



United States
Department of
Agriculture

Forest Service

Pacific
Northwest
Region



1993

Roaring National Wild and Scenic River

Environmental Assessment and Management Plan

Mt. Hood National Forest Estacada Ranger District



Table of Contents

Decision Notice and Finding of No Significant Impact DN-1

Environmental Assessment

Chapter I - Purpose and Need for Action EA-7

Chapter II - Affected Environment EA-17

Chapter III - Alternatives EA-27

Chapter IV - Environmental Consequences/Effects
of Implementation EA-32

Chapter V - Consultation With Others EA-48

Appendix A - Final Resource Assessment EA-50

Appendix B - References Cited EA-73

Management Plan

Desired Future Conditions MP-1

Standards and Guidelines MP-3

Implementation Plan MP-10

Monitoring Plan MP-12

**Decision Notice
and
Finding of No Significant Impact**

Roaring National Wild and Scenic River

**Environmental Assessment
and
Management Plan**

Forest Plan Amendment No. 5

Clackamas County, Oregon

**USDA - Forest Service
Mt. Hood National Forest
Estacada Ranger District**

Decision Notice

Table of Contents

Background.....	1
Decision	1
Description of Selected Management Alternative	2
Reasons for the Decision.....	3
Other Management Alternatives Considered	3
Summary of Public Involvement	3
Relationship to Mt. Hood National Forest Land and Resource Management Plan	3
Relationship to Clackamas Wild and Scenic River Environmental Assessment and Management Plan	4
Finding of No Significant Impact and Compliance with Laws.....	5
Implementation and Right to Appeal	6

Background

The United States Congress enacted the National Wild and Scenic River Act in 1968 establishing a system for protecting outstanding free-flowing rivers nationwide. In 1988, the Omnibus Oregon Wild and Scenic River Act designated the entire mainstem (13.7 miles) of the Roaring River to the National Wild and Scenic River system. The Forest Service is responsible for preserving the free-flowing character of the river, maintaining or enhancing the river's outstandingly remarkable values (ORVs), and developing a comprehensive management plan for the river and its associated corridor. This Decision Notice establishes the management strategy for the Roaring Wild and Scenic River. The accompanying Roaring Wild and Scenic River Environmental Assessment and Management Plan were prepared in accordance with the Wild and Scenic Rivers Act and the National Environmental Policy Act.

The ORVs for the Roaring Wild and Scenic River include:

Water Quality — based on the cool, clear, and pure water provided by the Roaring River.

Botany — based on the botanical and ecological values along the river and its corridor.

Fisheries — based on both fish populations (native cutthroat trout, late-run coho salmon, and late-run winter steelhead) and excellent quality habitat.

Wildlife Habitat — based on the exceptionally high quality habitat for the northern spotted owl and the unusually diverse array of wildlife habitat along the river and its corridor.

Recreation — based on the sport fishing opportunities, primitive character and remoteness of the river's recreation setting, and its non-wilderness primitive recreation opportunities.

Scenic Resources — based on the wild, unmodified scenery of the river corridor and the surrounding ridges which are unique in the region (outside designated wilderness areas).

The Roaring Wild and Scenic River is classified as a "recreational" segment from its confluence with the Clackamas Wild and Scenic River upstream to river mile 0.2. The river is then classified as a "wild" segment from river mile 0.2 upstream to its headwaters at river mile 13.7 (see Map 2 in the Environmental Assessment). The lower one-tenth mile of the Roaring Wild and Scenic River "recreational" segment overlaps with the "recreational" segment of the Clackamas Wild and Scenic River.

Decision

Based upon the analysis documented in the Environmental Assessment, it is my decision to select Alternative 2. Alternative 2 would allow for further recreational developments within the "recreational" segment only. The environmental consequences of Alternative 2 are disclosed under Chapter 4 ("Environmental Consequences/Effects of Implementation") of the Roaring Wild and Scenic River Environmental Assessment and Management Plan. My decision establishes the following:

- A final corridor boundary for the wild and scenic river (see Map 2 in the Roaring Wild and Scenic River Environmental Assessment).
- Management direction for the river and its corridor (see the Roaring Wild and Scenic River Management Plan).
- Necessary modifications to the Mt. Hood National Forest Land and Resource Management Plan (Forest Plan).

**Description of
Selected
Management
Alternative**

- An implementation schedule for management actions for various resources (see the Roaring Wild and Scenic River Management Plan).
- A monitoring plan for river, its corridor, and the various management activities to take place (see the Roaring Wild and Scenic River Management Plan).

All management activities identified in both the Implementation and Monitoring Schedules are subject to site-specific environmental analysis and are dependent on budget availability.

Alternative 2 is the selected management alternative for the Roaring Wild and Scenic River. This alternative emphasizes maintaining the present level of recreational development and opportunity for public use within the wild segment while expanding recreational developments and opportunity for use within the recreational segment. Under this alternative there would be no new or additional trail construction, development, or improved access within the "wild" segment of the river corridor. Trails currently providing access to the river and corridor would receive continued maintenance. Recreational developments would be allowed within the recreational segment. Specific activities under this alternative include:

- Development of a barrier-free, interpretive trail within the recreational segment.
- Construction of interpretive signing or facilities within the recreational segment that would be in compliance with the Clackamas River Drainage Interpretive Plan.
- Upgrading restroom facilities and expanding parking opportunities within the recreational segment adjacent to Highway 224.
- Closing and restoring public-created access trails within the river corridor.
- Closing, rehabilitating, and relocating existing dispersed campsites that are impacting resource values along the river.

Management direction for the "recreational" segment of the Roaring Wild and Scenic River would be the same as that for the "recreational" segment of the Clackamas Wild and Scenic River. See the Roaring Wild and Scenic River Corridor Management Area management direction in the Roaring Wild and Scenic River Management Plan. The interim river corridor boundary is accepted as the final river corridor boundary with no modifications -- one-quarter mile on each side of the river (see Map 2 of the Environmental Assessment).

This alternative retains all current "underlying" management areas designated in Alternative Q of the Mt. Hood National Forest Final Environmental Impact Statement and Land and Resource Management Plan. These "underlying" management areas include: B5 Pileated Woodpecker/Pine Marten Habitat Area, and B7 General Riparian Area. Management areas adjacent to the final river corridor boundary would remain as originally designated.

The Clackamas Wild and Scenic River Decision Notice and Finding of No Significant Impact already amended the Forest Plan changing the lower one-tenth mile of the Roaring Wild and Scenic River within the "recreational" segment from a regulated timber harvest regime to an unregulated timber harvest regime. It is my decision to apply the identical management direction identified in the Clackamas Wild and Scenic River Management Plan to the upper one-tenth mile section of the Roaring River recreation segment. Thus, there would be an unregulated timber harvest regime within the entire length of the Roaring Wild and Scenic River Corridor, including both the "recreational" and "wild" segments. It is also my decision to exclude commercial livestock grazing from the Roaring Wild and Scenic River Corridor.

Reasons For The Decision

In reaching my decisions, I first reviewed all of the river's outstandingly remarkable values (Resource Assessment) and the issues and concerns brought forward by the public, agencies, and interdisciplinary team (Chapter 1 of the EA and the letters and comments received from the public and agencies found in the EA Analysis File). Next, I evaluated how each of the three management alternatives respond to the ORVs and issues, and what the expected environmental consequences are of each management alternative. After carefully weighing all of these considerations, I find that Alternative 2 best meets the balance of benefits and response to public issues. This decision will allow for:

- the protection and maintenance of the six Outstandingly Remarkable Values of the river,
- further recreational opportunities and public enjoyment in the recreational segment, and
- continued "primitive" character of the river within the wild segment.

Other Management Alternatives Considered

I considered two other proposed management alternatives for the Roaring Wild and Scenic River -- Alternatives 1 and 3. Alternative 1 is the "No Action" alternative that would adopt the current Forest Plan interim management direction while emphasizing recreational developments within the corridor. Alternative 1 would allow for substantial trail developments within both the recreational and wild segments, thus providing an opportunity for increased public use within the river corridor. The upper one-tenth mile of the recreational segment would continue to be managed under a regulated timber harvest regime. Alternative 3, on the other hand, would maintain the Roaring Wild and Scenic River in an exceptionally wild state. Alternative 3 emphasizes ecological management and restoration of the wild and scenic river corridor. There would be no further recreational developments under this alternative. This alternative would also restrict present access within the upper wild segment and would emphasize the use of prescribed natural fire within the entire Roaring River drainage.

Summary of Public Involvement

Public participation and involvement was, and will continue to be, a critical part in the development and implementation of the Roaring Wild and Scenic River Environmental Assessment and Management Plan. Private citizens, interest groups, and state, local, federal, and tribal governments were invited to provide comment and input throughout the development of the Resource Assessment and the Environmental Assessment and Management Plan. See Chapter 5 of the Environmental Assessment for a list of those invited to provide public input. Comments received from those who replied were used to help supplement, modify, shape, and refine both the Resource Assessment and the Environmental Assessment and Management Plan.

Relationship to Mt. Hood National Forest Land and Resource Management Plan

The Forest Service is responsible for management of National Forest System lands. The 1990 Mt. Hood National Forest Land and Resource Management Plan provides direction for management on the Forest. All of the designated wild and scenic rivers on the Mt. Hood National Forest are given special management emphasis in the Forest Plan under the management area classification of "B1 Designated Wild and Scenic Rivers." This specific management area management direction incorporates the general guidance of the Wild and Scenic Rivers Act into specific "standards and guidelines" for the B1 Management Areas.

The Roaring Wild and Scenic River Environmental Assessment and Management Plan documents the results of analysis of three separate management regimes for the river and its corridor. Through this process and through the adoption of the Clackamas Wild and Scenic River Corridor Management Plan, a new Management Area is created and is entitled "A1-ROA - Roaring Wild and Scenic River Corridor." This new management area occupies the full area designated within the final river corridor boundary. The Forest Plan is hereby amended to create this new management area to be managed according to the management area management direction outlined in the Roaring Wild and Scenic River Management Plan. The B1 Designated Wild and Scenic Rivers classification has been changed to A1-ROA to reflect the very minor change in timber harvest management direction and maintain consistency with the A1-CLA Management Area classification for the Clackamas Wild and Scenic River Corridor. This amendment is considered to be non-significant because there is neither a major change in projected Forest "outputs" or a significant change in management direction. Specific modifications to the Forest Plan management direction include:

- No regulated timber harvest within the upper one-tenth mile of the recreation segment.
- No new trail or other recreational developments are allowed within the wild segment.
- No commercial livestock grazing is allowed within the corridor.

The level of Forest "outputs" between the Forest Plan (Alternative 1) and Alternative 2 are very minor. The change from a regulated to an unregulated timber harvest regime for the upper one-tenth mile segment of the recreational segment results in a 0.003 percent change to the projected yearly 189 million board feet allowable sale quantity (ASQ) for the Mt. Hood National Forest. *I have determined the change in management direction that prohibits new trail or other recreational developments within the wild segment to be insignificant.* The present level of access into the wild segment allows for sufficient access and recreational opportunity. Further developments could jeopardize the primitive quality of the wild segment. A change in management direction to no longer allow commercial livestock grazing within the corridor is neither a significant change in management direction for the corridor, nor would result in a change in projected Forest Plan outputs. There are no present or previously planned livestock grazing allotments within the corridor. In my judgment, neither the projected Forest "outputs" or the management direction under Alternative 2 have changed in a manner that would constitute a significant amendment to the Forest Plan.

The final Clackamas Wild and Scenic River Corridor Boundary extends from the mouth of Roaring River upstream to river mile 0.1. Within this section, the two wild and scenic river corridors overlap (see Map 3 in the Environmental Assessment). My decision is to manage the upper one-tenth mile recreational segment of the Roaring River identically to the management direction identified in the Clackamas River Wild and Scenic River Management Plan. Therefore, the entire 0.2 mile recreational segment of the Roaring River will be managed under consistent management direction. The A1-CLA Management Area management direction for the "recreational" segment of the Roaring Wild and Scenic River is incorporated into the A1-ROA Management Area management direction found in the Roaring Wild and Scenic River Management Plan.

Relationship to Clackamas Wild and Scenic River Environmental Assessment and Management Plan

Finding of No Significant Impact and Compliance With Laws

After thorough review of the Environmental Assessment, I have determined that this is not a major federal action that will significantly affect the quality of the human environment. Therefore, an environmental impact statement is not necessary and will not be prepared. My determination is based on the following:

- Irreversible and irremediable commitments of resources and adverse cumulative or secondary effects will not exceed those discussed and evaluated in the Final Environmental Impact Statement for the Mt. Hood National Forest Land and Resource Management Plan.
- Direct, indirect, and cumulative environmental impacts were analyzed and discussed in the Environmental Assessment and were not found to be significant.
- There will be no significant impacts to wetlands, floodplains, prime farm lands, range lands, minority groups, women, or consumers.
- Management direction established for the Wild and Scenic River corridor will not adversely affect the environment beyond or downriver from the designated corridor.
- River Management Plan direction is not expected to cause any significant adverse impacts to any threatened, endangered, or sensitive plant or animal species. Site-specific biological evaluations will be completed for scheduled activities within the corridor.
- The River Management Plan is in compliance with all relevant Federal, State, and local laws, regulations, and requirements for the protection of the environment. The River Management Plan meets the State of Oregon water and air quality standards.

Biological evaluations for plants and animals are completed and are included in the Environmental Assessment Analysis File. These evaluations assess the impacts of my programmatic level decision on all threatened, endangered, and sensitive plant and animal species and their habitats that could potentially be found within the river corridor. The evaluations conclude that Alternative 2 is not expected to cause any adverse impacts to these species or their habitats. All scheduled activities would require site-specific surveys and biological evaluations, as well as appropriate interagency consultation if necessary, during project planning and prior to project implementation.

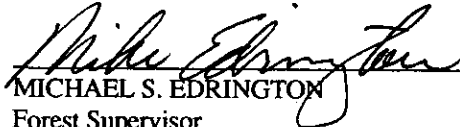
**Implementation and
Right to Appeal**

This decision may be implemented 30 calendar days after it is published in **The Oregonian**. Each management activity identified in the Implementation Schedule for the Roaring Wild and Scenic River Management Plan is subject to further site-specific environmental analysis prior to implementation in compliance with the National Environmental Policy Act.

This decision is subject to appeal pursuant to 36 CFR 217. Any written Notice of Appeal of this decision must be fully consistent with 36 CFR 217.9 (Content of a Notice of Appeal) and must include the specific reasons for appeal. A written Notice of Appeal, in duplicate, must be filed with the Reviewing Officer, John Lowe, Regional Forester, P.O. Box 3623, Portland, OR 97208-3623, within 45 days of the date upon which legal notice of this decision appears in **The Oregonian**.

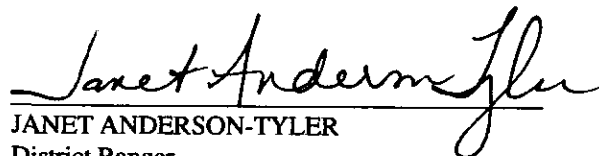
For further information, please refer to the Roaring Wild and Scenic River Environmental Assessment and Management Plan or contact Paul Norman, Wild and Scenic Rivers Administrator at (503) 666-0700.

Responsible Official:


MICHAEL S. EDRINGTON
Forest Supervisor
Mt. Hood National Forest
2955 NW Division Street
Gresham, OR 97030

9/13/93
Date

Recommending Official:


JANET ANDERSON-TYLER
District Ranger
Mt. Hood National Forest
Estacada Ranger District
595 NW Industrial Way
Estacada, OR 97023

9/7/93
Date

Roaring National Wild and Scenic River

Environmental Assessment

**Mt. Hood National Forest
Estacada Ranger District
Clackamas County, Oregon**

Deciding Official:

**Michael S. Edrington, Forest Supervisor
Mt. Hood National Forest
2955 NW Division
Gresham, OR 97030**

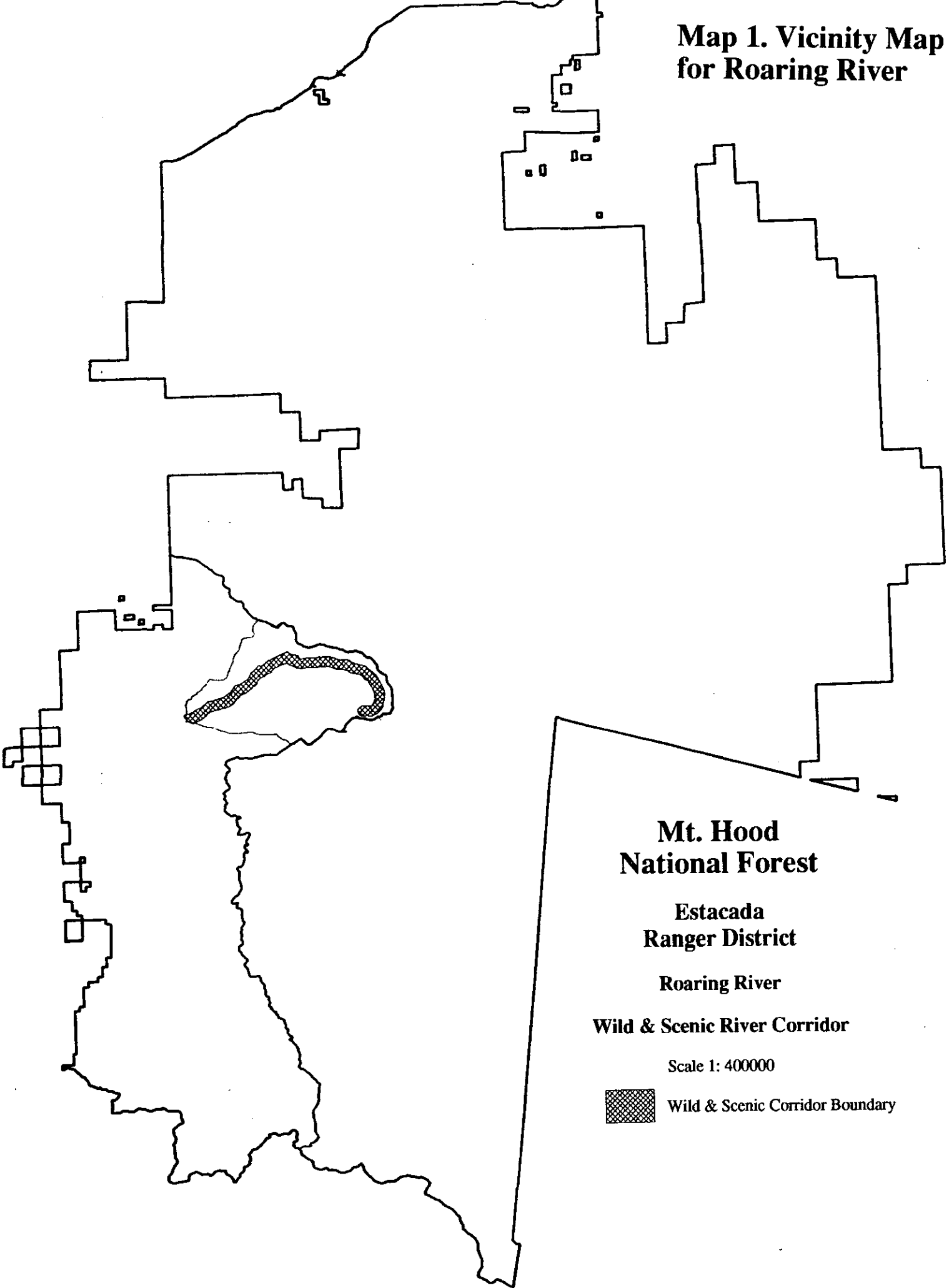
Recommending Official:

**Janet Anderson-Tyler, District Ranger
Mt. Hood National Forest
Estacada Ranger District
595 NW Industrial Way
Estacada, OR 97023**

For Further Information:

**Dan Shively
Estacada Ranger District
595 NW Industrial Way
Estacada, OR 97023
(503) 630-6861**

**Map 1. Vicinity Map
for Roaring River**



**Mt. Hood
National Forest**

**Estacada
Ranger District**

Roaring River

Wild & Scenic River Corridor

Scale 1: 400000



Wild & Scenic Corridor Boundary

Environmental Assessment Table of Contents

Chapter I - Purpose and Need for Action

Introduction	EA-7
Purpose and Need	EA-7
Proposed Action	EA-10
Decisions to be Made	EA-10
Agency Jurisdiction/Management Direction	EA-10
Roaring River Corridor Information	EA-12
The Planning Steps	EA-13
The Resource Assessment	EA-13
Scoping	EA-14
Issues/Opportunities	EA-14

Chapter II - Affected Environment

Geology	EA-17
Hydrology	EA-17
Botany	EA-18
Fisheries	EA-19
Wildlife	EA-21
Heritage Resources	EA-22
Recreation	EA-22
Scenic Resources	EA-23
Fire History and Role of Fire in Roaring River	EA-23
Vegetation	EA-24
Socioeconomics	EA-25
South Fork Roaring River	EA-26

Chapter III - Alternatives

Actions Common to All Alternatives	EA-27
Alternative 1 (No Action)	EA-27
Alternative 2	EA-30
Alternative 3	EA-30
Management Alternative Comparison Matrix	EA-31

Chapter IV - Environmental Consequences/Effects of Implementation

Introduction	EA-32
Geology	EA-32
Hydrology	EA-33
Botany	EA-35
Fisheries	EA-36
Wildlife	EA-39
Heritage Resources	EA-39

Recreation	EA-40
Scenic Resources	EA-43
Vegetation	EA-44
Socioeconomics	EA-45
South Fork Roaring River	EA-46
Required Disclosures	EA-46
Environmental Consequences Comparison Matrix	EA-47

Chapter V - Consultation With Others

List of Preparers	EA-48
Agencies, Organizations and Individuals	EA-48

List of Appendices

Appendix A - Final Resource Assessment for the Roaring River

Chapter I - Executive Summary	EA-50
Chapter II - Introduction: Background and Planning Overview	EA-51
Chapter III - The Resource Assessment: Definitions & Background	EA-52
Chapter IV - River Description	EA-53
Chapter V - Findings and Discussion of Values	EA-54
Appendix A-1 - Roaring River Map	EA-67
Appendix A-2 - SCORP Map	EA-68
Appendix A-3 - Roaring River Roadless Area Map	EA-71
Appendix A-4 - References Cited	EA-72

Appendix B - References Cited	EA-73
---	-------

List of Tables

Table 1 - Fish Species and Stocks Inhabiting the Roaring River	EA-20
Table 2 - Management Alternative Comparison Matrix	EA-31
Table 3 - Environmental Consequences Comparison Matrix	EA-47

List of Maps

Map 1 - Vicinity Map for Roaring River	
Map 2 - Roaring River Access Map (Corridor Boundary)	EA-8
Map 3 - Clackamas/Roaring River Recreational Segment Overlap	EA-9
Map 4 - Proposed Trail Developments for Alternative 1	EA-29

Chapter I

Purpose and Need for Action

Introduction

In 1968, Congress passed the National Wild and Scenic Rivers Act (P.L. 90-542), thus establishing a nationwide system of outstanding free-flowing rivers. The Act also provides for the protection of river values for each river in the system through the development of a river management plan.

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 (P.L. 100-557) amended the 1968 Act, adding portions of 40 Oregon rivers to the national system. The entire mainstem of the Roaring River was designated from its headwaters to its confluence with the Clackamas River: a total of 13.7 river miles.

For a river segment to be considered eligible for Wild and Scenic status, it must be "free flowing" and possess one or more "outstandingly remarkable values" (ORVs). The Congressional Record indicated that the Roaring River's primitive character and remoteness are its outstandingly remarkable values.

Under the Wild and Scenic Rivers Act, designated rivers are classified as wild, scenic or recreational, depending on the level of development and access present at the time of designation. Wild rivers are the most natural appearing and the least accessible. Scenic rivers have shorelines that are largely undeveloped with few access points. On river segments with the Recreational classification, the shoreline is more developed and roads may parallel the river closely. The Roaring River is classified wild except for about 0.2 miles at the confluence with the Clackamas where it is classified recreational (see Map 2):

Segment A. The 13.5 mile segment from its headwaters to two-tenths mile upstream from the confluence with the Clackamas River is classified **wild**; to be administered by the U.S. Forest Service.

Segment B. The 0.2 mile segment from the confluence of the Clackamas River upstream to river mile 0.2 is classified **recreational**; to be administered by the U.S. Forest Service. The lower one-tenth mile of the Roaring River recreational segment overlaps with the recreational segment of the Clackamas Wild and Scenic River (see Map 3).

