the area to a satisfactory condition.

Discussion: The authorizations from the Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act include the general conditions (h) requirements to maintain authorized work and (g) upon abandonment restoration of the area to a satisfactory condition. This guideline repeats those general conditions.

Monitoring and Reporting Guidelines

LTF's are monitored to assure permit compliance. Monitoring results are used to assess activities associated with the construction, operation, and maintenance of the facilities, and to ensure that corrective action occurs, if appropriate. The level and type of monitoring are dependent on the type of facility.

M1. **Monitoring by Permittee:** Monitoring for bark accumulations, oil sheen, and surface runoff associated with the construction, operation, and maintenance of facilities, and to ensure that corrective action occurs, if appropriate. The level and type of monitoring is dependent on the type of facility (see use definitions in the Glossary).

Discussion: The regulatory agencies when issuing permits can include conditions to a permit which require monitoring by the permittee. The agencies can assume some or all monitoring responsibilities.

M2. **Monitoring Requirements:** Monitoring should be undertaken at all continuous and intermittent use LTF sites, and at those occasional and incidental use LTF's at which total volume of logs transferred is similar to that of intermittent use sites. The level of monitoring and parameters to be monitored should be determined on a site-specific basis. Monitoring at occasional and incidental use facilities may be required on a site-specific basis. The need for monitoring of occasional or incidental use sites will be limited. Permittees will be required to submit a monitoring program to the permitting agencies prior to operation of a new continuous or intermittent use LTF. Agency approval of monitoring plans is required. Requirements for monitoring should be responsive to data obtained during prior monitoring activities.

Discussion: Monitoring is required to determine the occurrence and the extent of possible environmental impacts. The nature of monitoring activities shall be site-specific and determined by such factors as volume, site characteristics, life of project, and type of operation, since these factors may determine the extent of environmental impacts. Depending upon monitoring results, permitting agencies have sufficient flexibility to modify monitoring requirements for any LTF at any time during its operation, or after the first three years of operation of a continuous LTF. For example, monitoring requirements for a continuous LTF could be dropped if monitoring data indicates that significant deposits of bark debris are not accumulating. Permitting agencies approval is needed to determine if a monitoring plan will satisfy permit conditions.

M3. **Annual Monitoring for Bark Accumulation:** At continuous and intermittent use LTF's, monitoring of bark debris accumulation should occur prior to the operating season as a minimum requirement. Monitoring at intermittent LTF's would occur only during periods when the LTF is active.

Discussion: In order to determine if the bark accumulation conditions and stipulations of the permit are being met, it is necessary to measure bark and debris accumulations.

M4. **Elements of Bark Accumulation Monitoring Program:** Elements that should be included in a monitoring program for continuous and intermittent use LTF's, are site-specific and may include, but not be limited to:

a. permanent transects
b. measurement of areal extent, thickness and percent coverage of bark debris,

c. measurements required by M4, a and b are from MHW (Mean High Water) to depths of 60 feet MLLW (Mean Lower Low Water).

Discussion: In order to determine changes in site characteristics over time, installation of permanent transects is required. Thickness, area, and extent of bark coverage affects benthos. Sixty feet below MLLW was selected because it is a depth at which repeated dives can safely be conducted.

Permanent transects are necessary to enable collection of repetitive data. If little or no change is observed, the permit holder may be relieved of the requirement for collecting information along the transects.

The requirement for dive transects, the number of transects, and the method of establishing permanence of the transects will be related to the period of usage, the amount of use intended, the resource values involved, and the expectations of effects as a result of the siting process.

M5. **Monitoring for Oil Sheen:** Waters in the vicinity of an LTF shall be monitored during operations for the presence of a visible sheen and recorded when observed.

Discussion: The monitoring is necessary to determine if an LTF is being operated to comply with water quality standards for petroleum hydrocarbons, oils, and grease. Authority for this guideline is provided by State Water Quality Standards (18 AAC 70), Oil Pollution Regulations (18 AAC 75), and Federal Regulations (40 CFR 110).

M6. **Monitoring Upland Discharges:** On a case-by-case basis, discharges of rainfall from log sorting and storage yard, and discharges from any settling pond used to treat water, may require monitoring to ensure compliance with State Water Quality Standards and the Clean Water Act.

Discussion: This monitoring is necessary to determine if measures or structures designed to concentrate and treat runoff are operating effectively.

M7. **Reporting Guidelines:** Routine annual reports include the following descriptive information:

a. Location of the LTF (404/402 permits require latitude and longitude). Forest Service traditionally uses legal descriptions.
b. Description of the LTF, including transfer devices and sorting and storage areas.
c. Permit holder and/or operator of LTF.
d. Starting and ending dates of operating season (from first to last bundle), and number of operating days per season.
e. Gross volume in board feet (Scribner Scale) or number of bundles transferred during the operating season.
f. Monitoring data as described in Monitoring Guidelines.

Glossary

Biological Productivity

Highly diverse biological communities with many individuals.

Clean fill

Clean fill is defined as inorganic material, sized as sand and larger, free of organics. Current practice is to allow 0 to 15 percent material finer than sand and no organic materials in reinforced earth structures used for log transfer. Field observations indicate that the percentage of material is finer than sand from rock pits used for fill is considerably lower than the maximum percentage of fine material.

Log raft make-up area

A facility constructed in waters of the United States near or adjacent to log transfer facilities. The log raft make-up area is utilized for constructing log rafts which on completion are moved to either a log storage area or loaded on to a vessel.

Log raft storage facility

A facility constructed in the waters of the United States utilized for the purpose of temporary or long-term storage of commercially harvested logs awaiting transfer to a vessel, manufacturing facility, or storage at the manufacturing facility.

Log transfer facility

A facility constructed, in whole or part, in waters of the United States which is utilized for the purpose of transferring commercially harvested logs to or from a vessel or log raft.

Practicable

Means available and capable of being done after taking into consideration costs, existing technology, and logistics in light of overall project purposes (40 CFR 230.3 (q)).

Use Descriptions

There are four classifications to describe the range of use for log transfer operations. The intensity and duration of site use will vary over time and the descriptions for each use provide a benchmark description to relate to operating levels and characteristics. There is a trend away from long-term continuous sites with increased incidence of intermittent and occasional use sites.

Continuous use sites: Sites where use is expected to be continuous on a regular basis for 20 years or longer. These sites were described and analyzed by Sedlak (3-16) in his analysis of alternative log transportation systems. Volume of expected timber is approximately 20 to 50 MMBF per year. Industry practice is to try to operate at a minimum of 35 MMBF activity level if a year-round camp is to be maintained. Log sorting and scaling commonly occurs at these sites. Export shipping is expected for privately owned timber. This operation is described as having "two sides" (two full yarding and support systems) with year-round land-based camp operations normal. Sites originally developed and operated as continuous use will frequently change to intermittent use or occasional use sites subsequent to the initial harvest activities.

Incidental use sites: Sites where use for log transfer is expected to occur only once or twice over a 70-100 year period. Typically the focus is on salvage of logs as the result of blowdown, disease, or harvest of isolated stands of timber. The lands involved are generally not accessible by alternative means. Timber volumes at a site will normally not exceed 5-10 MMBF. Log sorting areas are normally not constructed and native log structures are expected. Floating camp operations are expected.

Intermittent use sites: Sites where use is expected to vary from zero to approximately 11-17 MMBF per year. This operation can be described as having a "single side" (one full yarding operation and supporting system). These sites were described and analyzed by Sedlak (3-17) in his analysis of alternative log transportation systems. Typically these sites will vary in use in a pattern of 4 MMBF for the first year, 11-17 MMBF for three years, 4 MMBF for one year, and 6-15 years with no log transfer (3-17). Timber volumes from intermittent use would be at the average annual rate of 3-5 MMBF per year over 20-50 years. Timber salvage operations may occur in the periods between major operations. Sort yards are not normally constructed if water storage sites are available.

Year-round camp operation is generally not expected. Land-based camps have been common in the past, but increased use of floating camps has been observed at these sites.

Occasional use sites: Sites where intensive log transfer is expected to occur for only 4-6 years out of a 20-30 year period. These sites have not been analyzed in the literature. The use pattern is expected to be cyclical through the life of the site. Timber volumes from major timber activities would be at the average annual rate of about 1/2 MMBF/year over 20-50 years. Small timber operations will occur during the periods when major sale activities do not occur. Sorting yards are constructed only if no other options are available. Direct shipping of export logs is not expected.

Floating camp operations are the expected normal situation unless commuting of workers from an established camp is feasible.

Appendix H

Tongass National Forest Cooperative Fisheries Planning Status Report

(ANILCA (P.L. 96-487) Sec. 507-B)

Preface

Public Law 96-487, December 2, 1980, the Alaska National Interest Lands Conservation Act (ANILCA), recognizes the importance of Southeast Alaska's fishery and the importance of fish habitat on the Tongass National Forest by giving the Secretary of Agriculture direction for planning of fisheries enhancement. Sections 507 (a) and (b) state:

> (a) The Secretary of Agriculture is directed to implement a cooperative planning process for the enhancement of fisheries resources through fish hatchery and aquaculture facilities and activities in the Tongass National Forest. Participation in this process shall include but not be limited to the State of Alaska and appropriate nonprofit aquaculture corporations. The Secretary may contract with private, nonprofit associations for services in such planning.
>
> (b) Each subsequent revision of National Forest management plans under the Forest and Rangeland Renewable Resources Planning Act shall contain a report on the status of the planning process undertaken under this paragraph, including, but not limited to, a description of current hatchery and aquaculture projects, an analysis of the success of these projects, and a prioritized list of projects anticipated for the duration of the management plan. The report shall be submitted by the Secretary to the Congress with recommendations for any legislative action which the Secretary may deem necessary to implement the proposed hatchery and aquaculture projects.

The following review is presented to meet the requirement of ANILCA Section 507b.

Introduction

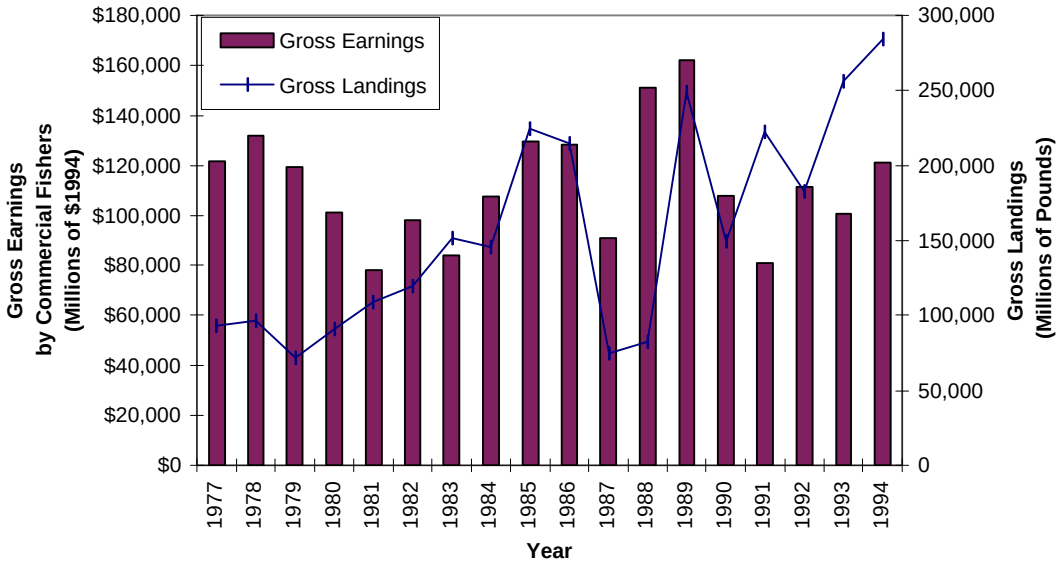
From a global perspective, there is no place on Earth that produces the number and diversity of salmon as does Southeast Alaska. Salmon are valuable social, cultural, and economic resources. Salmon fishing and processing is the number one private industry employer in Southeast Alaska. Numerous species and discrete spawning populations (stocks) of Pacific salmon, steelhead trout, and anadromous cutthroat trout exist on the Tongass National Forest. Recent research indicates that genetic diversity of cutthroat trout in Southeast Alaska is very high.

Fishing in Southeast Alaska is classified into the three major categories of subsistence fishing, sportfishing, and commercial fishing. From salmon produced in Southeast Alaska, the annual commercial salmon harvest (1977-1994) averages over 173 million pounds with earnings of over $112 million (1994 $'s). The harvesting and processing of salmon provides over 5,000 direct jobs, or the equivalent hours of 3,500 full-time jobs (year round positions) in Southeast Alaska. In 1994, over 227 million pounds of salmon were harvested worth over $96 million in Southeast Alaska (Figure 1).

In 1994, 2,337 limited entry permits were fished (Figure 2). These permits are issued to individuals, but represent small businesses employing up to 10 people each. The average value of limited entry permits have increased by a factor of 3.5 since 1977. For some salmon fisheries the value of a permit has increased by a factor of 6 since 1977.

Harvests of salmon have been at record or near record levels in Southeast Alaska for the past few years. These increases are thought to be primarily associated more with favorable oceanic conditions rather than any change in freshwater habitats. Since the early 1980's oceanic productivity for salmon has improved due to a number of factors. For instance, coho salmon smolt (juvenile salmon migrating to the sea) to adult (salmon returning from the sea) survival long-term average is about 5 percent. Recent coho smolt to adult survival has approached 30 percent in some Southeast Alaska locations due to more favorable ocean conditions. Increases in hatchery-produced salmon have contributed to the recent increased commercial harvest. For example, up to 50 percent of the commercial chum salmon harvest in SE Alaska is from hatchery production.

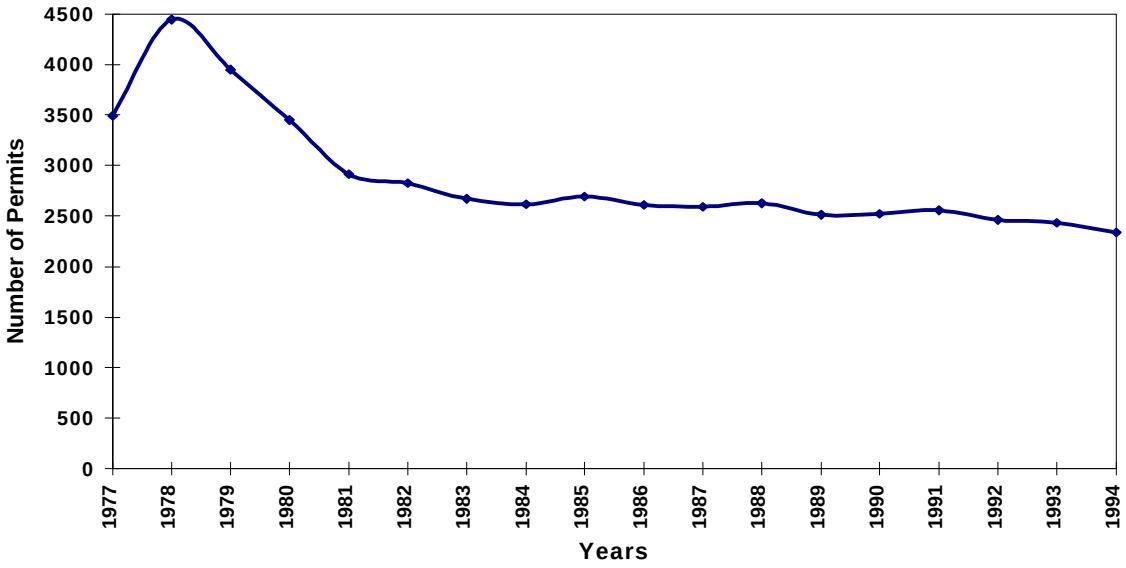
Figure 1.
Commercial Harvest and Value of Salmon Produced from Southeast Alaska (1977-1994)



The sportfishing industry also has significant economic and employment effects on Southeast Alaska. Healthy salmon habitats and large returns of adult salmon are vital to the growing recreational fisheries in Southeast Alaska. For 1984-1993, the number of anglers fishing has increased 62 percent while the number of Fish User Days (FUD's) on the Tongass National Forest have increased 44 percent. One FUD is equivalent to 12 hours of fishing.

FUD's on the Tongass National Forest totaled about 116,000 in 1991, 125,700 in 1992, 122,600 in 1993 and 146,515 in 1994 - a record year for coho. Based on a 1991 economic analysis (using 1988 data), anglers in the region spent an average of $433 (1994 $'s) per FUD fishing for salmon, or over $50 million in 1991, $54 million in 1992, $53 million in 1993, and $62 million in 1994. These dollar figures represent both resident and non-resident expenditures made in Southeast Alaska for fishing activities. Travel costs to Southeast Alaska are not included in this analysis.

Figure 2.
Limited Entry Salmon Permits Fished in Southeast Alaska (1977-1994)



Saltwater charter fishing service providers are one of the fastest growing business sectors in Southeast Alaska. The total number of charter registrations increased 20 percent from 1993 to 1994 (607 in 1993; 727 in 1994). About 88 percent of registered charter boat owners are Alaska residents, while nonresidents comprise about 12 percent. Charter fishing service providers are based throughout Southeast Alaska communities. Distribution of charter registrations (Table 1) indicates the importance of these businesses to the economy of the region.

Table 1.
Registered Charter Operators by Southeast Alaska Communities (1994)

Community	Charter Registrations	Community	Charter Registrations
Ketchikan	141	Angoon	23
Prince of Wales	90	Hoonah	12
Yes Bay	21	Pelican	5
Petersburg	34	Tenakee Springs	4
Wrangell	35	Juneau	103
Sitka	160	Haines	11
Elfin Cove	19	Skagway	4
Glacier Bay	3	Yakutat	15
Gustavus	21		

Freshwater fishing guide registrations under permit by the Forest Service (1992=130; 1993=146; 1994=136) indicate yet an additional business enterprise dependent on fishery resources of the region, especially wild stocks on the Tongass National Forest. About 90 percent of the registered freshwater fishing guides are Alaska residents.

The subsistence harvest of salmon is estimated to be in excess of 1.2 million pounds annually. Harvesting salmon in traditional areas is important for sustaining the Tlingit, Haida, and Tsimshian cultures and is an important part of the customary and traditional lifestyle of many Alaska residents. In accordance with ANILCA, the Federal government assumed management responsibility for wildlife and inland fish subsistence management on Federal public lands in Alaska on July 1, 1990. The subsistence program is directed by the Federal Subsistence Board (U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, Bureau of Indian Affairs, the U.S. Department of Agriculture - Forest Service, and a Chair appointed by the Secretary on Interior) in Alaska. The Alaska Regional Forester represents the Department of Agriculture. The U.S. Fish and Wildlife Service (Department of the Interior) has the lead agency responsibility.

The Secretary of the Interior and the Secretary of Agriculture are supportive of the State reassuming authority for subsistence management on Federal lands in Alaska. The federal agencies have been cooperating with the State in attempting to formulate a consensus solution to the current dilemma of dual management of fish and wildlife in Alaska.

