

Glass Copy



**Alpine Lakes Area
Land Management Plan**

Selected Alternative

from the

FINAL Environmental Impact Statement

3/17/91



U.S. Department of Agriculture
Forest Service
Wenatchee and Mt. Baker—Snoqualmie National Forests

1981

Cover photo by Asahel Curtis. Reproduction of photogravure published in 1900 in *Artwork of the State of Washington* by Edmond S. Meany.

Asahel Curtis (1874-1941) was the younger brother of the celebrated Edward Curtis, whose photographic studies of Native Americans are a primary link with the American past. Attention is turning increasingly to work by the younger Curtis, much of which captured for the first time scenery in the Cascade Range. A nature trail and memorial grove of old growth trees in the Alpine Lakes Area were named after Curtis in 1964. His photograph of Mt. Index on the cover of this document was taken prior to the turn of the century. It testifies to the enduring hold which this region exerts on the sense of wonder.



United States
Department of
Agriculture

Forest
Service

Mt. Baker-Snoqualmie 1022 First Avenue
National Forest Seattle, WA 98104

Reply to:

2320 Wilderness and Primitive Areas

Date:

Subject:

Alpine Lakes Wilderness

2 JUL 1984

To:

Regional Forester, Region 6

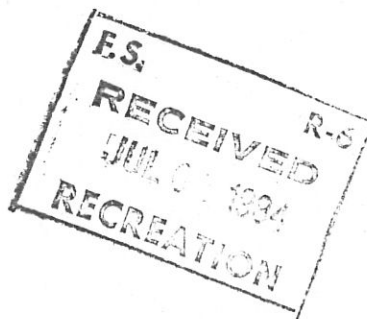
We have reviewed the boundary description of the additions to the Alpine Lakes Wilderness published in the Federal Register on May 16, 1984 and have found several errors. These errors involve rearrangement of parcel descriptions and typographical errors made after leaving the Forest. The draft sent on March 23, 1984 is correct as presented. The enclosed draft shows the recommended corrections.

Charles F. Neal

for SAMUEL R. NAGEL
Lands & Minerals Staff Officer

Enclosure

cc: Wenatchee NF
Bob Starke, RO Lands
Cle Elum RD
Skykomish RD
Leavenworth RD
Lake Wenatchee RD





United States
Department of
Agriculture

Forest
Service

RO

Reply to: 2320 Wilderness and Primitive Areas

Date: July 19, 1984

Subject: Alpine Lakes Wilderness Boundary Description

To: Chief

Enclosed is a copy of a July 2, letter from the Mt. Baker-Snoqualmie National Forest describing some errors found in the boundary description of the Alpine Lakes Wilderness as published in the May 16, Federal Register.

Please take whatever action is necessary to have the correct description published.

David W. Scott
for DAVID W. SCOTT
Director of Recreation

Enclosure

WENATCHEE NF

JUL 23 '84

Supr	Dep
LMP <i>AS</i>	E & LM
AO	LDS
AS	Min
FinC	Fire
Hit	LA
ISF	RWW'S
IP	Sci
Per	WS
Rec <i>AS</i>	
Tbr	DR
ISL	IC
	Rds



R-6

2320 Wildernesses and Primitive Areas

AUG 9 1984

Alpine Lakes Wilderness Boundary Description

Chief

Reference is made to our letter of July 19, 1984.

The Mt. Baker-Snoqualmie has found two more errors in the Federal Register description of the Alpine Lakes Wilderness.

Please add the following sections:

Snow Creek Parcel-T 33N, R 14E, W.M.
Sections 29 Through 32, all

Chiwaukum Parcel-T 25N, R 17E, W.M.
Sections 30 and 31, all

WENATCHEE NF

AUG 13 '84

DAVID W. SCOTT

DAVID W. SCOTT
Director of Recreation

cc:

Mt. Baker-Snoqualmie NF
✓ Wenatchee NF
Rn (JFH, BEC)
L&M (Starke)

Supr	Dep
LMP	E & LM
AO	LDS
AS	Min
Fisc	Fire
Ft	LA
I&E	RWWS
IP	Sail
Per	WS
Ret	
Tbr	DR
	TC
	Ris