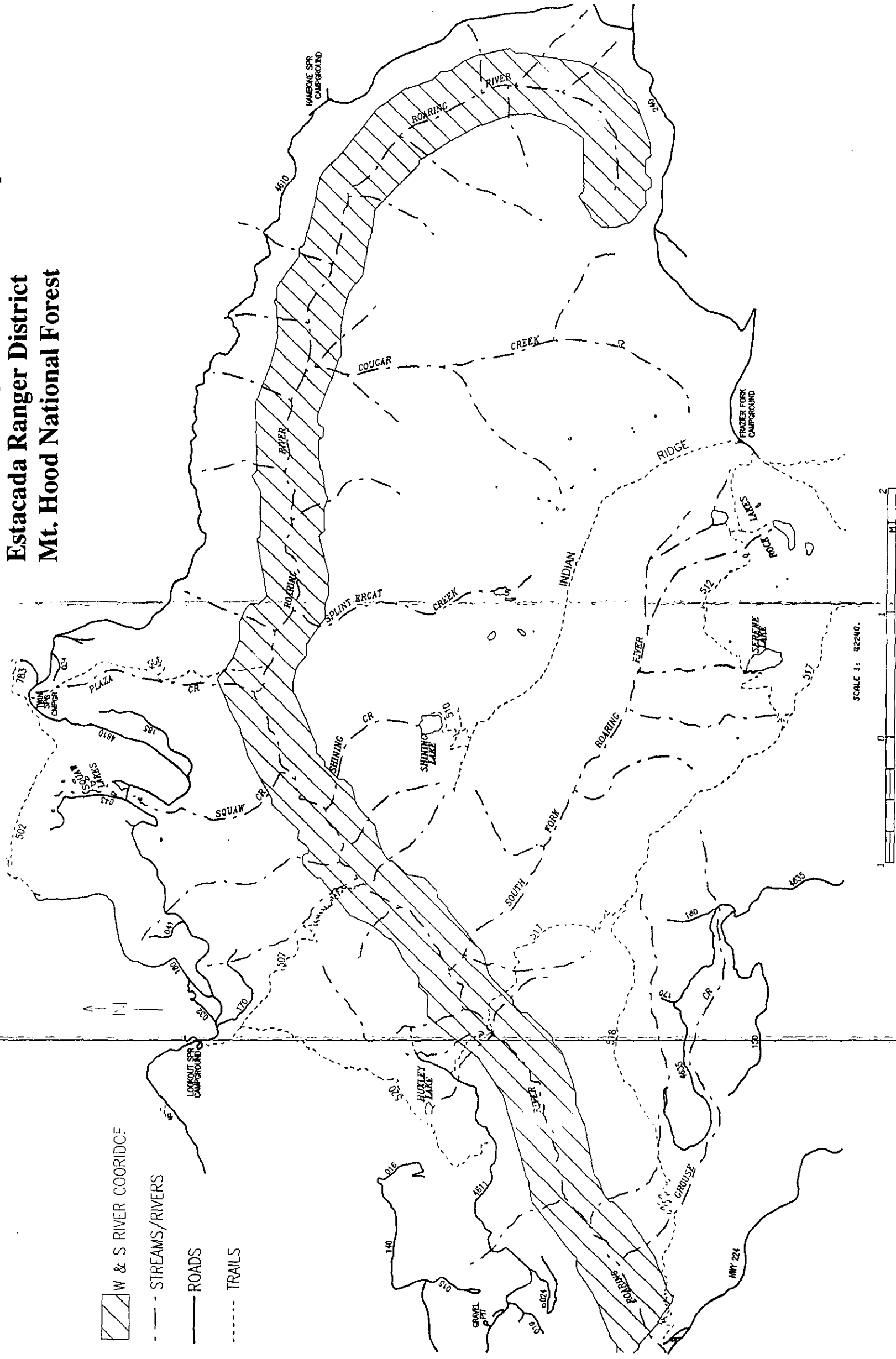
For interim management, during the period of time between the river's designation and development of a final river management plan, a corridor one-quarter mile on each side of the river was established by the Mt. Hood National Forest as the interim Wild and Scenic River corridor. The river would be managed in a manner that would provide for protection and enhancement of the values for which the river was designated, without limiting other uses that do not substantially interfere with public use and enjoyment of these values. The interim corridor boundary would be re-evaluated and boundaries finalized during the development of the river management plan.

Purpose and Need

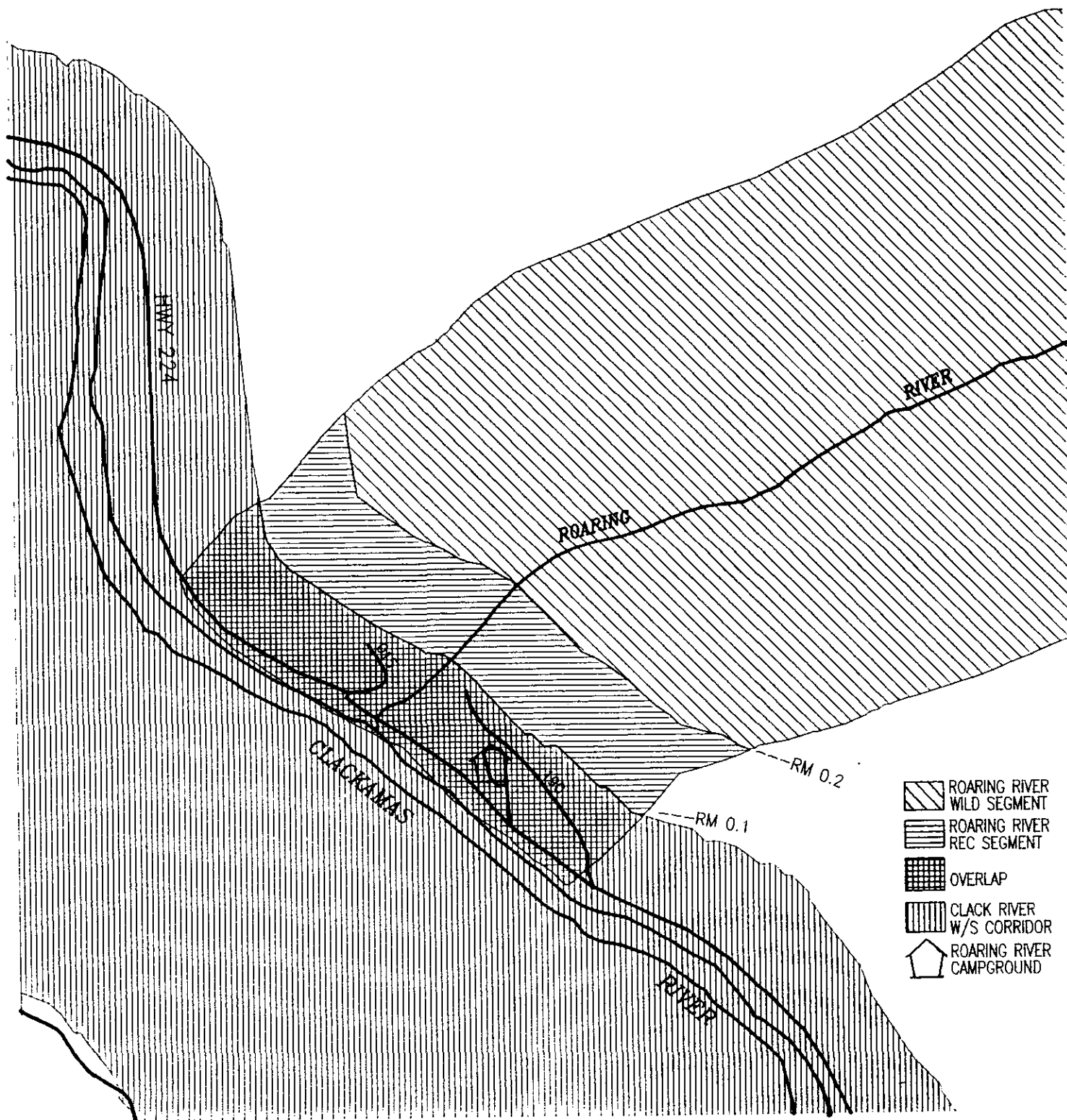
The 1988 Omnibus Oregon Wild and Scenic Rivers Act designated the Roaring River as a national wild and scenic river. The Act requires the Forest Service to develop a comprehensive management plan for the river within three full fiscal years of the date of designation. The environmental assessment for the Roaring River provides background information and subsequent analysis for comparing potential management alternatives. A comprehensive management plan, which accompanies the environmental assessment, was developed by the river planning team for the selected management alternative. The goals and objectives for this assessment and the river management plan are to:

- Provide an implementable strategy for the protection and enhancement of river-related values of the Roaring River, with specific emphasis on the protection and enhancement of the river's free-flowing condition, water quality, and outstandingly remarkable values.

Map 2. Roaring River Access Map Estacada Ranger District Mt. Hood National Forest



Map 3. Clackamas/Roaring River Clackamas/Roaring River Wild/Scenic Corridor Overlap



SCALE 1: 9051.



- Finalize the Roaring River's corridor boundary in the environmental analysis process.
- Review and finalize the Roaring River management area standards and guidelines, as set forth by the Mt. Hood National Forest Land and Resource Management Plan (1990), for consistency between management area prescriptions and goals to provide for protection and enhancement of the values for which the river was designated.
- Meet the requirements of the Wild and Scenic Rivers Act and the National Environmental Policy Act.
- Review and, if necessary, revise management prescriptions, goals and objectives, and standards and guidelines of adjacent management areas to protect the values for which the river was designated.

Proposed Action

The Estacada Ranger District proposes to complete the planning process for the Roaring National Wild and Scenic River which includes the completion of an environmental analysis and the development of a management plan, implementation plan, and monitoring schedule. The proposed action is to develop a river management plan which protects and enhances the values for which the river was designated.

The Roaring Wild and Scenic River Corridor is located in T.4S., R.6E. & R.7E.; and T.5S., R.6E. & R.7E. within the Roaring River drainage, Lower Clackamas watershed, on the Estacada Ranger District, Mt. Hood National Forest, W.M., surveyed, Clackamas County, Oregon (see Map 2).

Decisions to be Made

The deciding official needs to make the following programmatic decisions:

- Recommend to Congress a final river corridor boundary that best protects the values for which the river was designated.
- Modifications to the Forest Plan if current management standards & guidelines for the river corridor do not adequately protect the free-flowing condition, water quality, and outstandingly remarkable values.
- Selection of a river management plan that would protect and enhance the values for which the river was designated.

Agency Jurisdiction/ Management Direction

The Wild & Scenic Rivers Act requires coordination with other agencies in developing the management plan. Several agencies have jurisdiction over resources and uses in or affecting the the designated Roaring River corridor. Those entities with specific policies relevant to management of the Roaring River and its resources are described below.

U.S. Forest Service

The 1990 Mt. Hood National Forest Land and Resource Management Plan (also called the Forest Plan) provides direction for management programs, practices, uses and protection measures on the Forest. The Forest Plan recognizes five designated wild and scenic rivers on the Mt. Hood National Forest with a special management area designation: B1 - Designated Wild and Scenic Rivers. The Plan incorporates the general guidance of the Wild and Scenic Rivers Act into the "standards and guidelines" for the B1 Management Areas.

In addition to B1 lands, the Roaring River corridor includes two other Management Area designations:

- B5 - Pileated Woodpecker/Pine Marten Habitat Area
- B7 - General Riparian Area (unmapped)

Areas adjacent to the interim 1/4 mile river corridor are managed as:

- A4 - Special Interest Area (Scenic emphasis)
- A6 - Semi-Primitive Roaded Recreation
- B2 - Scenic Viewshed

This River Management Plan is intended to refine the guidance of the Forest Plan. Upon its completion, the Forest Plan would be amended (if necessary) to incorporate the Roaring River Management Plan and any changes to related standards and guidelines. All decisions made as a result of this assessment are programmatic in nature and relate to management of the river corridor. No site-specific projects are being proposed.

Oregon Department of Fish and Wildlife

The Oregon Department of Fish and Wildlife (ODFW) is responsible for management of all fish and wildlife populations on public and private lands within state boundaries, regulates all commercial and recreational harvest of fish and wildlife, and has the authority to request instream water rights to protect fish and wildlife resources. ODFW developed the Clackamas Subbasin Fish Management Plan (ODFW, January 1992) to direct management of fish resources of the Clackamas subbasin including the Roaring River. The Forest Service manages habitat for fish and wildlife on National Forest System lands, and coordinates with ODFW to achieve common objectives.

Oregon Department of Transportation (ODOT)

ODOT is responsible for planning, designing, constructing, signing, and maintaining State Highways. ODOT needs authorization to use National Forest Lands for highway rights-of-way, waste areas and material sources for highway construction, reconstruction and maintenance. The Memorandum of Understanding Title 1500 - External Relations, 1535.13 --1 describes coordination and responsibilities of the Forest Service and ODOT for both new and reconstruction activities. ODOT informs the Forest Supervisor of planned highway construction, highway relocations, and highway betterment projects that could have an impact on National Forest lands.

Oregon State Parks and Recreation Department

The Oregon State Parks and Recreation Department is responsible for the acquisition, improvement, maintenance, and operation of Oregon's state park system. The department is also responsible for giving technical assistance to local government agencies on park matters, develops and maintains the Statewide Comprehensive Outdoor Recreation Plan (SCORP), and administers the Federal Land and Water Conservation Fund matching grant program in Oregon. The department also administers the Scenic Waterway Program. The program includes the development of scenic waterway management plans, the review of land use changes and new development in scenic waterways, and the right to make application for instream water rights for recreational purposes. The lower quarter mile of the Roaring River is in the State's Scenic Waterway.

Other Agency Jurisdictions

Pacific Fishery Management Council

Regulation of commercial fish harvest of Pacific salmon.

Oregon Department of Water Resources

Water rights issuance on all waters in the state. Enforcement of development restrictions on State Scenic Waterways.

Oregon Department of Environmental Quality

Regulation of state air and water quality. Authority over instream rights for water quality for Scenic Waterways.

Oregon Department of Agriculture

Implementation of Oregon Endangered Species Act, cooperation with USFWS on Federal Endangered Species Act studies. The ODA has a cooperative agreement with the USFWS involving research and conservation programs for plant species under the auspices of the Federal Endangered Species Act.

Oregon Natural Heritage Program

The ONHP maintains the database and manuals on Oregon's rare, threatened, and endangered plants and ecosystems. A cooperative agreement with the national forests in Oregon provides an exchange of information on species and habitats, and a centralized database.

Roaring River Corridor Information

The Roaring River Wild and Scenic corridor is located on the Estacada Ranger District in Clackamas County. It is 30 miles southeast of Portland, and 15 miles southeast of Estacada. The river mileage is 13.7 miles, and the river corridor contains approximately 4596 acres within the interim boundary (see Map 2). The corridor is accessible to the north by the Abbott Road (Forest Service Road 4610). State Highway 224 crosses the Roaring River at its confluence with the Clackamas River. There are three Forest Service trails and an unmaintained fisherman trail which also provide access to the river.

The Roaring River drainage is a steep river drainage flowing in a southwesterly direction to the Clackamas River. Smaller side drainages dissect the area and include Cougar Creek, Splintercat Creek, Squaw Creek, and the South Fork of the Roaring River. The lower section of the Roaring River is a spectacular narrow gorge, lined with basalt cliffs and talus slopes. Further upstream the canyon widens to steep, heavily-timbered slopes. Beyond the river corridor, the area is characterized by several dominant ridges as well as a series of upper elevation lakes.

Hiking, camping and fishing are the predominant recreational activities. Recreational use is concentrated at several access points and in the lower mile of the corridor. Roaring River Campground is situated on the south side of the river near its mouth. Its use is popular due to sport fishing and proximity to the Clackamas River. The river canyon is relatively untrailed and receives minimal use due to rough terrain and isolation. This provides opportunities for recreation in a primitive setting.

Responsibility for management of the corridor belongs to the Mt. Hood National Forest. In 1974, the Forest Service conducted an environmental analysis and issued an environmental impact statement (EIS) for the Roaring River drainage. The proposed action was to establish a comprehensive land use plan and set management direction for the Roaring River Unit. The alternative selected specified that most of the Roaring River drainage remain unroaded. The 1990 Mt. Hood National Forest Land and Resource Management Plan (Forest Plan) contains management direction consistent with this earlier decision allocating most of the roadless area to A4 - Special Interest Area (scenic emphasis). The drainage is bounded on the north by the Salmon-Huckleberry Wilderness. A PGE powerline crosses the river near its mouth. No known mining claims, mineral leases, or physical impoundments exist within the river corridor. Locatable mineral potential and potential for development of leasable minerals is low.

The Planning Steps

The following planning steps were used in developing the river management plan:

- **Resource Assessment** to identify & evaluate river resources; determine the level of significance of river-related values,
- **Project scoping** to identify issues, concerns and opportunities,
- **Environmental Analysis** to evaluate alternative management scenarios,
- **Prepare an Environmental Assessment** for public review and comment, and
- **Select a Preferred Alternative** and develop a management plan.

The Resource Assessment

The first step in developing a river management plan is to evaluate the resources and values associated with the river and river corridor and determine the level of significance of river-related values. The federal process calls this first step the Resource Assessment.

The Resource Assessment determines the level of significance of river-related values. Those river-related values determined to be significant are considered as the river's "outstandingly remarkable values". To qualify as an outstandingly remarkable value, a river-related value must be a unique, rare, or exemplary feature that is significant at a regional or national level. Refer to Appendix A for the Final Roaring River Resource Assessment.

Outstandingly Remarkable Values

During the development of the Resource Assessment, the Forest Service team found fisheries, recreation, botany, water quality, and scenic resources to be outstanding remarkable values for the Roaring River. As a result of external review of the draft resource assessment, the finding for the river's wildlife habitat was changed to outstandingly remarkable.

Water Quality

The finding was based on the high level of water quality provided by the Roaring River. Its water is cool, clear, and pure.

Botany

The finding was based on the highly diverse and unique botanical and ecological values found within the river corridor.

Fisheries

The finding was based on both the fish populations and habitat. Native cutthroat trout, late-run coho salmon, and late-run winter steelhead populations were found to be outstandingly remarkable. The high quality fish habitat was also found to be outstanding for the entire mainstem of the Roaring River.

Wildlife Habitat

The finding was based on the exceptionally high quality habitat for the spotted owl (*Strix occidentalis*), a nationally significant threatened species, and the unusually diverse array of wildlife habitat.

Recreation

The finding was based on the sport fishing opportunities, the primitive character and remoteness of the river's recreation setting, and its non-wilderness primitive recreation opportunities.

Scenic Resources

The finding was based on the unmodified scenery of the river corridor and the surrounding ridges which are unique in the region (outside designated wilderness areas).

Scoping is the process for determining the scope of issues to be addressed. Scoping is used to identify the significant issues, determine the depth of analysis needed, the range of alternatives, and public notification of the proposed action.

In developing a management plan for the Roaring River, the Forest Service followed National Environmental Policy Act (NEPA) requirements, including establishing an interdisciplinary team and involving the public. Interdisciplinary team members and consultants are listed in Chapter 5.

Public involvement has been and continues to be a critical part of the river management planning process. Private citizens, interest groups, state and local governments, other agencies, and the tribal governments were invited to participate in the development of the resource assessment and management plan (see Chapter 5). In addition, public notice was conducted through a Mt. Hood National Forest newsletter "Sprouts".

Key Issues

Fisheries

- Additional trail development and public use within the wild and scenic river corridor may affect fisheries habitat and production. Increased angling pressure could lead to a decrease in population size and could change the age structure of the resident, native rainbow and cutthroat trout populations within both the recreational and wild segments. Further public use may also lead to an increased incidence of harassment and illegal taking (e.g., snagging) of spawning salmon and steelhead within the lower 3.5 miles of river.
- Further trail development and public use, especially within riparian areas, may result in increased sedimentation which could decrease fish habitat quality.

Scoping

Issues/ Opportunities

Water Quality

- Further trail development and public use within the wild and scenic river corridor may decrease water quality. The construction and use of new trails, especially those located within riparian areas, could result in further soil erosion, contributing additional fine sediments to the river, and therefore increasing the water's turbidity (amount of fine suspended sediments). An increase in the water's turbidity could lead to an increase in sedimentation and, therefore, lower the quality of fish habitat.
- Furthermore, additional public use that is concentrated within riparian areas and along the river and its tributaries could result in further human waste pollution that could lead to an increase in bacterial pollution of the river. If human waste pollution becomes great enough, the river's water quality may not meet state water quality bacterial standards.

Primitive Recreational Experience

- The existing primitive recreational experience within the wild segment, one of the only areas providing this opportunity outside of wilderness areas on the Forest, could be altered by further trail and site developments. Alteration of the primitive recreational experience could occur through an increase in visitations and personal encounters or further regimentation (restrictions placed on people's actions). These alterations could downgrade or lessen the primitive experience.

Botanical Values

- New trails and further public use within the wild and scenic river corridor may result in a loss of unique or threatened, endangered, or sensitive documented plant species or their potential habitats. Native plant species could be impacted or lost from human trampling, introduction and invasion by non-native species, and from incidental or intentional taking. Plant habitats could be degraded or destroyed when new trails are developed in or near their habitats or when unplanned dispersed recreational sites are created.

Other Issues and Opportunities

- Increased public demand for remote, back-country recreational experiences is expected to increase over the next 10 years due to the close proximity to the Portland-metropolitan area. Maintaining the existing uses and conditions within the wild and scenic river corridor may not meet this demand or provide for increased public enjoyment.
- Opportunities exist to further enhance and promote the primitive character and remoteness of the wild and scenic river corridor by blocking or removing existing developed and public-created trails.
- The ecological functioning of the Roaring River drainage and its wild and scenic corridor may be affected by certain management activities or decisions. Exclusion of natural fire within the drainage or wild and scenic corridor has and may alter the natural succession of vegetation and the development of plant and animal communities. Introductions of exotic species may also disrupt the ecological functioning and integrity of plant and animal communities within the Roaring River drainage and its wild and scenic corridor. For example, unintentional introductions of non-native plant species and escapement of non-native trout species from tributary lakes may alter the plant and fish community compositions, respectively, along and within the Roaring River.

- Additional trails and public use within key habitat areas for the northern spotted owl could decrease the overall habitat quality due to increased harassment and noise for the duration of the disturbance.
- There is an opportunity to provide increased access to and further public enjoyment of the river's wild, unmodified scenic values.
 - * Use of fire within the river drainage or wild and scenic corridor may change the existing scenic conditions. In the short term, dead and charred trees may be visible in affected areas along trails and from surrounding vistas.
 - * An infestation of forest pathogens may also change the existing scenic conditions. With severe infestations, large areas of forest foliage could be damaged, thus appearing brown and decadent. The setting could be modified to the degree that the affected areas dominate the visual experience of the observer.

Chapter II

Affected Environment

Geology

Through geologic time, volcanic activity and erosional processes have shaped the Roaring River drainage. Millions of years ago, the area was covered with a lake of molten lava. During this time an episode of periodic flood basalts covered much of northern Oregon and southern Washington forming the Columbia River Basalts. Later, deposits of andesite lava flows, ash, ejecta, and mud pyroclastic flows covered the Columbia River Basalts and were mapped as the Rhododendron Formation. A series of lava flows formed the Cascade Andesite, the youngest material found in the upper drainage. This hard and erosion resistant material formed cliffs and talus slopes. Glaciation has modified the upper portion of Roaring River and its tributary drainages into broad "U" shaped valleys. Extensive erosion during interglacial periods has been primarily responsible for development of the large earth-flows in the lower portion of the drainage. Outwash from the glaciers oversteepened the Columbia River Basalt deposits causing the overlying, weaker Rhododendron Formation to fail, creating mud flows and exposing basalt cliffs.

Today, the upper drainage topography is dominated by a relatively broad glacial valley with forested slopes and talus sweeping up to sharp ridges interspersed with small basins, many of which contain lakes. Upper ridgelines are composed primarily of igneous rock outcrops. Large blocks of basalt and andesite rock are exposed. A mosaic of talus and forested slopes fall steeply from these ridgelines. Many of the forested areas are growing on talus deposits over deep, gravelly glacial soils. Soils on benches, upper valley bottoms, and less steep upper sideslopes are of glacial origin. Rocks of Cascade Andesite and basalt form a large part of the soil mass. Bedrock below most of these glacial soils is basalt or andesite.

The lower four miles of the river corridor is a narrow gorge with steep basalt cliffs and talus. Columbia River basalts form the bedrock of the lower valley. Some of the drainages which are tributary to the lower Roaring River are extremely steep with unstable soils. Active landslides and debris flows are not uncommon in these steep drainages. Along the lowest part of the river, valley bottoms are nearly flat or gently sloping and are mantled by soils derived from deep glacial tills.

Elevations in the Roaring River drainage range from 996 feet at the confluence with the Clackamas River to over 4500 feet along the upper ridges and basins which form the headwaters. Prominent peaks and ridges around the drainage include Squaw Mountain (4,711 ft), Salmon Butte (4,877 ft), High Rock (4,953 ft), Signal Buttes (5,159 and 5,195 ft), Indian Ridge (4,308 ft at its high point), and Grouse Point (4,554 ft).

Hydrology

The total area of the Roaring River drainage is about 44 square miles. Lakes dot the drainage, forming the headwaters for many of the Roaring River's tributary streams. Large, named lakes within the drainage include Huxley Lake, Rock Lakes, Shining Lake and Serene Lake. There are also numerous small, unnamed lakes in the drainage. Some of these small lakes are strung along wet meadow areas. Squaw Meadows in the northern portion of the drainage (outside the roadless area) is the most important example of such a lake/meadow complex. This is an unusually extensive and high quality wetland for this intermediate elevation. Squaw Meadows is identified as a special interest area in the Forest Plan.

Stream classifications are used by the Forest Service to recognize present and foreseeable water use, and potential effects of upstream processes and events to downstream water characteristics. Four classes are recognized, Class I through Class IV, with larger rivers and streams included in Classes I and II and smaller or even intermittent streams included in Classes III and IV.

Based on its fisheries population and habitat, the Roaring River is a Class I stream from its confluence with the Clackamas to the falls just below the mouth of the South Fork Roaring River. From these falls to the mouth of Cougar Creek, the river is Class II, and above that it is Class III and IV.

Most of the drainage is covered with snowpack for five to seven months of the year. At the high elevations, the snowpack melts off in late June and July, and the area generally remains snow-free until early November.

The drainage is characterized by a variety of stream complexes including large log jams present in the upper river, large and small landslides, and small waterfalls alternating with large pools. Below the confluence with the South Fork Roaring River, the river is constricted between basalt cliffs and forms two large falls. The lowest mile of river is relatively wide (30 to 40 feet) and straight.

As a result of its undisturbed condition, the Roaring River drainage serves as an excellent control drainage for comparison with others in the region; an increasingly valuable attribute as other drainages are modified by management activities. Hydrologic characteristics such as flow regimes, turbidity, and temperature (as well as other resource characteristics such as fisheries and wildlife habitat) can be monitored and compared to other drainages.

Daily streamflow (discharge) records are available for the period from January 1966 to September 1968 as measured by the U.S. Geological Survey approximately 400 feet upstream from the mouth. The lowest streamflow on record during this time was 39 cubic feet per second (cfs), while the largest streamflow was 1,240 cfs.

Low flow summer water temperatures have been measured during the past two years (1991 and 1992) during the period from June through September (Henderson, 1993). Hourly stream temperatures were recorded near the river's mouth. Relatively stable, cool temperatures are noted for the river. There are very low fluctuations in daily temperatures. Low flow summer temperatures appear well buffered from sudden changes in ambient air temperature.

Aquatic macroinvertebrate sampling was conducted at the mouth of Roaring River in September 1991. Aquatic macroinvertebrate sampling can provide information on watershed condition and allow inferences to be made on water quality in regard to fine sediment accumulations. Data analysis and results indicate the watershed is categorized as "slightly impaired" using a modified Environmental Protection Agency (EPA) Rapid Bioassessment Protocol (Aquatic Biology Associates 1991). The "slight impairment" categorization may be indicative of the effects from the basin's intense past fire history.