The U.S. Supreme Court on May 13, 1996 denied certiorari review of the Ninth Circuit Court's ruling on "Katie John", a landmark decision concerning federal management of subsistence fishing in Alaska. Because of the Supreme Court's decision, the Ninth Circuit's ruling stands and federal management of subsistence hunting and fishing on federal public lands in Alaska will be expanded to apply to waters where the United States has reserved water rights.

An Advanced Notice of Proposed Rulemaking that identifies waters subject to subsistence priority and expansion of Federal Subsistence jurisdiction was published in the Federal Register on April 4, 1996. The proposed rule would:

1. Extend Federal Subsistence management to all selected but not yet conveyed lands within the boundaries of Conservation System Units, National Recreation Areas, National Conservation Areas, or any new national forest or forest addition, until conveyed to the State of Alaska or an Alaska Native Corporation, as required by ANILCA, and

2. Would also, when necessary, delegate to the Federal Subsistence Board the authority to regulate hunting, fishing, or trapping activities taking place off Federal public lands in Alaska if they interfere with subsistence activities on Federal public lands to such an extent as to result in a failure to provide the subsistence priority on public lands.

The FY 1997 Federal Appropriations Act for Interior and Related Agencies includes language that prevents any final rulemaking for expanded federal subsistence authority.

Planning Process Status

A cooperative planning process for fish enhancement activities has been in place since 1984. In 1993 the procedure for planning cooperative enhancement on the Tongass National Forest was updated, documented and approved by the Forest Service, the Alaska Department of Fish and Game, the Northern Southeast Regional Aquaculture Association, and the Southern Southeast Regional Aquaculture Association. The agreement identifies the process to be used by the cooperating agencies and organizations in their fisheries enhancement planning efforts. (A copy of the agreement is appended to this report.)

Hatchery Program Summary

During the past 15 years, State-owned and private nonprofit (PNP) hatcheries have contributed significantly to salmon enhancement in Southeast Alaska. There are currently 19 hatcheries in operation in Southeast Alaska (Table 2). One hatchery is owned and operated by the Alaska Department of Fish and Game (ADF&G). Four hatcheries are owned by ADF&G and operated by PNP's. One hatchery is owned by the

City of Ketchikan and operated by the PNP Ketchikan Indian Corporation. The remaining thirteen hatcheries are owned and operated by PNP's. The Alaska Department of Fish and Game has regulatory authority over all hatcheries.

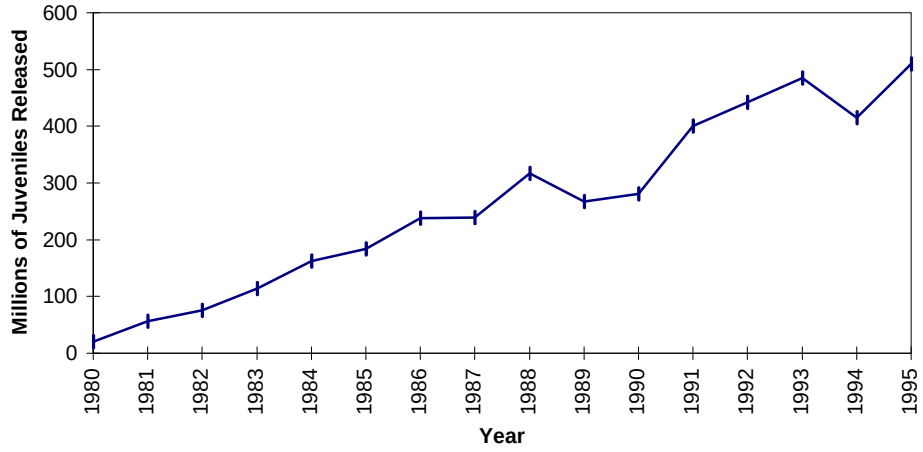
Table 2.
Number of Hatcheries in Southeast Alaska

Operator	1980	1989	1995
Alaska Dept. of Fish & Game	6	5	1
Private NonProfit Associations	6	14	18
Total	**12**	**19**	**19**

All of the hatcheries are managed to enhance and sustain Alaskan fisheries through the development and application of technologies in supplemental production and natural stock rehabilitation. The purpose of these hatcheries is, by State law, to make fish available to all users as part of the common property fishery. State law allows private nonprofit hatcheries to harvest a portion of hatchery returns to cover costs of operations.

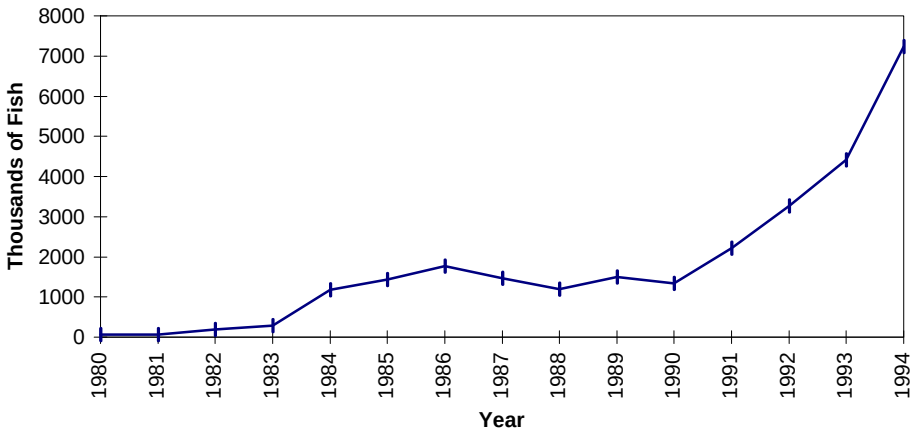
Hatchery juvenile salmon releases have increased significantly since 1980 (Figure 3). Releases in 1980 totaled approximately 20 million juvenile salmon. In 1995 over 510 million juveniles were released to contribute, as adults, to the common property fishery. This increase represents a 25-fold increase over 15 years.

Figure 3.
Total number (in millions) of juvenile salmon released from State and private nonprofit hatcheries from 1980 through 1995.



From 1980 through 1994 the increase of juvenile salmonids released resulted in an approximate 125-fold increase in the number of hatchery planted salmon which were commercially harvested. Commercial harvest of hatchery planted salmon increased from a 1980 low of 57,000 fish to a 1994 high of 7,243,500 fish (Figure 4). Harvest numbers may fluctuate among years because of variables such as numbers of juvenile salmon released, high seas interception from foreign fishing fleets, and biological factors affecting ocean survival rates.

Figure 4.
Annual commercial harvest of hatchery stocked salmon (1980-1994)



Many of the Forest Service cooperative habitat enhancement projects depend on the planting of juvenile salmon to seed new or rehabilitated habitats to ensure the earliest possible establishment of runs of adult salmon. Salmon eggs from wild systems are incubated in hatcheries and the resulting juveniles are transplanted back into wild systems. Without these stockings (i.e., bioenhancement) strong returns of adult salmon would be delayed for several life cycles, resulting in significant reduction in total production during the life of the project. The Commercial Fisheries Management and Development Division of ADF&G has been the lead agency responsible for bioenhancement projects on the Tongass National Forest, in close cooperation with the Forest Service.

While some may feel the potential effects of disease, genetic introgression with wild stocks, harvest interactions with nearby wild stocks, and overproduction of some species can be detrimental to the long-term sustainability of wild salmon production, the State of Alaska has strict protocols and regulations governing the siting and operation of hatcheries, including genetic evaluation of stocks, fish health at facilities, and pre-release screening.

Aquaculture (Fish Habitat Enhancement) Program

Tongass National Forest Cooperative Habitat Enhancement Activities

During the last 15 years increased emphasis has been placed on the enhancement of freshwater fish habitats on the Tongass National Forest. From 1980 to 1995 the USDA Forest Service invested approximately $8 million (direct project costs, does not include planning, overhead, monitoring and maintenance) in the fisheries enhancement program resulting in 176 fisheries habitat enhancement projects on the Tongass National Forest (Table 3). An additional $3.9 million was contributed by cooperators and partners in the enhancement program. At full potential production these projects are expected to contribute 17.7 million pounds of salmon annually to the harvest in Southeast Alaska. The annual value of this potential harvest is estimated to be $10,674,000. Return on investment averages about 6:1 for the overall fish habitat enhancement program on the Tongass.

The majority of the fish habitat enhancement projects implemented on the Tongass National Forest are cooperative projects involving multiple agencies and organizations. The costs of the projects are shared in a variety of ways which vary project by project depending on budget levels and priorities, availability of personnel and equipment, fish brood stock availability at hatcheries, and proximity of other projects to the proposed project location. Coordination and commitment is necessary at all levels of all agencies and organizations participating in the projects to ensure success of the projects and contribute to the continued production and health of the salmon stocks in Southeast Alaska.

Monitoring

The anticipated salmon production from fish habitat enhancement projects on the Tongass National Forest is calculated based on site-specific habitat conditions and an analysis of limiting factors for salmon production. The test for these calculated habitat production estimates consists of monitoring conducted on individual projects and the subsequent feedback of the monitoring results into the project planning process.

Table 3.
Tongass National Forest Cooperative Fisheries Enhancement Projects Completed During 1980-95

Enhancement Activity	Number of Projects	Estimated Production of Fish (M Lbs./year)	Estimated Commercial Value (M $/year)	Cost Federal (M $)	Cost Partners (M $)
Fishways	42	6,749.1	2,896.1	4,403.3	210.3
Falls Modification	13	166.9	126.3	167.4	4.0
Spawning Channels	9	450.5	238.6	374.0	111.5
Debris Removal	10	76.0	46.4	19.0	0.0
Lake Fertilization	9	7,306.6	5,605.1	1,456.2	1,938.0
Lake Stocking	8	1,242.0	757.6	521.1	1,170.3
Stream Stocking	22	519.1	368.1	168.6	236.6
Rearing Ponds	18	17.1	10.6	87.6	1.7
Incubation Boxes	5	1,091.9	572.7	67.0	131.2
LWD Management	28	83.6	52.8	633.6	30.0
Fish Weir	12	NA	NA	21.0	120.0
TOTAL	**176**	**17,702.2**	**10,674.3**	**7,918.8**	**3,953.6**

Notes: Project totals represent the number of activities completed at different locations. Repetitive annual investments at the same site (that is, fertilizer applied to each lake annually) are not shown, although the costs of the repetitive treatments have been included in the cost totals.

Estimated production of fish is based on full utilization of habitat capability. The time it will take to reach full production varies with the species, application of bioenhancement techniques and fisheries management strategies regulating the fish stocks returning to the projects. Total production is calculated to represent the fish available for subsistence, sport and commercial harvest.

Values displayed are minimum estimates of the value of the fish produced by enhancement activities. The dollar value of any given fish is generally greater when harvested in a sport or subsistence fishery than when harvested in a commercial fishery. Value per pound of fish is the average price paid to the commercial fisher over a 15 year period, expressed in 1991 dollars. Subsistence and Sport values are not shown.

Costs shown in the table are direct project costs (i.e., construction) and do not include indirect costs such as program planning.

The cost column for partners includes the combined investments of the Alaska Department of Fish and Game and Regional Aquaculture Associations. Individual cooperative investment information for the majority of the projects involving these organizations were not available.

Monitoring fish production performance of enhanced fish habitat has occurred for each type of habitat enhancement activity. Generally, most projects that are included in the activities listed in Table 3 receive a qualitative level of monitoring to ensure that the project is operating as designed. Additional monitoring is conducted on fishway, lake fertilization and stocking projects to more accurately determine fish production. A few representative projects are quantitatively monitored to test the production estimates used during the planning and design phases of project development. This monitoring generally requires the greatest investment in time and dollars and usually involves intensive enumeration and tagging of immature salmon. Most fisheries managers believe a greater emphasis should be placed on intensive types of monitoring, to more accurately determine the actual contribution that each type of enhancement activity makes to the total harvest.

Tongass National Forest Enhancement Activity

Small Instream Structures (large woody debris (LWD), gabions, etc.)

Small structures are sometimes constructed in stream channels to improve rearing habitat for salmon. Juvenile coho, chinook and sockeye salmon and steelhead trout usually require 1-4 years of rearing in freshwater before migrating to saltwater where they mature. Instream structures, often constructed of logs or rock, provide cover to protect fish from predators, increase water depth during summer and winter low flow periods, and shelter from high stream flows. This helps salmon and steelhead fry and parr to survive better and increase the numbers of juveniles migrating to the ocean.

Although individual structures can be low in cost, large numbers of structures may be needed to significantly change the habitat. Structures have a design life ranging from 5 to 25 years; the benefit/cost ratios range from 2:1 to 10:1.

Fishways

Fishway structures are constructed at stream barriers to allow salmon and trout passage to upstream spawning and rearing habitat. There have been more fishways constructed than any other type of project. Barriers can be partial, with some adult salmonids passing during specific water flows, or the barriers may be total, blocking salmon migration at all water flows. The exact number of barriers on streams throughout the Tongass National Forest is unknown. However, fisheries habitat managers believe there could be more than a thousand unidentified barriers on streams on the Tongass National Forest. As barriers are identified, analyses are conducted on a site-specific basis to determine feasibility and cost effectiveness of fishway construction and any potential negative effects to fish already resident in the stream. Many barriers have been identified on streams that have too little available habitat upstream to justify investment in a fishway structure.

The fishway construction program has been very successful. Most fishways built since 1980 have survived high flow periods and pass fish as designed. (Some fishways have required modifications following initial construction to ensure fish passage.) Periodic maintenance is required to remove debris from the ladders and jump pools. Most fishways are constructed with an average design life of 25 years. Fishways are generally expensive to construct but can have benefit/cost ratios as high as 13:1 when favorable salmon and steelhead trout spawning and rearing habitats exist above the barrier.

Bioenhancement is sometimes associated with fishway construction. Salmon eggs taken from below the barrier or from nearby streams are incubated in hatcheries, with the resulting juvenile fish released in the stream and or lake habitat above the newly constructed fishway. Bioenhancement ensures earlier establishment of runs of adult spawners.

Barrier Modification

Falls modification is the means by which either a partial or total barrier to salmon migration is altered to enhance fish passage. This is usually accomplished by creating small pools in the falls or high velocity chutes. These pools are either created in the natural bedrock or may be created by the construction of low concrete walls. Monitoring of salmon passage under various flow conditions is often needed to determine if the falls modification has been successful or if further modification is needed.

Barrier modification projects have a high rate of success and are moderate in cost. Benefit/cost ratios have been as high as 12:1. Bioenhancement is sometimes required to ensure early establishment of runs of adult spawners.

Spawning Channels

Spawning channels are constructed to provide stable spawning and rearing habitat for salmon. The most common strategy employed in Southeast Alaska is the excavation of a channel adjacent to a stream such that the channel provides fish access to the main stream. Intercepted ground water, in areas of upwelling, provides flowing water for the constructed spawning channels. Spawning channels can be low cost projects with benefit/cost ratios as high as 8:1.

Spawning channels may receive bioenhancement in the form of adult salmon transfers into the channel. Blocking the spawning channel connection to the mainstream usually results in the transferred salmon spawning in the channel.

Spawning channel construction is a relatively new salmon enhancement technique on the Tongass National Forest. Early results indicate that spawning channels can be a very cost effective method to produce salmon in Southeast Alaska. The major limitation to the construction of spawning channels is the need for ground water interception.

Rearing Ponds/Off-channel Rearing

Rearing ponds can provide increased quantity and often quality of rearing habitat for juvenile salmon over natural stream systems. Ponds are constructed near a stream system and connected to the stream by ditches or channels. Juvenile salmon rearing in the stream move into the more favorable pond habitat.

Costs of rearing-pond construction varies considerably. Some ponds are constructed during road gravel excavation projects, while other ponds are constructed solely for the purpose of rearing salmon. Rearing-ponds are moderate in cost with an average benefit/cost ratio of 4:1.

Rearing ponds appear to be a cost effective means of successfully increasing the size and number of juvenile coho salmon produced. Rearing-ponds require continued monitoring with more emphases placed on quantitative monitoring techniques to more accurately determine the contribution of pond reared salmon to the common property fishery.

Barren Lake Stocking

An exception to the establishment of self-perpetuating wild runs of salmon by bioenhancement has been the practice of "barren" lake stocking. Barren lake stocking consists of planting immature salmon in lakes that do not have natural runs of salmon because of barriers. The stocked juvenile salmon rear in the lakes until emigrating to saltwater where they mature. Total harvest of these salmon is targeted since natural reproduction is not possible. Generally the barriers do not prevent the outmigration of salmon smolts. Survival of juvenile salmon in lakes can be as high as 65 percent or as low as 1 percent depending on the lake, species released in the lake, and disease associated with the species and the lake.

Cooperative Fish Stocking

Stocking of lakes and streams has been accomplished generally for the purpose of bioenhancement of other enhancement projects. As previously discussed, bioenhancement seeds new habitat with young salmon with the objective of establishing self-perpetuating wild runs of salmon.

Incubation Boxes

Incubation boxes are used in remote locations to incubate Chum salmon eggs. These devices are similar to incubation systems used in fish hatcheries but operate with little maintenance. Unlike incubation systems in hatcheries, salmon fry swim out of the boxes and into a stream or lake ecosystem. Use of incubation boxes increases the survival of eggs to fry over survival commonly observed in stream gravels.

Incubation boxes can be moderately expensive projects. However, survival of salmon eggs to fry is about 70 percent and maximum production has been measured at 98 percent. Benefit/cost ratios can be as high as 20:1.

Lake Fertilization

Some lakes exhibiting low levels of fertility and high potential for salmon production are enriched using commercial fertilizers. The objective of lake fertilization is to enhance primary food production and to increase the size and survival of salmon fry. By enriching the nutrient level of these lakes there is a measurable increase in the number and/or size of outmigrating juvenile salmon, resulting in increased numbers of adult salmon available for harvest. Some lakes become self fertilizing with large increases in adult escapement, where returning adults bring nutrients from the sea. Lake fertilization is a relatively expensive enhancement technique requiring detailed pre- and post-fertilization monitoring. However, large increases in salmon production are often realized. Benefit/cost ratios can be as high as 4:1. Bioenhancement (stocking of salmon fry) is often conducted in association with lake fertilization.

Debris Removal

Debris removal is a habitat enhancement technique utilized extensively during the 1970's on the Tongass National Forest. Natural debris deposited in stream channels was thought to create barriers to upstream migration of adult salmon and to reduce available spawning habitat. Extensive stream cleaning was conducted to remove the debris. Unfortunately, debris removal was conducted in excess and much beneficial large woody debris (structure) was removed from some stream channels. This work was well intentioned and considered to have positive benefits for pink and chum salmon, the young of which leave the stream ecosystem immediately upon emerging from the gravel substrate. Salmon species requiring instream rearing habitat during the early portion of their life cycles probably declined in numbers as a result of debris removal practices. Studies have recently shown that large woody debris adds diversity to stream ecosystems and in most instances is beneficial to the production of salmon in those systems. Debris removal projects are currently conducted under the careful supervision of fisheries managers.