Lake as
heavenly

RECORD OF DECISION

ALPINE LAKES AREA LAND MANAGEMENT PLAN
FINAL ENVIRONMENTAL IMPACT STATEMENT
Chelan, King, Kittitas, and Snohomish Counties
Washington
USDA - Forest Service
Mt. Baker-Snoqualmie and Wenatchee National Forests

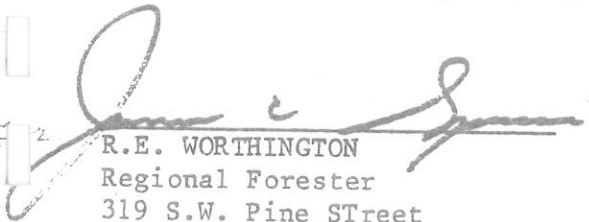
Based on the analysis and evaluation in the Alpine Lakes Area Land Management Plan Final Environmental Impact Statement, it is my decision to adopt Alternative E as the management plan for the Alpine Lakes Area. This plan was required by the Alpine Lakes Area Management Act of 1976 (P.L. 94-357 July 12, 1976).

Alternative E best meets the criteria set forth in the Environmental Impact Statement and the intent of Congress "... to provide for public outdoor recreation and use and for economic utilization of commercial forest lands ... by present and future generations ..."

Public comment and involvement contributed significantly in shaping the five alternatives including the one that I have chosen. The five alternatives ranged from a no action alternative to one featuring intensive timber and recreation management. An element of subjective judgment was inevitable in choosing the best alternative, but every effort was made to draw upon objective rationale found on tables, figures and maps. While Alternative B ranked highest in seven of the 13 evaluation criteria goals, it ranked lowest in three others. Alternative C and E mitigate the low ratings of B while maintaining acceptable ratings in the other goals. Alternative E was chosen over C because of higher timber production, greater economic stability of local communities and greater protection for high quality wilderness. Alternative E is considered to be the environmentally preferable alternative.

In accordance with the Alpine Lakes Act, this plan is being transmitted to the President and to the United States House of Representatives and to the Senate. The plan will take effect and will begin to be implemented no earlier than ninety calendar days from the date of this decision.

This decision is subject to administrative review pursuant to 36 CFR 211.19. A notice of appeal must be filed with the Regional Forester within 45 calendar days of the date of this Record of Decision.



R.E. WORTHINGTON
Regional Forester
319 S.W. Pine Street
Portland, OR 87208

Date: November 2, 1981
Portland, Oregon

RECORD OF DECISION

ALPINE LAKES AREA LAND MANAGEMENT PLAN
FEDERAL ENVIRONMENTAL IMPACT STATEMENT
Chelan, Kittitas, and Snohomish Counties
Washington

USDA - Forest Service

Mr. Baker-Schmidt and Wapinitia National Forest

Based on the analysis and evaluation in the Alpine Lakes Area Land Management Plan Final Environmental Impact Statement, it is my decision to select Alternative B as the management plan for the Alpine Lakes Area. This plan was selected by the Alpine Lakes Area Management Act of 1978 (P.L. 95-557 July 12, 1978).

Alternative B best meets the criteria set forth in the Environmental Impact Statement and the intent of Congress "... to provide for public outdoor recreation and use and for economic utilization of forest lands ... by present and future generations ...".

Public comment and involvement contributed significantly in shaping the five alternatives including the one that I have chosen. The five alternatives ranged from a no action alternative to one requiring intensive timber and recreation management. An element of judgment was involved in choosing the best alternative and every effort was made to draw upon objective rationale found in rather figures and maps. While Alternative B ranked highest in seven of the 13 evaluation criteria goals, it ranked lowest in three others. Alternative C and E mitigate the low ratings of B while maintaining acceptable ratings in the other goals. Alternative E was chosen over C because of higher timber production, greater economic stability of local communities and greater protection for high quality wilderness. Alternative E is considered to be the environmentally preferable alternative.

In accordance with the Alpine Lakes Act, this plan is being transmitted to the President and to the United States House of Representatives and to the Senate. The plan will take effect and will begin to be implemented no earlier than ninety calendar days from the date of this decision.