Water chemistry sampling was conducted at the mouth of Roaring River in August and September of 1991. Four separate grab samples were taken over this two month period. Water samples were analyzed for the full spectrum of organic and inorganic constituents. Results of sampling indicate a high level of water purity.

Botany

The drainage supports a diversity of plant communities that form a mosaic of riparian and upland species from the headwaters to the confluence. The outstandingly remarkable values attributed to the river's headwaters include a unique combination of plant communities found in association with the rock and talus ridgeline habitat and the numerous braided channels of the river. Most of the river corridor is flanked by old growth stands. The side slopes and ridges are comprised of a mosaic of different successional stages of coniferous forest, hardwood and shrub communities, rock outcrops and talus habitats, and meadow communities.

In the lower elevational reaches of the drainage, Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*) predominate with silver fir (*Abies amabilis*), noble fir (*Abies procera*) and mountain hemlock (*Tsuga mertensiana*) at the higher elevational tributaries and headwaters of the river. Vine maple and red alder (*Alnus rubra*) dominate terraces and riparian sites immediately adjacent to the river. Older trees and stands are most often found near the river on more level terrain. Old trees (200+ years, usually with fire scars) are also found scattered among younger stands along and above the river.

The mosaic of plant communities on the drainage side slopes and ridges is largely the result of response to disturbance by fire. Fire scars are common on old trees and fire scarred snags are scattered throughout the drainage. It is thought that in the past, local people used fire to maintain huckleberry fields in the Roaring River headwaters. Shrub communities dominated by western rhododendron (*Rhododendron macrophyllum*) are common in these fire disturbed areas, as are dense, often stagnated stands of Douglas-fir.

Upper slopes and ridges are covered by extensive bear grass (*Xerophyllum tenax*) and huckleberry (*Vaccinium spp.*) dominated communities. These upper slopes are a mixture of the non-forested bear grass/huckleberry communities and forested areas. Forested vegetation along the corridor of the upper river includes vine maple (*Acer circinatum*), sitka alder (*Alnus sitchensis*), and rhododendron dominated communities.

The OMSI report (Miller 1971) contains a listing of all the plants which were identified during the Roaring River study. Clackamas iris (*Iris tenuis*) was located in the Roaring River drainage. This iris has a very limited range and is thus of particular interest. The drainage's diversity of plant communities and interesting species composition is repeatedly mentioned throughout the OMSI study.

Fisheries

Fish Community Composition

The Roaring River supports populations of native cutthroat trout, late-run coho salmon, and late-run winter steelhead. All three of these populations are considered to be endemic (native) to the river. It is these three fish populations for which the fisheries resource was found to be outstandingly remarkable. Region-wide, populations of these species have declined over the last few decades (Nehlsen et al. 1991). These fish populations are not classified as threatened, endangered, or sensitive by any federal agencies. However, the Oregon Dept. of Fish and Wildlife recognizes the late-run Clackamas River coho as a state sensitive species and the late-run winter steelhead and spring chinook as stocks of concern. The native cutthroat trout population is present in the mainstem and its major tributaries above the first falls at river mile 3.5. Populations of late-run coho salmon and late-run winter steelhead are present only within the lower 3.5 miles below the falls. This particular stock of late-run coho salmon, also common to other parts of the Clackamas River, is considered to be the last self-sustaining run of native coho salmon in the entire Columbia River Basin.

Other fish species found within Roaring River include spring chinook salmon, summer steelhead, resident (native) rainbow trout, brook trout, mountain whitefish, dace, coarse scale suckers, and sculpin. Spring chinook salmon, summer steelhead, and mountain whitefish are found only within the mainstem below the falls at river mile 3.5. Brook trout have been introduced to the Roaring River through stockings that have taken place in some of the high lakes within the Roaring River drainage. Brook trout have found their way down some of the high lake tributary outlets that feed the Roaring River. These brook trout are exotic to the region, and may present a threat to the native cutthroat population through competition for available food and habitat.

The native cutthroat trout population in the Roaring River is particularly important because this species is becoming increasingly scarce in Oregon. The remote and relatively pristine conditions of the Roaring River drainage are ideal for this population. About 11 river miles of excellent trout habitat exists along the river. This outstanding cutthroat trout habitat is recognized not only by fisheries biologists but also by anglers who possess considerable knowledge of the Roaring River drainage.

Population Characteristics and Status

A 1972 hook and line survey documented trout in the 4 to 8 inch size range (Whitt, 1972). Trout as large as 15 inches have been observed in the river (Miller, 1971). Both sources of this information failed to identify the species of trout observed. The river is not stocked with hatchery trout which might compete with the native fish, however, brook trout have begun to invade the river as stated before. Other potentially competing native or hatchery fish from the Clackamas River are blocked from entering much of the Roaring River by the falls which are located at river mile 3.5, just above the confluence between the Roaring River mainstem and the South Fork Roaring River.

Population sizes and structure of fish species within the Roaring River are largely unknown. However, information on population sizes and trends for all anadromous fish species occupying the Clackamas River upstream of North Fork Dam is available from Portland General Electric. Table 1 below indicates the population status or trend for those anadromous fish species occurring upriver of North Fork Dam and for those fish species known to occur within the Roaring River. Fisheries production goals for fish species in the Clackamas River and its associated tributaries are provided in the Clackamas River Subbasin Fish Management Plan (Oregon Department of Fish and Wildlife, January, 1992).

Table 1. Fish Species and Stocks Inhabiting the Roaring River. Population status for those anadromous species occupying the Roaring River is derived from fish counts at the PGE North Fork Dam fish counting facility.

Common Name	Scientific Name	Stock Origin ¹	Status
coho salmon	<i>Oncorhynchus kisutch</i>	early run - H late run - W	increasing declining
spring chinook salmon	<i>Oncorhynchus tshawytscha</i>	W/H	increasing
winter steelhead	<i>Oncorhynchus mykiss</i>	H W	declining declining
summer steelhead	<i>Oncorhynchus mykiss</i>	H	stable
cutthroat trout	<i>Oncorhynchus clarki</i>	W	unknown
rainbow trout	<i>Oncorhynchus mykiss</i>	W	unknown
brook trout	<i>Salvelinus confluentus</i>	H	unknown
mountain whitefish	<i>Prosopium williamsoni</i>	W	unknown
sculpin	<i>Cottus sp.</i>	W	unknown

¹ Stock Origin (H = hatchery origin, W = wild)

Habitat Conditions

The lower river, below the falls at river mile 3.5, serves as important spawning and rearing habitat for late-run coho salmon, late-run winter steelhead, and spring chinook salmon. The pristine, undisturbed habitat of the Roaring River also serves as a refuge from the mainstem of the Clackamas River for these fish. Holding pools for salmon and steelhead dot this lower river segment, which drops at a gradient of about 3.7 percent.

A basin-wide stream habitat survey was conducted in 1991 from the mouth of Roaring River to its headwaters (Bio-Surveys, Inc. 1991). A total of eight stream reaches were identified during the survey. Fish habitat changes drastically in nature throughout the basin depending on changes in geomorphology and floodplain vegetation. Fish habitat and riparian vegetation is considered highly complex and of excellent quality. The stream channel and adjacent riparian habitat from river mile 5.0 to 8.6 (reaches 4 and 5) have been largely influenced by past fire history. Much of riparian vegetation in this area is dominated by red alder and small diameter second-growth Douglas-fir.

Wildlife

The wildlife habitat of the Roaring River corridor provides exceptionally high quality habitat for the spotted owl (*Strix occidentalis*), a nationally significant threatened species, and supports an unusually diverse array of wildlife habitats.

The Roaring River's mosaic of habitat resulting from previous wildfires, riparian areas, rock outcrops, and talus slopes offers excellent wildlife habitat diversity. Riparian hardwood and shrub vegetation, various successional stages of conifer forest including old growth Douglas-fir forest, shrub dominated non-forested sideslopes, and upper elevation meadows typify the rich variety of wildlife habitat within the drainage.

Spotted owl use of the river corridor's old growth has been confirmed, and spotted owl habitat is present within the corridor and in adjacent areas in the drainage. Nearly all of the Roaring River corridor is considered critical owl habitat by the U.S. Fish and Wildlife Service. Approximately 70 percent of the river's corridor is in Habitat Conservation Area (HCA) O-3. Four spotted owl pairs have been located within the river corridor, and one resident single is located immediately adjacent to the corridor. The spotted owls have successfully reproduced in this area.

Beaver (*Castor canadensis*) dams and beaver sign are present in various locations throughout the drainage. The drainage's shrub and meadow habitat supports a good small mammal prey base: pika (*Ochotona prineps*), Townsend chipmunk (*Tamias townsendii*), brush rabbit (*Sylvilagus bachmani*), golden mantled ground squirrel (*Spermophilus lateralis*), Douglas squirrel (*Tamiasciurus douglasii*) and porcupine (*Erethixon dorsatum*) were all found to be abundant or common in the drainage. Common predator species of the drainage include coyote (*Canis latrans*) and black bear (*Ursus americanus*) (Miller, 1971). Mink (*Mustela vison*), weasel (*Mustela frenata*), and mountain lion (*Felis concolor*) are also present, although there are no reliable assessments of how common they are in the drainage.

Black-tailed deer (*Odocoileus hemionus*) are common in the drainage. Elk (*Cervus elaphus*) are present also, although less abundant than deer (Miller, 1971). The lower Roaring River valley is important deer and elk winter range. In general, as with other resources, the Roaring River has outstanding potential for comparing big game habitat and populations in an unroaded area with habitat and populations in roaded drainages.

The 1971 OMSI survey of the Roaring River (Miller, 1971) includes notes for all large mammal sightings recorded during the survey. The OMSI survey also includes a list of all bird species confirmed present in the drainage during the survey, the list contains nearly 50 different species. Bald eagles (*Haliaeetus leucocephalus*) are known to over-winter in the valley and osprey (*Pandion haliaetus*) are also present.

The Roaring River Wild and Scenic River corridor contains three management areas for the pileated woodpecker (*Dryocopus pileatus*) and five management areas for the pine marten (*Martes americana*). These eight management areas make up approximately 36 percent of the corridor. The goals of B5 Pileated Woodpecker and Pine Marten Management Areas as stated in the Forest Plan are to "Provide ... mature or old growth forest habitat blocks of sufficient quality, quantity and distribution to sustain viable populations of pileated woodpecker and pine marten." These habitat blocks should be predominantly mature and overmature, have a high density of high quality den and nest snags and defective green trees, have prevalent dead and down woody material and be limited to recreational access. The current condition of the Pileated Woodpecker and Pine Marten management areas in the Roaring River corridor closely match the major characteristics detailed as the desired future condition in the Forest Plan.

Heritage Resources

Earliest human use in this area may have occurred between 14,000 and 11,000 years ago (Burtchard and Keeler, 1991). Roaring River was probably an important anadromous fish-carrying stream. Limited historical accounts seem to indicate that prehistoric American Indians of the Molala and Clackamas tribes exploited the fishery resource all along the Clackamas River drainage. By inference, it is plausible that the riverine environment of Roaring River would have been exploited as well. Plants and animals would have been taken along with the fish. Ethnographic accounts indicate that the upper reaches of the river were considered prime areas for gathering huckleberries. This use continues at the present time. Historic use may have started with fur trappers and gradually expanded to include recreational activities such as fishing, hunting and picnicking.

The Forest Service built a fire protection cabin along the Clackamas River about one-quarter mile downstream from the mouth of Roaring River. This was known as the Roaring River Ranger Station. In later years these cabins were known as guard stations. Fire detection lookouts and access trails were later constructed in this area. In 1912, the Forest Service seeded an old burn area near Cougar Creek. The first documented commercial exploitation of the drainage occurred in the 1900s and 1910s when sheep were grazed here. In 1922, the Portland Railway, Light and Power Company (now known as Portland General Electric) built a railroad line along the Clackamas River from North Fork to Lake Harriet. Supplies were hauled over this line for the construction of the Oakgrove Hydroelectric Project. A railroad bridge was built over Roaring River near its confluence with the Clackamas. Recreational use increased when "picnic" and "fishermen" trains occasionally ran up the line. In 1937, the railroad was replaced with a primitive motor truck road, and today State Highway 224 follows the old railroad grade as far as the Three Lynx townsite road junction. No railroad grades or logging activity ever existed in the Roaring River drainage. Today the river corridor is used primarily by anglers and occasionally by hikers.

Recreation

The Roaring River is one of the only areas outside of wilderness areas that has been inventoried as providing a primitive recreational experience (Appendix C, page 47, FEIS, Mt. Hood National Forest Land and Resource Management Plan). The undeveloped character of the Roaring River area attracts recreationists who enjoy a variety of activities in a primitive setting. Activities include hiking, fishing, hunting, gathering, mountain biking, horseback riding and general exploration. The Roaring River's primitive, remote environment and its native cutthroat, coho salmon, and steelhead populations provide a unique sport fishery. Except for occasional kayaking up the Roaring River at its confluence with the Clackamas, there are no known white water recreation opportunities. The current amount of recreational uses within the wild and scenic corridor is well below its capacity threshold due to limited and physically demanding access.

Three trail connections are available into the wild segment of the river. Connection from the northern rim of the drainage is provided by the Plaza Lake Trail #506 from Twin Springs Campground, the Corral Springs Trail #507 from Lookout Springs Campground, and the Grouse Point Trail #517. The Grouse Point Trail provides connections to the Huxley Lake Trail #521 from Lookout Springs Campground and Forest Service Road 4611. It also continues across the river and connects with the southern rim trails and the Dry Ridge Trail which connects with Roaring River Campground, a developed facility located at the mouth of Roaring River. Dispersed campsites at the river are associated with these trails. Approximately three to five miles of trail that access the drainage from Roaring River Campground are open year round. No Forest Service trails currently parallel the river, and access to the river is minimal. However, public created access routes, originating near the Roaring River Campground, follow the river to popular fishing areas.

Forest Service roads around the rim of the drainage provide access for dispersed motorized recreation. Although the roads are well removed from the river corridor, several undeveloped campgrounds are located at the trailheads for trails dropping down to the river. The roads along the upper drainage, particularly the primitive Road 4610, also provide dramatic views into the drainage and across it to Signal Buttes and Indian Ridge. Road access into the upper Roaring River drainage is closed for approximately seven months of the year due to snow.

The Recreation Opportunity Spectrum (ROS) (FSM 2311.1) is a management and planning tool used by the Forest Service to inventory, manage and plan for the provision of a variety of recreational "settings" on National Forest lands. Land classifications within the Spectrum vary from "Urban" to "Primitive", with the selected category based upon a combination of levels of access, remoteness, naturalness, facilities and management, numbers of persons typically encountered, and impact levels. The ROS has been applied to the river corridor as defined in the Forest Plan. The wild segment of the Roaring River is classified as "Primitive" (P) to "Semi-Primitive Non-Motorized" (SPNM), and would be managed to provide dispersed, undeveloped recreation. The "recreational" segment is classified as "Roaded Natural" (RN), and would be managed to provide dispersed and developed recreation. Lands adjacent to the wild and scenic corridor and within the Roaring River drainage are classified as Semi-Primitive Non-Motorized (A4 lands) and Motorized (A6 lands). Unroaded and non-wilderness wildlands are increasingly unique, making the Roaring River a particularly important part of the region's mix of recreation settings.

The Roaring River flows through an inventoried roadless area. The analysis of roadless lands, documented in Appendix B of the FEIS for the 1990 Mt. Hood Land and Resource Management Plan, described each roadless area, the resources and values considered, the range of alternative land uses studied, and the effects of management under each alternative. As a result of the analysis, some roadless areas were recommended for inclusion in the National Wilderness Preservation System and others were assigned various non-wilderness prescriptions. The Roaring River Roadless area was assigned to an A4 Special Interest Management Area.

Scenic Resources

The unmodified scenery of the river corridor and surrounding ridges is unique in the region (outside designated wilderness areas), and would become increasingly valuable as surrounding lands are more intensely managed and the Portland metro area population increases.

The sweeping vistas into the Roaring River's wild, unmodified valley are the most important characteristic of its scenic resources. This scenery is of particular value, since the river is located so close to the Portland metropolitan area. The Mazamas, organized in 1894 and based in the Portland area, have pointed out that such scenic values, literally in the city's back yard, are of special interest (Hurst, 1990). Views into and across the Roaring River valley are provided along Forest Road 4610, and the trails along Grouse Point and Indian Ridge. Past fires have created a varied pattern of color and texture. Densely textured, light green second-growth conifer forests contrast with the shaggy-topped, darker green old growth. Shrubs and hardwoods create blankets of red and gold in the fall which are complimented by the golds and buffs of curing meadows. These vegetation patterns are framed by rock outcrops, talus, and buttes. Distant horizons are dotted with Cascade peaks, including a dramatic view of Mt. Hood.

Fire History

Past fire history indicates stand rotation fire frequency of 250-350 years with a low intensity fire frequency of 75 to 125 years. Fuel loadings are sparse, with scattered areas of heavy concentrations of large and small downed materials. Fires burning in these fuels would burn with low intensity and low rates of spread except where down woody material is concentrated.

Vegetation

The landscape of the Roaring River drainage is comprised of a mosaic of stands and plant communities including a variety of successional stages and stand structures. Its diversity reflects the physical character of the drainage (topography, soils, geology, climate) and its past fire history. Successive fires during the late 1800s and early 1900s removed much of the mature trees leaving residual stands or trees along Roaring River and its tributaries.

Within the drainage, western hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*) predominate at the lower elevations. Pacific silver fir (*Abies amabilis*), noble fir (*Abies procera*) and some Douglas-fir and mountain hemlock (*Tsuga mertensiana*) occupy the higher elevational tributaries and headwaters of the river. The area surrounding the Roaring River drainage is comprised of a mixture of Douglas-fir, western hemlock and true fir second-growth.

Both old growth stands and scattered residuals can be found throughout the drainage amongst the blanketed slopes of second growth trees. Fewer old-growth stands and residuals are found adjacent to the drainage where more second-growth stands predominate due to management activities and fire history. The most recent fires were those which took place during 1929 and 1939 over the LaDee Flats.

To date, there has been little timber management within the Roaring River drainage. The recreational segment of the river corridor currently has a regulated harvest which is designed to enhance the scenic and recreational values. Current Allowable Sale Quantity (ASQ) is set at less than 100 thousand board feet per decade, approximately less than five clearcut equivalent acres per decade based on a 125 year rotation. The Clackamas Wild & Scenic Corridor and River Management Plan (3/93) further reduced the ASQ when it amended the first 0.1 mile of the overlapping Roaring river corridor to a non-regulated timber harvest. This leaves 0.1 mile of the recreational segment in a regulated timber harvest status.

Areas adjacent to the Roaring River drainage have been managed but not intensively. Commercial thinning northwest of the drainage and clearcutting with some shelterwood harvest has occurred to the south. The Thrasher Timber Sale commercially thinned approximately 6.5 million board feet (MMBF) over 1,081 acres, and the Badger Timber Sale clearcut harvested approximately 10.5 MMBF and shelterwood harvested approximately 3.5 MMBF over 240 acres. The Cone and Corral sales to the north originally proposed to salvage approximately 2.0 MMBF over 650 acres from the LaDee fires, but were later dropped from consideration. Historical records indicate that approximately 1000-1500 acres in the Cougar Creek drainage may have been seeded with coastal Douglas-fir after the 1911 fire.

Forest Health

Forest Health may be defined as a condition in the forest in which the risk of present and future damage by natural and human caused stressors is minimized to meet site-specific resource management objectives. A "healthy forest" is one that is resilient to changes and characterized by tree species and landscape diversity that provides a sustained habitat for fish, wildlife and humans. Stand densities, windthrow, disease pockets, fire exclusion, and drought conditions contribute to increasing stress on these forest stands. As a result, stand vigor declines making the stand more susceptible to insects and disease.

The effects of pathogens and climatic influences are apparent in and adjacent to the Roaring River drainage. Dwarf mistletoe and *Phellinus weirii* (laminated root rot) are prevalent in the vicinity. Approximately 20 acres on the Thrasher Timber Sale was regeneration harvested with a clearcut to eradicate *Phellinus weirii*. Western hemlock overstory and understory in the majority of the Badger Timber Sale area were heavily infested with dwarf mistletoe. Wind has not been a major factor to date within the river corridor even with the numerous edges created by the clearcuts from harvest activities outside of the corridor. Within the Roaring River corridor, there is one known area of windthrow. It is a patch of approximately 12 acres located southwest of Hambone Springs Campground surrounded by standing trees.

Insect outbreaks are also evident in and adjacent to the Roaring River drainage. The forests in the upper Roaring River drainage, within and adjacent to the designated corridor, have been experiencing an infestation of western spruce budworm (*Choristoneura occidentalis*) since 1985. In 1989, the Cougar Creek/Signal Buttes area was sprayed with a biological insecticide called *Bacillus thuringiensis* (*B.t.*) var. *kurstaki*. Today, the budworm continues to affect the surrounding stands. Based on 1992 photos of the area, approximately 1,775 acres are experiencing defoliation of which 155 acres are within the corridor. Scattered small outbreaks of Douglas-fir bark beetle adjacent to the drainage and within the corridor also exist.

Socioeconomics

In general, the socio-economic environment is considered to comprise the residents and businesses in the local area. No specific data exist for this area. However, data on Clackamas County has been utilized to provide some indications of general trends for the region.

Data from the 1990 Census show a substantial population increase from 1980 in the area north and west of the Clackamas River. A high "quality of life", a temperate climate, and numerous job opportunities in the Portland Metropolitan area, led to this increase. Between 1980 and 1990, Clackamas County population expanded by 15.3 percent. The 1990 figures show a population of 258,850 which is expected to increase dramatically over the next decade. Some of this new growth would occur in semi-rural areas in the vicinity of the lower Clackamas River.

Economic Environment

Service, the top earning industry for Clackamas County, accounted for 23.0 percent of earnings, manufacturing accounted for 14.8 percent, and retail trade 14.1 percent. The fastest growing industry in Clackamas County is wholesale trade, which increased by 19.6 percent from 1988 to 1989.

The economies of nearby communities are built predominantly on a mixture of service: timber industry, tourism, light manufacturing, utility (PGE) and Forest Service jobs. Overall, Clackamas County has a strong and diversified economy, especially in the urbanized northwest part of the county. Smaller communities in the southern and eastern parts of the county are still tied to resource-based employment and tourism. As economic growth moves eastward, the economies of the rural communities may diversify. Some people would continue fishing, hunting and woodcutting on the Forest to supplement household incomes.

The Roaring River is within an hour's drive of Portland, and 15 miles from the community of Estacada. Access to Roaring River is via the very popular Clackamas Wild and Scenic River Corridor. The Clackamas River attracts thousands of tourist and recreationists each year. Its fishing, whitewater, boating, and camping opportunities are the main attraction. The Roaring River campground, located at the confluence with the Clackamas River, receives use mainly from Clackamas River users and those fishing the Roaring River.

South Fork Roaring River

The Forest Plan identifies the South Fork Roaring River as eligible for designation as a Wild & Scenic River from its headwaters to the confluence with the Roaring River; a total of 4.6 miles. Based on the its primitive character and access, the South Fork Roaring River is classified as "wild". Wildlife habitat quality, specifically for the Northern Spotted Owl, is considered excellent, and is identified as the outstandingly remarkable value.

The suitability study would be done as a comprehensive study incorporating all the Forest's eligible rivers by the end of 1994, dependent upon adequate funding. If found suitable, it would then be recommended to Congress for inclusion into the National system, and would continue to be protected until Congressional action. Interim management direction is outlined in the Forest Plan.

Chapter III

Alternatives

Introduction

The following management alternatives represent different ways to manage the river and its corridor while protecting and/or enhancing the outstandingly remarkable values. The three separate management alternatives, described below, were developed based on the issues, concerns, and opportunities identified during the scoping and public involvement process. No site-specific projects are being approved under this environmental assessment, and additional environmental analysis would be required for each of the project proposals under the selected alternative. Each management alternative provides the overall future management direction and guidance for the river corridor.

Direction Common to All Alternatives

Wild and Scenic River Corridor Boundary

The interdisciplinary team evaluated the need for adjusting the interim wild and scenic corridor boundary (one quarter mile each side of the river). After review and analysis, it was determined that boundary adjustments or changes were not necessary for further protection of key river resources. Therefore, the interim wild and scenic river corridor boundary would be adopted as the permanent boundary for the Roaring River under each of the proposed management alternatives below.

Relationship to Clackamas Wild and Scenic River Management Plan

The Clackamas Wild and Scenic River Management Plan management direction would be adopted for the lower one-tenth mile of Roaring River under each of the three proposed alternatives. See the Clackamas National Wild and Scenic River and State Scenic River and State Scenic Waterway Environmental Assessment and Management Plan for further information on management direction.

Alternative 1

(No Action -- follows current Forest Plan Interim Direction which emphasizes recreational developments within the Wild & Scenic Corridor)

Alternative 1 is the "no action" alternative. In this case, "no action" would result in continued application of the Forest Plan interim direction established for the Roaring Wild and Scenic River under the B1 Designated Wild, Scenic, and Recreational Rivers Management Area. Current Forest Plan management direction for the Roaring Wild and Scenic River allows for the following:

- New development of recreational sites within the recreational segment, but not the wild segment.
- Dispersed recreation improvements (e.g., trails) within both segments.
- Habitat improvement projects for wildlife and fisheries. Improvements are to be limited to those necessary for the protection, conservation, rehabilitation, or enhancement of river area resources.
- Regulated timber harvest within the upper one-tenth mile section of the recreational segment.
- Un-regulated timber harvest and salvage activities may occur within the wild segment only for insect or disease control, fire, natural catastrophe, disasters, public safety, or under specified conditions on valid mining claims.
- Watershed improvement projects may occur.
- No new dams, major water diversions, or hydroelectric power facilities.

- No new mineral developments within the wild segment.
- New road construction may occur within the recreational segment, but not the wild segment.
- Within the recreational segment, motorized vehicles are permitted only on open roads and off-road vehicles are permitted only on designated trails.
- Within the wild segment, motorized recreational use is not allowed.
- Prescribed burning may occur to protect or enhance river-related values.