Debris removal is labor intensive and generally exhibits a low benefit/cost ratio. Some notable exceptions do exist in which very high benefits resulted from debris removal. In two instances, accumulations of debris at the outlets of lakes blocked migration into the lake and the associated habitat in the streams above the lake. Removal of the blockage resulted in large numbers of salmon reaching the high quality habitat in the lake and further up the watershed. Benefit/cost ratios, in these exceptions, are calculated to be as high as 100:1.

Weir / Stock Assessment

This activity evaluates the success of previously completed projects by establishing the common property harvest of fish produced by completed projects. In addition this activity can support fisheries subsistence management and develop trend information of escapement and production of indicator streams.

Riparian Rehabilitation

This is a relatively new technique that has been used over the past two years. Benefit to cost ratios have not been calculated for this activity. The overall objective of this work is to accelerate the return of logged riparian zones to preharvest conditions. Most of the current emphasis has been to accelerate growth of large conifers for future sources of large woody debris. Care is being taken to maintain a species mix to include deciduous trees mostly next to the stream bank. Most work involves thinning alder to release conifers. Some future work may include microsite development, planting of conifers, and road treatments.

Future Fisheries Habitat Enhancement Opportunities

There are 158 potential projects identified for implementation during the next ten years on the Tongass National Forest (Table 4). Most of the potential projects have not been through environmental analyses nor on-site review required to determine project feasibility. Total costs, including project planning and implementation, maintenance and monitoring of these projects, are estimated to be $30.7 million.

Table 4.
Number of Potential Enhancement Projects by Type

Project Type	Ketchikan Area single yr/multi yr	Stikine Area single yr/multi yr	Chatham Area single yr/multi yr	Total
Small Instream Structures	7 / 4	5 / 0	10 / 5	31
Fishways	5 / 0	11 / 0	8 / 2	26
Barrier Modification	5 / 2	2 / 1	4 / 0	14
Spawning Channels	1 / 0	0 / 0	1 / 0	2
Rearing Ponds/off channel rearing	0 / 0	0 / 0	3 / 0	3
Barren Lake Stocking	0 / 3	1 / 0	0 / 1	5
Cooperative Fish Stocking	1 / 3	0 / 3	1 / 3	11
Incubation Boxes	0	0 / 2	2 / 1	5
Lake Fertilization	0 / 2	0 / 0	0 / 3	5
Debris Removal	0	0	0	0
Weir/stock assessment	0 / 2	0 / 6	7 / 2	17
Riparian Rehabilitation	4 / 6	4 / 1	22 / 2	39
Total Projects	**45**	**36**	**77**	**158**

Notes: Multi-year projects are usually implemented in successive years but only counted as one activity. Fertilization of a particular lake is an example of a single project which may be repeated for several years in order to achieve the desired objective of restoring a natural run of salmon to the lake.

The majority of the small instream structural projects, including projects such as large woody debris and gabion placement, mitigate past logging activities. These projects may be considered as rehabilitation rather than enhancement.

All projects which are determined to be feasible following environmental analysis and on-site review may be scheduled for implementation. Priorities for project completion are coordinated through the cooperative salmon enhancement planning process (see appendix to this report). The final implementation schedule will be dependent upon a variety of factors including budget availability, cost/benefit ratios and partnership opportunities. An additional factor for consideration is the timing and location of other forest management activities. Some activities, such as road construction for timber harvest purposes, are important for the successful implementation of some fisheries projects.

Implementation of all potential fisheries enhancement projects on the Tongass during the next decade is estimated to total 864.7 million pounds of salmon through the first five decades. Fish would be available to subsistence, sport and commercial harvesters. The aggregated value of this harvest is projected to be $661.1 million during this same period.

Recommendations for Legislative Action

Current laws and regulations adequately provide for the program summarized in this report. Appropriations for the anadromous fish program on the Tongass should be funded at $5 million per year to complete the potential fish projects and to monitor, maintain and evaluate completed projects.

TONGASS NATIONAL FOREST

COOPERATIVE FISHERIES ENHANCEMENT

PLANNING PROCESS

1993 Revision

Tongass National Forest Cooperative Fisheries Enhancement Planning Process

I. Introduction

Tongass National Forest Cooperative Fisheries Enhancement Planning is a process designed to effectively and efficiently coordinate fish enhancement activities and goals between interested groups in Southeast Alaska. The process describes how the Forest Service, Alaska Department of Fish and Game (ADF&G), and Southeast Alaska Regional Aquaculture Associations cooperate in the planning, funding, and implementation of fisheries rehabilitation and enhancement projects. Not only does the process address activities on the Tongass National Forest, but it also should facilitate the development of fisheries opportunities in watersheds with other land managers and owners.

The foundation for Cooperative Planning is in both Federal and State law. The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 (Public Law 96-487) and Alaska Statutes 16.10.375 and 16.10.380 require coordination between public and private sectors (see glossary for definitions.) However, it is primarily ANILCA, Section 507(a), to which this Cooperative Planning process responds. Section 507(a) states:

> **SEC. 507. (a)** The Secretary of Agriculture is directed to implement a cooperative planning process for the enhancement of fisheries resources through fish hatchery and aquaculture facilities and activities in the Tongass National Forest. Participation in this process shall include, but not be limited to, the State of Alaska and appropriate non-profit aquaculture corporations. The Secretary may contract with private, non-profit associations for services in such planning.

In addition to the cooperative planning required by 507(a), Alaska Statute 16.10.375 establishes the requirement for Regional Salmon Plans. Regional Planning Teams (RPT's), made up of representatives of Regional Aquaculture Associations and ADF&G personnel, develop the Regional Salmon Plans.

Integration of the Federal and State requirements, for the Tongass National Forest, is accomplished through this Tongass National Forest Cooperative Fisheries Enhancement Planning process. The intent of the planning process is to develop and describe a process which will efficiently coordinate activities between the Forest Service, ADF&G, and the Regional Aquaculture Associations and others, where appropriate, to meet common fish enhancement and production objectives. This planning process primarily applies to salmon species but may also include discussion of other species of fish.

Production objectives are generally set in the Regional Salmon Plans (Northern and Southern Southeast Plans, and the Yakutat Plan) in the form of targets and goals for fish production. The Tongass National Forest Land Management Plan (TLMP) sets the specific objectives for the Forest based on the Regional Salmon Plans.

Enhancement opportunities that are addressed in the Salmon Plans or in the Tongass Land Management Plan include fish hatcheries, and other fisheries resource rehabilitation and enhancement activities. Specific types of projects include, but are not limited to fishways, fish weirs, spawning channels, fish stocking, and lake fertilization. Recreational, subsistence, and commercial fisheries should all be addressed when planning projects.

Cooperative implementation of fisheries rehabilitation and enhancement programs on the Tongass National Forest has been ongoing and is addressed in this cooperative agreement, and the Memoranda of Understanding between the ADF&G, the Regional Aquaculture Associations, and the USDA Forest Service (Appendix 1).

Evaluation reports (ANILCA Section 507(b)), prepared at the time of each Tongass Land Management Plan revision, shall be compiled by the Forest Service with the assistance and review of the ADF&G and the Regional Aquaculture Associations. The reports summarize projects completed during the previous forest planning period and report on the status of cooperative fisheries planning. A listing of projects proposed for the next forest planning period is included in the report.

II. The Planning Process

The Tongass National Forest Cooperative Fisheries Planning Process (Figure 1) is the orderly identification, verification, approval, implementation, and evaluation of rehabilitation and enhancement projects. The process is composed of sequentially integrated components and encompasses both the regional salmon planning and forest planning processes. A description of each process component is presented below.

A. *The Tongass Land Management Plan (TLMP)*

The TLMP is the source of management direction for the Tongass National Forest, specifying activity objectives for a period of 10-15 years. As the TLMP is revised, new management direction in the plan is based on the need to change management direction identified in the previous plan. Issues drive the plan's development, amendment, or revision.

The TLMP is a "programmatic" plan in that it sets the strategic goals for the Forest for all resources, and does not evaluate the environmental consequences of individual on-the-ground activities. For fisheries, the plan integrates public issues, the results of monitoring during the previous planning period, requirements of law, and the recommendations of the Comprehensive Salmon Plans. Targets and goals set by the Comprehensive Salmon Plans are used to establish the demand for fish resources through the next 10-15 year Forest planning period. The Forest Plan presents a recommended strategic level of fish enhancement for the Tongass National Forest. A preliminary list of projects which could be implemented during the 10-15 year planning period may be proposed.

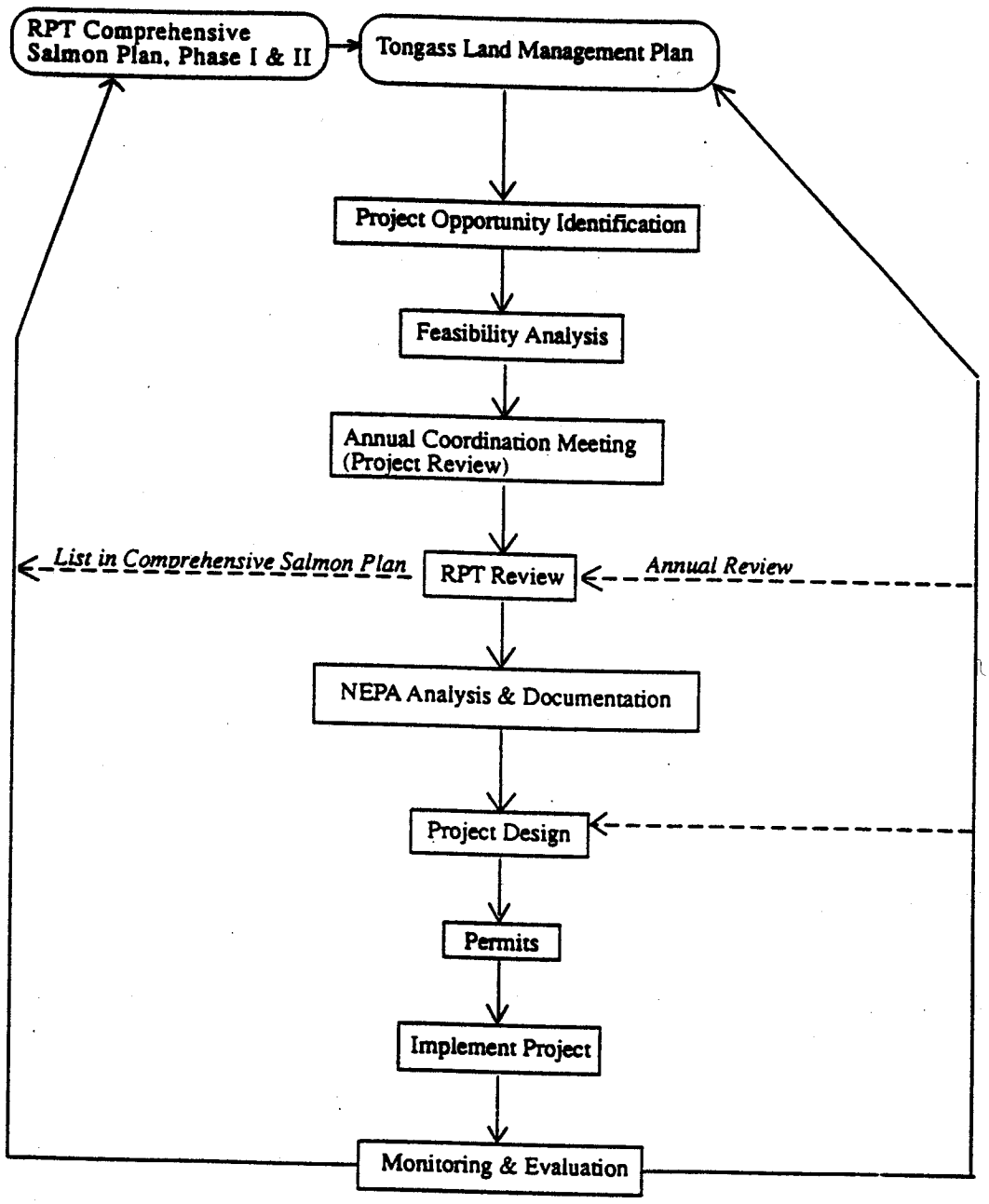


Figure 1. Tongass National Forest Cooperative Fisheries Enhancement Planning flow diagram

B. *Project Opportunity Identification*

Fisheries enhancement opportunities are identified by participants in the planning process, or by others with enhancement ideas or proposals. Documentation of these opportunities is on the Fisheries Project Opportunity Identification Form (Appendix 2). Upon completion of the first page and the top of the second page of the forms, copies are sent for review to the people or agencies identified by the project proponent on the second page of the form. This review is the basis of the next step, the feasibility analysis.

C. *Feasibility Analysis*

A feasibility study, usually prepared by the project proponent will determine if there are any obvious overriding factors that would preclude potential project development. Feasibility studies can be cooperatively developed between groups, agencies or individuals. The following areas should be examined:

- Can the project be physically accomplished?
- Are there any significant biological problems?
- Are there social or political considerations?
- Is the project economically feasible?
- Is the project compatible with the TLMP, Forest Service policy, and other agency and organization plans or policies?
- What is the land status/classification of the project area? (For example, is it in a special use authorization area, are there rights-of-way, is the land encumbered or restricted, or is the land designated as wilderness?)
- What are the potential benefits to user groups, and the potential conflicts between user groups?

Considerable feasibility information can be obtained through formal and informal contact with individuals or groups. Level of support for a project can often be determined in advance through these contacts.

Only projects determined to be feasible by the proponent will be further addressed in the Cooperative Fisheries Planning Process for the Tongass National Forest. Projects may become part of the preliminary list of projects incorporated into the Tongass Land Management Plan, its revision or amendments.

D. *Annual Coordination Meeting*

One annual coordination meeting should be held for each of the Tongass Administrative Areas. Representatives from the ADF&G's Fisheries Divisions and other Divisions, as appropriate, Area/District representatives of the Forest Service, and the appropriate aquaculture association will conduct an annual Cooperative Fisheries Coordination meeting. The primary purpose of this meeting will be to review and coordinate identified projects in Southeast Alaska. Agenda topics should include, but not be limited to:

- Discussion of identified project opportunities and feasibility analyses, circulated since the group last met.
- Review of all projects currently in development. Discussion should be guided by the project proponent or leader.
- Presentation of anticipated budgets.
- Coordination of project implementation.
- Opportunities for cooperative funding.
- Results of previously completed projects.

Project opportunities generally agreeded upon by the participants at the Cooperative Fisheries Coordination meetings will be forwarded by the proponent to the Regional Planning Teams for review.

E. *Regional Salmon Planning*

Potential projects endorsed at the annual Cooperative Fisheries Coordination meetings will be presented to the Regional Planning Teams (RPT's) at their regularly scheduled meetings. RPT's, established under Alaska Statute 16.10.375, are responsible for the development and amendment of a Comprehensive Salmon Plan, including provisions for both public and private nonprofit hatchery systems. Representation on the RPT consists of one person from each of the three fisheries divisions of the ADF&G, and three members from the appropriate qualified regional aquaculture association.

The RPT's also include ex-officio members, as considered necessary by individual RPT's. The Forest Service has ex-officio representation on each of the Southeast Alaska RPT's. Ex-officio representation for subsistence and sport fisheries is encouraged by the RPT members.

State statutes define certain duties of the RPT's, including:

- Regional Salmon Plan development and amendment.
- Review of private non-profit (PNP) hatchery permit applications and recommendations to the Commissioner of the ADF&G.
- Review and comment on proposed permit suspensions or revocations by the Commissioner of ADF&G.

As part of the cooperative fisheries planning process under #1 above, the RPT's annually review new projects proposed by the Forest Service, ADF&G, Aquaculture Associations, and other project proponents. Project proposals that are reviewed and endorsed by the RPT's are included in the annual updates of the Comprehensive Salmon Plans.

F. *NEPA Analysis and Documentation*

Following review and positive recommendation by the RPT, the Forest Service or other lead agency undertakes environmental analysis of the project and appropriate documentation of the analysis, as required by the National Environmental Policy Act (NEPA). Four basic steps are required: scoping, which determines the public issues concerning the proposed project; alternative development, which must consider a number of alternatives to the proposed action, including the possibility of no action; the determination of the environmental consequences of the alternatives; and, selection of the preferred alternative and the identification of the reasons for that selection. Concerns of the RPT from the previous step (step E), including project monitoring and evaluation criteria, are addressed. All steps must be documented, although the documentation required varies based on the scope of the project. Final project design, the next step, is based on the selected alternative.

G. *Project Design*

Following selection of an alternative final project design may proceed. On National Forest System lands, approval of project designs needing detailed engineering, such as fish pass and spawning channel construction, is required by the Forest Service Regional Office, Director of Engineering. All other enhancement project designs to be implemented on National Forest System lands require the approval of the appropriate Forest Service Line Officer.

H. *Permits*

The nature of the project proposal will determine the types of permits required. The Alaska Coastal Zone Management Program, administered by the State of Alaska, Division of Governmental Coordination, has a system for reviewing and processing all resource-related required approvals (permits, leases, and other authorizations) which are required for proposed projects in or affecting coastal areas of Alaska. This system is called Project Consistency Review. Project proposals are reviewed to:

- Identify permits required by the State resource agencies, including the Alaska Departments of Environmental Conservation (DEC), ADF&G, and Department of Natural Resources (DNR).
- Identify permits required by Federal agencies, such as the Army Corps of Engineers and the Environmental Protection Agency.
- Determine whether the project is consistent, to the maximum extent practicable, with the standards of the Alaska Coastal Management Program and approved district coastal management programs.

Participants in the State's review include the applicant, state resource agencies and the Division of Governmental Coordination, the affected local coastal community, and other interested members of the public. The coordinating agency must complete the review of the proposed project within either 30 or 50 days. A 30-day review schedule will be used if all associated state permits must, by statute or regulation, be issued in 30 days. A 50-day review schedule will be used for projects with approvals requiring 30-day public notice.

For private non-profit (PNP) hatchery projects, including expansion of facilities for additional production of fish or changes to production scenarios, permit alteration requests are required. These requests are reviewed by the appropriate Regional Planning Team (RPT) prior to approval by the Commissioner of the ADF&G. If these permit alterations will require any other permits, the PNP operators are required to fill out a coastal zone questionnaire. Depending on the nature of the project, a permit from the U.S. Army Corps of Engineers, a Title 16 permit issued by the ADF&G Habitat Division, or a special use authorization from the Forest Service may also be required.

I. *Implementing the Project*

Following receipt of the appropriate permits the project may be implemented. Emphases is placed on cooperative funding and/or implementation of projects, as discussed at the Annual Coordination meeting (Step D).

J. *Monitoring and Evaluation*

The performance of enhancement projects should be measured and evaluated to demonstrate achievement of the desired objectives. The nature of the project will determine the degree of monitoring required. Projects that may significantly affect or impact wild stock or alter allocations among user groups will have a comprehensive evaluation and monitoring plan developed, reviewed, and approved by the parties. Cooperative funding is also emphasized for monitoring and evaluation activities.

The monitoring plan developed for a project must include specific reporting and termination dates, and identify specific data needs. Monitoring actions include:

- Implementation of the approved monitoring plan.
- Evaluation of accomplishment and outputs.
- Preparation and distribution of periodic evaluation and performance reports as described in the monitoring plan.
- Storage of monitoring reports for future reference.