This decision is subject to administrative review pursuant to 36 CFR 211.15. A notice of appeal must be filed with the Regional Forester within 60 calendar days of the date of this Record of Decision.

November 2, 1981

Portland, Oregon

R. E. HORTON
Regional Forester
319 S.W. Pine Street
Portland, OR 97208

TABLE OF CONTENTS

	Page		Page
Record of Decision		WILDERNESS MANAGEMENT PLAN (Blue)	36
INTRODUCTION	1	Introduction	36
BACKGROUND	1	Management Goal for the Alpine Lake	
DEFINITIONS	3	Wilderness	37
MANAGEMENT DIRECTION	6	Management Analysis	37
LAND ALLOCATION AREAS (Management Unit)	6	Wilderness Use Zones	37
Developed Site	6	Carrying Capacity	38
Special Area	6	Administration	39
General Forest	6	Trails and Travel	40
Scenic Forest	6	Signing	42
Dispersed Recreation	7	Recreation	43
ALTERNATIVE E (SELECTED ALTERNATIVE)	7	Land Occupancy and Structures	44
Land Allocation Areas	7	Fish and Wildlife	45
Visual Management Direction	7	Vegetation	46
Water Management Direction	8	Water	47
Transportation Management Direction	9	Soils	47
Roads	9	Mining and Minerals	48
Summer Trails and 4x4 Routes	11	Collection of Resources and Use Information	49
Recreation Management Directions	12	Scientific Study	50
Winter Recreation	15	Communications	51
Other Recreation	16	Cultural and Historic Resources	52
Cultural Management Direction	20	Visual Quality	52
Fire Management Direction	20	Fire Management	53
Air Management Direction	27	Livestock Use	54
Land Ownership Direction	27	MANAGEMENT ACTION PROGRAM OUTLINE	55
Wildlife, Fish and Plant Management Direction	28	WILDERNESS PLAN EXHIBITS	57
Timber Management Direction	32	A-1 — Wilderness Management Guidelines,	
Range Management Direction	32	Transition Zone	57
Special Areas Management Direction	33	A-2 — Wilderness Management Guidelines,	
Plan Revision Direction	34	Semi-Primitive Zone	59
Summary of Effects	34	A-3 — Wilderness Management Guidelines	
		Primitive Zone	61
		A-4 — Wilderness Management Guidelines	
		Trailless Zone	63
		B — Wilderness Ranger Areas of Responsibility	64
		C — Region-6 Wilderness Management	
		Standards	65
		D — Cone Enchantment Area	66
		E — Wilderness Fisheries Inventory	67
		H — Trail Service Levels	
		ALPINE LAKES AREA MANAGEMENT ACT	75
		Implementation Schedule	(Yellow)
		Wilderness Monitoring, Visitor Regis-	
		tration, & Trailhead Signing	(Green)
		Prescribed Natural Fire Action Plan	(Pink)

LIST OF TABLES

	Page
Table 1. Acres for Wilderness, Intended Wilderness and Management Unit	2
Table 2. Resource Complex Acreage	5
Table 3. Fire Behavior Parameters Consistent With Prescription Fire Intensity Zones	23
Table 4. Fire Management Direction by Land Allocation Title	24
Table 5. Maximum Individual Size for Wildfires in General Forest and Scenic Forest Allocations	26
Table 6. Maximum Burn Area Per Decade for Wildfires in the General Forest and Scenic Forest Allocations	26
Table 7. Specially Classified Animal Species in the Alpine Lakes Area	29
Table 8. Sensitive Plants Reported To Occur In The Alpine Lakes Area	30
Table 9. Anadromous Fishery	31
Table 10. Acreage Summary and Annual Long Term Benefits by Resource Complex — Alternative E	35
Table 11. Alpine Lakes Wilderness Fires 1970-1979	53

LIST OF FIGURES

Figure 1. Alpine Lakes Area Resource Complexes	4
Figure 2. Mineral Sites	18
Figure 3. Recreational Use Patterns-Alternative E	19
Figure 4. Prescribed Fire Zones Alternative E	22
Figure 5. Suppression Decision Matrix	27

Wilderness Plan Exhibits

Exhibit	Page
A. Wilderness Management Guidelines	57
B. Wilderness Ranger Areas of Responsibility	64
C. Region-6 Wilderness Management Standards	65
D. Core Enchantment Area	66
E. Wilderness Fisheries Inventory	67
F. Trail Service Levels	74

Introduction

This management plan is a compilation of management direction for the selected alternative (Alternative E) found in the Alpine Lakes Area Land Management Plan Final Environmental Impact Statement (FEIS). This is a working plan which responds to the need of managers to have all management direction pertaining to the same subject appear in one location of the book. This plan contains direction in Alternative E and the direction common to all alternatives found in Appendix A of the FEIS.