Even though this "no action" alternative would adopt the interim management direction set forth in the Forest Plan as the final, guiding management direction for the river corridor, specific emphasis under this alternative would be placed on the following activities:

- Construct new trails within the river corridor to provide for increased access and allow for further public enjoyment. Specific trail developments would include those identified on the District's Capital Investment Program (CIP) list (see Map 4). These include:
 - * **Roaring River Trail**

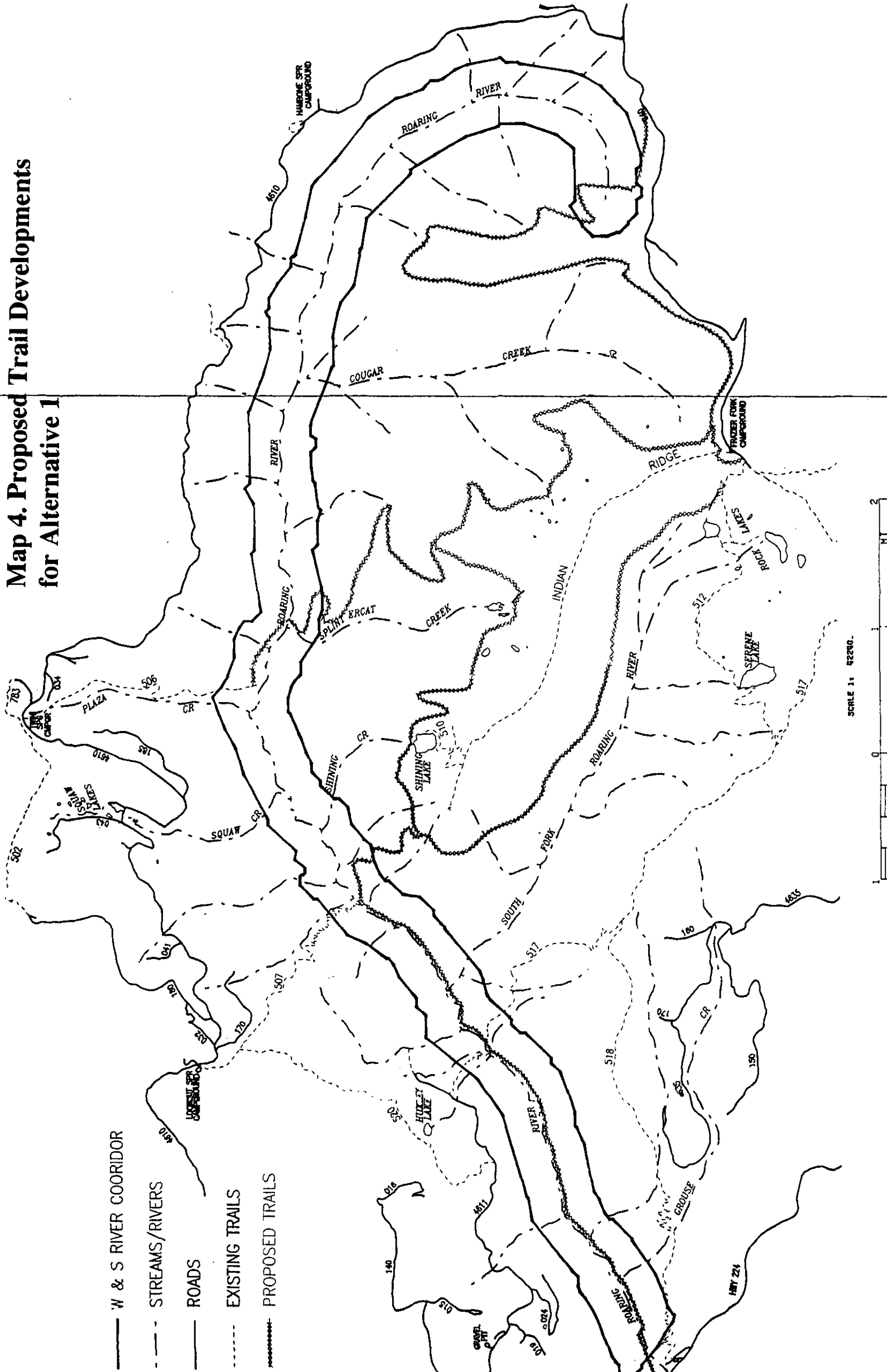
A trail originating from the mouth of the river at Highway 224 extending parallel along the river upstream to approximately river mile 4.0, tying into the Corral Springs Trail #507; approximately 5.0 miles.
 - * **Corral Springs Addition**

A trail connecting from the end of the proposed Roaring River Trail southeasterly to a proposed loop trail around Indian Ridge (proposed Cougar Canyon and South Fork Roaring River trails); approximately 2.0 miles.
 - * **Splintercat Trail**

A trail (Splintercat addition) connecting with the Plaza Lake Trail #506 where it terminates at Roaring River and connects to a proposed loop trail around Indian Ridge; approximately 4.0 miles.
 - * **Signal Butte Loop**

A trail that loops around Signal Butte, originating at Road 4610240 and tying into the proposed Indian Ridge Loop Trail; approximately 1.0 mile would intercept the wild and scenic river corridor boundary.
- Construct interpretive signing or facilities within the recreational segment that would be in compliance with the Clackamas River Drainage Interpretive Plan.
- The existing developed trails (Trails 506, 507, and 517) into the wild and scenic corridor would be maintained or upgraded to provide for better pedestrian access.
- Close and restore public-created access trails within the river corridor.
- Close, rehabilitate, and relocate existing dispersed campsites that are impacting resource values along the river.

Map 4. Proposed Trail Developments for Alternative 1



SCALE 1: 42200



Alternative 2

(Maintain existing level of recreational development within wild segment to maintain current use level, expand developments in recreational segment)

This alternative focuses on maintaining the existing level of recreational use within the wild segment of the river corridor while expanding opportunities and developments to accommodate additional use within the recreational segment. Management direction under this alternative would be similar to Alternative 1, except there would be no new trail developments within the wild segment and no regulated timber harvest within the upper one-tenth mile of the recreational segment. Existing developed trails within the wild segment would be maintained. This alternative would emphasize the following management activities:

- Develop a barrier-free, interpretive trail along the river within the recreational segment; approximately 0.2 miles. The barrier-free access trail would allow for full access for physically challenged persons or those in wheel chairs. Interpretive signing would provide information on the river's unique resources and would be constructed in a manner that would blend in naturally with the surrounding landscape.
- Construct interpretive signing or facilities within the recreational segment that would be in compliance with the Clackamas River Drainage Interpretive Plan.
- Upgrade restroom facilities and expand parking opportunities within the recreational segment of the river adjacent to Highway 224.
- Close and restore public-created access trails within the river corridor.
- Close, rehabilitate, and relocate existing dispersed campsites that are impacting resource values along the river.

Alternative 3

(Emphasis on ecological management and restoration)

This alternative emphasizes ecological management and restoration within the wild and scenic river corridor. Restoring the primary ecological process would be achieved through the use of fire within the drainage. Ecological restoration would focus primarily on the prevention and suppression of introduced exotic plant and animal species. The primitive and remote character of the corridor would be further enhanced by the elimination of some existing developed access trails. There would be no regulated timber harvest within the upper one-tenth mile of the recreational segment. Specific management activities under this alternative would include:

- Develop a fire management plan for the entire Roaring River drainage. The fire management plan would emphasize the use of prescribed natural fires and allow the use of prescribed burning to mimic natural disturbances.
- Prohibit both recreational and commercial livestock within the river corridor to reduce the potential for further introductions of non-native plant species.
- Employ a noxious weed eradication program along trails, dispersed campsites, the Roaring River campground, and other infested areas.
- Provide recommendations to the Oregon Department of Fish and Wildlife to reduce or eliminate the stocking of non-native fish species into Roaring River or its tributary lakes.
- Close and obliterate Trail 506 (Plaza Lake Trail) and Trail 507 (Corral Springs Trail) at their origins.
- No special use permits would be allowed within the wild segment for the following types of activities: collection or removal of special forest products (e.g., firewood, beargrass, mushrooms, etc.) and recreational or other activities that may impact river values (i.e., military training, large-scale group events, outfitter guides, etc.).

- Close and restore public-created access trails within the river corridor.
- Close, rehabilitate, and relocate existing dispersed campsites that are impacting resource values along the river.
- Restoration plantings with native species along trails and dispersed campsites in need of restoration.

Table 2. Management Alternative Comparison Matrix

Management Alternative Comparison Matrix

Topic	Alternative 1	Alternative 2	Alternative 3
Hydrology	Same as Forest Plan direction.		
Water Quality & Quantity	All river segments shall be managed to remain in a free-flowing and unpolluted state.		
Botany	Same as Forest Plan direction.		Eliminates recreational and commercial livestock to reduce risk of spread of noxious weeds, noxious weed eradication, and restoration planting with native species.
Fisheries	Same as Forest Plan direction.		Recommend to ODFW to discontinue stocking of tributary lakes with non-native fish species.
Wildlife Habitat	Same as Forest Plan direction.		
Heritage Resources	Same as Forest Plan direction.		
Recreation	Improve and increase access to both Wild and Rec. segments, new trails, dispersed camping sites, and interpretation in the Rec. segment.	No new or additional trails provided within the Wild segment, continued maintenance or upgrading of current trails within the Wild segment, new trails and interpretation in the Rec. segment.	Access reduced by removal of Trails 506 & 507 and reduction of dispersed sites within the Wild segment.
Scenic Resources	Same as Forest Plan direction.		Limited visual opportunities due to reduced access.
Timber Management	Same as Forest Plan direction and Clackamas National Wild & Scenic River Management Plan.	Changes upper 0.1 mile of Rec. segment to an unregulated timber harvest.	
Fire Management	Same as Forest Plan direction.		Develop basin Fire Management Plan emphasizing use of prescribed and prescribed natural fire.

Chapter IV

Environmental Consequences/ Effects of Implementation

Introduction

This chapter forms the scientific and analytic basis for comparing alternatives. The effects that each alternative would have, if implemented, are analyzed and displayed. Short-term, long-term, direct, in-direct, and cumulative effects are considered.

Geology

All management activities proposed under each alternative would not be expected to impact the corridor's geologic resources. However, potential impacts of proposed activities may be expected to soil resources.

Alternative 1

Increased trail developments and the opportunity for greater public use proposed under this alternative presents the potential for an increase in impacts to soil resources. Recreational developments could encourage additional soil erosion and increase sediment delivery to the river. Project planning would adopt U.S. Forest Service Region 6 General Water Quality Best Management Practices (BMPs) to minimize or eliminate potential impacts to soil resources. Locations for planned projects would address suitability of soils and site to the proposed development (see soil map and interpretations in analysis file). Restoration of impacted sites would mitigate effects from human-related activities. Overall effects to soil resources would remain low.

Alternative 2

There would be a low potential for additional impacts to existing soil conditions in the basin under this management alternative. Additional recreational developments would occur only within the two-tenth mile recreational segment. The majority of the corridor would remain protected in a relatively undisturbed condition. Effects from soil erosion and sediment delivery would remain very low.

Alternative 3

This alternative provides the greatest degree of protection to the soil resources in the corridor. Existing impacts from trails and dispersed campsites would be rehabilitated, reducing effects from soil erosion and sediment delivery. Eliminating the two trails leading into the upper wild segment and public created access trails would help to reduce or eliminate human disturbances, thus further reducing the potential for impacts to soils resources.

Permitting wildfire disturbance in the basin could contribute to an increase in accelerated erosion and sediment delivery by reducing vegetative cover. Anticipated impacts from wildfire disturbance would be the result of natural ecosystem functions and relatively short lived (less than 10 years). Effects to soil resources would be very low to non-existent under this alternative.

Hydrology

The Roaring River's streamflow regime (timing, magnitude, and duration of streamflow) would not change as a result of human-related activities proposed under the three management alternatives for the wild and scenic corridor. Prescribed natural fire as proposed under Alternative 3 may affect the river's streamflow regime and water quality. However, this would simulate natural events in a dynamic, functioning ecosystem. Management activities identified under Alternatives 2 and 3 are not expected to lower river's high water quality within detectable limits. Alternative 1, however, proposes substantial new trail developments within the corridor offering increased opportunities for public use. Alternative 1 has a higher potential than Alternatives 2 and 3 for impacting water quality as a result of new trail construction and an increased opportunity of public use. Construction and use of new trails, especially within riparian areas, can result in further soil erosion that can contribute additional fine sediments to the river, thus increasing the river's turbidity (amount of fine suspended sediments in water). Also, increased public use within riparian areas and along the river and its tributaries could result in an increase in human waste pollution that can elevate the bacterial pollution of the river. Management activities under the selected alternative would be planned and implemented in accordance with the U.S. Forest Service Region 6 General Water Quality Best Management Practices (BMPs) and the Forest Plan forestwide standards and guidelines for water. Any potential effects to water quality from projects that are planned and implemented in accordance with these BMPs and standards and guidelines would be minimized or eliminated.

Project proposals under each of the management alternatives are not expected to affect or alter the functioning of aquifers or groundwater recharge. Those human-related activities proposed under each alternative would not result in any appreciable ground disturbances that could affect both in-watershed and downstream aquifers.

The Roaring River serves as an excellent comparison watershed for future long-term monitoring of water quality given that only a very small portion of the watershed has been affected by land management activities. None of the proposed management alternatives would affect this opportunity for comparative long-term water quality monitoring.

Alternative 1

Alternative 1 poses the highest risk to degradation of the river's water quality when compared to Alternatives 2 and 3. This alternative proposes to construct approximately 12 miles of new trail within the wild and scenic river corridor. The proposed Roaring River Trail would parallel the river for approximately six miles, just less than half of the total corridor length. Further trail developments and an increase in the opportunity for public use could affect the river's high water quality values. Water quality degradation could result from either an increase in the river's turbidity or an increase in bacterial contamination. The increase in turbidity could affect fisheries habitat quality as discussed below under "Fisheries." If bacterial contamination of the river were to become extreme, state water quality standards may not be met.

Additional construction and public use of trails, especially those located within riparian areas, could result in soil disturbance causing increased soil erosion and fine sediment delivery into the river. If fine sediments become transported by water and are delivered into the river, then the river's turbidity could increase. In order to minimize these potential impacts, new trails would be located away from areas that are sensitive to disturbance and have a high potential for accelerated surface erosion. Minimizing the total number of stream crossings and locating new trails outside of riparian areas toward the outer corridor boundaries would also help to reduce or eliminate the potential for an increase in the river's turbidity. Furthermore, trail design standards (i.e., water-barring, maintaining a low gradient, and minimizing the tread width) would also be incorporated into new trail construction in order to further minimize potential soil erosion and fine sediment transport.

Additional public use along trails and dispersed recreational sites within the river corridor could lead to an increase in human waste pollution along the river. If human waste pollution becomes great enough or if it is concentrated along the river or within riparian areas, there would be a high potential for an increase in elevated fecal coliform levels in the river (bacterial pollution), thus lowering water quality. If bacterial pollution become extreme, then state water quality standards could be exceeded. Trail developments away from the river and outside of riparian areas would help eliminate the potential for an increase in bacterial pollution of the river. Additional restroom facilities and public education through signing would also reduce the likelihood for bacterial pollution of the river. Monitoring of public use and associated human waste pollution within the river corridor would be necessary to maintain the current high level of water quality.

Alternative 2

Alternative 2 proposes trail and other recreational developments only within the two-tenth mile recreational segment as compared to the 12 miles of trail construction under Alternative 1. Potential impacts to water quality under this alternative are much lower than under Alternative 1 based on the measure of new trail developments and corresponding increased opportunity for public use.

The types of potential impacts to water quality under this alternative would be similar to those described for Alternative 1. Additional trails and an increased opportunity for public use within the recreational segment could result in an increase in turbidity and/or bacterial pollution of the river's water within the lower two-tenths mile of the river. However, the potential for these impacts would be much less than under Alternative 1 given that the proposed barrier-free trail would include design standards that would reduce the amount of bare soil exposed for potential erosion. Additionally, restroom facilities would be more easily accessed by recreationists thus minimizing the amount of human waste pollution. The barrier-free trail would most likely be built with planking materials and/or an asphalt or concrete surface, thereby reducing the amount of soil exposed for erosion and fine sediment transport. The activities proposed under this alternative are not expected to result in a detectable change in the river's turbidity. Improved restroom facilities within the recreational segment may be necessary to accommodate the additional public use expected from recreational developments proposed under this alternative. Improved restroom facilities would help reduce or eliminate human waste pollution along the river and would therefore reduce the potential for increased bacterial pollution of the river. The present level of high water quality is expected to be maintained under this alternative.

Alternative 3

This alternative offers the greatest protection to the river's water quality. Existing trails (Trails 506 and 507) and dispersed campsites within the river corridor would be closed and rehabilitated. Rehabilitation would help reduce present soil erosion and would restore vegetation and effective ground cover. These rehabilitation efforts would be expected to reduce the amount of river corridor in a detrimental soil condition, therefore reducing the present soil erosion and fine sediment transport occurring on existing trails and dispersed campsites. There would be no new trail construction under this alternative. In fact, with the closure of two of the three developed trails into the corridor, the level of the public use is expected to decrease. Human waste pollution along the river is expected to decrease as a result of trail closures. Hence, the high level of water quality is expected to be even further protected under this alternative.

The river's streamflow regime and water quality could be affected by natural processes (i.e., fire) that are allowed to fully function. Prescribed natural fire can remove vegetation and ground cover within the watershed which could result in accelerated run-off and erosion within the watershed. Reduction of vegetation and accelerated run-off could affect the river's sediment and streamflow regime over the short term by increasing fine sediment delivery to the river and increasing the river's total water yield. These impacts would be short lived (less than 10 years) and would be the result of natural processes at work in a dynamic, functioning ecosystem. Prescribed burning activities would be done only under circumstances to enhance or maintain ecological functioning or river related resources. Prescribed burning activities would be planned and conducted in accordance with water quality BMPs and other mitigation measures that would minimize impacts to the river's streamflow regime and water quality.

Botany

The effects of each alternative on plant communities (including unique, sensitive, threatened, or endangered plant species and their habitats) would vary according to ground disturbance, fluctuations in water regimes, and changes to substrates. Each proposed project (e.g., trail construction and vegetation management) would include site-specific surveys for unique, sensitive, threatened, or endangered plant species and their habitats. Mitigation measures for each project would be developed to provide for the protection of habitat for unique, sensitive, threatened, and endangered plant species. Activities such as restoration planting with native species, natural and prescribed burning in special habitats, and control of noxious weed species would enhance plant habitat and/or plant communities. Interpretive facilities, if developed along the recreational river segment under Alternatives 1 and 2, would allow for viewing without impacts to populations or habitats, perhaps accomplished through the use of low impact trails and boardwalks in sensitive areas.

Alternative 1

This alternative would have a higher potential for adverse effects to plant community diversity and the botanical resources of the corridor as compared to Alternatives 2 and 3. The increase in miles of trail constructed and acres of vegetation managed could increase the potential for the creation of disjunct plant populations, removal of canopy cover, and the displacement of native plant species through the establishment of non-native, invasive species. An increase in recreational activities would increase impacts to the riparian and upland plant communities and have the potential to alter species composition. These impacts could occur through human trampling both on and off trails, introduction and invasion of non-native species by hikers and domestic pets and disturbance from incidental or intentional taking of plants. Proposed projects would meet Forest Plan Standards and Guidelines for sensitive, threatened, and endangered plant species and habitat. Mitigation measures for trail construction projects and vegetation management projects may include riparian zone buffers, control of noxious weeds, and use of weed free erosion control methods such as certified hay and weed free mulching mat. Although mitigation measures for each project would be implemented, the impacts from the increase in recreational opportunities could adversely impact the outstandingly remarkable botanical values of the corridor.

Alternative 2

This alternative would have a low potential for adverse effects to plant community diversity and botanical resources. Public created access trails within the river corridor would be closed and restored so as to decrease human trampling in plant habitats and prevent the introduction and invasion by non-native species. No new trail development would occur within the wild segment.

Alternative 3

A low potential for adverse effects to the plant communities of the river corridor exists with this alternative. Emphasis on ecosystem preservation and habitat restoration (e.g., natural and prescribed burning, non-native invasive species removal) would serve to maintain and enhance plant communities in the Roaring River drainage. All project proposals under this alternative would be assessed for site-specific level impacts to botanical resources within the corridor. Prescribed natural fire projects would be implemented only when assessed to be beneficial to botanical resources or other river resources. Recreational impacts to botanical resources would be minimized through the reduction in trail access and the restriction of some recreational activities. The botanical and ecological values of the corridor would be retained with this alternative.

Fisheries

Current fish habitat production capability would remain largely unaffected (dependant upon natural disturbances) through time under each of the three proposed management alternatives. Each of the management alternatives does not propose or allow for any activities that could substantially change the existing fish habitat capability. Current population levels and trends of anadromous fish species (Chapter II, Table 1) may change under each of the proposed management alternatives dependent on the level of increased river access, angling pressure, and human harassment (e.g., snagging). The population trends and age structure of resident, native rainbow and cutthroat trout populations may be even more sensitive to changes in angling pressure brought about from increased river access. Alternative 1 has the highest risk for causing a negative or downward trend in both anadromous and resident fish populations. Alternative 2 would essentially maintain current population trends. Alternative 3 restricts access to the upper wild segment and would therefore reduce or eliminate existing angling pressure on the resident cutthroat trout population above the waterfall at river mile (RM) 3.5. Alternative 3 provides the greatest protection for fisheries habitat and native fish production. Population levels and trends of anadromous fish species within Roaring River could change due to other factors or changes in present management of fish harvest, hydroelectric operations, or hatchery fish management either within or outside of the Clackamas River sub-basin. The effects of each management alternative on fisheries habitat and production are discussed below.

The Roaring River serves an excellent example of a largely unimpacted watershed for long-term comparative monitoring of aquatic habitat and fisheries production. Since much of the watershed has not been affected by human-related activities, this river serves as a unique control site for comparative, long term monitoring of impacts from forest management activities on aquatic habitat quality and productivity.

Alternative 1

Alternative 1 poses the highest risk of all three management alternatives for causing a negative or downward trend in both anadromous and resident fish populations. The high risk is a result of the increased access provided by the proposed trail developments under this alternative. The Roaring River Trail would add six miles of new trail along the river, greatly increasing the opportunity for public use and angling. An increase in angling pressure, if large enough, could lead to a decrease in fish population sizes and could lead to a change in the population age structure of the resident, native rainbow and cutthroat trout populations. Heavy angling pressure on resident trout populations may shift population age structures to a predominance of younger age classes. Hence, there could be fewer, large reproductive fish within the population. This could eventually lead to a reduction in population viability and a decrease in angler satisfaction. Increased angling pressure and associated effects on fisheries production would have to be closely monitored under this alternative. If necessary, recommendations to the Oregon Department of Fish and Wildlife may be needed to change the current consumptive angling regulations on the river to non-consumptive angling restrictions in order to maintain fisheries production and fisheries values.

A change in population age structure of salmon and steelhead species brought about from increased angling pressure is not likely. However, an increase in salmon and steelhead sport fishing harvest within the Roaring River could lead to a substantial decrease in spawning escapement (the number of fish in a population that reproductively spawn). Increased access along the lower 3.5 miles of the river (the total distribution range of salmon and steelhead) could also lead to an increase in illegal snagging of salmon and steelhead, thereby further reducing their spawning escapement. Locating the trail toward the outer corridor boundary and away from critical spawning areas would help to reduce the potential for increased snagging and harassment of salmon and steelhead.

This alternative would build approximately 12 miles of new trail. New trail developments, especially within or near riparian areas, could cause soil disturbance and erosion. Accelerated soil erosion and fine sediment delivery to Roaring River or its tributaries could lead to decrease in fish habitat quality. Sedimentation within the river can result in a loss of habitat for and productivity of aquatic macroinvertebrates that serve as the primary food base for trout and juvenile salmon and steelhead. Sedimentation can also cause gravel embeddedness that can lower the quality of spawning habitat for fish. Specific measures to reduce these potential impacts may include locating trails away from sensitive erosional areas and riparian areas. Trail construction standards specifying water-barring, low grade, and small width may also help to alleviate potential fisheries habitat impacts. All trail and recreational developments within the corridor would be designed in accordance with U.S. Forest Service Region 6 General Water Quality Best Management Practices (BMPs) to minimize or eliminate potential impacts to water quality and fisheries habitat.

Alternative 2

Alternative 2 would maintain the existing level of river access within the wild segment. Angling pressure is not expected to increase within the wild segment under this alternative. The development of a barrier-free trail within the recreational segment, however, would very likely bring added fishing pressure to the lower two-tenths mile of the Roaring River. Presently, there is available fishing access to the recreational segment of the river from a public created trail along the south side of the river. The addition of a barrier-free trail, however, would likely increase the amount of visitation and angling within the recreational segment. The increase in angling pressure within this small section of river would not likely affect fish population levels or the population age structure of the resident, native rainbow and cutthroat trout populations. It is also very doubtful that the increased amount of visitation expected from the addition of a barrier-free trail would result in any further harassment or snagging of salmon and steelhead.

This alternative would allow further trail development only within the recreational segment. Therefore, potential impacts to fish habitat from new trail construction and increased public use would be limited to the lower two-tenths mile of river. The amount of soil disturbance and erosion from this amount of trail construction would be very minimal. In fact, design standards for barrier-free trails often include paved trails or boardwalk-type trails constructed from planking. Both types of design standards would even further reduce the potential for soil erosion and sedimentation. New recreation developments within the recreational segment would be designed and implemented in accordance with water quality BMPs, thereby reducing potential impacts to water quality and fisheries habitat. Fisheries habitat quality and production capability is not expected to change as a result of management activities under this alternative.

Alternative 3

This management alternative would offer the most protection to the river's aquatic habitat and fisheries resources. Existing access to the upper wild segment would be decreased, thus further reducing possible impacts to fisheries production that may be brought about from increased angling pressure. The existing level of access to the lower wild segment and to the recreational segment would be maintained. There would be no expected increase in angling pressure or snagging and harassment within the the lower wild segment and recreational segment.

Native rainbow and cutthroat trout production would actually be expected to improve under this alternative as result of decreased angling access and the potential elimination of stocking non-native fish within tributary lakes (contingent upon a successful recommendation to the Oregon Department of Fish and Wildlife). Non-native trout stocked in lakes that are tributaries to Roaring River can escape and find there way into the Roaring River. Interbreeding between native and non-native trout species can lead to an alteration of the gene pool for native trout species. Genetic traits and behaviors of non-native trout species that are less well adapted to survival in the wild can weaken the gene pool of native trout species, thus reducing their survival. Non-native trout species may also outcompete native trout species for available habitat, thus decreasing their range of distribution and possibly lowering their population level.