If many similar projects are implemented, only a representative sample need be monitored. Low cost, low risk projects often need only cursory monitoring, while high cost, high risk projects, and projects involving new technologies may need more intensive monitoring.

Monitoring results are used to help in the formulation of future plans, such as the Comprehensive Salmon Plans, the Tongass Land Management Plan, and individual project plans.

CARL L. ROSIER

Commissioner

Alaska Department of
Fish and Game

Date: 8/5/93

PETER A. ESQUIRO

General Manager

Northern Southeast Regional
Aquaculture Association

Date: 7/2/93

MICHAEL A. BARTON

Regional Forester

United States
Department of Agriculture
Forest Service

Date: 6/25/93

DONALD F. AMEND

General Manager

Southern Southeast Regional
Aquaculture Association

Date: 7/7/93

III. Appendixes

1. Memoranda of Understanding between the Alaska Department of Fish and Game, the Regional Aquaculture Associations, and the USDA Forest Service

2. Fisheries Project Opportunity Identification Form

Appendix 1

MEMORANDUM OF UNDERSTANDING
Between
ALASKA DEPARTMENT OF FISH AND GAME
and
U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE
and
PRINCE WILLIAM SOUND AQUACULTURE CORPORATION,
AND COOK INLET, NORTHERN SOUTHEAST REGIONAL,
AND SOUTHERN SOUTHEAST REGIONAL
AQUACULTURE ASSOCIATIONS

This MEMORANDUM, effective as of the 26 day of October, 1981, between the Alaska Department of Fish and Game (hereafter referred to as the Department), the U.S. Department of Agriculture, Forest Service (hereafter referred to as the Forest Service), and the Cook Inlet, Prince William Sound, Northern Southeast Regional and Southern Southeast Regional Aquaculture Associations (hereafter referred to as the Associations.

WITNESSETH:

WHEREAS: The Department has been created under the laws of the State of Alaska to manage, protect, maintain, improve, and extend the fish and wildlife resources of the State of Alaska; and

WHEREAS: The Forest Service is responsible for the fish and wildlife habitat on National Forest lands and some of the fish habitat rehabilitation, enhancement, and development activities of both the Department and the Associations will be carried out on lands under the management jurisdiction of the Forest Service; and

WHEREAS: The qualified Associations have been created under the laws of the State of Alaska for the purpose of enhancing salmon production; and

WHEREAS: It is the mutual desire of the Department, Forest Service, and Associations to work in harmony for the common purpose of enhancing and maintaining the salmon resources of the State in the best interest of the people of Alaska; and

WHEREAS: The public benefits of cooperation between agencies engaged in similar activities in given geographical areas are obvious; and

WHEREAS: The expenditure of money and use of manpower and equipment for the enhancement, rehabilitation, and maintenance of salmon resources by related agencies demands careful coordination; and

WHEREAS: The parties to this Memorandum of Understanding are engaged in salmon enhancement programs and desire to develop a cooperative relationship which will be in the best interest of all parties and produce the greatest public benefit."

A. NOW, THEREFORE, THE DEPARTMENT AGREES:

1. To enhance, rehabilitate, maintain, and regulate salmon populations originating from within the respective geographic areas of the four Associations.

2. To recognize the Forest Service as the agency responsible for fish and wildlife habitat on the National Forests of Alaska.

3. To cooperate with the Forest Service and Associations in the way of mutually funded projects and/or personnel assistance whenever possible.

4. To make available to the Forest Service and Associations technical expertise in the fields of fisheries and engineering as requested whenever possible.

5. To develop strategic salmon enhancement plans through the Regional Planning Team process.

6. To cooperate with the Forest Service and Associations in project planning and development within the limitations of funds and manpower available for that purpose.

7. To make or sanction no introduction of any native or exotic salmon species without an investigation of its effect on other resources and its desirability as a management measure.

8. To provide the Forest Service and Associations with available salmon project evaluation reports and cost analysis when requested.

9. To make available to the Forest Service and Associations plans for salmon stock and habitat rehabilitation, enhancement, and development in advance of execution of the projects.

B. THE FOREST SERVICE AGREES:

1. To recognize the Department as the agency responsible for the management of the fish and wildlife resources of the State of Alaska.

2. To utilize the Regional Planning Team process for the development of strategic salmon enhancement and rehabilitation plans.

3. To cooperate with the Department and Associations in the way of mutually funded projects and/or personnel assistance whenever possible.

4. To make available to the Department and Associations reports of habitat reconnaissance and evaluation of habitat enhancement projects and any other pertinent reports when requested.

C. THE ASSOCIATIONS AGREE:

1. To recognize the Department as the agency responsible for the management of the fish and wildlife resources of the State of Alaska.

2. To recognize the Forest Service as the agency responsible for fish and wildlife habitat on the National Forests of Alaska.

3. To cooperate with the Department and Forest Service in the development mutually funded projects and/or personnel assistance whenever possible.

4. To cooperate with the Department and Forest Service in the development of salmon habitat improvements within the limitations of funds available for that purpose.

5. To obtain appropriate approval needed from the Department for all salmon enhancement and rehabilitation projects in accordance with Alaska Statute Title 16 authority invested in the Department.

6. To obtain appropriate approval needed from the Forest Service for all salmon enhancement and rehabilitation projects according to procedures, rules, and regulations of the Forest Service regarding structures, roads, etc. with special emphasis on projects within National Monuments, Wilderness Areas, and other lands of special significance.

7. To provide the Department and Forest Service with project evaluation and other pertinent reports when requested, and as required by law or policy.

D. THE DEPARTMENT, FOREST SERVICE, AND ASSOCIATIONS MUTUALLY AGREE:

1. To cooperate, consistent with respective statutory and regulatory responsibilities, in the enhancement, rehabilitation, and maintenance of the salmon resource.

2. To cooperate in the development and application of plans and projects for the enhancement, rehabilitation, and maintenance of salmon and their habitat in a manner which mutually supports the goals and objectives of the three organizations.

3. To recognize the purposes for which Wilderness areas were established, to design facilities within Wilderness so as to minimize impact on Wilderness values and to plan aquaculture projects so that those involving structures or changes in gene pools are implemented outside of Wilderness areas to the extent that suitable opportunities are available and economically feasible.

4. To exchange technical information, and furnish assistance to each other in the form of materials, personnel, equipment, vessels, and aircraft within legal limits of each organization.

ALASKA DEPARTMENT OF FISH AND GAME

Date 10-26-81 By Ronald O. Skoog

Title Deputy Commissioner

UNITED STATES DEPARTMENT OF AGRICULTURE,
FOREST SERVICE

Date 9/28/81 By Michael A. Barton

Title Dep. Regional Forester

PRINCE WILLIAM SOUND AQUACULTURE CORPORATION

Date Sept. 9, 1981 By Clifford F. Messing

Title President

COOK INLET AQUACULTURE ASSOCIATION

Date Sept 9, 1981 By Floyd E. Heimbuch

Title Exec. Dir.

NORTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION

Date September 9, 1981 By Otto A. Egenes

Title General Manager

SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION

Date September 9, 1981 By Ronald L. Wendt

Title Executive Director

Appendix 2

Date: _____
Proponent: _____
Organization: _____

FISHERIES PROJECT OPPORTUNITY IDENTIFICATION FORM

Project Name: _____ Type of Project: _____
Describe Location: _____
ADF&G Stream No: _____
Access to the Site: _____

Attach Map of Project Location:

Briefly describe the opportunity including the purpose, benefiting species, potential user groups, and projected amount and type of habitat to be improved. Attach schematics maps/photos of proposed project, if appropriate; Describe relationship to any of the projects._____

_____

_____

_____

_____

_____

_____

Land Ownership, Status, and Classification: _____

_____

Habitat surveys and watershed condition surveys presently available (list):

_____

_____

_____

_____

_____

_____

_____

Available data on indigenous species and stock status: _____

_____

_____

_____

_____

_____

_____

Comments

Specialists in the following disciplines and/or representatives of the indicated organizations should review and comment on the proposed projects.

Alaska Department of Fish and Game

_____ Commercial Fish Division
_____ FRED Division
_____ Habitat Division
_____ Sport Fish Division
_____ Subsistence Division

(appropriate) **Aquaculture Association**

_____ Northern Southeast
_____ Southern Southeast

USDA Forest Service

_____ Ecology
_____ Archeology
_____ Fish
_____ Geology
_____ Hydrology
_____ Recreation
_____ Soils
_____ Subsistence
_____ Timber
_____ Wilderness
_____ Wildlife
_____ Forest Service District Office
if not initiator of the project

Comments:

INSTRUCTIONS (DRAFT)

1. Proponent fills out first pages and identifies reviewers on second page. Proponents should coordinate with the Forest Service, Alaska Department of Fish and Game, and the Aquaculture Associations, as appropriate to identify the reviewers.

2. Proponent sends copies of both pages to the reviewers with a request for their initial thoughts on the project.

3. Reviewer returns comments(written on page 2) to the proponent listed on the top of page 1.

4. Proponent uses comments for the project feasibility analysis and makes all comments available to reviewers, if requested.

GLOSSARY

Alaska Statute 16.10.375. Regional Salmon Plan
The commissioner shall designate regions of the State for the purpose of salmon production and have developed and amend as necessary a comprehensive salmon plan for each region, including provisions for both public and private non-profit hatchery systems. Subject to plan approval by the commissioner of ADF&G, comprehensive salmon plans shall be developed by regional planning teams consisting of department personnel and representatives of the appropriate qualified regional associations.

Alaska Statute 16.10.380. Regional Associations
(a) The commissioner shall assist in and encourage the formation of qualified regional associations for the purpose of enhancing salmon production. A regional association is qualified if the commissioner determines that:

(1) it is comprised of associations representative of commercial fishermen in the region;

(2) it includes representatives of other user groups interested in fisheries within the region who wish to belong; and

(3) it possesses a board of directors which includes no less than one representative of each user group that belongs to the association.

(b) In this section "user group" includes, but is not limited to, sport fishermen, processors, commercial fishermen, subsistence fishermen, and representatives of local communities.

(c) A qualified regional association, when it becomes a nonprofit corporation under AS 10.20, is established as a service area in the unorganized borough under Alaska Statute 29.03.020 for the purpose of providing salmon enhancement services.

Alaska National Interest Lands Conservation Act - Federal legislation to provide for the designation and conservation of certain public lands in Alaska, and for other purposes.

Forest Service Manual - A component of the Forest Service Directives System. The Forest Service Manual is the basic guide to all programs and activities. The Forest Service Manual sets broad policy and guidance for all program activities within the Forest Service.

Monitoring - An evaluation process to determine how well objectives have been met.

National Environmental Policy Act of 1969 - Federal legislation to declare a national policy which will encourage productive and enjoyable harmony between people and their environment.

Regional Aquaculture Associations - see Alaska Statute 16.10.380, above.

Regional Comprehensive Salmon Plan - see Alaska Statute 16.10.375, above.

Regional Comprehensive Salmon Plan, Phase I - Sets goals and objectives for salmon production in the region for the planning period (1980-2000), and establishes the background and philosophy for enhancement.

Regional Comprehensive Salmon Plan, Phase II - Specific plans for Northern Southeast and Southern Alaska that identify and prioritize enhancement opportunities within the southeast region.

Regional Five-Year Action Plan - This plan prioritizes recommended enhancement opportunities identified in the Phase II Comprehensive Salmon Plans. Action Plans are dynamic planning tools that are annually updated through the Regional Planning Team process.

Regional Planning Team - see Alaska Statute 16.10.375, above.

Tongass Land Management Plan - A forest management plan that provides for the allocation of land to different primary uses and for multiple-use and sustained yield of goods and services from the National Forest.

Acronyms

ADF&G	Alaska Department of Fish & Game
ANILCA	Alaska National Interest Lands Conservation Act
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
PNP	Private Non-profit (hatchery operators)
RPT	Regional Planning Team (Salmon Planning)
TLMP	Tongass Land Management Plan

Appendix I

Karst And Caves

Introduction

The management of karst resources and the associated caves is new in Southeast Alaska; this appendix was written to provide more background on these resources. It also contains technical definitions and some specific “how to’s,” such as how to maintain records on caves, which are inappropriate in the Forest-wide Standards & Guidelines. The appendix contains three parts: Characterization of the Karst Landscape, Karst Resources, and Cave Resources Management.

Characterization of the Karst Landscape, Basis for an Ecologically-Based Management Strategy

Introduction

The Tongass National Forest contains the largest concentration of dissolution caves known in the State of Alaska. The Forest also contains world-class surface or epikarst features particularly in the alpine and sub-alpine zones (Aley et al., 1993). The caves and epikarst features result from chemical weathering of limestone and marble bedrock. The karst and cave features and associated resources are a recently discovered and recognized attribute of the lands within Southeast Alaska and have been found to be of national and international significance for a wide variety of reasons, including their intensity and diversity of development, the biological, mineralogical, cultural, and paleontological components, and recreational values (Aley et al., 1993).

The Federal Cave Resources Protection Act (FCRPA) is the primary Federal law affecting caves. It requires protection of caves on Federal lands. A cave must possess one or more of the criteria outlined in 36 CFR Part 290.3(c) or (d) and be designated as significant as outlined in 36 CFR Part 290.3(e).

The intent of FCRPA is to protect cave resources not karst resources; however, caves and their associated resources are an integral part of the karst landscape. Therefore, the karst landscapes should be managed as an ecological unit to protect cave resources (Baichtal, 1993e, 1995).

Lands underlain by carbonate rocks in high rainfall zones of Southeast Alaska are usually karst landscapes. The karst landscapes result from the chemical weathering of the almost pure calcium carbonates, acidic peatlands adjacent to the karst lands, and highly fractured bedrock.

Karst lands add a vertical, underground dimension to land use planning. Karst landscapes function differently than other ecosystems on the Forest. Subsurface drainage networks generally operate independently of, and with more complexity than, the surface drainage systems above (Aley and Aley, 1993; Huntoon, 1992a). The watershed characteristics of the surface may have little or no relationship to the subsurface karst drainage system. On karst lands, the many solution-widened fissures at the surface become injection points into a more complex subsurface drainage system. These fissures rapidly move water and sediment delivered from surface sources vertically downward into the underground lateral systems. Thus, sediment and water transported from roads and disturbed lands may emerge unexpectedly at one or more distant springs including across surface watershed boundaries.

A large portion of a karst system's vulnerability to management disturbance is the system's openness. The degree to which the surface is connected to the karst system conduits at depth relates directly to the effect of any planned land use. A high density of solution and collapse features indicates the presence of well-developed underground systems. The presence of a single sinkhole demonstrates a direct surface/subsurface connection, even if the sinkhole intermittently retains water.

Sediment transport mechanisms are different between karst and non-karst landforms. A particle of soil in non-karst lands is transported by gravity, landslides, and/or surface water flow, sometimes over great distances into a watercourse, to become sediment. Atop a karst landform, depending on the openness of the karst system, a soil particle only needs to be transported laterally a few inches or feet before it can be washed vertically through the surface or epikarst into the karst conduits at depth.

Karst Management Goals

This overview is intended to describe to the reader the current understanding of the function and biological significance of the karst landscapes in Southeast Alaska. It is these characteristics and our current understanding of the karst landscape on which the proposed karst management strategy is based. The proposed karst management strategy is designed to assess a karst resource's vulnerability or sensitivity to a

proposed land use. This strategy strives to maintain the natural karst processes and the productivity of the karst landscape, while providing for other appropriate land uses.

The Karst Landscape

In Southeast Alaska, the karst landscape can be characterized as an ecological unit found atop carbonate bedrock on which karst features have developed as the result of differential solution by acid groundwater. These acidic groundwaters are a direct product of abundant precipitation and rapid passage of groundwater through the organic-rich forest soil. Recharge areas may be on carbonate or adjacent non-carbonate substrate. A few of the characteristics of this ecological unit include: mature, well-developed spruce and hemlock forests along valley floors and lower slopes, increased productivity for plant and animal communities, extremely productive aquatic communities, well-developed subsurface drainage, and the underlying unique cave resources. The basic principals of karst development and cave formation are documented in Ford and Williams (1994); White (1988); and, White and White (1989). The rate and processes controlling the aerial extent of karst landscape and cave development along the north pacific coast under the cool, moist, heavily forested conditions are not fully understood. Extensive research is needed to fully understand and describe the characteristics of this ecosystem. The following description of the karst landscape discusses its geologic and hydrologic characteristics, biologic characteristics, and natural history.

Geologic and Hydrogeologic Characteristics

Karst landscape development in Southeast Alaska appears to be controlled by the purity of the calcium carbonate bedrock, the structure of the bedrock (i.e., faulting, fractures, and bedding), occurrence of igneous intrusions, tectonism, proximity of the carbonates to peatlands and other forest vegetation, the development of surface or epi-karst, glacial history, precipitation, and temperature.

Karst existed on Prince of Wales Island long before the latest glacial advance. Recent phreatic passages into two pre-Latest Wisconsinan caves (approx. 30,000 ybp) have dissolved through Tertiary paleokarst breccias (Aley et al., 1993). Older passages have been plugged by debris from past glacial episodes. One small cave has yielded a marmot tooth which has been dated to greater than 44,500 years (Baichtal, personal communication). Most caves predate the most recent glaciation based upon the presence of glacial clays, glacial sediments, wood, Pleistocene vertebrate remains, and possibly even ancient ice. Similar features are being found during field reconnaissance on Kuiu and Chichagof Islands, and on the islands seaward of Prince of Wales Island. Such evidence clearly suggests that glaciation modified a pre-existing karst landscape, collapsing some passages and systems, gouging into others, and filling some with sediments. The epikarst, which is exceptionally well developed in higher elevations, has been removed in places at lower elevations by the most recent glaciation. Where low-elevation epikarst is present, primarily on the outer coast of islands seaward of Prince of Wales, vegetation has re-established itself and a forested epikarst developed. Where impermeable compacted glacial till and marine silts are deposited on the karst terrain ,and poorly drained lithologies adjacent to karst terrain, peatlands are commonly developed. Many of the glacial deposits overlying karst terrain have filled in and modified collapsed karst features. With the development of the forested epikarst and peatlands, and the entrance of associated acidic waters into underground tributaries, a system of enlarged vadose caves and vertical shafts has developed (Baichtal, 1993a).

The rocks most susceptible to karst development are those which are greater than 70 percent calcium carbonate ($CaCO_3$). Well developed karst and cave systems require that the bedrock be 90 percent calcium carbonate or better. Chemical analysis of 67 limestone and marble samples collected from the northern half of Prince of Wales and surrounding islands showed the range of calcium carbonate varied from 91.47 to 99.46 percent. The samples averaged 97.65 percent $CaCO_3$ (Mass et al. 1992).