Many sections of the FEIS are not found in this book including: Affected Environment, Alternatives A-D, Effects of Implementation, Evaluation of Alternatives, Consultation With Others, and several Appendices. These are not needed for day-to-day management purposes. The FEIS should be consulted when this omitted information is needed.

The intent of this book is to present the exact wording found in the FEIS. This has caused the text to be awkward in a few places. For example, the text may refer to "alternatives found in this FEIS." The reader should translate this into "the selected management alternative found in this book."

Where it is necessary for clarity, table or figure numbers and references to Appendix have been changed. In these cases, the new information will appear in a different type size. This will indicate where the new text differs

from that found in the FEIS. In no case have changes been made in the substance of the original text found in the FEIS.

The Final Environmental Impact Statement is technically the legal document under which the Forest Service manages. In writing project plans, Environmental Assessment Reports, or other reports, the Final EIS and Record of Decision should be referred to as the authority under which you are operating.

The management plans describe decisions concerning resources and uses, and allocate lands available for projects or activities. The alternatives will give management direction and guidelines for specific lands, activities and resources. The alternatives respond to local, regional and national goals and laws, as well as public issues, management concerns and resource opportunities. Calculating programmed harvest levels and scheduling is not the subject of this Environmental Impact Statement. This information will be addressed in the Forest Plans currently under development. The Alpine Lakes Area Management Act of 1976 directs the Secretary of Agriculture to "prepare, complete, and implement a single multiple-use plan for the federal lands in the Alpine Lakes management unit." Wilderness in the Alpine Lakes has been established by Congress so Wilderness land allocations or boundaries are not at issue in the Statement.

How and where management directions contained in this Statement are implemented will be determined by site specific project analysis. This is done during the budget programming process of the two National Forests involved.

Management planning for the area involves a process that began with the Congressional classification of land into Wilderness, Intended Wilderness, and a surrounding management unit. The acres for these are:

Wilderness	306,934
Intended Wilderness	86,426
management unit	547,155
TOTAL	940,515

These acres include intermingled private lands. A complete break-down of these acres, by county and national forest, is found in Table 1.

Background

The Alpine Lakes Area is a part of Wenatchee and Mt. Baker-Snoqualmie National Forests. It includes portions of Chelan, King, Kittitas, and Snohomish Counties.

Table 1.

Acres for Wilderness, Intended Wilderness and Management Unit.

Administrative	County				
	King	Snohomish	Chelan	Kittitas	Total
Wilderness					
East Side-Wenatchee NF					
Cle Elum RD				59,906	59,906
Ellensburg RD					
Leavenworth RD			111,791		111,791
Lake Wenatchee RD			15,116		15,116
Subtotal			126,907	59,906	186,813
West Side-Mt. Baker-Snoqualmie NF					
North Bend RD	55,210				55,210
Skykomish RD	64,911				64,911
Subtotal	120,121				120,121
Total Acres For Wilderness	120,121		126,907	59,906	306,934
Intended Wilderness					
Parcel 1-Chiwaukum					
Lake Wenatchee RD			2,087		2,087
Leavenworth RD			30,446		30,446
Parcel 2-Eightmile					
Leavenworth RD			8,159		8,159
Parcel 3-Snow Creek					
Leavenworth RD			1,939		1,939
Parcel 4-Ingalls Creek					
Leavenworth RD			5,089		5,089
Parcel 5-Waputis					
Cle Elum RD				12,729	12,729
Parcel 6-Pratt Lake					
North Bend RD	16,369				16,369
Parcel 7-Taylor River					
North Bend RD	2,488				2,488
Parcel 8-Sunday Creek					
North Bend RD	6,227				6,227
Parcel 9-Tunnel Creek					
Skykomish RD	893				893
Total For Intended Wilderness	25,977		47,720	12,729	86,426
Management Unit					
East Side-Wenatchee NF					
Cle Elum RD			347	146,623	146,970
Ellensburg RD			33,247	103,326	136,573
Leavenworth RD			71,719		71,719
Lake Wenatchee RD			43,759		43,759
Subtotal			149,072	249,949	399,021
West Side-Mt. Baker-Snoqualmie NF					
Snoqualmie NF					
North Bend RD	99,564				99,564
Skykomish RD	45,332	3,238			48,570
Subtotal	144,896	3,238			148,134
Total For Management Unit	144,896	3,238	149,072	249,949	547,155
Total for Area	290,994	3,238	323,699	322,584	940,515