There would be no impacts from new trail construction under this alternative. However, there may be similar impacts to fisheries habitat from natural fire and prescribed burning under this alternative. Natural fire can result in accelerated run-off and soil erosion, thereby delivering additional fine sediments to the river. These additional fine sediments could reduce overall aquatic habitat quality and lower the fish production capability over the short term (less than 10 years). However, wildfire is a natural process that would express itself in a largely natural, functioning ecosystem. Prescribed burning could also lead to accelerated soil erosion and increased sedimentation that would decrease fish habitat quality. Prescribed burning projects would be planned and implemented in accordance with specific mitigation measures and water quality BMPs in order to reduce or eliminate negative impacts to water quality and fisheries habitat.

Wildlife

Alternative 1

Alternative 1 would increase access to the Roaring River corridor for recreation use. Additional trails would increase the potential for disturbance or harassment of wildlife. Wildlife harassment from non-motorized dispersed recreation is limited in intensity and duration. The direct effects from disturbance would be that the animals simply move away for the duration of the disturbance. There should be little cumulative effect of increased harassment. Activities that take place near known spotted owls may require a restricted operating season to avoid disturbance during the nesting season. Wildlife that rely on early successional stage vegetation would slowly lose habitat as the immature coniferous tree species develop and shade out understory herbaceous and woody vegetation. This would reduce diversity of wildlife habitats. However, river corridors are subject for frequent small scale disturbances caused by flooding, windthrow, landslides and animal damage. These small, common types of disturbance would slow the loss of diversity by creating openings in the forest canopy and adding complexity to the forest. Over time, risk for large crown fires, serious insect outbreaks or other stand replacement events threaten the long term habitation of the Roaring River corridor by spotted owls and other old growth dependent wildlife.

Alternative 2

Habitat for mature and old growth wildlife dependent species such as the spotted owl would be relatively unchanged by Alternative 2. The long term changes in habitats would be similar as in Alternative 1. Diversity of habitats may decline, although slowly, and the risk of major stand replacement would remain unchanged. Alternative 2 does not alter the risk of unacceptably large areas of mature or old growth forest being lost to catastrophic events.

Alternative 3

Alternative 3 would decrease possibility of disturbance or harassment of wildlife from recreation use. Long term changes in wildlife habitat would be monitored and early successional stage habitats would be maintained. Overall diversity of wildlife habitats would be maintained or improved. Management activities to reduce risks of large scale disturbance might temporarily displace or disturb wildlife. Activities that take place near known spotted owls may require a restricted operating season to avoid disturbance during the nesting season. Habitat improvement for early successional stage wildlife would reduce the increase in habitat for species that use mature or old growth forests. If the prevention strategies are successful, the risk of large scale stand replacement events would be less.

Heritage Resources

The effects of activities under each alternative would, in most cases, vary according to the depth of ground disturbance. Those that disturb the most soil have the greatest probability for displacing archaeological deposits. Above-ground features may also have a high potential for disturbance or destruction. The cumulative effects would be variable and mostly a continuation of the short-term effects. Management activities and increasing numbers of people would probably cause more site disturbances and possibly site destruction in some cases. Natural processes such as storm damage, water run-off and fire would continue to impact heritage resources. Heritage resource surveys would be required before any management activities occur within or adjacent to the river corridor. Mitigation measures would have to be developed for each specific impact and would follow Forest Plan standards and guidelines. They might include, but are not necessarily limited to, data recovery or site excavation.

Alternative 1

Known and suspected heritage resources would have the highest potential for being impacted under this alternative because of the emphasis on recreational developments, timber harvesting, and fish and wildlife habitat improvements. Heritage resources would continue to be affected by natural processes (i.e., weather damage) and incidental effects such as recreational use of an area that contains a site. Formal site monitoring and protection would be extensive. Mitigation measures would be developed whenever site disturbance becomes unavoidable. Public interpretation could offset the expected impacts by increasing awareness of the "non-renewable" aspect of heritage resources.

Alternative 2

This alternative has a potential for moderate impact to sites within the recreational segment due to the emphasis on expanding developments such as parking facilities and a barrier-free trail. Natural processes would continue to affect heritage resources. Interpretive opportunities would be confined to the recreational segment. Low to moderate site monitoring would occur and mitigation measures would be developed to handle actual or expected impacts to sites.

Alternative 3

Proposed restoration projects in this alternative have a low potential for impacting heritage resources. While the use of fire could have the potential to destroy wooden structures, no such sites are known or suspected to exist in the river drainage. Fire would have a minimal affect on stone artifacts. Natural processes would continue to affect heritage resources. Site monitoring would be minimal but could be increased to assess the affects of natural fires. Interpretive opportunities would probably be minimal and might include informational brochures.

Recreation

Recreation activity in the Roaring River corridor would continue under all three of the proposed alternatives. Access would be altered by each alternative, but activities would remain unchanged. Increase in public use is expected due to:

- overall general increase in recreation visitors to the Mt. Hood National Forest,
- the Semi-Primitive Non-Motorized recreation opportunities provided in the Roaring River Corridor*, and
- the river is within a one hour drive of a major metropolitan area (i.e., Portland/Gresham/Oregon City).

Evidence of increased visitor use would be prominent in the following locations:

- Roaring River Campground,
- along public created access routes adjacent to the river, and
- new dispersed sites accompanying these routes.

Public created access routes demanded by the recreationist have shown greater negative natural resource impact in a larger area than do systematic trails created and maintained by the Forest Service.

** The Forest Plan identifies a deficit on the forest in the supply of both types of Semi-Primitive recreation opportunities (Semi-Primitive Motorized and Non-Motorized). This deficit is expected to increase over time.*

Proposed management actions affect the opportunity for a satisfying recreational experience in the Roaring River corridor. The opportunity for a "satisfying recreational experience" occurs when a user participates in a preferred activity in a preferred environmental setting. For recreation planning and evaluation, possible mixes or combinations of activities, settings and probable experience opportunities have been arranged along a spectrum called the Recreation Opportunity Spectrum (ROS). Proposed management actions in this document were evaluated using this spectrum. The ROS is divided into six classes:

- Primitive,
- Semi-Primitive Non-Motorized,
- Semi-Primitive Motorized,
- Roded Natural,
- Rural, and
- Urban

(For further information refer to the Forest Service "Recreation Opportunity Spectrum Users Guide").

Alternative 1

Dispersed recreation improvement (e.g., trails) within both the recreation and wild segment of the river would alter the existing natural setting. In the wild segment, impacts from development on the natural setting could move the Recreation Opportunity Spectrum (ROS) classification towards the more developed end of the Semi-Primitive Non-Motorized (SPNM) classification, though the ROS class would still remain Semi-Primitive (SP). This change would come about in the following manner:

- Trail construction would be visually dominate from adjacent viewing areas within the Roaring River corridor,
- Based on previous patterns of activities after trail construction, recreation use of the river corridor would increase and this increase in visitation would likely lead to an increase in social encounters, and
- On-site regimentation and controls would increase in the area with directional signing and possible educational signing connected with dispersed camping activities (i.e., garbage disposal, human waste contamination, impact to vegetation, soil compaction in sensitive areas, interpretation, etc).

In the recreation segment, impacts from development on the natural setting could move the current classification of Roded Natural towards the more developed end of the Roded Natural classification. This area would be intensively managed with human control structures and developed routes that would dominate the natural setting.

Activities would remain the same in the wild segment even with additional access. The proposed new trail system would provide various trail-loop opportunities, fishing access along the river, connections to other trail systems in the area, and year-round recreation opportunity. Resource damage created by public created access routes would be minimized by maintained trails and visitor management. The trails would provide a variety of difficulty levels. These developments would also provide trail opportunities in Semi-Primitive lands for recreational activities not allowed in designated wilderness area (i.e., mountain bikes).

Activity in the recreation segment would change from predominate sport fishing accessed from public created trails to viewing, educational activity along the proposed Roaring River trail. Sport fishing would be easily accessed by traditional users.

The recreation experience would be changed in the the wild segment due to increased accessibility that would allow access to additional users. The sights and sounds of other humans would increase. The opportunity to have a risk-taking, self-reliant independent experience would be lessened by system trails connecting to the river which is the destination sought by most users (e.g., sport fishermen). The ROS classification would remain SP but would move towards the more developed end of the SPNM spectrum.

The recreation experience would be changed in the recreation segment by improved access that removes the challenge and risk-taking opportunity associated with current access availability. Visitation would be expected to increase in this new developed area that would provide resting and viewing areas with interpretation and nature study emphasis. The ROS classification could remain Roaded Natural but would move towards the more developed end of the Roaded Natural classification.

Alternative 2

Proposed closure and restoration of public-created access trails within the river corridor and associated dispersed sites would impact the natural setting of both wild and recreation segments of the Roaring River. In the wild and recreation segments, the established public created access trails display the demand for access to the river. The existence of these public-created trails over time has allowed this human modification to become subtle and visually subordinate in the natural setting. The demand for access would continue after closure of these trails and multiple new trails would be expected. New public created access trails would disturb the natural setting and human modification would be easily noticed. Public created dispersed sites would return to public preferred areas after proposed closures for rehabilitation were completed. Visitation would be expected to remain approximately the same growing only with forest-wide general increase. The modifications to the natural setting by management activities and public trail blazing would not change the ROS classification. Although, it would lessen the primitive character of all current classifications.

In the recreation segment, impacts from development for barrier-free access on the natural setting could move the current classification of Roaded Natural towards a more developed classification on the spectrum. This area would be intensively managed with human control structures and developed routes that would dominate the natural setting.

Activities would remain the same in the wild segment. Access to the river would remain the same on Forest Service system trails. Accessing areas associated with closed public created trails would require additional time and effort. This could discourage a minimal portion of traditional use (e.g., sport fishing).

Activity in the recreation segment would change from predominate sport fishing accessed from public created trails to viewing, educational activity along the proposed barrier-free trail. Sport fishing would be easily accessed by traditional users and new access for handicap accessibility to sport fishing could be created from the barrier-free trail.

The recreation experience could have a subtle change in the wild segment of the river. Reduced access from closure of public created access trails could decrease the number of users and thus reduce the amount of human sounds and related activities associated with area use (e.g., garbage, human waste). ROS classifications would remain the same.

The recreation experience would be changed in the recreation segment by improved access that removes the challenge and risk-taking opportunity associated with current access availability. Visitation would be expected to increase in this developed area that provides resting and viewing areas with interpretation and nature study emphasis. The ROS classification could remain Roded Natural but would move towards the more developed end of the Roded Natural classification.

Alternative 3

Proposed closure and restoration of public-created access trails and Forest Service system Trails #506 (Plaza Lake) and #507 (Corral Springs) at their origins would impact the natural setting of both wild and recreation segments of the Roaring River. In the wild and recreation segments of the Roaring River, the established public created access trails display the demand for access to the river. The existence of these trails over time has allowed this human modification to become subtle and visually subordinate in the natural setting. The demand for access would continue after closure of the system and public-created trails. Multiple new trails would be expected unless a CFR (Certified Federal Regulation) closure was approved. New public created access trails would disturb the natural setting and human modification would be easily noticed. Public created dispersed sites would return to public preferred areas after proposed closures and restorations without a CFR closure. Fire suppression activities could change the existing natural setting of the corridor and adjacent lands (e.g., firelines and retardant).

Activity in the wild segment would be the same in the wild segment without a CFR closure of the area. Access to the river would occur on new public created trails without a CFR closure. This would require additional time and effort on the part of the recreationist which could discourage a minimal portion of traditional use (e.g., sport fishing). Activity in the recreation segment would remain unchanged with possible additional access in the river for sport fishing.

The recreation experience in the recreation and wild segments would be denied to many users under this alternative. Relocation of use would be difficult as the Forest Plan has already identified a deficit on the forest for this type of primitive recreation experience.

Scenic Resources

Alternative 1

The focus of Alternative 1 is on continued application of the Forest Plan interim direction established for the Roaring River Wild and Scenic Corridor under the B1 Designated Wild, Scenic, and Recreational Rivers Management Area. Changes to scenic quality in the river corridor and its viewshed could result from allowed recreation development. Facilities expected to occur in the recreation segment of the river would result in a more "developed" appearance in the corridor. Design standards that emphasize natural materials and color would help facilities proposed for the recreation segment of the river to blend into the natural setting. Emphasis on watchable wildlife opportunities would provide an additional "visual experience" for the visitor. New vistas would enhance the visual experience.

Alternative 2

The focus of Alternative 2 is on recreation development in the recreation segment of the river corridor. This development would be as proposed in Alternative 1 and would have the same visual effect. Limiting access through closure of public created access trails and dispersed campsites should result in more natural appearing scenery, but access to this scenery would be more difficult.

Alternative 3

Maintaining the Roaring River Corridor as an exceptionally wild example of late successional stage Pacific Northwest forested landscape should result in the gradual improvement of scenic quality in the river corridor. Restoration of dispersed sites in riparian areas would improve scenic quality. Limiting current and new recreation developments could result in more natural appearing scenery. However, access to this scenery would be more difficult. Strategies for controlling damage from insects, disease, and exotic organisms would maintain the visual quality of the area. Wildlife habitat improvements that increase populations contribute to the visual richness of the corridor. Prescribed burning activities would change the existing visual character of the corridor and adjacent lands. Burned areas may stand out more readily on the landscape as viewed from vistas.

Vegetation

Timber Outputs

Alternatives 2 and 3 amend the Forest Plan changing the upper one-tenth mile of the recreational segment from a regulated to an unregulated timber volume output. The Clackamas Wild & Scenic Corridor and River Management Plan (3/93) amended the lower one-tenth mile of the overlapping Roaring River corridor to a unregulated timber harvest. This means that volume targets would not be computed as part of the Forest's Allowable Sale Quantity (ASQ). However, it does not imply that timber harvest would not occur within the corridor. Salvage timber harvest activities may occur if they are designed to protect and/or enhance river values and to ensure visitor safety. This change amounts to a negligible reduction (.003 percent) in the volume output for the Forest as a whole. Under Alternative 1, there would be no change in timber outputs.

Forest Health/Changes to Stand Structures Over Time

Plant and animal diversity at the landscape level is linked to the variety of environments and habitats present on the landscape. Landscape processes, such as succession and disturbances, play a key role in modifying landscape patterns and how forest stands function (i.e., production, cover, etc). The diversity of habitats or stand structures contributed by these processes across the landscape maintains resiliency of the landscape, allowing its various ecological functions to continue even in the presence of catastrophic events. A healthy forest is characterized by its resiliency to disturbance and landscape diversity. The following focuses on general trends expected under each management scenario.

Alternatives 1 & 2

Existing conditions would remain the same within the next 10 years. The dynamics of the riparian ecosystems would continue to create small scale disturbances which would maintain the early successional stage or habitat types in and adjacent to these areas. However, over time, the risk of large scale disturbances would increase on the upslope forests as stands matures, as growth declines, fuels build up, and the understory fills in with shade tolerant tree species creating layered canopies. Early successional habitat types would reduce as successional processes proceed without disturbance. Under Alternative 1, the recreational segment would have harvest disturbance which would maintain the early successional stage in this area.

Current western spruce budworm populations would eventually decline leaving low to understocked areas. It is expected that continued stresses on forest stands would contribute to continued episodes of pest outbreaks.

Socioeconomics

Alternative 3

Placing emphasis on ecosystem health and utilizing fire as a tool in maintaining ecosystem functions and forest health would create a drainage that is more resilient to disturbances. A variety of successional stages or habitat types would be maintained providing for a diversity of wildlife species. The mosaic landscape pattern provides a change or diversity of stand structures which would help to reduce large scale (stand replacement) disturbances that follow specific stand structures. Under this scenario, pest outbreaks would normally occur at a small scale. Stresses to the forest stands would be minimized by allowing natural processes to occur. Use of low intensity patchy fires could allow old growth stands to persist and may make them more resistant to disturbances.

Economic opportunities are examined by looking at the amount of money which would be paid from Forest receipts to counties and changes in employment and incomes resulting from Forest outputs, receipts and expenditures in the designated river corridor under each alternative. Typically, these changes reflect decreases or increases in the amount of timber harvest, and recreation use in the corridor. Non-commodity values such as scenery and wildlife are also considered.

The major effects of the alternatives would be related to changes in recreation use. Economic effects in terms of employment, incomes, and receipts are minimal. Expected timber outputs for the recreational segment of the Roaring River were partially changed by the 1993 Clackamas River Management Plan (from its confluence to river mile 0.1). Under Alternatives 2 and 3, a change to a non-regulated timber harvest regime in the upper one-tenth mile of the recreational segment would have minimal impact to local economies.

Alternative 1

This alternative emphasizes recreational development. Amenity values could increase somewhat through better trail access (new construction in the recreational and wild segment), interpretative services, and rehabilitation of public created sites. However, these gains may decrease non-commodity values in some sensitive areas (i.e., fisheries, wildlife, botanical sites, and heritage resource sites).

Alternative 2

This alternative would have no change in recreational opportunities for the wild segment and some for the recreational segment. Amenity values would increase in the recreational segment through construction of a barrier-free trail, interpretative services, and rehabilitation of public created sites. However, use may increase due to public demand for the type of recreation experience provided by the Roaring River. Federal expenditures would be lower than in Alternatives 1 or 3, centering around maintenance of existing developments (i.e., trails, campground, and dispersed use sites).

Alternative 3

This alternative restricts recreational development and could decrease recreation opportunities. It would have the highest level of federal expenditures for maintenance or restoration of forest health and ecosystem functions. Non-commodity values would increase in the short and long term due to a high level of environmental protection, the phasing out of some trails, restoration of some dispersed sites and control of non-native plants and fish species.

**South Fork
Roaring River****Required
Disclosures**

None of the alternatives would affect the eligibility of the South Fork Roaring River for designation as a Wild and Scenic River or would threaten to degrade its potential wild classification or its outstandingly remarkable value.

All three alternatives would meet all applicable National laws and executive orders with specific direction regarding wild and scenic rivers and National Forest land management. These items included heritage resources, water quality, forest regeneration, scenic quality, air quality, soil productivity, and threatened, endangered and sensitive plant and animal species and their habitats. None of the alternatives would have significant adverse effects on the above.

For all alternatives, irreversible and irretrievable commitments of resources would not exceed those discussed in the Final Environmental Impact Statement for the Mt. Hood National Forest Land and Resource Management Plan.

There are floodplains and wetlands within the planning area. Any effects on these would be further assessed on a site-specific basis with further project-level planning. There are no prime farmlands or rangeland within the planning area.

Until research findings can resolve some major scientific uncertainties, evaluation of climate change effects in a document such as this would be speculative.

Native American rights, including those covered by the American Indian Religious Freedom Act, would not be affected. Effects on Native Americans, other minorities, and women would be similar to the socioeconomic effects on the general population.

Table 3. Environmental Consequences Comparison Matrix

Environmental Consequences Comparison Matrix

Topic	Alternative 1	Alternative 2	Alternative 3
Geology	Low potential for increased soil erosion (from new construction and use of trails) in entire corridor.	Low potential for increased soil erosion (from new recreational developments) in recreational segment only.	Expected improvement of existing soil erosion within entire corridor.
Hydrology	Potential for increased turbidity and bacterial contamination within entire corridor.	Very low potential for increased turbidity and bacterial contamination in recreational segment only.	Increased protection of water quality throughout entire corridor.
Botany	High potential for creation of disjunct plant populations and displacement of native species.	Low potential for adverse effects to plant community diversity or native plant species.	Low potential for adverse effects to plant community diversity or native plant species.
Fisheries	Increased angling pressure could cause population decline for fish species. Potential for decreased fish habitat quality and production capability.	No likely effects to fish populations as a result of expected angling pressure in recreational segment only. No expected change in fish habitat quality or production capability.	Expected improvement of fish production. Improved protection for fisheries habitat.
Wildlife	Potential for harassment of wildlife would increase for a short and limited duration. Over time, risk increases for stand replacement disturbances which could threaten mature and old growth habitat. Slow decline of habitat diversity with loss of habitat in the early successional stage.	No expected change to harassment potential. Over time, risk increases for stand replacement disturbances which could threaten mature and old growth habitat. Slow decline of habitat diversity with loss of habitat in the early successional stage.	Potential for harassment of wildlife would decrease. Risk of large disturbances would decrease with implementation of prevention strategies. Overall diversity of wildlife habitats would be maintained or improved.
Heritage Resources	Highest potential for impacts to known and suspected heritage resources. Continued impacts from natural processes (i.e., weather damage).	Potential for moderate impacts to sites in recreational segment only. Continued impacts from natural processes (i.e., weather damage).	Low potential for impacts to heritage resources. Continued impacts from natural processes (i.e., weather damage).
Recreation	Increased recreation opportunities within entire corridor. No changes to ROS classifications; however, there is a potential for change towards the more developed end of each classification for the wild and recreational segments.	Increased recreation opportunities within recreational segment only. No change to ROS classification for the wild segment. Potential for change of classification in recreational segment. Or, there is a potential for change towards the more developed end of the Roded Natural classification in the recreational segment.	Decreased recreation opportunities within upper wild segment and along public-created trails. ROS classification would change due to impacts to the natural setting and recreation experience from limiting access.
Scenic Resources	Visual opportunities improved through creation of new access and viewing areas. More "developed" appearance within the corridor.	Maintenance of present visual qualities in wild segment. More "developed" appearance within the recreational segment only.	Gradual improvement of scenic quality expected. Changes in existing visual character resulting from prescribed fire.
Vegetation	No change in timber output. Increased risk for large scale disturbances over time. Reduction of early successional stages in wild segment.	Change to an un-regulated timber harvest would result in negligible change to Forest's ASQ. Increased risk for large scale disturbances over time. Reduction of early successional stages in wild and recreational segments.	Change to an un-regulated timber harvest would result in negligible change to Forest's ASQ. Forest stands would be more resilient to natural disturbances. A variety of successional stages over the landscape.
Socioeconomics	Amenity values could increase within entire corridor. Possible decrease of non-commodity values.	Amenity values may increase in recreational segment only. Lowest level of federal expenditures (for maintenance of existing developments).	Increase in non-commodity values. Reduction in amenity values. Highest level of federal expenditures (for restoration and maintenance of the ecosystem).
South Fork Roaring River	No effects on river's eligibility. No degradation of potential wild classification or impacts to ORV.		

Chapter V

Consultation With Others

List of Preparers**Interdisciplinary Team**

Dan Shively, Fisheries biologist and Roaring River team leader
 Jeanne Rice, Silviculturist
 Glenda Goodwyne, Forester
 Glenda Woodcock, Recreation planner
 Thomas Rottman, Wildlife representative

The following people provided valuable technical assistance:

Gale Masters, Botanist	Sheila Strachan, Soil Scientist
William Carr, Heritage Resources	Art Webber, Fire Management
Robert Alvarado, Wildlife Biologist	

**Agencies,
Organizations and
Individuals**

The following agencies, organizations and individuals received notice of the planning effort and were invited to provide input or comments throughout the planning process:

American Rivers, Tom Cassidy
 Association of Oregon Archaeologists, David Ellis
 Bureau of Indian Affairs, Les McConnell
 Bureau of Land Management, Tommy Thompson
 Bureau of Land Management, Ken White
 Cascade Geographic Society, Rhododendron
 Clackamas County Dept. of Transportation and Development, Winston Kurth
 Clackamas County Forest Program, Troy Moore
 Clackamas County Planning Office, John Borge
 Clackamas County Soil & Water Conservation District, Joe Evans
 Confederated Tribes of the Grand Ronde Community of Oregon, Mark Mercier
 Confederated Tribes of the Warm Springs Reservation, Zane Jackson
 Estacada Chamber of Commerce
 The Flyfishing Shop, Mark Bachman
 Heritage Research Association, Steve Beckham
 Mazamas, Jim Hurst
 Mt. Hood Community College, John Woodard
 National Organization for River Sports, John Garren
 National Wildlife Federation, Portland
 Nature Conservancy, Dick Vander Schaaf
 Northwest Forestry Association, Chris West
 Northwest Power Planning Council, Peter Paquet
 North West Rafters Association, Al Ainsworth
 Oregon Dept. of Environmental Quality, Portland Area Manager
 Oregon Dept. of Fish & Wildlife, Columbia Region, Mike Gray
 Oregon Dept. of Fish & Wildlife, Bob Maben
 Oregon Dept. of Geology and Mineral Industries, Donald Hull
 Oregon Dept. of Transportation, Jeff Kaiser
 Oregon Equestrian Trail Club, Dick Bauman
 Oregon Kayak and Canoe Club, Steve Scherrer
 Oregon Kayak and Canoe Club, Thom Powell
 Oregon Native Plant Society, Mike Fahey
 Oregon Natural Heritage Data Base, Mark Stearn
 Oregon Natural Resources Council, Portland
 Oregon State Parks, John Lilly
 Oregon State Parks and Recreation, Gary Miniszewski
 Oregon State University, Donald McLeod

Oregon State Water Resources Board, Bill Fujii
Oregon Trout, Bill Bakke
Oregon Trail Advisory Council c/o Oregon Historical Society
Pacific Rivers Council, David Bayles
Portland Audubon Society, Marc Liverman
Portland General Electric, Doug Cramer
Portland General Electric, Gary Hackett
Portland State University-Department of Anthropology and Archaeology, Ken Ames
Sierra Club, Dr. John Sherman
Small Hydro Association, Rick Glick
South Fork Water Board, Larry Sparling
Trout Unlimited, Jerry Pavletich
US Fish and Wildlife Service, Portland Area Manager
US Geological Survey, Portland Area Manager
The Wilderness Society, Bob Freimark
Yakima Tribal Council, Levi George
Mike Alexander, Estacada
Emily Barlow, Portland
Allan Beck, Salem
Sharon Beck, Cove
Bernie Bottomly, Portland
Jim Bradbury, Eagle Creek
Rich Brown, Portland
Ron Burnett, Portland
Charles Ciecko, Portland
Char & Dave Corkran, Portland
Bill Daniels, Oregon City
David French, Portland
Liz Frenkel, Corvallis
Cole Gardiner, Portland
Robert Gould, Estacada
John Hammond, Portland
Bob Johnston, Eagle Creek
Michael P. Jones, Rhododendron
Bonnie Levet, Lake Oswego
Chuck McGinnis, Portland
Fred Muhleman, Estacada
Cyril Oberlander, Milwaukie
Howard Rondethaler, Portland
Dick & Sally Seymour, Eagle Creek
Jerry Sheldon, Eagle Creek
Jeff Stier, Eugene (Legislative Assistant)
Janet Tobkin, Portland

Of those invited to provided comment (listed above), specific comments or input were received from the following and are available in the analysis file:

Oregon Department of Fish and Wildlife, Jay Massey
Tualatin Valley Chapter Trout Unlimited, Thomas M. Wolf
Cole Gardiner
David and Charolette Corkran
Glen O. Varnado

Appendix A

**Final Resource Assessment
for the Roaring River**

Final Resource Assessment

Roaring River

**National Wild and Scenic River
USDA Forest Service
Mt. Hood National Forest
Estacada Ranger District**

July 1993

Chapter I

Executive Summary

Executive Summary

The mainstem of the Roaring River from its headwaters to its confluence with the Clackamas River was designated by Congress as a National Wild and Scenic River in 1988. The USDA Forest Service, Mt. Hood National Forest is the management agency with responsibility for development of a river management plan for the Roaring River.