These very pure carbonate rocks have had a long and tortured history. They originated as marine reef and lagoonal deposits near the equator during Silurian time, some 438 to 408 million years ago (Soja, 1990). These deposits were rafted atop spreading oceanic plates until they docked on the ancient shores of

Southeast Alaska. These rocks are part of what is now recognized as the Alexander terrane, one of five sub-continental blocks of rock which have combined to form the Ketchikan Area. The oblique collision of the Alexander terrane with North America resulted in the rocks being compressed from east to west and smeared northward along the coast. The Alexander terrane was spectacularly fractured and then fragmented at all scales as it was rifted apart and smeared northward along the Alaskan coast. This smearing occurred along large, northwest-southeast trending, strike-slip faults. Second order intersecting, north trending strike-slip faults allowed the terranes to break into huge blocks. What makes the picture more interesting is that the granite blocks bounded by the large faults are themselves broken into smaller blocks by smaller faults which mimic their large counterparts. This same fault pattern can be seen from terrane boundaries to the outcrop and hand specimen scale. The fractures serve two very important functions in the karsts associated with the Alexander Terrane. First, the intra-island and mountain-block scale faults commonly define karst system boundaries. Secondly, cave passages, chains of sinkholes, and many of the other karst features are localized along sets of small to intermediate scale faults. Epikarst development is largely a function of these fractures and faults (Aley et al., 1993; Coney et al, 1980; Brown and Yorath, 1989; Brew et al., 1992a and b; Gehrels and Berg, 1992).

Epikarst is exceptionally well developed throughout the karst areas. The alpine epikarst is characterized by deep shafts, crevasse-like dissolved fissures, eroded dissolution rills of all sizes, and spires and spikes of limestone. In the sub-alpine, the epikarst has virtually the same characteristics found in the bare alpine settings, except it is vegetated. Typical thickness of the epikarst zone ranges from more than 100 feet in the alpine zone to less than 5 feet along the coast and lower elevations. The epikarst thickness appears to be more a function of glacial history than altitude. The epikarst is extremely important in moving water, nutrients, organic matter, and soil from the land surface and from the rooting zone into the subsurface where these materials can move laterally to seeps and springs or to vertical collector structures which channel them downward into cave networks (Aley et al. 1993).

Peatlands form atop poorly drained non-carbonate rocks and impermeable compact glacial tills and marine silts that overlie carbonates. Surface waters originating from these poorly drained areas seldom flow more than a few yards onto carbonate substrate before diving below the ground, down vertical shafts or into cave entrances. The highly acidic waters from the peatlands accelerate cave and karst development. pH levels of waters flowing from these Sphagnum-dominated wetlands can be as low as 2.4 (Aley et al., 1993). Waters flowing from the cave systems that accept these waters commonly show a pH range of 7.5 to 9.0. The buffering capabilities of the pure carbonates is evident.

Most of the caves studied so far are hydrologically active. Those that carry streams are subject to extreme variations in flows. Rainfall in the areas dominated by karst terrain varies greatly, ranging from annual average precipitation of 60 to more than 250 inches per year. The largest floods occur when heavy rains fall on wet snow packs. These cave systems can best be described as very dynamic. Limited dye tracing work on Prince of Wales Island has demonstrated that karst groundwater systems routinely transport water for several thousands of feet to receiving caves, springs, and surface streams (Aley et al., 1993). The limited specific conductance information gathered to date from this same area suggests that values from karst systems in southeast Alaska are about half the mean values typically encountered in most other North American karst areas. However, karst areas in Southeast Alaska yield annual runoff which is typically on the order of 8 to 16 times greater than that found in other American karsts. The net effect is that solution of soluble bedrock occurs on the order of at least 4 to 8 times faster in Southeast Alaska (Aley et al., 1993).

Hydrologic models currently used for estimating the cumulative effects of proposed surface management activities are not designed to model the effects of timber harvest on the karst landscapes. Evidence suggests that timber harvest increases available surface waters, thereby increasing sediment and debris transport capabilities and flooding passages which have not flooded for centuries. Observations in some caves suggest that passages which now flood result in fragile ceiling formations becoming tannin-stained and showing signs of dissolution. Many cave entrances are infilled and/or blocked by logging slash, sediment, and debris. Runoff generated from road surfaces commonly is diverted into karst features. It is not known what cumulative effects past timber harvest has had on the epikarst landscape (Baichtal, 1993c).

Biologic Characteristics

Only limited information is available on the importance of the karst landscape to plant and animal life in coastal Alaska. The following characterizes what is known about the vegetation/forest, wildlife, and fisheries components of the karst landscape:

Vegetation/Forest. There is a definite tie between the karst landscape and the productivity of the spruce and hemlock forests found there. The major contributors are believed to be the nutrient rich soils, well developed subsurface drainage, and dissected bedrock surface which allows the tree roots to hold fast and become somewhat more windfirm. The old growth on the karst provides a well structured, multi-layered canopy resulting in important winter habitat. The structure of the forest provides many forbs and shrubs for wildlife. It is possible that the available forage contains, at a minimum, higher calcium levels allowing for better bone, muscle, and antler development. The combination of quality forest structure and abundant nutritional browse could make the karst landscape exceedingly crucial habitat (Gustafson, 1993).

One way of demonstrating the productivity of the karst area is to compare timber volume differences between karst and non-karst areas. Exceptionally dense stands of very large diameter spruce and hemlock at lower elevations are characteristic of many karst landscapes. For example, the Labourchere Bay Final Karst Vulnerability Assessment Report (Labourchere Bay, 1994) on north Prince of Wales Island indicates 74% of volume class 7 occurring on karst. Past timber harvest on the karst landscapes has been disproportionately high most likely due to the high percentage of very large, dense forest stands. For instance, in the Central Prince of Wales FEIS analysis, 66 percent of the commercial forest land on known karst has been harvested while only 33 percent of non-karst areas have been cut (Baichtal, 1993c). It has been estimated that in some areas 70 to 80 percent of the commercial forest land within specific karst blocks on the Ketchikan Area has been harvested (Streveler and Brakel, 1993; Baichtal, 1993d). Recent analysis of the karstlands less than 1,400 feet in elevation and on slopes less than 60% (27 degrees) on the Thorne Bay Ranger District indicates that 50% of those acres have been harvested.

On karst landscapes worldwide, timber harvest has led to serious, often long-term declines in soil depth and fertility, in some cases culminating in permanent deforestation (Harding and Ford, 1993; Huntoon, 1992 a,b; Kiernan, 1993). Trees growing on karst generally have roots extending down into the dissolved cracks in the bedrock. These roots act to pump water and nutrients back up into the forest canopy. Much of the site productivity is tied up in this nutrient cycle and in the forest canopy. When trees are harvested this nutrient cycle is broken. Soils tend to be thin, residual soils on these karst areas. The greater the development of the epikarst, the greater the surface/sub-surface connection. The greater the epikarst development, the easier nutrients and soil can be transported vertically beyond the rooting depth of vegetation and into the conduit systems of the karst drainage. Vertical migration of nutrients and soil becomes possible in areas of heavy rainfall and well developed sub-surface drainage once the forest canopy is removed (Harding and Ford, 1993; Gains, 1993; Lichon, 1993). Karst systems are productive, but fragile (Huntoon, 1992 a and b; Streveler and Brakel, 1993).

Field observations and aerial photo interpretations show strong evidence of greatly increased surface runoff on karst areas after harvest. This increases sediment, nutrient, and debris transport capability of these systems. Transport capability increases both vertically and laterally. Current harvesting techniques leave the slash within the unit, which helps to protect the shallow fragile soils from erosion and drying. Timber regeneration information from the Ketchikan Area, taken on low-elevation flat-topography karst areas, indicates few regeneration problems. A considerable percentage of the easily accessible low-level karst areas within the Area have been harvested. Timber harvest is now moving onto steeper, higher elevation karst areas which are characterized by shallower, better-drained soils. Observations suggest that with harvest atop these soils, much of the soil may be removed if adequate log suspension is not achieved. Often, only a thin organic mat covers the karst. The exceedingly shallow soils become excessively dry once the protective forest canopy is removed. The high rainfall of the area can rapidly move these fragile soils into the well developed epikarst. Observations suggest that these steeper, higher elevation karst areas show less than desirable regeneration or remain as bare rock slopes within harvested units.

Wildlife. Many wildlife species find the surface karst features and the stable environment and shelter provided within the caves to be valuable habitat (Baichtal, J.F.,1993b). Caves have been used as natal den sites for otters, and as resting and denning sites for deer, bear, wolves, and small furbearers. Deer are known to rest around cave entrances both in summer, when the air coming from the caves is cooler and in winter when the cave entrance environment is warmer than elsewhere.

Cave systems are known to provide critical roosting and hibernating habitat for bats (Parker, D.I., 1993). The stable environment within caves can provide roosting habitat both in summer and winter. Bats select cave sites because they fulfill very specific requirements involving cave structure, air circulation patterns, temperature profiles, humidity, and location relative to feeding sites (Hill and Smith, 1992).

Preliminary surveys in southeast Alaska show some bat usage in many of the caves inventoried. Bats have been found within a few caves once temperatures drop below freezing. Roost sites are beyond where freezing air temperatures penetrate from the cave entrance. Southeast Alaska caves appear to be most important to bats during periods of winter torpor. No use of caves by bats as summer roosts or maternity colonies has been noted yet. Much more work remains before good understanding of year-around importance of caves bats is understood. Three species of bats have been reported from caves in the Ketchikan Area: *Myotis luicifugus*, *M. californicus*, and a possible *Lasionycteris noctivagans*. During the summer of 1993 the first ever specimen of *Myotis volans* has been collected from Prince of Wales Island (D. Parker, 1993). In December 1991, the first ever recorded hibernating bat in Alaska was described and photographed from within El Capitan Cave. The *Myotis californicus* collected in El Capitan cave in February of 1992 was the first live record of that species in Alaska (Parker and Cook, 1993).

Cave systems provide habitat for many invertebrate organisms. Preliminary studies conducted during July 1992 identified 77 species from collections made within several caves. Taxonomic identification of these species must be done before further biological correlations or associations can be made. One amphipod has been identified as *Cratigonyx obliquus-richmondensis*, the first ever record of this amphipod's occurrence in a cave in all of northwestern North America (Carlson, 1993a). Field work continued during the 1993 and 1994 field seasons, with collections made from a number of caves. A troglodytic *Stygobromus* amphipod was collected on Heceta Island to the west of Prince of Wales Island. This species is morphologically identical with *Stygobromus quatsinensis* from two caves on Vancouver Island, British Columbia, Canada (Holsinger, 1987, 1993). This discovery is possibly a high-latitude world-record for a cave adapted species (Aley et at., 1993). Similar *Stygobromus* species were discovered in caves and karst springs on the western shore of Dall Island during the summer of 1993 (Carlson, 1993b).

Some bird species including dippers, thrushes, and swallows, have been known to use cave entrances for nesting and feeding. Rookeries for seabirds including cormorants and pigeon guillemots, and murres and puffins on Coronation Island have been found in some littoral caves (Baichtal, 1993b).

Fisheries. The karst landscape influences productivity of its aquatic habitats in several aspects. The geochemistry associated with karst development contributes to productivity in aquatic environments through its carbonate buffering capacity and carbon input from dissolved limestone bedrock. This has significant downstream effects on the aquatic food chain and biotic community. Preliminary studies (Swanston, personal communication) suggest that aquatic habitats associated with karst landscapes may be eight to ten times more productive than adjacent non-karst dominated aquatic habitats. The karst dominated aquatic habitats support a higher abundance, distribution, density, and variety of invertebrate species than the non-carbonate based systems, have higher growth rates for smolts and resident fish, reflect less variable water temperatures and flow regimes, and contain unique habitat affecting species distribution, abundance, and adaptations (Wissmar et al., in press; Bryant et al., in press; Swanston, personal communication, 1993). It is believed that karst waters have the following connection to fisheries:

1. The carbonates have important buffering effects. Very acidic waters flow from the peatlands (pH 2.4 to 5.8) into karst systems, emerging at a slightly basic pH of 7.5 to 9.
2. Resident time for groundwater in the karst systems results in cool, even temperature water. Flow rates through caves are relatively consistent. The storage capability of the karst systems

results in lower peak flows and higher low flows. This helps to moderate the effects of storm events on resurgence streams. The systems do remain flashy though.

3. The cave systems filter out some debris and sediments, although they do not filter out chemical impurities or microorganisms.
4. Smolts and resident trout use the cave systems for protection from predation, for shade, and for a feeding area, since many insects utilize the photic zone of the cave system for breeding and shelter. Adult salmon have been seen spawning through some cave systems, and evidence of salmon spawning in the caves has been found. Salmon are reported to spawn within one river cave system on Chichagof Island.
5. Karst streams have much greater and more diverse aquatic insect populations, both within the caves and in the streams. There also seems to be greater moss and algae growth within the carbonate dominated systems, most likely reflective of nutrient availability (Swanston, 1993).

Natural History, and Paleontological and Cultural Resources.

The potential cultural and paleontological significance of the caves and karst landscape is high. The Pleistocene paleontology of the area is primarily known from cave and rock shelter deposits, which are often intimately related to archaeological sites. The cool, stable, basic environments in the caves result in exceptionally good preservation of bone and organic materials (Aley et al., 1993). Recent paleontological work in caves on Prince of Wales and surrounding islands, along with botanical surveys of alpine areas and genetic studies on chum salmon populations, argue for a well developed coastal refugium along the western coast of southern southeast Alaska. The evidence sheds new light on problems of glacial chronology, climatic change, biogeography, and archaeology along the western margin of North America (Autrey and Baichtal 1992; Heaton and Grady, 1992; Dixon et al., 1992).

To date, significant archaeological and paleontological materials have been discovered in at least thirty caves and rock shelters on the Ketchikan Area (R.Carlson, 1993). During the summers of 1993 and 1994, at least three new bone deposits were located during inventory of caves.

Recently, four black bears (*Ursus americanus*), one of which dates to approximately 11,565 years before present (B. P.) and thirteen grizzly or brown bears (*Ursus arctos*), now extinct on Prince of Wales Island, ranging in age from 35,363 to 7,205 B.P. have been discovered. A possible black bear tibia has been dated to greater than 39,100 B.P. Natal otter (*Luta canadensis*) dens dating to 8035 B.P. have also been discovered and described (Baichtal, 1993b). Early humans were exploring some caves during the middle Holocene. Evidence of human habitation, the oldest dating to nearly 4,500 B.P., has been discovered in several caves on Prince of Wales and seaward islands. The remains of red fox (*Vulpus volpes*), caribou (*Rangifer tarandus*), and marmot (*Marmota* sp.), now extinct on the islands, have been recovered (Heaton 1994, 1995a & b). The marmot was dated to over 44,500 years B.P. Botanical studies on Dall and Prince of Wales islands have described plant populations which suggest ancestry from local remnant populations that escaped glaciation (Hulten, 1968; Muller, 1991). Recent research concerned with chum salmon populations from the Queen Charlotte Islands and Southeast Alaska has shown that the greatest genetic variation exists in the fish along the western coastlines of Queen Charlotte and Prince of Wales Islands (Kondzella, 1993). These significant genetic variations suggest longer habitation of streams in these areas, and therefore the possibility of coastal refugia. The occurrence of the *Stygobromus* species on Heceta, and Dall and Coronation Islands also supports the refugia theory. The apparent lack of troglodytes on Prince of Wales Island appears to be correlated with the glacial history of the region (Aley et al., 1993). This new information, combined with limited data on raised marine beaches in the area, strengthens the argument for a coastal refugium, along which Pleistocene mammals and humans may have migrated.

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Karst Resources

Useful Definitions

Due to the uniqueness of the karst landscapes, definition of several terms is needed for a better understanding of the resource. The following terms are used throughout this appendix:

1. **"Karst"** is a type of topography which develops as the result of the dissolution of soluble rocks, in this case limestones and marbles. Dissolution of the subsurface strata produces a landscape that is characterized by well-developed subsurface drainage, collapse features such as sinkholes, dry valleys, vertical shafts, caves, and fluted rock surfaces (epikarst).
2. **"Karst Landscape"**, in southeastern Alaska, can be characterized as a three-dimensional ecological unit found atop and within carbonate bedrock in which karst has developed and including the recharge areas on adjacent non-carbonate substrate. A few of the characteristics of this ecological unit include: mature, well-developed spruce and hemlock forests along the valley floors and lower slopes, increased productivity for plant and animal communities, extremely productive aquatic communities, well-developed subsurface drainage, and the underlying unique cave resources.
3. **"Karst Resources"** refer to all components of the karst system. These include both the physical and biological components of the karst landscape.
4. **"Epikarst"** is the surface of the karst. It is an intensely dissolved veneer consisting of an intricate network of intersecting dissolution-widened fissures, cavities, and tubes. It is this network of intersecting fissures which collect and transport surface waters and nutrients vertically to the underlying karst conduits.
5. **"Cave"** is legally defined under federal law as: "... any naturally occurring void, cavity, recess, or system of interconnected passages beneath the surface of the earth or within a cliff or ledge and which is large enough to permit a[n] person to enter, whether the entrance is excavated or naturally formed. Such a term shall include any natural pit, sinkhole, or other opening which is an extension of a cave entrance or which is an integral part of the cave (36 CFR 261.2)". Speleologists use "cave" to refer to all parts, regardless of size, of an underground system that links openings and chambers and that may connect the system to the surface. The most common type of cave is formed in carbonates by dissolution. Included in the term "caves" are tree molds and lava tubes associated with lava flows, erosional caves, boulder caves, glacier caves, and littoral caves, as well as those formed by dissolution of bedrock.
6. **"Cave Coordinator"**. An individual with responsibility for managing cave resources. The Forest Coordinator, has forest oversight responsibilities, while the District Cave Coordinator has on-the-ground responsibilities for cave resource management.
7. **"Cave Entry Permit".** A permit issued to allow entry into a closed cave. Usually the permit will allow entry of a maximum of six persons at one time.
8. **"FCRPA**". Federal Cave Resource Protection Act of 1988. This law establishes a Federal mandate to identify, protect, and manage caves on public lands administered by the departments of Agriculture and Interior. It may be referred to as the "Act".
9. **"Cave Resources"** includes any material or substance occurring in caves including, but not limited to, biological, cultural, mineralogical, paleontological, geological, hydrological, and recreational resources.
10. **"Significant Cave"** means a cave located on Federal lands that has been determined to meet the criteria in 36 CFR 290.3(c) or (d) and has been designated in accordance with 36 CFR 290.3(e).
11. **"Sinkhole"** or **"Doline"**(used interchangeably) are terms used to describe relatively shallow, bowl- or funnel-shaped depressions ranging in diameter from a few feet to more than 3,000 feet. These depressions are generally formed by dissolution of and subsequent settlement of bedrock to form a depression or collapse feature.
12. **"Speleothem"** means any natural mineral formation or deposit occurring in a cave or lava tube, including but not limited to any stalactite, stalagmite, helictite, cave coral, flowstone, soda straw, drapery, rimstone, or formation of clay, sand, or mud.

13. **"Speleogen"** refers to relief features on the walls, ceiling, and/or floor of any solution cave or lava tube. Speleogens are part of the surrounding bedrock. They include but are not limited to anastomoses, scallops, meander niches, petromorphs, and rock pendants in solution caves and similar features unique to volcanic caves.
14. "**Vulnerability Mapping"** or **"Karst Vulnerability"** is a management tool used to assess the susceptibility or sensitivity of the karst resources to any proposed land use. This type of approach is similar to "hazard area mapping" or "risk assessment". The thesis of this approach recognizes that not all karst development and associated resources are equal. Vulnerability mapping utilizes the fact that some parts of a karst landscape are more sensitive than others to planned land uses.