The name Alpine Lakes takes its origin from the over 700 small mountain lakes nestled among the high rock peaks and timbered valleys of the region. It is significant that the two National Forests, within which the Alpine Lakes are situated, were both named after Indian terms descriptive of the country. Wenatchee is a term used by Yakima Indians which means "Water pouring out" and Snoqualmie is from an Indian word meaning "moon people" from the legend that people from the moon had come to earth to live in this beautiful land.

Proximity to the large metropolitan area makes the Alpine Lakes one of the most popular natural areas in the Northwest. Half of Washington State's population of 3.6 million people are within an hour drive of the area. By the year 2000, that population is expected to increase to over 5 million people.

This planning effort coincided with the development of planning regulations required to implement the National Forest Management Act (NFMA) of 1976. These regulations were published in the Federal Register in September of 1979 under the heading, "National Forest System Land and Resource Management Planning." By September of 1979 Alpine Lakes Planning was nearly complete. A good faith effort, was made, however, to comply with the general intent of the NFMA planning regulations as they were being written and revised. These regulations were developed to guide forest-wide planning and apply to this plan to the extent that they are consistent with the planning requirements specified in the Alpine Lakes Act for this special area (refer to NFMA regulations, 219.2).

Definitions

Four terms refer to the Alpine Lakes: Wilderness, Intended Wilderness, management unit, and Alpine Lakes Area.

Alpine Lakes Area — Hereafter, reference to the Alpine Lakes Area will include lands in the Wilderness, Intended Wilderness, and management unit as described by the Alpine Lakes Area Management Act.

Wilderness — Reference to Wilderness will mean those classified lands, 306,934 acres, included under the National Wilderness Preservation System under authority of the Wilderness Act of 1964.

Intended Wilderness — As a matter of convenience, reference to the Wilderness will include those lands designated Intended Wilderness. This latter designation is 86,426 acres of mixed private and public ownership that will become Wilderness without further Congressional action after public acquisition of the private lands.

Management unit — Reference to the management unit will include those 547,155 acres of land designated by Congress. This unit surrounds the

Wilderness and Intended Wilderness. It is a mixture of private and public ownership. However, as directed by the Act, the management plans apply only to the Federal lands administered by the Forest Service.

Resource Complexes — Land management planning for such a large, diverse area can best be accomplished by dividing it into smaller units. This subdivision can serve three important purposes: 1. Assist planners with an inventory of resources and use patterns in the area, 2. Aid the decision making process by enabling planners to analyze the effects of each management alternative in different portions of the area, and 3. Similarly help members of the public relate their concerns to a particular portion of the area.

There are numerous ways to subdivide the management unit, i.e., along hydrographic or other physical boundaries, along existing administrative boundaries or according to primary land use. Units combining a variety of features were felt to be most useful. Eight subdivisions called "resource complexes" were formed. Each contains a variety of interacting uses and resources with distinguishable characteristics. Each affords a certain set of opportunities and contains a certain collection of constraints.

The third purpose for "resource complexes" is particularly relevant to readers of this document. People living in and around the Alpine Lakes Area have a direct and intense interest in what happens in their immediate proximity. People residing outside the area often have places of particular concern to them. For loggers living in Cle Elum, for instance, the availability of nearby timber in the Kachess Resource Complex is what matters, not the total availability of timber for the entire management unit. For those who are devoted to a single recreation area, what happens there is crucial, not the overall availability of recreation.