As the first step in developing the river management plan, the Forest Service prepared a draft assessment of the resources and values on the river in 1990. The Forest Service interdisciplinary team found fisheries, recreation, and scenic resources to be outstandingly remarkable values for the Roaring River in the draft resource assessment. In agreement with the Congressional findings, the river's primitive character and remoteness were key considerations for these findings. The river's geology, hydrology, and wildlife were found to be important values in the draft assessment. No findings were made in the draft assessment on the river's water quality and quantity, botany, or heritage resources.

The draft resource assessment was then distributed in 1990 to external reviewers for input and comment. As a result of the external review, the river's fisheries, recreation, and scenic resources were confirmed to be outstandingly remarkable values. In addition, the finding for the river's wildlife habitat was changed to outstandingly remarkable. No findings were issued on the river's water quality, botany, or heritage resources. An assessment was completed in August 1990 at which time the planning effort subsided. Substantial additions were made to the content of the draft resource assessment based on the information provided by external reviewers and based on additional Forest Service analysis.

In February 1993, a new interdisciplinary team resumed the planning effort by reviewing and updating the final assessment issued in 1990. Based on further investigations and additional information, the river's botany and water quality were determined to be outstandingly remarkable values. No new information was available on the river's heritage resources (formerly cultural resources). However, based on the available information, heritage resources are not found to be outstandingly remarkable, but do represent an important river resource.

In summary, the river's six outstandingly remarkable values include:

- water quality,
- botany,
- fisheries,
- wildlife habitat,
- recreation, and
- scenic resources.

Chapter II

Introduction: Background and Planning Overview

**Introduction:
Background and
Planning Overview**

The United States Congress enacted the National Wild and Scenic River Act in 1968. With this legislation, Congress established a system for protecting outstanding free-flowing rivers nationwide. All of the Roaring River mainstem was designated a Wild and Scenic River in 1988 when the Omnibus Oregon Wild and Scenic River Act added parts of forty rivers to the National Wild and Scenic River system. The 1968 Wild and Scenic River Act requires that a river be free flowing and possess one or more "outstandingly remarkable values." The Congressional Record indicated that the Roaring River's primitive character and remoteness are its outstandingly remarkable values.

Under the 1968 Wild and Scenic River Act, a river may be classified as wild, scenic, or recreational. The Roaring River is classified wild except for about 0.2 miles at the confluence with the Clackamas where it is classified recreational (Appendix A-1). Rivers or river segments classified as wild are generally inaccessible except by trail and are essentially primitive. Recreation rivers are readily accessible by road or railroad and have a greater degree of development along their shorelines. Some recreation rivers are even within urban areas.

In 1974, the Forest Service conducted an environmental analysis and issued an environmental impact statement regarding the Roaring River drainage (USDA Forest Service, 1974). The alternative selected in the Record of Decision for that Environmental Impact Statement specified that most of the Roaring River drainage remain unroaded. The Mt. Hood National Forest Land and Resource Management Plan (commonly referred to as the Forest Plan--USDA Forest Service, 1990) contains allocations consistent with this decision, including a special interest area and primitive, non-motorized recreation classification for roadless portions of the drainage. Most of the drainage is recognized as critical spotted owl habitat and has been proposed for inclusion in a spotted owl conservation area. Special scenic allocations and other compatible allocations have been made for much of the surrounding, roaded lands in the Forest Plan.

Chapter III

The Resource Assessment: Definitions and Background

The Resource Assessment: Definitions and Background

The first step in developing a river management plan is evaluating the resources and values associated with the river and river corridor, and determining the level of significance of river-related values. The federal process calls this first step the resource assessment.

The resource assessment makes findings on whether or not river-related values are "outstandingly remarkable values". To qualify as an outstandingly remarkable value, a river-related value must be a unique, rare, or exemplary feature that is significant at a regional or national level. Specific criteria for determining individual values are described in Chapter V under each value.

For regional comparison, the geographic regions defined in the 1989 Statewide Comprehensive Outdoor Recreation Plan (SCORP) for Oregon are used (Oregon State Parks and Recreation, 1988). The Roaring River is in SCORP Region 7. Appendix A-2 is a map of Oregon's SCORP regions. Region 7 contains the most heavily populated area of the state. It is located in the northern Willamette Valley and the bordering Cascade Range. Region 7 also contains the Sandy, Salmon, and Clackamas Wild and Scenic Rivers. The Columbia River forms its northern boundary.

The following categories have been used to assess the resource values along the Roaring River:

- Geology
- Hydrology, Water Quality, Water Quantity
- Botany
- Fisheries
- Wildlife
- Heritage Resources
- Recreation
- Scenic Resources

Chapter IV

River Description

River Description

The 1988 Omnibus Oregon Wild and Scenic Rivers Act designated the entire mainstem of the Roaring River, from its headwaters to its confluence with the Clackamas River. A total of 13.7 total river miles, divided into two segments, was included (see Roaring River map in Appendix A-1):

Segment A. Wild River: the 13.5 mile segment from river mile 0.2 to the headwaters.

Segment B. Recreation River: the 0.2 mile segment from the confluence with the Clackamas River upstream to river mile 0.2.

For interim management, during the period of time between this designation and development of a final river management plan, a corridor 1/4 mile on each side of the river was established by the Mt. Hood National Forest as a Wild and Scenic River corridor. The final corridor boundary will be determined as part of the Wild and Scenic River Management Plan.

Chapter V

Findings and Discussion of Values

Findings and Discussion of Values

Geology

Criteria for Outstandingly Remarkable Values

The river or the area within the river corridor contains an example(s) of a geologic feature, process, or phenomena that is rare, unusual, one-of-a-kind or unique to the geographic region. The feature(s) may be in an unusually active stage of development, represent a "textbook" example and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial and other geologic structures).

Finding

The geology of the Roaring River drainage is typical of surrounding basins and does not represent a unique or rare combination of geologic features.

Discussion of the Geologic Values

Sixteen million years ago, the Roaring River drainage was part of an area covered by a 50-mile wide lake of molten lava that flowed from deep fissures in the earth's crust. An episode of periodic flood basalts began about this time and covered much of northern Oregon and southern Washington. These basalts are referred to as the Columbia River Basalts.

After several million years, the flood basalts ceased their westward flow, and local volcanic activity became dominant in the Roaring River area. These volcanos were responsible for deposits of andesite lava flows, ash, and ejecta and also for and mud pyroclastic flows. There was intermingling of the deposits from various volcanos, but collectively, they are mapped as the Rhododendron Formation and they covered much of the Columbia River Basalts.

Periodically, through geologic time, volcanic activity and erosional processes reshaped the area. Several million years ago the Roaring River drainage was likely a well-defined topographic feature.

In the past million years (Pleistocene time), glaciation has modified the upper portion of Roaring River and its tributary drainages into broad "U" shaped valleys. Extensive erosion during interglacial periods has been primarily responsible for development of the large earth-flows in the lower portion of the drainage. Outwash from the glaciers oversteepened the Columbia River Basalt deposits causing the overlying, weaker Rhododendron Formation to fail (hence the mud flows).

During recent geologic history (last 10,000 years), minor landscape modification by water erosion, gravity, and weathering processes has occurred, including erosion of exposed rock, deposition of alluvium in stream and river bottoms, and debris slides on steep side slopes.

The following has been summarized from the Mt. Hood National Forest Soil Resource Inventory (Howes, 1979).

- Elevations in the Roaring River drainage range from 996 feet at the confluence with the Clackamas River to over 4500 feet along the upper ridges and basins which form the headwaters. Prominent peaks and ridges around the drainage include Squaw Mountain (4711 ft), Salmon Butte (4877 ft), High Rock (4953 ft), Signal Buttes (5159 and 5195 ft), Indian Ridge (4308 ft at its high point), and Grouse Point (4554 ft).

**Hydrology, Water
Quality, Water
Quantity**

- Upper drainage topography is dominated by a relatively broad glacial valley with forested slopes and talus sweeping up to sharp ridges interspersed with small basins, many of which contain lakes. Upper ridgelines are composed primarily of igneous rock outcrops. Large blocks of basalt and andesite rock are exposed. A mosaic of talus and forested slopes falls steeply from these ridgelines. Many of the forested areas are growing on talus deposits over deep, gravelly glacial soils.
- Soils on benches, upper valley bottoms, and less steep upper sideslopes are of glacial origin. Rocks of Cascade Andesite and basalt form a large part of the soil mass. Bedrock below most of these glacial soils is basalt or andesite.
- The lower four miles of the river corridor is a narrow gorge with steep basalt cliffs and talus. Columbia River basalts form the bedrock of the lower valley. Some of the drainages which are tributary to the lower Roaring River are extremely steep with unstable soils. Active landslides and debris flows are not uncommon in these steep drainages. Along the lowest part of the river, valley bottoms are nearly flat or gently sloping and are mantled by soils derived from deep glacial tills.

Criteria Used for Outstandingly Remarkable Values

The waterway offers nationally or regionally unique examples of free flowing nature. Examples include flooding, stream bank or stream bed erosion, island building, downcutting, etc., or water-created features such as falls, sinks, caverns, springs, etc.

The river water itself is one of the best examples of clarity, purity, glacial "milk", etc., or the combination of water chemistry and temperature supports lifeforms nationally unique or unique to the physiographic region.

Finding

The hydrologic characteristics of the Roaring River are generally understood, based on the topography and climate of the drainage and on the characteristics of similar, adjacent drainages. The river provides cool, clear, and pure water that meets the criteria for outstandingly remarkable. However, the river's water quantity is not found to be outstandingly remarkable.

Discussion of Hydrologic Values and of Water Quality and Quantity

The total area of the Roaring River drainage is about 44 square miles. Lakes dot the drainage, forming the headwaters for many of the Roaring River's tributary streams. Large, named lakes within the drainage include Huxley Lake, Rock Lakes, Shining Lake and Serene Lake. There are also numerous small, unnamed lakes in the drainage. Some of these small lakes are strung along wet meadow areas. Squaw Meadows in the northern part of the drainage (outside the roadless area) is the most important example of such a lake/meadow complex. This is an unusually extensive and high quality wetland for this intermediate elevation. Much of Squaw Meadows was until recently privately owned; however, most of these private lands have been acquired by the U.S. Government and are now part of the Mt. Hood National Forest. Squaw Meadows is identified as a special interest area in the Forest Plan.

Stream classifications are used by the Forest Service to recognize present and foreseeable water use, and potential effects of upstream processes and events to downstream water characteristics. Four classes are recognized, Class I through Class IV, with larger rivers and streams included in Classes I and II and smaller or even intermittent streams included in Classes III and IV.

Based on its fisheries population and habitat, the Roaring River is a Class I stream from its confluence with the Clackamas to the falls just below the mouth of the South Fork. From these falls to the mouth of Cougar Creek, the river is Class II, and above that it is Class III and IV.

Most of the drainage is covered with snowpack for much of the year. The snowpack begins to melt in late June and July and the area generally remains snow-free until early November when snow begins to fall and accumulate once again.

The information following is drawn from an Oregon Museum of Science and Industry (OMSI) report (Miller, 1971). This description begins at the headwaters and proceeds downstream.

- Large log jams are present in the upper river, north of Indian Ridge and Signal Buttes. The jams often consist of 10 or more large logs, lodged among rocks and forming large pools. The upper five miles of the river are fed by several small streams originating on Signal Buttes, Indian Ridge, and Northern Ridge (Northern Ridge is above FS Road 4610--the "Abbott Road"). Dissolved oxygen content was measured at 13 ppm immediately above a small falls in the upper river and 10 ppm about a mile below the falls.
- Average depth of the river between Twin Springs Creek and Squaw Creek is about three feet; average width is about 25 feet. Log jams create many pools.
- Below Squaw Creek, the north bank of the river steepens. Soils are apparently unstable in this section as both large and small slides are described. A large slide, leaving a 100 by 50 yard gap in the hillside was noted (T4S, R6E, Section 34). This area is further characterized by numerous fallen trees across the river, and small waterfalls alternating with large pools.
- Near FS Trail 517, the river widens from 30 to 40 feet across and is about four to six feet deep. Large log jams are present, ranging from five to 15 feet in height. Measurements in this area on July 28, 1971 included water temperature of 54 degrees Fahrenheit (at noon), and stream velocities of approximately three feet per second.
- Below FS Trail 517, a 50-foot waterfall is present on a tributary stream at its confluence with the Roaring River. Just below this tributary, and below the confluence with the South Fork, the river is constricted between basalt cliffs and forms two large falls, one with a drop of about 15 feet and one with a drop of about 40 feet. The larger falls drops into a bowl about 75 feet in diameter and about 30 feet deep. This falls and broad bowl create a spectacular natural setting. The sides of the bowl are deeply undercut at river level and the cliffs which are created by this undercutting are covered by a luxuriant growth of moss and fern. Rock shelves in the cliffs provide natural walkways to view the falls and pool.
- The lowest mile of river is relatively wide (30 to 40 feet) and straight.
- Few effects related to current human use are present due to the unroaded condition of most of the area. As noted in the introduction to this assessment, the area's unroaded condition is unlikely to change. As a result of its undisturbed condition, the Roaring River drainage serves as a control drainage for comparison with others in the region, an increasingly valuable attribute as other drainages are modified by management activities. Hydrologic characteristics such as flow regimes, turbidity, and temperature (as well as other resource characteristics such as fisheries and wildlife habitat) can be monitored and compared to other drainages.

- Streamflow (discharge) records are available during the period from January 1966 to September 1968. River discharge was measured daily by the U.S. Geological Survey approximately 400 feet upstream from the mouth. While the period of discharge measurement is somewhat short, the recordings still provide meaningful insight into the river's hydrology and water quantity. The lowest streamflow on record during this time was 39 cubic feet per second (cfs), while the largest streamflow was 1,240 cfs. For the 1967 water year (a water year runs from October 1 to September 30), there was a total cumulative discharge of 62,677 cfs, with a maximum daily discharge of 765 cfs, minimum of 39 cfs, and mean of 765 cfs. There were 124,300 acre-feet of water for the 1967 water year. For the 1968 water year, there was a total cumulative discharge of 62,061 cfs, with a maximum daily discharge of 1,240 cfs, minimum of 42 cfs, and mean of 170 cfs. There were 123,100 acre-feet of water for the 1968 water year.
- Low flow summer water temperatures have been measured during the past two years (1991 and 1992) during the period from June through September (Henderson, 1993). Hourly stream temperatures were recorded near the river's mouth. Relatively stable, cool temperatures are noted for the river. There are very low fluctuations in daily temperatures. Low flow summer temperatures appear well buffered from sudden changes in ambient air temperature.

Botany

Criteria for Outstandingly Remarkable Values

The river, or the area within the river corridor, contains nationally or regionally important populations of indigenous plant species. Of particular importance are species considered to be unique, or populations of federal or state, listed or candidate, threatened, endangered or sensitive species. The occurrence of an example(s) of a relict plant community, presence of a Research Natural Area (RNA), presence of a unique, rare, or geographically important wetland, or the presence of a unique combination of plant communities may be considered. Diversity of plant communities is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Finding

Botanical and ecological values along the river meet the criteria for outstandingly remarkable values.

The drainage supports a diversity of plant communities that form a mosaic of riparian and upland species from the headwaters to the confluence. The outstandingly remarkable values attributed to the river's headwaters include a unique combination of plant communities found in association with the rock and talus ridgeline habitat and the numerous braided channels of the river.

Discussion of Botanical Values

Old growth Douglas-fir (*Pseudotsuga menziesii*) dominated forests are present in the Roaring River drainage with about 35 percent of these old growth forests occurring along the river. Almost the entire river corridor is flanked by these old forests, with the side slopes and ridges a mosaic of different successional stages of coniferous forest, hardwood and shrub communities, rock outcrops and talus habitats, and meadow communities.

The mosaic of plant communities on the drainage side slopes and ridges is largely the result of response to disturbance by fire. Fire scars are common on old trees and fire scarred snags are scattered throughout the drainage. It is thought that in the past, local people used fire to maintain huckleberry fields in the Roaring River headwaters, and this is a probable explanation of what seems to be an unusually high forest fire frequency. Shrub communities dominated by western rhododendron (*Rhododendron macrophyllum*) are common in these fire disturbed areas, as are dense, often stagnated stands of Douglas-fir.

In the lower elevational reaches of the drainage, Douglas-fir and western hemlock (*Tsuga heterophylla*) predominate with silver fir (*Abies amabilis*), noble fir (*Abies procera*) and mountain hemlock (*Tsuga mertensiana*) at the higher elevational tributaries and headwaters of the river. Upper slopes and ridges are covered by extensive bear grass (*Xerophyllum tenax*) and huckleberry (*Vaccinium spp.*) dominated communities. These upper slopes are a mixture of the non-forested bear grass/huckleberry communities and forested areas. Forested vegetation along the corridor of the upper river includes vine maple (*Acer circinatum*) and sitka alder (*Alnus sitchensis*) dominated communities, particularly in talus and rock slide habitat.

The following descriptions of the Roaring River area are mentioned in the OMSI report (Miller 1971). Areas surveyed included trail accessible locations within the drainage.

- Side slopes of the headwaters are covered by dense western rhododendron stands and rhododendron is also the dominant shrub beneath Douglas-fir forests in the upper river. Numerous log jams and fallen large trees along the river were considered evidence of wind-throw disturbance by the OMSI report. Both Douglas-fir and western hemlock wind-thrown trees are noted. Older trees and stands are most often found near the river on more level terrain. Old trees (200 plus, usually with fire scars) are also described as scattered among younger stands along and above the river. The younger stands are estimated to be approximately 50 years old.
- An unusually large, non-forested area dominated by large, dense western rhododendrons occurs along lower Cougar creek near the confluence with Roaring River. Miller (1971) speculated that this may have resulted from repeated fire eliminating all conifer seedlings and young trees.
- Along the river near the confluence with Twin Springs Creek, large old trees provide a high, dense canopy. Thick moss dominates the forest floor under these trees. The area is characterized as "park-like". An area of botanical interest is described between Twin Springs Creek and Squaw Creek. Four to six-foot bracken ferns (*Pteridium aquilinum*) densely dominate a non-forested opening.
- From below FS Trail 517 to the confluence with the Clackamas River, vegetation along the Roaring River is largely a mosaic of hardwood stands and old growth Douglas-fir forest. Vine maple and red alder (*Alnus rubra*) dominate terraces and riparian sites immediately adjacent to the river. The large waterfalls which occur here (described previously in the hydrology section) are surrounded by moss and luxuriant masses of maidenhair ferns (*Adiantum pedatum*).
- The OMSI report (Miller 1971) contains a listing of all the plants which were identified during the Roaring River study. Clackamas iris (*Iris tenuis*) was located in the Roaring River drainage. This iris has a very limited range and is thus of particular interest. The drainage's diversity of plant communities and interesting species composition is repeatedly mentioned throughout the OMSI study.

- The Roaring River and its associated headwater tributaries include much diverse habitat. A unique combination of plant communities is found in association with the rock outcrop, and talus habitat along the more xerophytic ridgetops above the river and in association with the numerous braided streams and side channels that form this section of the river.

Fisheries

Criteria for Outstandingly Remarkable Values

Fish values may be judged on the relative merits of either fish populations or habitat or American Indian traditional use - or a combination of these river-related conditions. Consideration shall be given for potential as well as existing values.

Populations

The river is internationally, nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or federal or state listed threatened, endangered and sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat

The river provides or has the potential to provide exceptionally high quality habitat for fish species indigenous to the region. Of particular significance is habitat for wild stocks and/or federal or state listed or candidate threatened, endangered and sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Finding

The native cutthroat trout, late-run winter coho salmon, and late-run winter steelhead populations are found to be an outstandingly remarkable value.

In addition, the river's fish habitat (for both native cutthroat trout in the upper river, and for coho and steelhead in the first 3.5 miles upstream from the confluence with the Clackamas) is found to be an outstandingly remarkable value.

The Roaring River's primitive character and remoteness were found to be an outstandingly remarkable value, confirming recognition of these characteristics in the Congressional Record from the 1988 Omnibus Oregon Wild and Scenic River Act. This primitive and remote setting, combined with the river's native cutthroat trout, late-run coho salmon, late-run winter steelhead, and chinook salmon offer outstandingly remarkable fishing opportunities which are recognized in the recreation section of this document.

Discussion of Fisheries Values

The Roaring River supports populations of native cutthroat trout, late-run winter coho salmon, and late-run winter steelhead. All three of these populations are considered to be endemic to the river. Region-wide, populations of these species have declined over the last few decades (Nehlsen et al. 1991). The native cutthroat trout population is present in the mainstem and its tributaries above the first falls at river mile 3.5. Populations of late-run winter coho salmon and late-run winter steelhead are present only within the lower 3.5 miles below the falls. This particular stock of late-run winter coho salmon, also common to other parts of the Clackamas River, is considered to be the last self-sustaining run of native coho salmon in the entire Columbia River Basin.

Other fish species found within Roaring River include spring chinook salmon, summer steelhead, resident (native) rainbow trout, brook trout, mountain whitefish, and sculpin. All of these species except rainbow trout, brook trout, and sculpin are believed to be limited in distribution to the lower 3.5 miles below the falls.

Native cutthroat trout in the Roaring River is particularly important because this species is becoming increasingly scarce in Oregon. The remote and relatively pristine conditions of the Roaring River drainage are ideal for these cutthroat. About 11 river miles of excellent trout habitat exists along the river. This outstanding cutthroat trout habitat is recognized not only by fisheries biologists, but also by anglers who possess considerable knowledge of the Roaring River drainage. Cole Gardiner, with over 40 years experience of the Clackamas and Roaring drainages, rates the Roaring River as one of the last three remaining prime habitats for cutthroat trout in the Clackamas drainage (Gardiner, 1991). The Mazamas also recognize the outstanding cutthroat trout population and habitat of the Roaring River (Hurst, 1990). In addition, Ron Burnett, who first visited the Roaring River drainage in 1922 and has explored and fished the drainage many times since then, noted the value and uniqueness of the river's native trout (Burnett, 1990).

A 1972 hook and line survey documented fish in the 4 to 8 inch size range (Whitt, 1972). Trout as large as 15 inches have been observed in the river (Miller, 1971). The river is not stocked with hatchery trout which might compete with the native fish. Other potentially competing native or hatchery fish from the Clackamas River are blocked from entering much of the Roaring River by the falls which are located at river mile 3.5, just above the confluence between the Roaring River mainstem and the South Fork Roaring River.

The tributary drainages of the upper Roaring River also support small populations of cutthroat, rainbow trout, and introduced brook trout. Introduced brook trout have escaped from some of the high lakes and have established themselves in some of the tributary drainages. The primary contribution of these drainages to Roaring River fisheries, however, is high quality, cold, clear water (Miller, 1971).

The lower river, below the falls, serves as important spawning and rearing habitat for late-run winter coho salmon, late-run winter steelhead, and spring chinook salmon. The pristine, undisturbed habitat of the Roaring River also serves as a refuge from the mainstem of the Clackamas River for these fish. Holding pools for salmon and steelhead dot this lower segment, which drops at a gradient of about 3.7 percent.

A basin-wide stream habitat survey was conducted in 1991 from the mouth of Roaring River to its headwaters (Bio-Surveys, Inc. 1991). A total of eight stream reaches were identified during the survey. Fish habitat changes drastically in nature throughout the basin depending on changes in geomorphology and floodplain vegetation. Fish habitat and riparian vegetation is considered highly complex and of excellent quality.

Aquatic macroinvertebrate sampling was conducted at the mouth of Roaring River in September 1991. Data analysis and results indicate the watershed is categorized as "slightly impaired" using a modified Environmental Protection Agency (EPA) Rapid Bioassessment Protocol (Aquatic Biology Associates 1991). Slight impairment is indicated by a high percentage of sediment tolerant mayflies, a low percentage of intolerant mayflies, a very high percent of taxa in the "collector-gatherer" functional feeding group classification, and a low percentage of taxa in the "shredder" functional feeding group classification.

The Roaring River's relatively undisturbed hydrologic and biological characteristics lend itself to a comparison or "control" drainage for other neighboring or regional drainages. Along with the river's hydrologic features, its fish habitat and populations, aquatic invertebrates, and other biological characteristics contribute to the river's value as a comparison or "control" drainage. Control drainages like the Roaring River are an important and increasingly scarce management monitoring and research tool.

Wildlife Habitat and Populations

Criteria for Outstandingly Remarkable Values

Wildlife values shall be judged on the relative merits of either wildlife populations or habitat or American Indian traditional use, or a combination of these conditions.

Populations

The river or area within the river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or populations of federal or state listed or candidate threatened, endangered and sensitive species. Diversity of species is an important consideration and could in itself lead to a determination of outstandingly remarkable.

Habitat

The river or area within the river corridor provides exceptionally high quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for federal or state listed or candidate threatened, endangered and sensitive species. Contiguous habitat conditions are such that the biological needs of the species are met. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Finding

The wildlife habitat of the Roaring River corridor meets the criteria for an outstandingly remarkable value. This area provides exceptionally high quality habitat for the spotted owl (*Strix occidentalis*), a nationally significant threatened species and supports an unusually diverse array of wildlife habitats. Wildlife populations along the corridor are important river values, but do not meet the criteria for outstandingly remarkable river values.