Karst Landscape Assessment

Karstlands impose land management challenges not encountered in non-karst areas because this three dimensional landform functions differently than do other landforms. Evaluate karst resources as to their vulnerability to land uses affecting karst systems. Vulnerability mapping recognizes that some parts of the karst landscape are more sensitive than others to surface activities and groundwater contamination. These differences in vulnerability may be a function of the extent of karst development, the openness of the karst systems, and the sensitivity of other resources that benefit from karst groundwater systems. Assess karst resource vulnerability for both large geographic areas and site-specific projects. Complete vulnerability assessments of large geographic areas for any karst area where land-disturbing activities are planned. Conduct site-specific vulnerability mapping on a project by project basis or as field verification of the larger scale karst vulnerability assessment. Karst lands will be classified as being of low, moderate, and high vulnerability. This is a four-step process:

1. **Identify Potential Karst Lands.** Identify those lands underlain by carbonate rocks. As a practical matter, all lands underlain by carbonate rocks within the Forest should be considered a karst landscape.

2. **Inventory Karst Resources.** At the beginning of any land-disturbing project planning effort, determine the project's proximity to or position on a karst landscape. If it is determined that karst occurs in the project area, require a complete inventory. Assess the degree of karst development. If karst is present, as a minimum the following information will be recorded:
   a. The degree to which karst has developed including the degree of epikarst development, the presence of caves, the presence of insurgences and resurgences, sinkholes, collapse channels, and other karst features.
   b. When caves are identified, they will be surveyed and inventoried in accordance with cave management guidelines. To maintain continuity of inventory reports and cave maps, specifications will be addressed prior to commencement of inventory work. During inventory work caving ethics and protection of cave resources will be stressed.
   c. The relative position of karst features both within and adjacent to the planned activity.
   d. The slope of the land and the depth and nature of soil atop the karst.
   e. The presence of any Class I or Class II streams being significantly contributed to from the karst hydrologic systems. It is only intended that streams which have had sufficient residence time or contact with the carbonate bedrock which show appreciable geochemically changed be considered. Temperatures less than 5 degrees C., pH ranging from 7.5 - 9.0, and specific conductance greater than 120 would be an indication of the highest value karst waters. It should be recognized that some normally dry drainage channels in a karst landscape will periodically carry large flows when the capacity of underlying conduits is exceeded during high flow events.
   f. Sensitive habitats and features that might be adversely affected by land use changes in the area being investigated. These habitats and features must specifically include, among other things, streams important to fisheries and streams or springs used as domestic water supplies, habitats which support cave adapted organisms, and critical bat winter habitat and/or roosts. When considering karst streams and springs, the inventory work must recognize that many sensitive

habitats and features are likely to be located appreciable distances away from points where waters enter the karst groundwater system.

g. The results of the survey shall be documented and digitized onto the Region's GIS data base. The area's geology, location of karst features and caves, and the vulnerability of specific karst areas shall be recorded.

3. **Delineate Karst Hydrologic System and Catchment Area.** Define, to the extent feasible, the karst hydrologic system and the recharge area watershed or catchment area for each karst system. The character of the catchment area, i.e., the area, slope gradient, vegetation, water quality, soils, etc. controls the nature of the receiving karst system and defines the volume of runoff available for infiltration into the system. Recharge area delineation is a crucial component of vulnerability mapping; you must know where the water comes from and resurges to credibly assess and characterize possible impacts. At a minimum, the following information will be recorded:

   a. During the inventory phase, record the location of all resurgences, insurgences, losing streams, sinkholes or other features appropriate for injection of tracing dyes. Estimate water volume entering or discharging from the groundwater system at the time of the visit. Describe prevailing weather conditions at the time of the visit.

   b. Perform a sufficient number of dye traces to assess the karst hydrologic system or systems within a study area. Conditions on the Forest are such that flow direction of tracer dyes cannot always be predicted. This unpredictability reinforces the need for a thorough area search for all resurgences and accurate estimates of stream and spring flows.

   c. Record the results of the dye traces, indicating the relative position of the dye injection point and the position of the resurgence or spring where the dye was recovered. Record the tracer dye's travel time and concentration, if known. Record resurgences and streams that were sampled but no dye was recovered. Document and digitize results onto the Regional GIS data base.

4. **Assess Vulnerability of Karst Terrain to Management Activity.** The final step is to delineate the land under investigation into various vulnerability categories. An area's vulnerability rating must be sensitive to potential surface management practices based on the extent to which epikarst has developed and the openness of the karst system. The vulnerability categories and their criteria are as follows:

   a. **Low Vulnerability Karstlands**

      i. **Classification Criteria.** Low vulnerability karstlands are those areas where resource damage threats associated with land management activities in the areas are not likely to be appreciably greater than those posed by similar activities on non-carbonate substrate. Some characteristics of these lands are:

         (a) Karst development is limited or has been modified by glaciation;
         (b) Epikarst development is relatively shallow;
         (c) Solutional karst features are present but not numerous;
         (d) Soils are primarily mineral, soil depth is shallow to deep, the soils are moderately well to well drained, parent material is the carbonate substrate, glacial till, or volcanic.
         (e) No caves are present;
         (f) There are no slopes $\geq$ 72 percent;
         (g) The karst hydrologic system does not contribute waters to Class I or Class II streams and/or domestic watersheds;
         (h) They lie within a watershed which contributes surface waters to a karst area determined to have a low vulnerability.

      ii. **Karst Management Objectives and Appropriate Land Uses.** These are areas of low or negligible vulnerability from a karst management perspective. No special provision for the protection of karst values is considered necessary. Timber harvest and related activities could be conducted in such areas in a similar manner to those normally employed on lands underlain by non-carbonate bedrock. Partial suspension yarding may be required. No quarry shall be developed atop karst without adequate site survey and design. Quarries should be properly closed after abandonment. Recreational development would be appropriate with consideration of karst resource values.

It is possible that karst areas with high vulnerability will be found within and adjacent to areas found to be of low vulnerability. Along such boundaries or margins, guidelines outlined under "Moderate Vulnerability Karstlands" shall apply.

b. **Moderate Vulnerability Karstlands**

i. **Classification Criteria.** Moderate vulnerability karstlands are those areas where resource damage threats associated with land management activities in the areas are appreciably greater than those posed by similar activities on low vulnerability karst lands. Some characteristics of these lands are:

(a) Karst systems are moderately well developed;
(b) Epikarst is up to eight feet in depth;
(c) Solutional karst features are present but not numerous;
(d) Soils are a mosaic of both mineral and organic. Mineral soils vary from shallow to deep, are well drained, and parent material is the carbonate substrate. Organic soils are shallow and well drained. If the soil was displaced from the bedrock, it would be retained in the adjacent solutional channels of the epikarst. The percentage of bare rock would increase but the soils would not be transported beyond the rooting depth of young conifers;
(e) No caves are present;
(f) There are no slopes $\geq$ 72 percent;
(g) The karst hydrologic system does not contribute waters to Class I or Class II streams and/or domestic watersheds;
(h) They lie within a watershed which contributes surface waters to a karst area determined to have a low vulnerability.

ii. **Karst Management Objectives and Appropriate Land Uses.** To provide for other land uses taking into account karst management objectives. Timber harvest and related activities could be conducted in such areas under more restrictive guidelines than normally employed on lands underlain by non-carbonate bedrock. To protect the fragile soils found here, as a minimum, the yarding system selected may be required to achieve partial suspension. Longer timber harvest rotational periods may be appropriate. Reduced timber harvest unit size and a greater dispersal of harvest units may be required. Existing roads and quarries will be utilized in preference to the construction of new ones. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate. Because karst development is more intense here, additional design criteria may be required. Such criteria may relate to road construction methods, blasting, culvert placement and density, and sediment retention and erosion prevention. No quarry shall be developed atop karst without adequate site survey and design. Quarries should be properly closed after abandonment. Recreational development would be appropriate with consideration of the karst resource values listed above, particularly with respect to reducing disturbance of sensitive soils and use of construction methods that avoid erosion and diversion of natural and road drainage waters into karst features.

It is probable that karst areas with high vulnerability will be found within and adjacent to areas found to be of moderate vulnerability. Along such boundaries or margins the following guidelines shall apply:

(a) No surface disturbing activity such as timber harvest, road construction, and/or quarry development shall occur within a minimum of 100 feet of the edge of a sinkhole, collapse channel, doline field, losing stream, or other collapse karst feature if groundwater dye tracing studies have indicated that such features contribute to Class I or Class II streams or a domestic water supply. If groundwater dye tracing studies have not been completed and it is suspected that the groundwaters contribute to a "significant" cave, Class I or II stream, or domestic water supply, no ground disturbing activity shall occur within 100 feet of any above mentioned karst features;

(b) No surface disturbing activity such as timber harvest, road construction, and/or quarry development will occur on lands that overlie a known "significant" cave or contribute waters to any known "significant" cave. Neither should these activities occur on lands that are close enough to the entrance of a significant cave to be capable of altering the microclimate of the cave's entrance and/or cave features within;

(c) When designing buffers to protect karst systems and their features, the buffer should be designed to be wind-firm. There is no credible standard buffer distance that will provide the assurance required to protect the systems from blowdown of the forest within a given buffer. Each buffer must be carefully designed considering wind direction patterns, blowdown history, previous adjacent harvest, topography, and stand windfirmness. Delineated lands surrounding such features and systems must be of sufficient size to insure protection even if blowdown occurs.

c. **High Vulnerability Karstlands**

i. **Classification Criteria.** High vulnerability karstlands are those areas where resource damage threats associated with land management activities in the areas are appreciably greater than those posed by similar activities on low or moderate vulnerability karst lands. These are the areas contributing to or overlying significant caves and areas containing a high density of karst features. Some characteristics of these lands are:

(a) Karst systems are extremely well developed;

(b) Epikarst is greater than eight feet in depth and may be open to the lateral karst conduits at depth;

(c) Solutional karst features are numerous;

(d) Soils are primarily shallow, well drained organics. Exposed bedrock areas are common to extensive. If the soil is displaced from the bedrock, it may be retained in the adjacent solutional channels of the epikarst; however, the percentage of bare rock would greatly increase and the soils most likely would be transported beyond the rooting depth of young conifers. If the karst systems are extremely well developed and open, soils may not be retained within the epikarst channels. They would be rapidly transported to the lateral karst conduits at depth;

(e) Caves may be present;

(f) Karst areas may contain slopes $\geq$ 72 percent;

(g) The karst hydrologic system may contribute waters to Class I or Class II streams and/or domestic watersheds;

(h) They lie within a watershed which contributes surface waters to a karst area determined to have a high vulnerability.

Karst Management Objectives and Appropriate Land Uses. These areas shall be managed to insure conservation of karst values through the implementation of a high level of protection. Timber management and related activities should be excluded from these lands. Small expanses of these areas may be crossed by roads to access areas where harvest is appropriate, i.e. low or moderate vulnerability karst lands and non-carbonate areas. This would only be allowed if no other route or option was available and karst resource values would not be compromised. No quarry development would be allowed on these lands. Limited recreational development may be appropriate. Roads across such sensitive terrain except as described above, are inappropriate. Recreational facilities and trails would have to consider karst resource values and objectives discussed above, particularly with respect to reducing disturbance of significant epikarst features and sensitive soils and use of construction methods that avoid erosion and diversion of natural drainage waters into karst features.

Karst lands found to be of unquestionably high vulnerability shall be identified and removed from the commercial forest lands suitable land base.

Catchment Area Management

The catchment areas for karst systems, comprised of carbonate or non-carbonate substrate, are an integral portion of those system. These catchment areas must be effectively managed to protect the resource values of the karst systems into which they flow. The higher the resource values found within a particular karst block, the higher the degree of protection which is needed within a contributing catchment area. As a minimum, such things as potential for increased runoff and increased stream velocities, increased sediment transport capability, mass wasting potential of the soils within the watershed, and increased wind-throw potential should be considered when developing management strategies for these catchment areas. The vulnerability of the karst system's catchment areas should be considered equal to the highest down-gradient karst vulnerability values. As part of site-specific analysis, management strategies developed for the catchment areas should insure protection of the down-gradient karst resource values.

Monitoring

A monitoring strategy should be developed and maintained to determine the effects of land uses, specifically timber harvest and road construction on the karst landscape. As a minimum, karst hydrology, soil loss, forest regeneration, sedimentation, and debris transport should be monitored.

Mineral Development

The chemically pure carbonates of southeastern Alaska have long been considered for their commodity values. Values are not determined solely on chemical purity but on brightness as well. The more pure the carbonate bedrock, the more intense karst development. It is not the intent of these standards and guidelines to restrict any lands from mineral development, though that may be appropriate if a specific project or area is allocated to the "Special Interest Area" Land Use Designation. The impacts of any proposed mineral development within the karst landscape can be analyzed through the environmental analysis which is triggered once a Plan of Operation is received.

CAVE RESOURCES MANAGEMENT

1. **Cave Inventories and Designation.** The inventory of caves is an ongoing process. The Forest will continue to aggressively pursue collection of inventory data. This will be accomplished mostly through partnerships with caving organizations. Collection of this information will be the responsibility of the Unit cave management coordinator.
   a. Each of these caves will be assigned a unique cave inventory number, and, except in wilderness, a brass cave inventory cap will be placed at each entrance. The brass caps provide a permanent identification marker at each cave entrance and allow a distinction to be made between known and newly discovered caves.
   b. Cave numbers will be assigned to each cave entrance. Caves with multiple entrances will bear the same number at each entrance, followed by alpha characters (A, B, C, etc.) to differentiate between individual entrances. Cave numbers are assigned by Region, Forest, and Unit, followed by consecutive numbers for each cave on the Unit. For example, the number assigned to the main entrance of El Capitan Cave (10-5-4-70-A). The key to this numerical designation is as follows:

10	=	Region 10
5	=	Tongass National Forest, Ketchikan Area (Forest 5)
4	=	Thorne Bay Ranger District (Unit 4)
70	=	Cave No. 70 on the Unit
A	=	First Entrance of El Capitan Cave.

   c. Except in wilderness, brass cave inventory caps, stamped with the cave number, will be grouted into a drill hole at each entrance. The caps will be placed in obvious, easily found locations. Care will be taken when placing the markers to avoid locations which would unnecessarily impact the aesthetics of the cave or cause resource damage.

2. **Records.** On each management unit with caves, a file of permanent data will be maintained for each cave. This file will remain locked, with access provided on a need-to-know basis only. At a minimum, the following information will be collected and maintained for each cave:

   a. Cave Name
   b. Cave Number (entrance number)
   c. Determination of Significance
   d. Date Marker Cap Set
   e. Cave Length
   f. Latitude
   g. Longitude
   h. Elevation
   i. Township
   j. Range
   k. Section
   l. Quadrant
   m. Cave Classification
   n. Special Management Concerns
   o. Alternate Cave Names
   p. Descriptive Notes
   q. Cave Map

   In addition to the above information, photographs, scientific reports, copies of newspaper clippings, or other printed materials relating to a specific cave should be included in the file.

3. **Naming of Caves.** If a new name is to be applied to a cave there are two rules which should be followed:
   a. Never name a cave after a living person;
   b. Never name a cave after a geographic feature which discloses the cave's location.

4. **Cave Locations.** Information concerning the location of caves will be kept confidential in accordance with provisions of the FCRPA.
   a. Only the location of caves classified as "Directed Access" will be made available to the public;
   b. Cave locations recorded in GIS will be placed on a separate, secure layer, and all inventory records will be maintained in a locked file. Access to these records will be permitted on a need-to-know basis only. Generalized information which does not lead to the disclosure of cave locations may be made available if it is determined that such disclosure would not

constitute a threat of theft, damage, or harm to cave resources, and is consistent with the purposes of the FCRPA, the implementation regulations, Forest Plan Standards and Guidelines, and FSM 2356.

5. **Partnerships.** Use partnership agreements or volunteers to assist with cave management. The use of volunteers is authorized by the Volunteers in the National Forest Act (16 USC 558), the Federal Cave Resources Protection Act of 1988, and a National Memorandum of Understanding between the USDA Forest Service and the National Speleological Society, dated September 30, 1988. Actively seek and participate in interagency agreements and partnerships with both Federal, State and private partners, to meet the goals of this management plan. Emphasize opportunities for cooperative bat management.

6. **Suggested Monitoring/Management for Recreational Use.** Recreational use of only a few caves in the Tongass National Forest is currently taking place. However, with increased interest in the resource and increasing population, access, and tourism, cave use and visitation is expected to increase. Recreational use monitoring of select undeveloped caves has been done elsewhere through the use of cave registers or electronic counters. It is suggested that these proven techniques be used on the Tongass. Seek assistance from the National Speleological Society in monitoring projects. Include the following monitoring and management at a minimum:
   a. Photo monitoring of points established in sensitive caves to assess visitor impacts. Revisit these photo points periodically and take new photos from the same spots. Compare these photos to determine impacts to the cave and as a help in establishing appropriate use levels;
   b. Development of a brochure describing the sensitivity of cave resources to disturbance, cave access policy on the Forest, and precautions explorers should follow to prevent damage to caves. Caving safety and equipment will also be included. Develop the brochure in partnership with caving organizations.

7. **Protection of Cave Entrances.** Cave entrances are both sensitive and critical to cave ecosystems. Entrances are a focus of biological activity which contributes nutrients to deep cave organisms. The moderating affect of warm moist cave air creates micro-environments in cave entrances which promote growth and occupation by unusual plants and animals. Disruption of this ecosystem by development, or heavy recreational use should be avoided. Archaeological and paleontological sites are frequently found in cave entrances, particularly beneath vertical drops. Protection of cave entrances should include the following considerations:
   a. Recreational use, or development of cave entrances may be permitted only when it has been determined to be consistent with provisions of the Federal Cave Resources Protection Act;
   b. When heavy use is anticipated, narrow pathways should be provided to minimize disturbance;
   c. The building of fires in caves and cave entrances will be prohibited;
   d. No camping in caves and cave entrances unless it is deemed necessary. Camping may be permitted when it has been determined to be consistent with protection of cave resources.

8. **Digging in Caves.**
   a. All digging, moving of rocks, or enlargement of passages to allow exploration requires a permit. Digging should generally be minimal, and waste products disposed of, or graded in a manner specified in the digging permit. Excavations made as a part of scientific investigations will be backfilled and graded to natural contours.
   b. Issue permits only when it has been determined that no damage to cave resources will take place;
   c. If formerly closed passages are opened, take measures to maintain former atmospheric conditions through use of airlocks or gates.

9. **Permanent Anchors.** In vertical caves, use natural anchors for rigging ropes when possible. Chocks, cams, and slings are acceptable low impact anchoring devices. The use of permanent anchors, such as expansion bolts, will be set only when approved in advance by the Forest Service and generally not in wilderness. Acceptable reasons to set bolts would be lack of safe natural

anchors, directing ropes to avoid loose rocks, reduce rope abrasion, or to protect fragile cave resources.