It must be emphasized that "resource complex" subdivision is a temporary planning tool and should not be confused with Ranger Districts, the established administrative division of National Forest land. Six Ranger Districts include land within the area and will implement the plan after its adoption.

Figure 1 shows the resource complexes used for planning the Alpine Lakes management unit. Following is a brief description of each.

1. Middle Fork Snoqualmie River Resource Complex

Bound on the north, east, and south by the Alpine Lakes Wilderness and Intended Wilderness boundaries. Bound on the west by the Alpine Lakes management unit and National Forest boundary.

2. I-90 Corridor Resource Complex

Bound on the north by the Alpine Lakes Wilderness and Intended Wilderness boundaries, on the east by

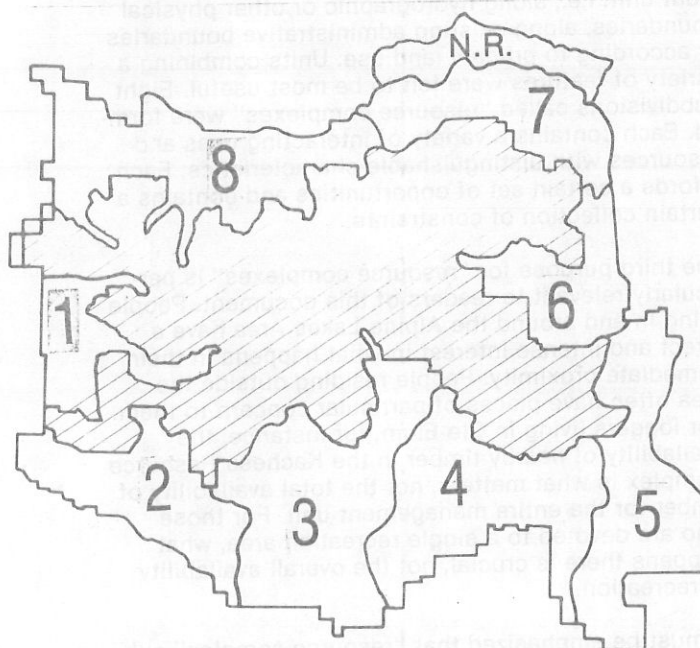
the Keechelus Ridge between Keechelus and Kachess Lakes and on the south and west by the Alpine Lakes management unit boundary.

3. Kachess Resource Complex

Bound on the north by the Alpine Lakes Wilderness and Intended Wilderness boundaries, on the east by the ridge separating the Teanaway and Cle Elum drainages, on the south by the Alpine Lakes management unit/National Forest boundary, and on the west by the ridgetop between Keechelus and Kachess Lakes.

Figure 1.

Alpine Lakes Resource Complexes



- Wilderness
- Resource Complexes

1. Middle Fork Snoqualmie
2. I-90 Corridor
3. Kachess
4. Teanaway
5. Highway 97 Corridor
6. Icicle
7. U.S. 2 East
8. U.S. 2 West
- N.R. Nason Ridge (outside Alpine Lakes Area)

4. Teanaway Resource Complex

Bound on the north by the Alpine Lakes Wilderness and Intended Wilderness boundary, on the east by the Teanaway Ridge, on the south by the Alpine Lakes management unit/National Forest boundary and on the west by the ridgetop between the Teanaway and Cle Elum Rivers.

5. Highway 97 Corridor Resource Complex

Bound on the west by Teanaway Ridge, and the Alpine Lakes Wilderness and Intended Wilderness boundaries, on the north by Icicle Creek and the National Forest boundary, on the east and south by the Alpine Lakes management unit boundary.

6. Icicle Resource Complex

Bound on the north by Chiwaukum Creek and Wenatchee River near Tumwater campground, on the east by the Alpine Lakes management unit boundary, on the southeast by the Icicle Creek, on the south and west by the Wilderness and Intended Wilderness boundaries.

7. U.S. 2 East

Bound on the north and east by the Alpine Lakes management unit boundary, on the south by the Alpine Lakes Wilderness and Intended Wilderness boundaries and on the west by Stevens Pass.

8. U.S. 2 West

Bound on the north by the Alpine Lakes management unit boundary, on the east by Stevens Pass, on the south by the Alpine Lakes Wilderness boundary and on the west by the management unit and/or National Forest boundary.