Discussion of the Wildlife Values

The total Roaring River drainage (river corridor in combination with surrounding areas) has considerable importance for wildlife. The following discussion of wildlife values includes the river corridor itself and surrounding drainage lands.

The Roaring River drainage's mosaic of vegetation resulting from previous wildfires, riparian areas, rock outcrops, and talus offers excellent wildlife habitat diversity. Riparian hardwood and shrub vegetation, various successional stages of conifer forest including old growth Douglas-fir forest, shrub dominated non-forested sideslopes, and upper elevation meadows typify the rich variety of wildlife habitat within the drainage. About 35 percent of the drainage's old growth Douglas-fir forest is within the immediate river corridor. In addition, the drainage's preserved roadless and remote conditions offer stable habitat. Spotted owl use of the river corridor's old growth has been confirmed and recognized spotted owl habitat is present within the corridor and on adjacent areas in the drainage. Nearly all of the Roaring River corridor is considered critical owl habitat by the U.S. Fish and Wildlife Service. Approximately 70 percent of the river's corridor is in Habitat Conservation Area (HCA) O-3. Four spotted owl pairs have been located within the river corridor and one resident single is located immediately adjacent to the corridor. The spotted owls have successfully reproduced in this area.

Beaver (*Castor canadensis*) dams and beaver sign are present in various locations throughout the drainage. The drainage's shrub and meadow habitat supports a good small mammal prey base: pika (*Ochotona prineps*), Townsend chipmunk (*Tamias townsendii*), brush rabbit (*Sylvilagus bachmani*), golden mantled ground squirrel (*Spermophilus lateralis*), Douglas squirrel (*Tamiasciurus douglasii*) and porcupine (*Erethixon dorsatum*) were all found to be abundant or common in the drainage. Common predator species of the drainage include coyote (*Canis latrans*) and black bear (*Ursus americanus*). (Previous sentences from Miller, 1971.) Mink (*Mustela vison*), weasel (*Mustela frenata*), and mountain lion (*Felis concolor*) are also present, although there are no reliable assessments of how common they are in the drainage.

Black-tailed deer (*Odocoileus hemionus*) are common in the drainage and elk (*Cervus elaphus*) are present also, although less abundant than deer (Miller, 1979). The lower Roaring River valley is important deer and elk winter range. In general, as with other resources, the Roaring River has outstanding potential for comparing big game habitat and populations in an unroaded area with habitat and populations in roaded drainages.

The 1971 OMSI survey of the Roaring River (Miller, 1971) includes notes for all large mammal sightings recorded during the survey. The OMSI survey also includes a list of all bird species confirmed present in the drainage during the survey, the list contains nearly 50 different species. Bald eagles (*Haliaeetus leucocephalus*) are known to over-winter in the valley and osprey (*Pandion haliaetus*) are also present.

The Roaring River Wild and Scenic River corridor contains three Pileated Woodpecker (*Dryocopus pileatus*) and five Pine Marten (*Martes americana*) habitat management areas. These land allocations make up approximately 36 percent of the corridor. The goals of Pileated Woodpecker and Pine Marten management areas as stated in the Forest Plan are to "Provide ... mature or old growth forest habitat blocks of sufficient quality, quantity and distribution to sustain viable populations of pileated woodpecker and pine marten." These habitat blocks should be predominantly mature and overmature, have a high density of high quality den and nest snags and defective green trees, have prevalent dead and down woody material and be limited to recreational access. The current condition of the Pileated Woodpecker and Pine Marten management areas in the Roaring River corridor closely match the major characteristics detailed as the desired future condition in the Forest Plan.

Heritage Resources

Criteria for Outstandingly Remarkable Values

Before European Settlement

The river or area within the river corridor contains a site(s) where there is evidence of occupation or use by American Indians. Sites must have unusual characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare or sacred purposes. Of particular significance are sites or features listed in, or are eligible for inclusion in, the National Register of Historic Places.

After European Settlement

The river or area within the river corridor contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare, unusual or one-of-a-kind in the region. A historic site(s) and/or feature(s) in most cases is 50 years old or older. Of particular significance are sites or features listed in, or are eligible for inclusion in, the National Register of Historic Places.

Traditional Use, Culture

The river or area within the river corridor contains regionally unique location(s) of importance to Indian tribes (religious activities, fishing, hunting, and gathering). Locations may have unusual characteristics or exceptional cultural value being integral to continued pursuit of such activities. Locations may have been associated with treaty rights on ceded lands or activities unprotected by treaty on ceded lands or in traditional territories outside ceded lands.

Finding

The river's heritage resources are not found to be outstandingly remarkable based on current available information. However, heritage resources are considered to be an important river resource.

Discussion of Heritage Resources Values

Earliest human use in this area may have occurred between 14,000 and 11,000 years ago (Burchard, 1991). Roaring River was probably an important anadromous fish-carrying stream. Limited historical accounts seem to indicate that prehistoric American Indians of the Molala and Clackamas tribes exploited the fishery resource all along the Clackamas River drainage. By inference it is plausible that the riverine environment of Roaring would have been exploited as well. Plants and animals would have been taken along with the fish. Ethnographic accounts indicate that the upper reaches of the river were considered prime areas for gathering huckleberries. This use continues at the present time. Numerous stacked rock features seem to indicate a religious type use of this area.

Historic use may have started with fur trappers and gradually expanded to include recreational activities such as fishing, hunting and picnicking. The Forest Service built a fire protection cabin along the Clackamas River about one-quarter mile downstream from the mouth of Roaring River. This was known as the Roaring River Ranger Station. In later years these cabins were known as guard stations. Fire detection lookouts and access trails were later constructed in this area. In 1912, the Forest Service seeded an old burn area near Cougar Creek.

Recreation

The first documented commercial exploitation of the drainage occurred in the 1900s and 1910s when sheep were grazed here. In 1922, the Portland Railway, Light and Power Company (now known as Portland General Electric) built a railroad line along the Clackamas River from North Fork to Lake Harriet. Supplies were hauled over this line for the construction of the Oakgrove Hydroelectric Project. A railroad bridge was built over Roaring River near its confluence with the Clackamas. Recreational use increased when "picnic" and "fishermen" trains occasionally ran up the line. In 1937, the railroad was replaced with a primitive motor truck road and today State Highway 224 follows the old railroad grade as far as the Three Lynx townsite road junction. No railroad grades or logging activity ever existed in the Roaring River drainage. Today the river corridor is used primarily by fishermen and occasionally by hikers.

Criteria for Outstandingly Remarkable Values

Recreational opportunities are, or have the potential to be, unique enough to attract visitors from outside of the geographic region. Visitors would be willing to travel long distances to use the river resources for recreational purposes. River-related opportunities could include, but are not limited to, sightseeing, wildlife observation, photography, hiking, fishing, hunting and boating.

Interpretive opportunities may be exceptional and attract or have the potential to attract visitors from outside the geographic region.

The river may provide or have the potential to provide settings for national or regional usage or competitive events.

Finding

The Roaring River's sport fishing opportunities, the primitive character and remoteness of the river's recreation setting, and its non-wilderness primitive recreation opportunities contribute to a determination that recreation is an outstandingly remarkable value.

Discussion of the Recreation Values

The Roaring River's primitive, remote environment and its native cutthroat, coho salmon, and steelhead populations provide a unique sport fishery. In addition to the unusually beautiful appearance of the native fish, their superior fighting characteristics and wily nature contribute to the quality of this recreational activity. The relatively small size of the Roaring River and its remoteness also challenge a select group of anglers.

The river drainage's undeveloped character also attracts recreationists who enjoy hiking and exploring, particularly since it is so unusual to find such an opportunity so close to the Portland metropolitan area. The Forest Plan designates most of the Roaring River drainage as a "primitive and/or semi-primitive, non-motorized" recreation area which will be managed to provide dispersed, undeveloped recreation. Unroaded and non-wilderness wildlands are increasingly unique, making the Roaring River a particularly important part of the region's mix of recreation settings.

There is little trail access to most of the river. Three trails drop down from the north rim of the drainage, providing access where they meet or cross the river (FS trails 517, 502, and 506). Only one trail continues across the river, the trail to Grouse Point (FS trail 517). There are no trails that parallel the river. Two trails follow ridges along the south side of the drainage, providing views into and across the Roaring River valley to a horizon dotted with Cascade volcanos, with a spectacular view of Mt. Hood being the most commanding. One of these trails follows Indian Ridge (FS trail 510); the other accesses the Rock Lakes/Serene Lake/Cache Meadows area and also Grouse Point (FS trails 512 and 517). This trail can be hiked all the way to the western end of the drainage to the Roaring River Campground (FS trails 517 and 518).

The Forest Capital Investment Program (CIP) has several new trails proposed in the Roaring River drainage. Two loop trails are included: one around Signal Buttes and one around Indian Ridge. Another new trail that was proposed would parallel the Roaring River up to near the base of Indian Ridge where it would switchback up to meet the loop trail around the ridge. In combination with the area's existing trails, these proposed new trails represent a tremendous roadless recreation resource for a variety of users including hikers, horseback riders, mountain bikers, huckleberry pickers, and fishing enthusiasts. Much of the drainage remains snow-free, offering year-round recreation opportunities.

Forest Service roads around the rim of the drainage provide access for dispersed motorized recreation. Although the roads are well removed from the river corridor, several undeveloped campgrounds are located at the trailheads for trails dropping down to the river. The roads along the upper drainage, particularly the primitive Road 4610, also provide dramatic views into the drainage and across it to Signal Buttes and Indian Ridge.

Except for occasional kayaking up the Roaring River at its confluence with the Clackamas, there are no known white water recreation opportunities.

The Roaring River flows through an inventoried roadless area (Appendix A-3). The analysis of roadless lands, documented in Appendix A-3 of the FEIS for the 1990 Mt. Hood Land and Resource Management Plan, described each roadless area, the resources and values considered, the range of alternative land uses studied, and the effects of management under each alternative. As a result to the analysis, some roadless areas were recommended for inclusion in the National Wilderness Preservation System and others were assigned various non-wilderness prescriptions. The Roaring River Roadless area was assigned to A4 Special Interest. The Forest Plan did not make an "irreversible" or "irretrievable" commitment of resources to development. NEPA documents for projects proposed for roadless areas assigned a non-wilderness management prescription must examine the issue of whether to develop, not just how to develop.

Scenic Resources

Criteria for Outstandingly Remarkable Values

The landscape elements of landform, vegetation, water, color and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

Finding

The Roaring River's scenic resource is an outstandingly remarkable value. The wild, unmodified scenery of the river corridor and surrounding ridges are unique in the region (outside designated wilderness areas) and will become increasingly valuable as surrounding lands are more intensely managed and the Portland metro area population increases.

Discussion of Scenic Resource Values

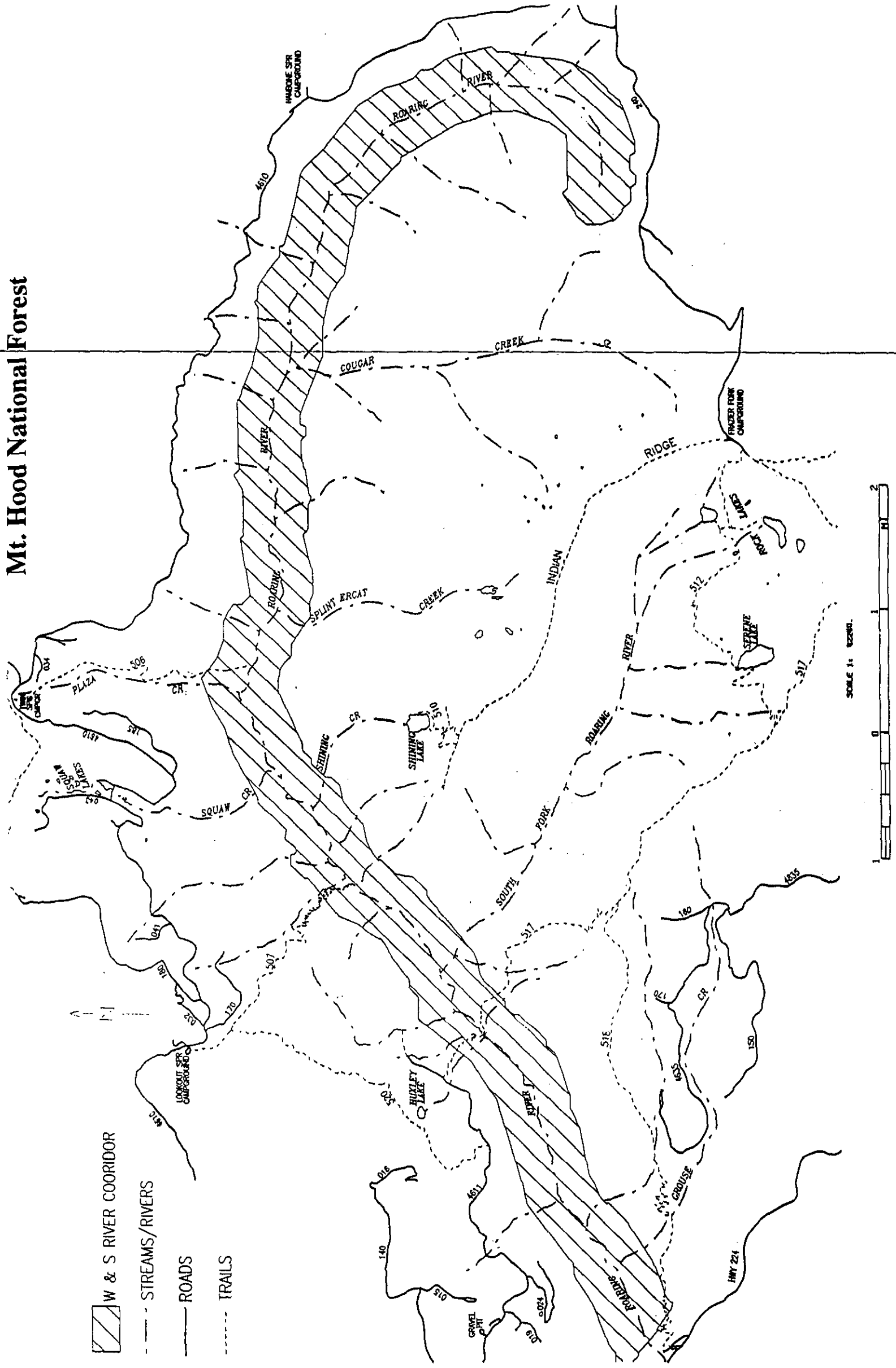
The sweeping vistas into the Roaring River's wild, unmodified valley are the most important characteristic of its scenic resources. This scenery is of particular value, since the river is located so close to the Portland metropolitan area. The Mazamas (a hiking organization), organized in 1894 and based in the Portland area, have pointed out that such scenic values, literally in the city's back yard, are of special interest (Hurst, 1990). Views into and across the Roaring River valley are provided along Forest Road 4610, and the trails along Grouse Point and Indian Ridge. Past fires have created a varied pattern of color and texture. Densely textured, light green second-growth conifer forests contrast with the shaggy-topped, darker green old growth. Shrubs and hardwoods create blankets of red and gold in the fall which are complemented by the golds and buffs of curing meadows. These vegetation patterns are framed by rock outcrops, talus, and buttes. Distant horizons are dotted with Cascade peaks, including a dramatic view of Mt. Hood.

The river's waterfalls, canyons, and old-growth groves reward explorers and bushwhackers with impressive up-close settings. The large waterfall below FS Trail 517 is particularly beautiful. This falls cascades over 50 feet into a deep, broad bowl surrounded by moss, ferns, and dark basalt cliffs. These river features are enhanced by surrounding ridges, talus, and buttes swept by a mosaic of forests, shrublands, and meadows.

Appendix A-1

Roaring River Map

Roaring River Access Map Estacada Ranger District Mt. Hood National Forest

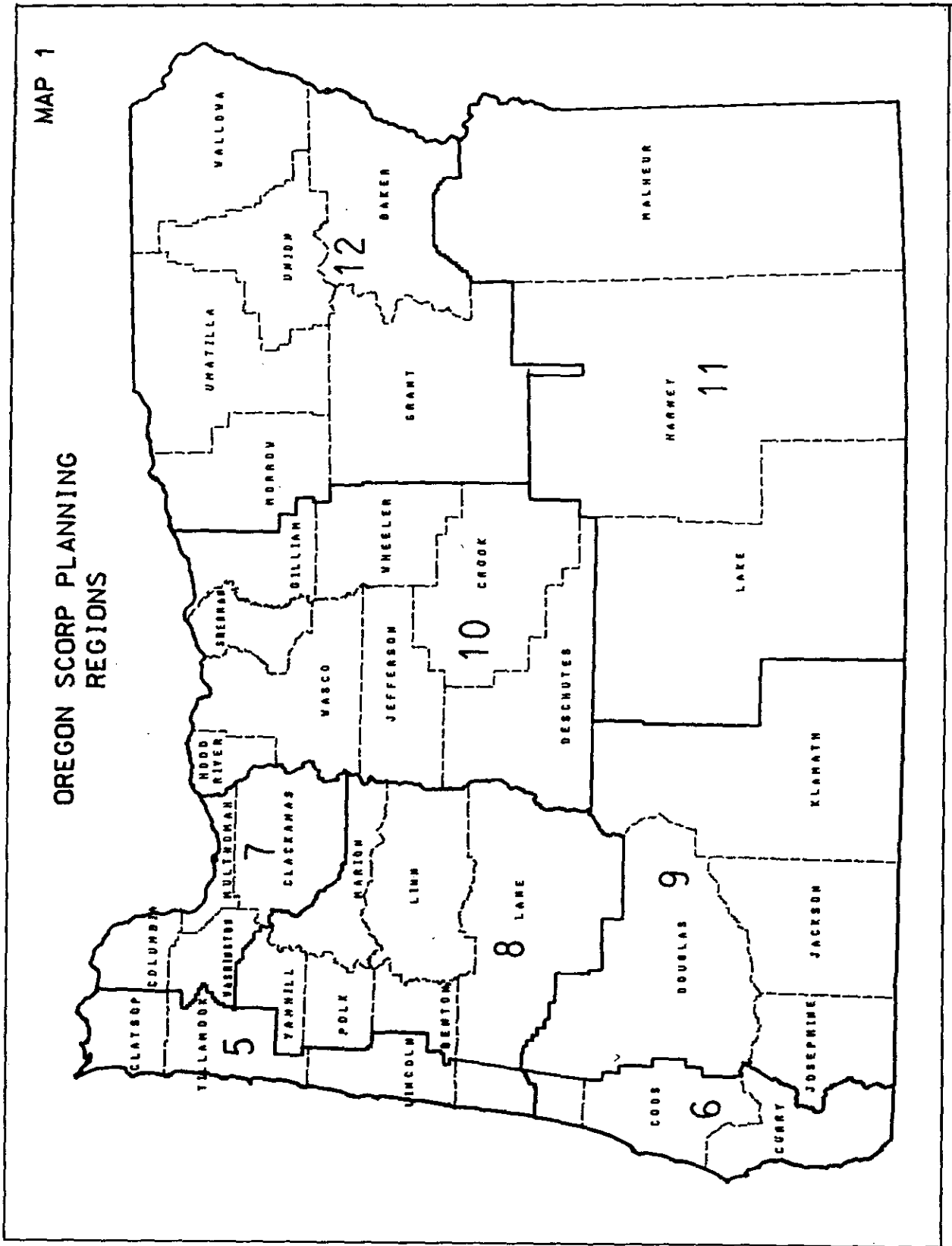


Appendix A-2

SCORP Map

**STATEWIDE COMPREHENSIVE
OUTDOOR RECREATION PLAN
1988-1993**

**Oregon State Parks and Recreation Division
December, 1988**

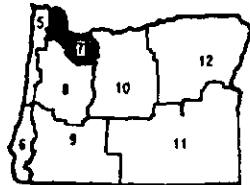


the Coos Bay dune sheet. The Umpqua and Rogue are major rivers of this area. Much of the southern coast area is notably rocky.

The climate is mild in winter and cool in summer with a high moisture content in the air at all seasons. The rainfall is comparable to the North Coast. The strong contrast is directly attributable to the stability of the air masses over the Pacific Ocean in the summer. In July, the hottest month inland, cold off-shore currents result in fog along the coast.

Portland Metropolitan Area - Region 7

Counties: Columbia, Clackamas, Multnomah and Washington



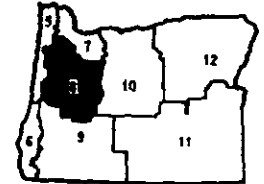
This region contains the metropolitan Portland area. It is the most heavily populated region of the state. It is located in the northern Willamette Valley, the state's major lowland. The valley is bordered by the Coast Range on the west and the Cascades on the East. Wetlands are typically found within the active or diked flood plain of the Columbia and Willamette Rivers. Much attention is being given to protect wetlands associated with the Columbia Slough. The Willamette River runs north/south through the area meeting the Columbia River sloughs which form the northern boundary of this region. The area is highly urbanized with the Cascadian forest only minutes away. The major peak, Mt. Hood, is the highest point in Oregon at 11,235 feet.

This area's climate is dominated by the Pacific Ocean and the Columbia River Gorge. Mild and rainy winters are often interrupted by

continental influences flowing through the Gorge creating icy, chilly conditions.

Mid Willamette Valley - Region 8

Counties: Yamhill, Polk, Benton, Marion, Linn and most of Lane County.



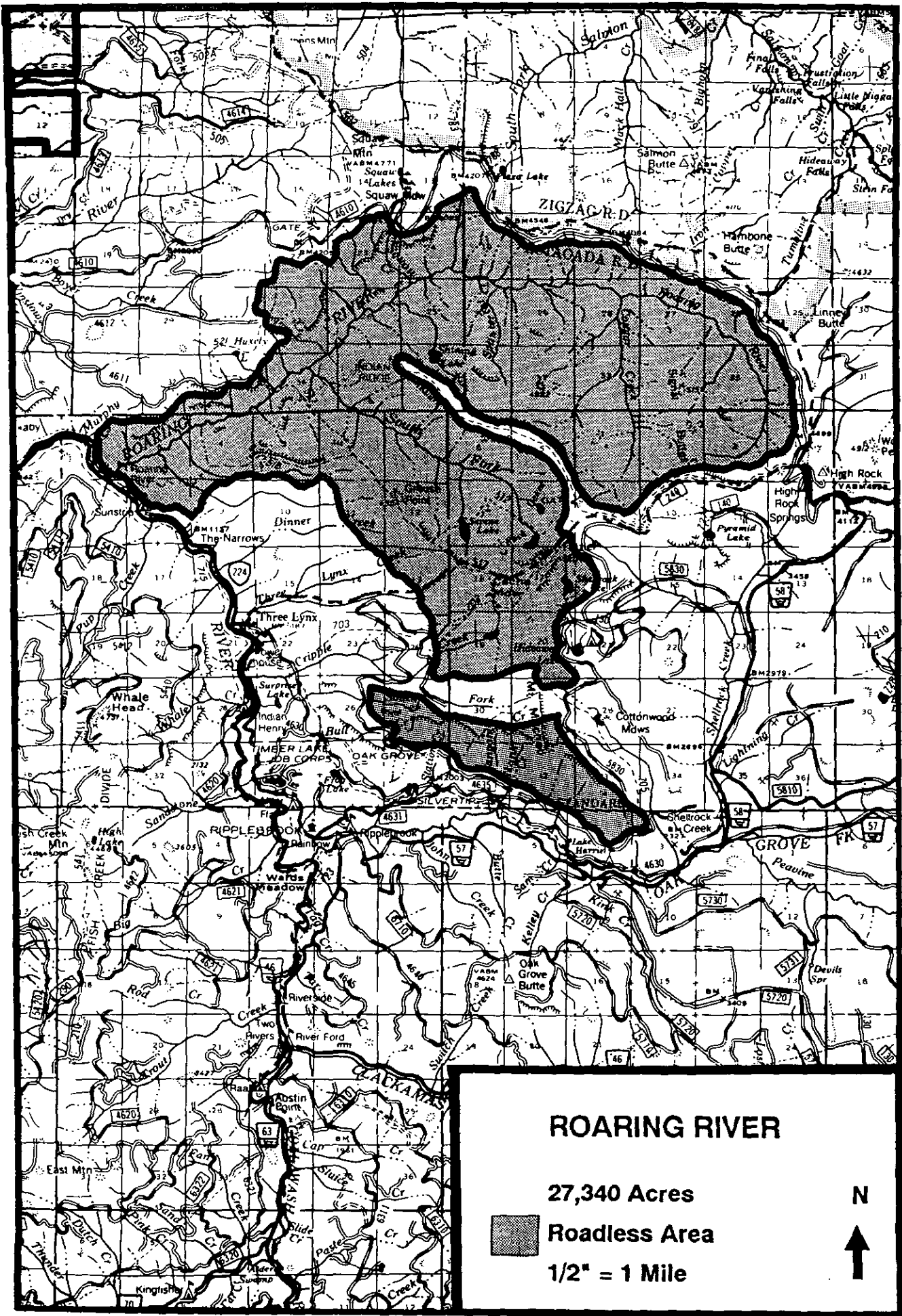
This region contains several major population centers. It is bordered by the Coastal Range to the west and the Cascades to the east. The valley is a broad, flat, alluvial plain, fifty miles across at its widest point. The Willamette River meanders through the plain. Sloughs, islands, oxbow lakes and flood channels have been created by the shifting river system. Wetland sites in the mid-Willamette Valley are typically residual undrained areas associated with farmland. Scattered hills and buttes rise above the valley floor.

The Valley has mild, rainy winters and springs which produce lush, green vegetation. Annual rainfall varies between 20 to 50 inches. Summers usually have less than 5 inches of rain with daytime temperatures ranging from 70-85°F. The Valley is dependent on snow melt from the Cascades to maintain adequate water for the major rivers during the summer.

The Valley is largely an agricultural landscape interspersed with Douglas fir, Oregon oak, big leaf maple, Oregon ash, and alders. The western slopes of the Cascades and eastern slopes of the Coast Range have a mountain hemlock/Douglas fir forest. Western red cedar, bigleaf maple, vine maple, western hazelnut, rhododendron, snowberry, and salal are all common.