10. Climbing. Climbing in caves may be allowed when needed to overcome vertical obstacles during exploration. Sport climbing may be allowed in the vicinity of cave entrances when no risk of damage to cave resources is present. Climbing must not mar, deface, for leave visible signs of activity having taken place. The use of chalk to dry climber's hands, and which leave marks on handholds, is considered a defacement and will not be permitted.

11. Closed Caves/Cave Entry Permits.

a. All sensitive caves will be closed by order of the Forest Supervisor and entry allowed by permit only. A sign at the entrance of each sensitive cave will designate it as closed to visitation without a permit, and indicate the address and phone number where permit information may be obtained.

b. Establish a carrying capacity for exploration purposes for each sensitive cave and determine allowable uses. Issue permit only for uses compatible with long-term preservation and protection of cave resources. Except in unusual circumstances, the maximum party size permitted in any sensitive cave will be six persons. Establish a maximum number of visits per month and per year. Each unit will be responsible for issuance of permits for caves under their jurisdiction.

c. Use gates to control access to certain caves. When it is determined a gate is required, design and install the gate to allow free passage of bats, small animals, air and water into or out of the cave. Gates will be constructed using the best designs available and located for maximum wildlife acceptance.

d. Certain caves on the Tongass National Forest provide critical winter habitat for bats. Bats have a low tolerance to disturbance. Recreational use during hibernation can result in death when disturbance results in starvation from utilization of limited fat reserves. Use seasonal closure of caves for protection of hibernating bats or bat maternity sites as appropriate. Winter closure will generally be between November 1, through April 15. Bat caves may be open to visitor use when bats are not present.

e. Blasting and other surface management activities can result in significant disturbance of roosting and hibernating bats within the cave systems. Some birds and large mammals and furbearers utilize the caves for nesting, denning and hibernation. Seasonal closures prohibiting construction activities in some areas may be required to insure protection of these populations.

12. Cave Evaluation. All caves on the Tongass National Forest will be evaluated using the following rating system. The system assigns values to various cave resources. The assigned values will be used in determining cave classification and in making determinations of cave significance as provided by the implementation regulations for the Federal Cave Resources Act of 1988. If a cave has a value of "1" or greater, in one or more categories, the cave will be considered for designation as significant using the criteria in 36 CFR 290.3(c) and (d) (FCRPA Implementation Regulations, 1994).

a. Biological Resources

Value	Explanation of Value
0	Biological components lacking.
1	Biological components exist but of low apparent significance.
2	Biological components present and numerous, sensitivity low.
3	Biological components present, numerous and of moderate sensitivity.
4	Biological components numerous and sensitive to disturbance.
5	Biological components very numerous and highly sensitive to disturbance. Habitat is critical to species survival. The cave contains unique species, or ones found on State or Federal sensitive, threatened, or endangered species lists.

b. Hydrological Resources

Value	Explanation of Value
0	Hydrologic components lacking.
1	Hydrologic components present but of low importance.
2	Hydrologic components present but of low sensitivity.
3	Hydrologic components present and of moderate sensitivity.
4	Hydrologic components important and very sensitive.
5	Hydrologic components complex and highly sensitive.

c. Heritage (cultural/historic) Resources

Value	Explanation of Value
0	Heritage resources lacking.
1	Potential for heritage resources low.
2	Potential for heritage resources moderate.
3	Heritage resources present or implicated by historic records. Site may be eligible for the National Register of Historic Places.
4	Heritage resources present and sensitive to disturbance. Site eligible for the National Register of Historic Places.
5	Heritage resources present and highly sensitive to disturbance. Site eligible for the National Register of Historic Places.

d. Recreational Resources

Value	Explanation of Value
0	Cave lacks recreational value.
1	Recreational value low. Little or no scenic appeal.
2	Recreational value low but receiving some use. Scenic values low.
3	Recreational values, scenic values and use moderate.
4	Recreational values, scenic values and use high.
5	Recreational values, scenic values and use very high. A major cave of regional or National significance.

e. Geologic/Mineralogic/Paleontologic Resources

Value	Explanation of Value
0	Features of significance lacking.
1	Some interesting features present.
2	Features present and resistant to disturbance.
3	Features present and of moderate sensitivity to disturbance.
4	Features numerous and of high value. Features sensitive to disturbance.
5	Features rare, valuable, numerous and/or of great sensitivity to disturbance.

f. Educational or Scientific Resources

Value	Explanation of Value
0	Caves lacking educational or scientific value.
1	Caves with low educational or scientific value.
2	Caves with features which can be used for educational or scientific study, but are otherwise considered common to the area.
3	Caves which provide opportunity for educational or scientific study.
4	Caves providing unusual opportunity for educational or scientific use.
5	Caves with unique opportunity for interpretation and public education or scientific study.

13. Cave Classification. Place caves into one of the following classes based on management objectives consistent with identified cave resource values. As new caves are discovered, temporarily manage them as Class 1 until an analysis of resource values is completed.

a. **Class 1. Sensitive Caves**. Caves considered unsuitable for exploration by the general public either because of their pristine condition, unique resources or extreme safety hazards. They may contain resources that would be impacted by low levels of visitation. These caves are not shown on maps or discussed in publications (such as guides, brochures or magazines) intended for general public use. Develop specific management guidelines for each sensitive cave for the purpose of protecting and maintaining their resources. Close these caves by order of the Forest Supervisor, and allow entry by permit only.

b. **Class 2. Directed Access Caves**. Caves with directed public access and developed for public use. These caves are shown on maps or have signs directing visitor access; frequently have guided tours and artificial lighting. Regardless of the level of development, encourage public visitation. The caves may have sensitive resources that are protected.

c. **Class 3. Undeveloped Caves**. Caves that are undeveloped but are suitable for exploration by persons who are properly prepared. In general, these caves contain resources that resist degradation by moderate levels of recreational use. Public attention will not be directed toward these caves. They will not be shown on maps nor discussed in brochures or publications intended for general public distribution.

14. Staffing Requirements. It is recommended that :

a. A position of Forest Cave Coordinator be designated. This position would have responsibility for coordinating all cave related activities on the Forest. This position would further be responsible for maintaining inventory records of all caves on the Forest, coordinate determinations of cave significance, provide expertise to field units concerning cave management, and assure guide lines, policies, plans, and laws pertaining to caves and cave resources are followed. The position would coordinate funding requests from field units, and transmit those requests to appropriate authorities. This position may be shared with the Regional Office to provide cave management direction and assistance to other National Forests;

b. On field units with caves, a District Cave Coordinator should be identified. This position will assume field level responsibility for inventory, evaluation, and management of caves. District Cave Coordinators will manage local activities related to caves, including issuance of cave access permits, research permits, cave gating, record keeping, and monitoring of impacts caused by use or management activities.

15. Prohibitions. The following acts will be prohibited by order of the Forest Supervisor pursuant to 36 CFR Sec. 261, 262, Subpart B:

a. In bat caves, or caves with sensitive species (261.53), it is prohibited to go into or be upon any area which is closed for the protection of: threatened, endangered, rare, unique, or vanishing species of plants, animals, birds or fish;

b. Applicable to all caves, except for purposes of research and exploration, it is prohibited to:

i. [261.52(a)] build, maintain, attend, or use a campfire or stove fire; fires may be allowed in regard to traditional native ceremonies in compliance with the American Indian Religious Freedom Act and the Native American Graves Protection and Repatriation Act, their amendments and implementing regulations.

ii. [261.52(c)] smoke;

iii. [261.58(e)] camp;

iv. [262.52(f)] possess, discharge, or use any kind of fireworks or other pyrotechnic device;

v. [261.58(m)] discharge a firearm, air rifle or gas gun; or

vi. [261.58(s)] possess a dog or cat.

16. Collection or Removal of Cave Resources. The Federal Cave Resources Protection Act authorizes the Secretary of Agriculture to issue permits for the collection and removal of cave resources under such terms and conditions as the Secretary may impose, including the posting of bonds to ensure compliance with the provisions of any permit. Specific guidelines are found for the issuance of such permits in the Act.

The Act further states "any person who, without prior authorization from the Secretary, knowingly destroys, disturbs, defaces, mars, alters, removes or harms any significant cave or alters the free movement of any animal or plant life into or out of any significant cave located on Federal Lands, or enters any significant cave located on Federal lands with the intention of committing any act described in this paragraph shall be punished..." The act goes on to describe specific punishment and sets civil penalties.

a. The Forest will comply with the Act by requiring permits for any collection of cave resources or when studies are proposed that could adversely impact cave resources. (See definition of Cave Resources in the FCRPA.)
b. Issue permits only when it has been determined that collections or studies will not create long-term impacts to cave resources.
c. Issue all permits with the provision that a copy of the study results is provided to the Forest Service.
d. All permits shall require assurance from the holder that the locations of significant caves will remain confidential.
e. Issue permits only when it has been determined that the proposed activities are consistent with the FCRPA, FSM direction, and are within Forest Plan Standards and Guidelines.
f. Issue collection permits for scientific research and educational purposes only.
g. No permits will be issued for removal of cave resources intended for personal collections or for purposes unlikely to generate new contributions of scientific knowledge or understanding of National Forest caves.

Appendix J

Watershed Analysis

A. **Introduction.** Watershed analysis is a procedure for assessing important riparian and aquatic habitat values and geomorphic processes within a watershed. It is to be considered within the overall context of ecosystem analysis. It describes key aquatic and riparian resources, along with their habitat conditions and trends. It is designed to:

1. Help set the stage for project planning
2. Strengthen the project NEPA analysis
3. Focus interdisciplinary discussion on key watershed-level resources, habitat relationships and management issues

Watershed analysis is not a decision process and does not propose any actions. NEPA compliance is not required for watershed analysis.

B. **Applicability.** Watershed analysis must be completed for any project decision that incorporates site-specific adjustment of process group standards & guidelines as provided for in the Riparian Forest-wide Standards & Guidelines. Watershed analysis is otherwise not required, but may be performed for a watershed if the responsible line officer determines it to be appropriate.

C. **Approach.** The responsible line officer will determine when a watershed analysis will be conducted and establish the purpose and scale of analysis. Watershed analysis may occur prior to development of a project proposal or as part of NEPA analysis for a specific project or projects. The need, scope and intensity of watershed analysis shall be based on a combination of issues, values and risks including, but not limited to:

1. Internal issues and public concerns and interests
2. Geomorphic characteristics and risks
3. Biological diversity and productivity
4. Past land use activities and watershed condition
5. Presence of threatened, endangered or sensitive species
6. Recommended or designated Wild, Scenic or Recreational Rivers
7. Water uses
8. Waters listed on the State of Alaska's 305(b) and 303(d) (Clean Water Act) lists

Watershed analysis shall use the basic framework relating to aquatic and riparian resources as described in: "Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis" (August 1995). Core topics for analysis include:

1. Erosion processes and wind disturbance regimes
2. Watershed hydrology
3. Stream channel morphology
4. Water quality
5. Aquatic and riparian dependent species and their habitats
6. Human uses
7. Cumulative risks to aquatic resources resulting from previous management disturbances and natural disturbances

Watershed analysis, at a minimum, will identify and describe aquatic and riparian resources, physical watershed characteristics and relevant issues. Products include:

1. Sediment risk analysis
   - identification of potential source areas (natural and resource management related)
   - identification of downstream depositional reaches and associated fish habitat
   - analysis of the hydrologic connection between source and deposition areas
2. Description of forest vegetative structure by size and age class
3. Identification of stream classes and aquatic species
4. Description of aquatic values and uses
5. Channel type inventory
6. Identification of Riparian Management Areas
7. Total miles of road and number of stream crossings
8. A description of the potential cumulative risks to aquatic resources resulting from past management disturbances

The scale and intensity of analyses will be determined by the significance of the issues, values and risks associated with management activities. When there are multiple risks to fish in the watershed, the intensity of watershed analysis should be commensurate with the level of cumulative risk. A more intensive, complex, and field-based watershed analysis will be needed in watersheds with, but not limited to:

1. High value of fish
2. High sediment yield risks or erosion potential
3. Extensive very high and high hazard soils
4. Presence of threatened, endangered or sensitive species
5. More than 20% of the watershed acres with trees in second growth younger than 30 years.
6. High density of roads and stream crossings

The scale of watershed-level analysis is generally between 5,000 and 20,000 acres, but can vary depending on project characteristics or issues being addressed.

D. **Documentation.** Complete a watershed analysis report. The analysis report documents current conditions and projected trends of past activities for aquatic and riparian habitats within the watershed. It will describe potential risks to aquatic resources and wetlands, and identify Riparian Management Areas. The report will provide recommendations that respond to the key management issues and analysis findings. Include in the documentation the criteria used by the line officer to establish the purpose and scale of the watershed analysis and the rationale for the watershed analysis recommendations. Include any recommendations for site-specific adjustment of process group standards and guidelines as provided for in the Riparian Forest-wide Standards & Guidelines. Include the watershed analysis report in any subsequent or concurrent documentation of project level decisions.

Appendix K

Old-growth Habitat Reserve Criteria

Introduction:

These criteria serve as guidelines for further evaluating the design of reserves at the project level as described in the Old-growth Habitat Land Use Designation Standards and Guidelines (Wildlife section).

Consider first, in any modification of mapped reserves, "non-development" Land Use Designations that maintain the integrity of the old-growth forest ecosystem and contribute to a Forest-wide system of reserves (e.g., Wilderness, Monument, LUD II, Remote and Semi-remote Recreation, Wild River, Municipal Watersheds, etc.). Where "non-development" Land Use Designations do not fulfill size, spacing, and composition criteria of the Forest-wide system of old-growth habitat reserves, add or modify old-growth reserves to meet criteria.

Rules Applicable to all Reserves:

A. Spacing should generally consider the four cardinal directions.
B. Reserves should be more circular rather than linear in shape to maximize the amount of interior (secure from the effects of forest edge) forest habitat.
C. Minimize to the extent feasible, the amount of early seral habitat and roads within mapped reserves.
D. Consider site-specific factors in placing reserves to help meet multiple biodiversity or wildlife habitat objectives. Factors include, but are not limited to:
    1. Important deer winter range to maintain important deer habitat capability to meet public demand for use of the deer resource (see Wildlife Forest-wide Standards and Guidelines.)
    2. Known or suspected goshawk nesting habitat (see TES Forest-wide Standard and Guidelines.)
    3. Known or suspected marbled murrelet nesting habitat (see TES Forest-wide Standard and Guidelines.)
    4. The largest remaining blocks of contiguous old growth within a watershed.
    5. Rare features such as underrepresented forest plant associations or stands with some of the Forest's highest volume timber stands.

Basic Criteria for Allocating Reserves:

A. **Large Reserves:** a contiguous landscape of approximately 40,000 acres, of which at least 20,000 acres must be productive old growth forest. At least 10,000 acres of the productive old growth forest (over 8,000 board feet per acre) component should be in the high volume class strata (greater than 25,000 board feet per acre). Large reserves shall not be greater than 20 miles apart, edge to edge, across the entire forest. Landscapes within the range of brown bears should include at least 1 Class I anadromous fish stream.
B. **Medium Reserves:** a contiguous landscape of approximately 10,000 acres of which at least 5,000 acres must be productive old-growth forest. At least 2,500 acres of the productive old growth forest component should be in the high volume class strata. Medium reserves shall not be greater than 8 miles from the nearest Large or Medium reserve across the entire forest.
C. **Small Reserves:** a contiguous landscape of at least 16% of the area of each Value Comparison Unit (VCU), and 50% of that area shall be productive old-growth forest.

Specific Design Criteria for Small Reserves:

Small reserves are required in all VCU's except as noted below. When needed, small reserves shall be 16% of the area of a VCU and at least 50% of that size shall be productive old growth forest. The preferred biological objective is for each reserve to contain at least 800 acres of contiguous productive old-growth forest, but may contain a minimum of 400 acres of productive old-growth forest.

A. Additional criteria for assessing the need for and designing of a small reserves:
   1. VCU's that have been separated (as denoted by decimal extensions, e.g., 597.1 and 597.2) may be combined for computation purposes.
   2. In very large VCU's that that contain relatively little old growth and the computational rule requires an amount of old growth that exceeds 50% of the existing old growth in the VCU, map a reserve of at least 800 acres of productive old growth.
   3. Small reserves are not required:
      a) In VCU's that already contain sufficient acres (16%/50% calculation) of productive old growth forest in a non-development Land Use Designation (LUD).
      b) In VCU's with less than 800 acres of productive old-growth forest.

B. Mapping of old growth computational allocation:
   1. In VCU's that are partially allocated to a non-development LUD, compare the computed acreage required to the acres of productive old growth in the non-development LUD. If productive old growth acres within the non-development LUD exceed the computed acres for the small reserve, no further allocation is necessary in that VCU. If the non-development LUD acres are less than the area necessary for a small reserve, first use the productive old growth acres in the existing non-development LUD to establish a small reserve and then add additional acres of productive old growth to achieve the required small reserve size and composition.
   2. In very large VCU's, the allocated old growth may be mapped in separate reserves as long as each reserve has a minimum of 800 acres of productive old growth. However, larger contiguous reserves are preferred to fragmented smaller reserves.
   3. In VCU's that are separated by saltwater channels, reserves may be separated but attempt to retain 800 acres of productive old growth in each.
   4. Where VCU boundaries do not match watershed or ecological boundaries, up to 30% of the allocated old growth acres in a VCU may be mapped in an adjacent VCU if the resulting reserve achieves old growth reserve objectives. The resulting small reserve in both VCU's must be contiguous.
   5. In VCU's with a computational allocation of less than 800 acres of productive old growth forest, attempt to design the reserve contiguous with old growth acres in a non-development LUD in an adjacent VCU to establish a larger contiguous reserve. Do not map isolated reserves with less than 400 acres of productive old growth.
   6. Attempt to avoid existing roads, clearcut units, and log transfer facilities within small reserves.
   7. Attempt to identify and map contiguous blocks of productive old growth forest. Old growth forest that constitutes scattered fragments of unsuitable timberland does not contribute to meeting small reserve design. Including riparian, beach and estuary habitats as contributing elements to contiguous old growth reserve design is acceptable.

C. In designing small reserves, include consideration of landscape linkages between larger reserves.

Appendix L

Resource Schedules

The direction set forth by the Forest Plan is implemented through specific activities and projects. This appendix displays those projects planned for approximately 10 years of plan implementation. These schedules are dynamic and may be updated frequently. Environmental analysis will be conducted on most of these projects as they become ripe for implementation. Some projects, like inventories and scenery management planning, do not generally require environmental analysis.

Following environmental analysis, where performed, projects may be scheduled for implementation. The final implementation schedule will be dependent upon a variety of factors including demand (for instance for timber sales), budget availability, cost/benefit ratios, and partnership opportunities. An additional factor for consideration is the timing and location of other forest management activities. For example, activities, such as road construction for timber harvest purposes, are important for the successful implementation of some fish, wildlife or recreation projects. Environmental analysis of projects will be tiered to the Forest Plan FEIS.