Table 2 presents an acreage summary for the resource complexes. Table 10 on page 35 presents an acreage summary and annual long term benefits by Resource Complex.

Nason Ridge — This area is outside but adjoins the management unit to the north of Highway U.S. 2 between the crest of Nason Ridge and Lake Wenatchee and Little Wenatchee River. The area is included in this Environmental Impact Statement to insure coordination and continuity of management over the entire ridge. In a previous decision in the Chelan Planning Unit Land Allocation Proposal, the Regional Forester directed that decision concerning management of Nason Ridge be delayed until the Alpine Lakes management unit plan is complete.

Table 2.

Resource Complex Acreage.

Resource Complex	National Forest	Other Ownership	Total	% of National Forest in Complex
----- acres -----				
Middle Fork				
Snoqualmie	21,535	15,236	36,771	58
I-90	31,470	22,377	53,847	58
			2,560 ¹	
Kachess	64,683	40,559	105,242	61
			9,300 ²	
Teaaway	66,154	10,092	76,246	87
Highway 97	60,052	16,156	76,208	79
Icicle	22,891	20,374	43,265	53
U.S. 2 East	35,368	18,527	54,165	66
U.S. 3 West	69,748	19,803	89,551	68
Total	372,171	163,124	547,155	68
Nason Ridge	20,314	2,950	23,264	87

¹Amount is acres under Keechelus Lake.²Amount is acres under Kachess and Cle Elum Lakes.

Management Direction

Land Allocation Areas (management unit)

Five allocations — Developed Site, Special Areas, General Forest, Scenic Forest and Dispersed Recreation — were used to describe primary land management approaches.

The location of allocation boundaries is not meant to require a ground survey for their placement. The Wilderness boundary is an exception to this direction. The actual placement on the ground for management purposes may vary several hundred feet from the location on the map depending on circumstances of the project. Disputes that arise will be handled on a case-by-case basis. A "rule of reason" will be applied to balance resource protection and cost effectiveness.

Developed Site

These areas are characterized by substantially modified environments for campgrounds, boating, ski areas, summer home tracts, administrative sites or other similar developments. Sights and sounds of people are readily evident and the concentration of users is often high.

Roads, trails, and parking accommodate expected use. This allocation generally has the highest density of roads and trails (miles per section). Access often determines suitability of the site. Roads and trails are managed to provide access to the site, but with emphasis on nonmotorized activity on-site.

Resource manipulation, including timber harvest or other forestry practices, will be done only for the enhancement or protection of the area for its primary use. Commercial forest lands within this allocation are placed in the unregulated timber component. Fire management will be to quickly suppress all wildfires at the least possible size. Prescription fire may be used under very constrained conditions.

Special Area

Special areas are protected for their uniqueness and natural conditions and, where appropriate, to foster public use, enjoyment or study. Because of its uniqueness, each special area has its own management direction, which is found on page 33.

Resource manipulation or developments such as roads, parking, picnicking facilities, interpretation and timber harvest will enhance and protect the area and its unique opportunities. Commercial forest lands are placed in the unregulated timber component.

Fire management depends upon specific objectives for the area. Fire will be managed to enhance or maintain the unique resources for which the area was established. For example, where special qualities could be endangered, aggressive fire suppression will be taken. Prescription fire might be appropriate in an area where fire's role is natural but not at a historic site, where the preservation of early structures is paramount.

General Forest

The greatest intensity of resource extraction occurs on these lands. This allocation contains both commercial and non-commercial forest lands. On commercial forest land, timber harvest with a full range of silvicultural practices is found and these lands are placed in the regulated timber component and classified as standard, special or marginal.

Management activities are designed to be as close to the visual quality objectives as possible, but in any case must be shaped and blended with the natural landscape to extent practical.

Dispersed recreation sites are common and encounters between recreationists may be numerous. Rustic recreation facilities may be provided for the convenience of users, as well as for safety and resource protection. Motorized recreation activities are common.

Land in this allocation is generally accessible by road. This allocation has the second highest road density (miles per section). Roads and trails standards, maintenance and management range from providing optimum operating conditions for high volume mixed traffic to obliteration after project completion. The Forest Service will normally share cost for road systems with intermingled land owners in this allocation.