Appendix A-3

Roaring River Roadless Area Map



Appendix A-4

**References Cited for
Resource Assessment**

**Resource
Assessment
References Cited**

- Aquatic Biology Associates, 1991.** Benthic Invertebrate Biomonitoring on the Mt. Hood National Forest, Estacada Ranger District. September 1991. On file at the Estacada Ranger District.
- Bio Surveys, Inc., 1991.** Stream Survey of the Roaring River, Clackamas Co., Oregon. September 1991. On file at the Estacada Ranger District.
- Burtchard, Greg C. and Robert W. Keeler, 1991.** Mt. Hood Cultural Resource Reevaluation Project. A Consideration of Prehistoric and Historic Land-use and Cultural Resource Survey Design Reevaluation, Mt. Hood National Forest, Oregon. Laboratory of Archaeology and Anthropology, Portland State University. Report submitted to Mt. Hood National Forest, Gresham, Oregon.
- Burnett, Ronald E., 1990.** Portland, Oregon: Personal Correspondence. September, 1990.
- Gardiner, Cole, 1991.** Portland, Oregon: Telephone Interview. March, 1991.
- Henderson, R., 1993.** Stream Temperature Monitoring on the Mt. Hood National Forest, Estacada Ranger District from 1989 to 1992. On file at the Estacada Ranger District.
- Howes, Steve, 1979.** Mt. Hood National Forest, Soil Resource Inventory. USDA Forest Service, Pacific Northwest Region, Mt. Hood National Forest, Portland, Oregon. January, 1979.
- Hurst, Jim, 1990.** Chairman, Mazamas Conservation Committee: Personal Correspondence. December, 1990.
- Miller, James C., 1971.** An Ecological Survey of the Roaring River Area. Oregon Museum of Science and Industry. Portland, Oregon.
- Nehlsen, W., J.E. Williams, and J.A. Lichatowich, 1991.** Pacific Salmon at the Crossroads: Stocks at Risk from California, Oregon, Idaho, and Washington. Fisheries 16(2):4-21.
- Oregon State Parks and Recreation Division, 1988.** Statewide Comprehensive Outdoor Recreation Plan, 1988-1993. Salem, Oregon. December, 1988.
- USDA Forest Service, 1974.** Final Environmental Impact Statement for the Salmon and Roaring Rivers and Unit Land Use Plans. USDA Forest Service, Mt. Hood National Forest, Gresham, Oregon. October, 1974.
- USDA Forest Service, 1990.** Final Environmental Impact Statement and Land and Resource Management Plan for the Mt. Hood National Forest. USDA Forest Service, Mt. Hood National Forest, Gresham, Oregon. January, 1990.
- U.S. Geological Survey, 1966, 1967, and 1968.** Annual Streamflow Records for the Roaring River, Clackamas Co., Oregon. On file at the Estacada Ranger District.
- Whitt, Charles R. 1972.** An Evaluation of Existing and Potential Fishery Resources in the Roaring River Study Area (unpublished report). USDA Forest Service, Mt. Hood National Forest, Gresham, Oregon.

Appendix B

References Cited for Environmental Assessment

Environmental Assessment References Cited

- Aquatic Biology Associates**, 1991. Benthic Invertebrate Biomonitoring on the Mt. Hood National Forest, Estacada Ranger District. September 1991. On file at the Estacada Ranger District.
- Bio Surveys, Inc.**, 1991. Stream Survey of the Roaring River, Clackamas Co., Oregon. September 1991. On file at the Estacada Ranger District.
- Burtchard, Greg C. and Robert W. Keeler**, 1991. Mt.Hood Cultural Resource Reevaluation Project. A Consideration of Prehistoric and Historic Land-use and Cultural Resource Survey Design Reevaluation, Mt.Hood National Forest, Oregon. Laboratory of Archaeology and Anthropology, Portland State University. Report submitted to Mt.Hood National Forest, Gresham, Oregon.
- Henderson, R.**, 1993. Stream Temperature Monitoring on the Mt. Hood National Forest, Estacada Ranger District from 1989 to 1992. On file at the Estacada Ranger District.
- Howes, Steve**, 1979. Mt. Hood National Forest, Soil Resource Inventory. USDA Forest Service, Pacific Northwest Region, Mt. Hood National Forest, Portland, Oregon. January, 1979.
- Hurst, Jim**, 1990. Chairman, Mazamas Conservation Committee: Personal Correspondence. December, 1990.
- Miller, James C.**, 1971. An Ecological Survey of the Roaring River Area. Oregon Museum of Science and Industry. Portland, Oregon.
- Nehlsen, W., J.E. Williams, and J.A. Lichatowich**, 1991. Pacific Salmon at the Crossroads: Stocks at Risk from California, Oregon, Idaho, and Washington. Fisheries 16(2):4-21.
- USDA Forest Service**, 1974. Final Environmental Impact Statement for the Salmon and Roaring Rivers and Unit Land Use Plans. USDA Forest Service, Mt. Hood National Forest, Gresham, Oregon. October, 1974.
- USDA Forest Service**, 1990. Final Environmental Impact Statement and Land and Resource Management Plan for the Mt. Hood National Forest. USDA Forest Service, Mt. Hood National Forest, Gresham, Oregon. January, 1990.
- U.S. Geological Survey**, 1966, 1967, and 1968. Annual Streamflow Records for the Roaring River, Clackamas Co., Oregon. On file at the Estacada Ranger District.
- Whitt, Charles R.**, 1972. An Evaluation of Existing and Potential Fishery Resources in the Roaring River Study Area (unpublished report). USDA Forest Service, Mt. Hood National Forest, Gresham, Oregon.

Roaring National Wild and Scenic River

Management Plan

Mt. Hood National Forest

Estacada Ranger District

Clackamas County, Oregon

Management Plan Table of Contents

Management Area Management Direction - A1-ROA Roaring Wild and Scenic River Corridor

Goals	MP-1
Location	MP-1
Desired Future Condition	MP-1
Standards and Guidelines	MP-3
Implementation Schedule	MP-10
Monitoring Plan	MP-12

Management Area Management Direction

Management Area Management Direction

A1-ROA Roaring Wild and Scenic River Corridor

Goals

Protect and enhance the resource values for which a river was designated into the Wild and Scenic Rivers System. The specific goals for the Wild and Recreational classified river segments are:

Wild - To perpetuate a primitive recreational experience and protect the river corridor to maintain an essentially unmodified environment.

Recreational - Provide opportunities for recreational activities and maintain visual quality.

Location

This management area applies to the Roaring River from the confluence with the Clackamas river to the headwaters.

Other Management Areas representing Management Requirements, e.g. B7 General Riparian Area and B5 Pileated Woodpecker/Pine Martin Habitat Area, are inclusions within or overlap some A1 Management Area boundaries. B7 and B5 Management Area prescriptions, as well as, the A1 prescriptions applies to these corresponding inclusions. If inconsistencies occur between these prescriptions, the Standards and Guidelines of B5 and B7 are applied jointly and predominate over A1 prescriptions (with the exception of visual quality objectives).

Desired Future Condition

Major Characteristics - Wild Segment

Congressionally designated areas on National significance.

Significant examples of the following features are often located in the river corridors:

- Deep, incised canyons and gorges.
- Old growth forests.
- Outstanding views of majestic mountains and river canyons.
- Alpine and sub-alpine meadows.
- The corridor is essentially free of recreation facilities and signs.
- Access is generally by trail or water.
- The corridor is essentially an unmodified environment.

- Motorized boats are not present.
- Minimal evidence of recreational users.
- Very low interaction between recreational users.

Sensory Perceptions

Isolation, tranquility and closeness to nature may be experienced with few intrusions from the sights and sounds of human activity.

Major Characteristics - Recreational Segment

Congressionally designated areas on National significance.

Significant examples of the following features are often located in the river corridors:

- Deep, incised canyons and gorges.
- Old growth forests.
- Visible public roads and developments such as campgrounds are closeby.
- Access is by roads and trails.
- Opportunities exist for a wide variety of river related recreation activities.
- Characterized by a predominately natural-appearing environment.
- A diversity of aquatic habitat types that foster high production of native salmonids.

Sensory Perceptions

The sights and sounds associated with human activity are common.

A1-ROA Roaring Wild and Scenic River Corridor

The following Standards and Guidelines apply to segments of the Roaring River, a Congressionally designated Wild and Scenic River (PL 100-557 Omnibus Oregon Wild and Scenic Rivers Act of 1988).

The intent of the following Standards and Guidelines is to protect and enhance the outstandingly remarkable values for which the Roaring River was designated and to protect its free-flowing characteristic.

A. General

1. All management activities in the river corridor shall protect and/or enhance the identified outstandingly remarkable values. (FSH 1909.12, Chapter 8, 7/87). **A1-ROA-001**
2. The free-flowing characteristics of the river shall be protected (PL 90-542, Wild and Scenic rivers Act, 1968.) **A1-ROA-002**
3. River Characteristics necessary to support the existing classification of Wild, Scenic or Recreational shall be protected during all management activities [Federal Register, Vol. 47, No. 173 9/82 (Interagency Guidelines)]. **A1-ROA-003**
4. Management activities shall be consistent with prescribed Recreation Opportunity Spectrum (ROS) classes (FSM 2311.1). **A1-ROA-004**
 - a. Wild segments shall provide primitive non-motorized and/or semi-primitive non-motorized ROS settings. **A1-ROA-005**
 - b. Recreation segments; From the confluence of the Clackamas River to river mile .2, shall provide Roaded Natural settings. **A1-ROA-006**

B. Specific Resource Values

1. Dispersed Recreation Facility and Site Construction, Administration and Management
 - a. Dispersed Recreation improvements (e.g., trails) shall be provided to:
 - 1) Minimize site degradation, provide for comfort and convenience of users in recreational segments. **A1-ROA-007**
 - 2) New trails shall not be constructed in the wild segment. **A1-ROA-008**
 - b. In recreational segments, dispersed recreation sites within 100 feet of the Clackamas and/or the Roaring Rivers shall be consistent with riparian values and the designated Recreation Opportunity Spectrum class. **A1-ROA-009**
 - c. River recreational use levels should be managed to maintain the prescribed ROS classes. **A1-ROA-010**
 - d. Recreational livestock use should be allowed in all segments, provided river banks, riparian vegetation and scenic quality are protected from adverse impacts. **A1-ROA-011**

- e. Recreational livestock may be tied, grazed or held overnight or for extended periods of time within the near-foreground areas (i.e., 100 feet) of campsites, trails, and key interest areas. **A1-ROA-012**
- 1) Utilization of current year's vegetation growth should not exceed 30 percent. **A1-ROA-013**
- 2) No more than 5 percent of an activity area should be in a detrimental soil condition from the combined impact of compaction, puddling and displacement. **A1-ROA-014**
- 3) Exposed mineral soil around campsites, trails, and key interest areas should not exceed 25 percent of the activity area. **A1-ROA-015**
- 2. Developed Recreation Facility and Site Construction, Administration and Management
 - a. Developed recreation improvements shall be provided to: **A1-ROA-016**
 - 1) Minimize site degradation in wild segments.
 - 2) Provide for comfort and convenience of users in recreational segments.
 - b. No new developed recreational sites shall be planned for wild segments. Existing developed recreation sites may be converted to dispersed sites. **A1-ROA-017**
 - c. For recreational segments, existing developed recreation sites may be converted to dispersed sites. New developed sites may be allowed. **A1-ROA-018**
 - d. All sites not currently at standard Forest Service maintenance levels should be rehabilitated to that standard by the year 2000. **A1-ROA-019**
- 3. Visual Resource Management

All management activities shall achieve the following visual quality objectives (VQO): **A1-ROA-020**

 - a. The VQO for wild segments shall be Preservation as seen from the river, river banks and trails within the river corridor. A VQO of Retention may be allowed for recreation facilities. **A1-ROA-021**
 - c. Exceptions to the above VQOs may occur within "designated viewsheds" **A1-ROA-022**
 - d. See Forestwide Visual Resource Management Standards and Guidelines for VQOs prescribed for trails.
- 4. Cultural Resources Management

See Forestwide Cultural Resources Standards and Guidelines.

5. Wildlife and Fisheries

- | | |
|--|------------|
| a. Habitat improvement practices should be limited to those which are necessary for the protection, conservation, rehabilitation or enhancement of river area resources. | A1-ROA-023 |
| b. Habitat improvement projects should not introduce non-native species that could significantly change the natural ecosystem. | A1-ROA-024 |
| c. Habitat improvement structures should mimic regular occurring natural events (as opposed to catastrophic);e.g., trees falling in and across the river, boulders falling in or moving down the river course, minor bank sloughing, erosion or undercutting, island building and opening or closing of existing-secondary channels. | A1-ROA-025 |
| d. Habitat improvement structures shall not create unusually hazardous conditions or substantially interfere with existing or reasonably anticipated recreational use of the river such as fishing, kayaking, canoeing, rafting, tubing, or swimming. | A1-ROA-026 |

The following apply to the recreational segment:

- | | |
|---|------------|
| e. Beaver dams/dens should be protected where compatible with recreation use. | A1-ROA-027 |
| f. Beaver transplants should be utilized to expand wetland habitat. | A1-ROA-028 |
| g. Development, timber harvest and ground disturbance should be avoided in areas supporting breeding populations of amphibians on the Sensitive Species list. | A1-ROA-029 |
| h. In timber harvest areas, densities of snags and down logs should be provided at levels that approximate unharvested old-growth natural levels. | A1-ROA-030 |
| i. Maximum allowable span across river for fish structures shall be 50 percent. | A1-ROA-031 |
| j. Side channels should be created. | A1-ROA-032 |

6. Range Management

- | | |
|--|------------|
| a. Commercial livestock grazing shall be prohibited. | A1-ROA-033 |
|--|------------|

7. Timber Management

- | | |
|--|--------------------------|
| a. Within wild river segments, regulated timber harvest shall be prohibited. Unregulated timber harvest and salvage activities may occur only for insect or disease control, fire, natural catastrophe, disasters, public safety or under specified conditions on valid mining claims (FSM 2354.42). | A1-ROA-034
A1-ROA-035 |
|--|--------------------------|

- b. Within recreational river segments, regulated timber harvest shall be prohibited. Unregulated timber harvest and salvage activities may occur if it is designed to protect or enhance river values and ensure visitor safety. A1-ROA-036
A1-ROA-037
 - c. Within recreational river segments, uneven-age management should be considered in highly visible portions. Even-age management may be considered if visual quality objectives are met. A1-ROA-038
A1-ROA-039
8. Soil, Water and Air Quality
- a. Water quality shall be maintained or enhanced. (See Forestwide Water Standards and Guidelines.) A1-ROA-040
 - b. Watershed management and improvement projects may be permitted. A1-ROA-041
 - c. All wild, scenic and recreational rivers segments shall be managed to remain in a free-flowing and unpolluted state. A1-ROA-042
- The following apply to the Recreational Segment:
- d. Operation of existing water-related projects (e.g., hydroelectric, municipal, water supply, etc.) shall occur under terms of current license or permit. Opportunities to improve flow conditions of existing hydroelectric projects shall be explored during relicensing. A1-ROA-043
A1-ROA-044
 - e. New water-related projects shall be prohibited on the mainstem of the Clackamas or Roaring River. Expansion and/or modification of existing water-related projects shall protect or enhance outstandingly remarkable values. A1-ROA-045
A1-ROA-046
 - f. Construction or operation of new water-related projects is prohibited within the corridor, and discouraged in tributaries outside the corridor. All new water-related project proposals or expansions of existing operations in river tributaries shall be subject to a project-specific analysis of potential effects on river values. Projects may be allowed if it is determined that river values remain in optimal condition. A1-ROA-047
A1-ROA-048
A1-ROA-049
9. Minerals and Energy Management
- For Wild river segments:
- a. Mineral development under the mining law (1872 Mining Law) and mineral leasing laws shall not be permitted within 1/4 mile of wild segment river banks. Provisions shall be made for valid existing mining and leasing rights. A1-ROA-050
A1-ROA-051
 - b. All new dams, major water diversions and hydroelectric power facilities shall be prohibited. A1-ROA-052
 - c. Common variety mineral (e.g., sand and gravel) development shall not be permitted. A1-ROA-053

For Recreational river segments:

- | | |
|---|--------------------------|
| a. Locatable minerals shall be recommended for withdrawal form development under the mining law (1872 Mining Law) with in the corridor for recreational segments. Provisions shall be made for valid existing mining and leasing rights. | A1-ROA-054
A1-ROA-055 |
| b. Leasable mineral (e.g., geothermal) permits shall include a "No Surface Occupancy" stipulation for that portion of the permit potentially affecting river resource values. | A1-ROA-056 |
| c. Common variety mineral (e.g., sand and gravel) development shall not be permitted within any river segments. | A1-ROA-057 |
| d. Plans of Operation for mineral exploration and development shall include reasonable, operationally feasible requirements to minimize conflicts with recreational activities and to protect the character of the landscape within the river corridor. | A1-ROA-058 |
| 1) Surface occupancy, if allowed, shall be designed to have the least possible effect on river related values. | A1-ROA-059 |
| 2) Site disturbance from mineral activities shall be rehabilitated within 3 years following project completion. | A1-ROA-060 |
| 3) During project operation, disturbed soils shall be stabilized prior to autumn high rainfall season. | A1-ROA-061 |
| e. All mineral exploration and development shall be done in a manner to protect river resource values. | A1-ROA-062 |

10. Geology

See Forestwide Geology Standards and Guidelines.

11. Lands and Special Uses

- | | |
|--|--------------------------|
| a. National Forest System lands within river corridors shall be retained. | A1-ROA-063 |
| b. Existing special uses, including recreation and non-recreation uses, may be allowed to continue where consistent with Management Area management direction. Special uses that do not meet Management Area management direction shall be terminated or phased out. | A1-ROA-064
A1-ROA-065 |
| c. New special use permits may be issued within all segments when consistent with the Management Area management direction | A1-ROA-066 |
| d. Construction of new utility and/or transmission lines (e.g., gals lines, geothermal and water pipelines and electrical transmission lines) should not be allowed within any river segment. | A1-ROA-067 |

- e. Applications for licenses from the Federal Energy Regulatory Commission to construct any impoundment, water conduit, reservoir, powerhouse, transmission line or other associated hydroelectric facility within any designated river segment shall be recommended for denial. **A1-ROA-068**
 - f. All non-hydroelectric dams not presently authorized by the Forest Service shall be prohibited. **A1-ROA-069**
12. Transportation System/Facilities; Travel and Access Management
- a. Within the Wild Segment, new roads and new trails shall not be constructed. Existing roads may be phased out and rehabilitated. **A1-ROA-070**
A1-ROA-071
 - b. Within the Wild Segment, motorized recreational use shall not be allowed. **A1-ROA-072**
 - c. Areas, roads and segments of the river closed to vehicle use shall be posted. Administrative use of motorized vehicles shall be allowed in all river segments. **A1-ROA-073**
A1-ROA-074
 - d. Mountain bicycle use should be accepted on designated trails. **A1-ROA-075**
 - e. Pedestrian and equestrian use should be encouraged. **A1-ROA-076**
 - f. Within the recreational segment, new roads may be constructed. **A1-ROA-077**
 - g. Within the Recreational Segment, motorized recreational use shall be limited. **A1-ROA-078**
 - 1) Motorized vehicles shall be permitted only on open roads. **A1-ROA-079**
 - 2) Off-road vehicles (ORV) may occur only on designated trails. **A1-ROA-080**
 - 3) Motorized water craft shall be prohibited. **A1-ROA-081**
13. Fire Prevention and Suppression
- a. Off-road vehicle travel within the designated river corridors shall not be permitted except for emergency fire suppression proposes. **A1-ROA-082**
 - b. Use of tractors to construct firelines may be permitted only in emergency fire suppression situations. Fireline locations shall consider protection of river related resource values. **A1-ROA-083**
A1-ROA-084
 - c. Fire retardant "drops" should be directed to minimize entry of chemicals into water courses and to protect river values. **A1-ROA-085**

14. Wood Residue Management

- a. Prescribed burning may occur to protect or enhance river-related values.
- b. See Forestwide Soil Productivity, Wildlife and Forest Diversity Standards and Guidelines regarding coarse woody debris.

A1-ROA-086

15. Integrated Pest Management

See Forestwide Timber Management Standards and Guidelines regarding Integrated Pest Management.

Implementation Schedule

Implementation Schedule

The following implementation schedule identifies specific projects for implementation within the Roaring Wild and Scenic River Corridor. Projects will be translated into out-year program budget proposals to identify needed expenditures for full implementation of the river management plan. Based on the Forest Service budget allocation process, which involves negotiations between the United States Congress and the Administration as well as discretionary allocation by the higher offices of the Forest Service, it is not possible to assure exactly when the proposed projects will be fully implemented. In fact, funding for several proposed projects within the implementation schedule is being sought through Challenge Cost Share proposals which rely on partnership contributions. The Regional Forester or Forest Supervisor may change proposed implementation schedules through allocation of the Region's or Forest's total budget allocation, respectively. Such changes would not require an amendment to this river management plan.

Priorities for projects are expressed by the year of estimated completion for each project. Year of estimated project completion is stated by fiscal year (October 1 through September 30). Estimated project completion dates assume time required for additional site-specific environmental analysis of each project.

Project costs are based on rough estimates that incorporate the cost of additional site-specific environmental analysis. Cost estimates also account for general administration and overhead. In some cases, it will be necessary to conduct surveys or implement design studies before finalizing project specifications. For example, completion of a design narrative would be required prior to initiating planning for the barrier-free access trail within the recreational segment. Also, plant surveys would be required before initiating the noxious weed eradication project in order to target critical areas. Estimated costs are based on 1993 dollar values and cover only those work items anticipated for completion within the next 10 years.

Roaring River Implementation Schedule

Project/ Location	Who*	Cost	Funding	Year of Implementation
Barrier-free Trail Rec. Segment	USFS	\$60,000	NFRM, CCS, CIP	1996
Interpretative Signing or Facilities Rec. Segment	USFS	\$20,000	NFRM, NFWL, NFAF, NFCR	1996
Restroom Upgrades Rec. Segment	USFS	\$30,000	NFRM, CIP, CCS	1996
Trailhead Landscaping Rec. Segment	USFS	\$20,000	CCS, CIP, NFRM	1996
Public-Created Access Trail Rehab. Rec. Segment RM 0-0.5	USFS	\$20,000	CCS, NFAF, WIN, NFWL, NFSO, NFRM	1995
Dispersed Site Rehab. RM3.0 Huxley Tr. Corral Springs Twin Springs				
Develop Parking Facility Rec. Segment	USFS	\$45,000	CIP, CCS	1996
Restoration Planting with Native Species Corridor	USFS	\$20,000	CCS, NFWL, NFAF	1998
Develop Fire Mgmt. Plan for Basin Roaring River Drainage	USFS	\$10,000	NFWL, NFAF, NFRM, NFCR, FFFP	1997
Noxious Weed Eradication Corridor	USFS	\$ 5,000	CCS, NFWL	1994

* Seeking Partnerships

Funding Sources: CCS = Challenge Cost-Share Grant Funds, CIP = Forest Capital Investment Program Funds, FFFP = Fire Protection Funds, NFAF = USFS Anadromous Fisheries Funds, NFCR = USFS Cultural Resource Funds, NFRM = USFS Recreation Maintenance Funds, NFSO = USFS Soils & Water Funds, NFWL = USFS Wildlife Management Funds, WIN = Watershed Improvement Needs Funds.

Monitoring Plan

Monitoring Plan

The following monitoring plan will provide necessary feedback to the public and Forest officials on the progress and results of implementing the river management plan. Monitoring results will be useful in comparing whether planned activities within the Implementation Schedule truly meet the objectives of and are consistent with river management plan direction. These results will also be useful to compare the predicted environmental effects of proposed activities with the actual effects. When activities are determined to be consistent with river management plan direction and their associated effects are consistent with expectations, these findings will be documented and implementation will continue. When activities and their effects are incongruent with the river management plan direction and expectations, these findings will also be documented upon further evaluation and appropriate action will be taken to modify the management plan where necessary.

The primary objective of this monitoring plan is to assess and determine whether management programs and activities are maintaining and/or enhancing the river's six outstandingly remarkable values. In the Forest Plan's Monitoring Plan (Table Five-2; Wild and Scenic Rivers), the main evaluation question for designated rivers is: "Are the outstandingly remarkable values and other values being protected consistent with the Wild & Scenic Rivers Act?" This monitoring plan addresses specific components of the ORVs and other river values to effectively evaluate this question. Many other monitoring questions included in Table Five-2 of the Forest Plan address similar issues and proposed activities that comprise the framework of this river management plan. Implementation of this monitoring plan used in conjunction with the Forest Plan's monitoring plan will effectively evaluate the implementation of the Roaring Wild and Scenic River Management Plan.

Roaring River Monitoring Plan

Project/ Location	Who*	Cost	Funding	Start Year	Frequency
Owl Habitat Corridor	USFS	\$ 2,000	NFWL	1997	5 yr.
Big Game Population Corridor	USFS	\$ 5,000	NFWL	1995	5 yr.
Amphibian Population Corridor	USFS	\$ 3,000	NFWL	1995	5 yr.
Forest Pest Drainage	USFS	\$ 700	SPPM	1994	2 yr.
Design Narrative Rec. Segment	USFS	\$10,000	NFRM	1994	Per proposal
Carrying Capacity Corridor	USFS	\$25,000	NFRM	1994	2 yr.
Noxious Weed** Corridor	USFS	\$ 2,000	NFWL, CCS	1994	2 yr.
Water Quality (Temp./Inverts.) Corridor	USFS	\$ 2,000	NFSW	1993	1 yr.
Aquatic Habitat Corridor	USFS	\$ 2,000	NFAF, NFIF	2000	10 yr.
Stream Channel Corridor	USFS	\$ 3,000	NFAF, NFIF	1993	5 yr.
Endemic Fish Species Mainstem	USFS	\$20,000	NFAF, NFIF	1995	10 yr.

* Seeking partnerships

** Inventories will precede implementation of projects

Funding Sources: CCS = Challenge Cost-Share Grant Funds, NFAF = USFS Anadromous Fisheries Funds, NFIF = USFS Inland Fisheries Funds, NFRM = USFS Recreation Maintenance Funds, NFWL = USFS Wildlife Management Funds, NFSW = USFS Soil, Water, Air Resource Funds, SPPM = USFS Pest Management Funds