Fish Habitat Enhancement

There are 158 potential projects identified for implementation during the next ten years. Most of the potential projects have not been through environmental analyses nor the on-site review required to determine project feasibility. Total costs including project planning and implementation, maintenance and monitoring of these projects are estimated to be $30.7 Million (1994 dollars).

Many of these projects are identified as project opportunities but have not yet received on site reconnaissance. Project feasibility will be determined at the time of the on site reconnaissance. All projects which are determined to be feasible, following environmental analysis and on-site review, may be scheduled for implementation. Priorities for project completion are coordinated through the cooperative salmon enhancement planning process (see Appendix H).

Implementation of all potential fisheries enhancement projects on the Tongass during the next decade is estimated to result in a total of 864.7 million pounds of salmon through the first five decades. Fish would be available to subsistence, sport and commercial harvesters. The aggregated value of this harvest is projected to be 661.1 million dollars during this same period.

Some projects, such as installing small instream structures or riparian rehabilitation, overlap with projects listed under watershed restoration. These projects are usually part of a comprehensive planning effort and are separated from watershed projects only for reporting purposes.

Number of Potential Enhancement Projects by Type

Project Type	Chatham Area single yr/multi yr	Stikine Area single yr/multi yr	Ketchikan Area single yr / multi yr	Total
Small Instream Structures	10 / 5	5 / 0	7 / 4	31
Fishways	8 / 2	11 / 0	5 / 0	26
Barrier Modification	4 / 0	2 / 1	5 / 2	14
Spawning Channels	1 / 0	0 / 0	1 / 0	2
Rearing Ponds/off channel rearing	3 / 0	0 / 0	0 / 0	3
Barren Lake Stocking	0 / 1	1 / 0	0 / 3	5
Cooperative Fish Stocking	1 / 3	0 / 3	1 / 3	11
Incubation Boxes	2 / 1	0 / 2	0	5
Lake Fertilization	0 / 3	0 / 0	0 / 2	5
Debris Removal	0	0	0	0
Weir/stock Assessment	7 / 2	0 / 6	0 / 2	17
Riparian Rehabilitation	22 / 2	4 / 1	4 / 6	39
Total Projects	**77**	**36**	**45**	**158**

Multi-year projects are usually implemented in successive years but only counted as one activity. Fertilization of a particular lake is an example of a single project which may be repeated for several years in order to achieve the desired objective of restoring a natural run of salmon to the lake.

The majority of the small instream structural projects, including projects such as large woody debris and gabion placement, mitigate past logging activities. These projects may be considered as rehabilitation rather than enhancement and often may be part of watershed restoration.

Recreation Capital Investment

The capital investment schedules for recreation facilities and trails generally emphasize reconstruction of existing facilities to meet current standards and demands. Schedules are updated annually by the Forest/Areas. These updates normally involve changes in cost, minor changes in scope, incorporation of partnership funding opportunities, filling in an additional year of future projects, and other new information. Occasionally projects may change in priority. This is generally due to unforeseen circumstances which may delay implementation, emergency needs which may result in new projects or changes in priorities, or opportunities to combine with other funding sources. Since the costs of the projects on the schedule exceed available funding for many years to come, new projects are not added every year. Thus while the general order of the schedule is adhered to, a certain degree of flexibility is required.

Recreation Facility Construction and Reconstruction Capital Investments

Project	Capacity (Persons At One Time)	Year Tentatively Funded	Area	District
Mendenhall Glacier Campground Rehab		1997-1998	Chatham	Juneau
Mendenhall Visitor Center		1997	Chatham	Juneau
Heckman Lake Cabin Rehab	6	1997	Ketchikan	Ketchikan
Eagles Nest Picnic Area		1997	Ketchikan	Thorne Bay
Eagles Nest Picnic Area	20	1997	Ketchikan	Thorne Bay
Red Bay Cabin Rehab	6	1997	Ketchikan	Thorne Bay
Bay Of Pillars Shelter		1997	Stikine	Petersburg
Mendenhall Visitor Center		1998	Chatham	Juneau
Yakutat Dunes Pavilion	60	1998	Chatham	Yakutat
Harris River Campground	75	1998	Ketchikan	Craig
Starrigavin Campground Rehab, Phase 2		2000-2005	Chatham	Sitka
Barlow Cove Cabin	12	2000-2005	Chatham	Juneau
Auke Village Campground Rehab	85	2000-2005	Chatham	Juneau
Skaters Cabin Rehab	30	2000-2005	Chatham	Juneau
Harbor Mountain Recreation Area		2000-2005	Chatham	Sitka
Salmon Lake Cabin	6	2000-2005	Chatham	Sitka
Starrigavin Campground Rehab Phase 1	375	2000-2005	Chatham	Sitka
Harbor Mountain Recreation Area		2000-2005	Chatham	Sitka
Southeast Alaska Visitor Center, Phase 6		2000-2005	Ketchikan	
Luck Lake Day Use	30	2000-2005	Ketchikan	Thorne Bay
Little Ratz Harbor)	54	2000-2005	Ketchikan	Thorne Bay
Hamilton Bay Picnic Area		2000-2005	Stikine	Petersburg
Towers Lake Cabin Rehab	6	2000-2005	Stikine	Petersburg
Nemo Road Campsites, Phase 2		2000-2005	Stikine	Wrangell
North Wrangell High country Shelters		2000-2005	Stikine	Wrangell

Trail Construction and Reconstruction Capital Investments

Trail	Miles	Year Tentatively Funded	Area	District
East Glacier Loop Trail	3.0	1997	Chatham	Juneau
Steep Creek, Phase 1	0.2	1997	Chatham	Juneau
Mendenhall Glacier Campground Trails	2.6	1997	Chatham	Juneau
Ketchikan Trail & Site Easements	5.0	1997	Ketchikan	
Ketchikan Trail & Site Easements		1997	Ketchikan	
Connell Lake Trail, Phase 2	1.1	1997	Ketchikan	Ketchikan
Eagles Nest Trail, Phase 1	3.0	1997	Ketchikan	Thorne Bay
Blind River, Phase 2		1997	Stikine	Petersburg
Harris River Campground	0.5	1998	Ketchikan	Craig
Eagles Nest Trail, Phase 2		1998	Ketchikan	Thorne Bay
Ketchikan Trail & Site Easements		1999	Ketchikan	
Suntaheen Trail	0.1	2000-2005	Chatham	Hoonah
Steep Creek, Phase 2	0.3	2000-2005	Chatham	Juneau
Trail Of Time	0.5	2000-2005	Chatham	Juneau
Auke Campground Trails		2000-2005	Chatham	Juneau
Skaters Cabin Trails	0.2	2000-2005	Chatham	Juneau
Gavin Hill Access	0.2	2000-2005	Chatham	Sitka
Harbor Mt. Recreation Area		2000-2005	Chatham	Sitka
Mt. Edgecumbe	6.2	2000-2005	Chatham	Sitka
Starrigavan Campground Trails		2000-2005	Chatham	Sitka
Ketchikan Trail & Site Easements		2000-2005	Ketchikan	
Castle River Trail	1.1	2000-2005	Stikine	Petersburg
Harvey Lake	0.5	2000-2005	Stikine	Petersburg
North Wrangell High Country	2.5	2000-2005	Stikine	Wrangell

Road Management Planning

The Revised Forest Plan incorporates substantial change in management direction from the 1979 (as amended) Tongass Land Management Plan. Major change includes the allocation of new Land Use Designations (LUD's) and the implementation of new standards and guidelines. Numerous areas previously available for timber harvest and often unrestricted vehicular access now have revised management direction.

Standards and guidelines throughout the Plan address the need for road management planning (e.g., the Transportation and Wildlife Forest-wide Standards & Guidelines, and the Old-growth Habitat Land Use Designation). Road management planning is executed through the development and implementation of Road Management Objectives. (Consult FSM 7710 and FSH 7709.55.) Road Management Objectives are used to address the design, use, and maintenance of individual roads, as well as the overall road network.

Travel and Access Management Planning (Consult FSH 7709.55, 7709.58, and 7709.59), which addresses human uses of roads activities such as hunting, fishing, and recreation, as well as resource concerns such as for the protection of wolves or brown bear, is an important process to facilitate the developing or updating of the Road Management Objectives. This schedule addresses the need to develop or update Road Management Objectives across the roaded area of the Tongass as a result of implementation of the Revised Forest Plan.

Road Management Objective Schedule

Develop or update Road Management Objectives across the roaded area of the Forest. The priority for accomplishing updated objectives will be set by each of the Forest Supervisors for his or her Administrative Area. Generally, those geographic areas with recognized road conflicts or specific concerns related to implementation of the revised Forest Plan should be addressed first. Conflict areas may include, but not be limited to, Northeast Chichagof Island (road accessible from Hoonah), Prince of Wales Island, and Mitkof Island.

Planning should address logical road management areas (e.g., an island, a part of an island, a grouping of islands, parts of the mainland, etc.). If feasible, develop or update Road Management Objectives as part of a proposed project within a vicinity.

Road management planning should be consistent with Forest Service Manual 7710 and Forest Service Handbook 7709.55.

Scenery Management

The Tongass National Forest is in the process of changing from the previous Visual Management System to the new National Scenery Management System. Manual direction, titled "Landscape Aesthetics: A Handbook for Scenery Management" should be available during the first year of Forest Plan implementation. The new system has been developed to: 1) incorporate into one manual the analysis tools that have evolved over the past two decades since the inception of the basic system, 2) redefine and clarify some terms; 3) revise some of the inventory processes; 4) provide a stronger link with ecosystem management; and 5) provide more graphic examples of all the systems concepts. The following schedule will implement the new system.

New "Scenery Management System" Schedule

Within five years after distribution of the new Scenery Management System handbook complete a refinement of the scenery data base that will be based on the direction and guidelines outlined in this handbook. This scenery inventory refinement will include updates of several elements of the data base. These new and/or refined inventories may then be used in the next revision of the Forest Plan. The time frames for completion are as follows: 1) Ecological land unit delineation's and landscape character descriptions and inventory of inherent scenic attractiveness. Complete by the first year after plan implementation. 2) Refine concern level ratings (sensitivity level ratings in VMS) utilizing a constituent analysis as outlined in new handbook. Complete by the second year after plan implementation. 3) Viewshed mapping and delineation of Scenic Classes. Complete by the third year after plan implementation. 4) Visual Absorption Capability inventory refinement. Complete by the fifth year after plan implementation.

Timber Harvest

About 700 thousand acres of commercial forest land are classified as suitable for timber production (see Appendix A). Most of these acres have been scheduled for eventual timber harvest over a rotation age ranging from 70 to 160 years. Of the total acreage, 247,000 acres are scheduled for harvest on the Stikine Area; 140,000 acres are scheduled on the Chatham Area; and 289,000 acres are scheduled on the Ketchikan Area.

The Allowable Sale Quantity (ASQ) for this plan for the next ten years is 65.3 MMCF (267.2 MMBF) on an average annual basis. As shown in the following timber schedule the ASQ is divided into two non-interchangeable components (NIC). The standard component (NIC I) volume is scheduled from suitable lands using existing logging systems (normal operability). Most of theses lands are expected to be economic under projected market conditions for the plan. The non-standard component (NIC II) volume (difficult and isolated operability) is scheduled from suitable lands that are available for harvest using systems not commonly used in Southeast Alaska. Most of these lands are considered economically or technologically marginal for the life of the plan. As much as 52.3 MMCF (219 MMBF) could be make available from the NIC I component, and as much as 13 MMCF (48 MMBF) could be made available from the NIC II component, during the life of this plan from the Forest as a whole. How the projected annual average sale schedules used to calculate these totals are divided among the three administrative areas, on an average annual basis, is shown in the following sale schedules. (Note: The ASQ is measured in cubic feet; board foot volumes are only given for comparison purposes.)

Sale Schedule in Millions of Cubic Feet

1st Decade Sale Schedule – Average Annual Sell (MMCF, sawlog and utility)

	Noninterchangable Components		
	Standard	**Non-Standard**	**Total**
Chatham	9	4	13
Stikine	18	5	23
Ketchikan	25	4	29
Tongass Avg. Annual Allowable Sale Quantity	52	13	65

(Totals may be off due to rounding errors.)

1st Decade Sale Schedule – Average Annual Sell (MMCF, sawlog only)

	Noninterchangable Components		
	Standard	**Non-Standard**	**Total**
Chatham	7	3	10
Stikine	15	4	19
Ketchikan	21	3	25
Tongass Avg. Annual Allowable Sale Quantity	43	11	54

(Totals may be off due to rounding errors.)

Sale Schedule in Millions of Board Feet

1st Decade Sale Schedule – Average Annual Sell (MMBF, sawlog and utility)

	Noninterchangable Components		
	Standard	**Non-Standard**	**Total**
Chatham	35	16	51
Stikine	77	18	95
Ketchikan	107	14	121
Tongass Avg. Annual Allowable Sale Quantity	219	48	267

(Totals may be off due to rounding errors.)

1st Decade Sale Schedule – Average Annual Sell (MMBF, sawlog only)

	Noninterchangable Components		
	Standard	**Non-Standard**	**Total**
Chatham	27	13	40
Stikine	63	15	78
Ketchikan	88	13	101
Tongass Avg. Annual Allowable Sale Quantity	178	41	219

(Totals may be off due to rounding errors.)

Watershed Restoration

Watershed restoration involves accelerating the return of a watershed to a condition which is within a natural range of variation for water yield, stream flow, sediment movement, large wood recruitment and transport, water chemistry, and soil mass movement. Because of the magnitude of some watershed restoration needs, projects are often multi-year projects and require significant time for planning prior to implementation. These watershed restoration efforts are expected to involve partners from outside the Forest Service.

Projects may also be implemented which have narrower objectives than large -scale watershed restoration, such as stabilizing a landslide through revegetation, releasing riparian conifers in dense alder stands or correcting drainage problems. These types of projects are usually not located in watersheds with apparent large scale restoration needs and will not require as intensive analysis and planning as the watershed wide restoration projects.

The 10-year restoration schedule identifies both large-scale watershed restoration projects as well as single-year type projects. Some projects, such as re-establishing stream bank vegetation, controlling erosion at a stream crossing, or placing large wood in a stream, may overlap with projects listed under fish habitat improvement . These projects are usually part of a comprehensive planning effort and are separated from fish habitat projects only for reporting purposes. Also included in the 10-year restoration schedule are projects which are needed to support watershed restoration planning. Although these projects do not produce direct on the ground accomplishments, they are necessary to either gather information about the watershed on which project designs are based; or to enable out year budgets to be developed and priorities set. Both the watershed analysis protocol development and the update of the watershed restoration strategy will be coordinated with other agencies and landowners.

Watershed Restoration Planning Schedule

Type of activity or project	Chatham	Stikine	Ketchikan
Watershed Analysis protocol development (within one year of plan implementation)	Forest-wide	Forest-wide	Forest-wide
Update Area projects list in Watershed Restoration Strategy (within one year of plan implementation)	Forest-wide	Forest-wide	Forest-wide

Watershed Project Schedule

Type of activity or project	Chatham	Stikine	Ketchikan
Maybeso watershed restoration (planning, implementation and monitoring phases may span 8 to 10 years)			X
Nakwasina watershed restoration (planning, implementation and monitoring phases may span 8 to 10 years)	X		
Number of single year type projects, per year	1	1	1

Wildlife Management

Extensive inventories and monitoring projects are planned during the next 10 years of Forest Plan implementation. These inventories and monitoring projects will contribute to the understanding of the habitat requirements of the Forest's wildlife, including Threaten, Endangered and Sensitive Species. The types of projects implemented during plan implementation may shift depending on new information gained.

Habitat enhancement activities are either vegetative habitat improvements or structural improvements. Vegetative habitat Improvement projects (measured in acres) include activities such as precommercial thinning, cutting canopy gaps into young-growth stands, shrub plantings, and seeding of forage plants. Structural improvements, listed in the schedule as "structures constructed", include: structures which regulate road access; provide waterfowl and osprey nesting platforms; signing for eagle nests; and songbird and bat nest boxes.

Watchable wildlife projects are generally implemented to facilitate the forest visitor's understanding and enjoyment of wildlife. Projects are often designed, funded and implemented in cooperation with other agencies and organizations. These projects may be planned to complement other recreation management projects and programs.

Wildlife Schedule (annual)

Type of activity or project	Chatham	Stikine	Ketchikan
Acres of habitat improved	1,500	1,300	5,200
Number of structures constructed	10	15	50
Acres inventoried, monitored, or studied to benefit:			
Amphibians [3]	1,500	3,000	5,000
Birds			
bald eagles [5]	6,200	1,500	5,000
marbled murrelet	4,200	5,000	1,000
waterfowl and shorebirds [1,2,3,4,5]	38,500	18,000	19,000
forest birds [4,5]	27,000	7,000	35,000
Upland species			
deer [3,4]	25,000	92,700	85,000
Alexander Archipelago wolf	1,000	5,000	30,000
bear [3,4]	15,000	5,000	15,000
furbearers [3,4]	5,600	5,000	5,000
other species [1,3,4](especially moose, elk, goats and small mammals)	15,300	10,500	45,000

[1] Includes aerial surveys over acres of good habitat (for shorebirds and waterfowl includes concentration areas used for nesting, wintering or loafing; for sea birds includes acres of previously known haulouts or rookeries surveyed for population trend; for mountain goats includes acres where animals are commonly spotted during aerial surveys.)
[2] Counts 500 acres for each "MAPA" study site and each fall migration count site.
[3] Except where otherwise specified, assumes 40 acres per day of level 4 field survey by each biologist, botanist or biological technician.
[4] Assumes 10 acres per telemetry relocation of each radioed animal under study.
[5] Assumes 80 acres per mile of shoreline surveyed for eagle nests or eagle productivity, or 80 acres per mile of sea transact for sea birds or sea mammals.

Threatened, Endangered and Sensitive Species Schedule (annual)

Type of activity or project	Chatham	Stikine	Ketchikan
Acres of habitat improved	0	200	1,100
Number of structures constructed	0	5	170
Acres inventoried, monitored, or studied to benefit:			
Fish (miles of streams, acres of lakes)	6 mi. 150 ac.	0	4 mi.
Birds			
goshawk [3,4]	75,000	10,000	100,000
Plants [3]	16,800	8,400	14,000
Marine Mammals [1,3,4] (including both listed and non-listed marine mammals)	4,500	1,500	6,000

[1] Includes aerial surveys over acres of good habitat (for shorebirds and waterfowl includes concentration areas used for nesting, wintering or loafing; for sea birds includes acres of previously known haulouts or rookeries surveyed for population trend; for mountain goats includes acres where animals are commonly spotted during aerial surveys.)
[2] Counts 500 acres for each "MAPA" study site and each fall migration count site.
[3] Except where otherwise specified, assumes 40 acres per day of level 4 field survey by each biologist, botanist or biological technician.
[4] Assumes 10 acres per telemetry relocation of each radioed animal under study.

Nature-watch Program

Type of activity or project	Chatham	Stikine	Ketchikan
Number of viewing sites developed	1	4	7
Number of presentations	20	20	60
Number of multimedia products	10	100	50