General Forest areas fall into the light prescribed fire intensity zone. Fire may be prescribed only under specified intensity which does not threaten timber or other commodities. All wildfires will be suppressed.

Scenic Forest

The objective in these areas is to retain or enhance viewing and recreation experiences. Developments

and permitted uses in the seen area from recreation sites, roads and trails within this allocation will meet adopted visual quality objectives. These proposed uses within the allocation will be integrated with the natural landscape. Commercial forest land within these areas will be included in the programmed allowable timber harvest under the regulated component. A full range of silvicultural practices will be used to meet visual and recreational objectives. The Scenic Forest Allocation generally falls within the light intensity prescribed fire zone. Wildfires will be suppressed.

Dispersed Recreation

Land in this allocation will be managed primarily in an unroaded condition with emphasis on dispersed recreation, scenic, wildlife or other amenity values.

No roads will be constructed nor will existing roads be maintained for travel by motorized vehicles intended for highway use. Three exceptions to road building may be found:

1. Routes for 4 X 4 vehicle use may be permitted.
2. If no alternative road access to intermingled land owners is available, access may be granted for a minimum standard road. This will be closed to public travel by vehicles exceeding 40 inches in width. The Forest Service will not share in the cost of such roads.
3. Temporary roads may be permitted for timber harvest as specified below.

Commercial forest lands shall be placed in the unregulated timber component. Timber harvest would only be permitted to protect adjacent lands from insect, disease or fire damage.

Cutting of trees may be permitted for on-site or off-site recreational or scientific purposes. However, such cutting shall be designed to meet visual quality objectives.

Concentration of recreation users is low and evidence of and contact with other users is relatively minimal compared to other allocation areas. Land within this allocation shall be managed for a minimum of on-site controls and restrictions; when present, they will be subtle.

Any resource modification shall be designed to emulate the natural environment and create the least disturbance possible.

Low and medium intensity prescribed fires are acceptable in this area. Wildfires will be suppressed.

Alternative E (Selected Alternative)

This Alternative provides a mix of goods and services as follows:

1. Emphasize allocating land to optimize timber and recreation based on capability and suitability of land to support various activities.

2. Feature wood fiber use on highest productivity lands.

3. Feature a variety of dispersed recreation opportunities on highest suited recreation lands.

4. Feature developed recreation where future use is expected to exceed capacity at existing facilities.

5. Manage the Wilderness resource with a moderate amount of recreation use and preserve a variety of experiences and opportunities for solitude.

6. Insure continuation of unique areas, recreation opportunities and outstanding special features.

Land Allocation Areas

The following shows the mix of allocations and use zones for Alternative E. See Land Allocation Areas (management unit) and Wilderness Use Zones sections for the meaning of the types of allocations and zones. Also, see the Allocation Map E for specific locations.

Allocation Area (management unit)	Acres
Developed Site	3,773
Special Area	88,360
Mt. Index Scenic Area	(13,179)
Tumwater Scenic Area	(5,734)
Tumwater Botanical Area	(1,104)
Asahel Curtis Recreation Area	(129)
Teaway Recreation Area	(57,449)
Denny Creek Recreation Area	(1,634)
Eldorado Research Natural Area	(1,221)
Nason Ridge Recreation Area	(5,454)
Annette Lake Recreation Area	(2,456)
General Forest	138,042
Scenic Forest	87,232
Dispersed Recreation	54,764

Wilderness Use Zones

Transition	12,242
Semi-primitive	32,242
Primitive	10,182
Trailless	338,694

Visual Management Direction

Provide improved opportunities to view natural appearing landscapes in the area by both vehicles and primitive means.

Provide natural appearing foreground areas along Granite Mountain, McClellan Butte and Pacific Crest Trail routes.

See the Visual Quality Objective Map Alternative E for specific locations.

Maintain or enhance scenic quality consistent with the requirements of "primitive" and "semi-primitive nonmotorized" recreation and special areas.

Develop corridor (viewshed) plans to assure that developments and uses will meet established visual quality objectives. These plans will be prepared first for the areas that can be seen from Interstate 90 and Highway 2. The next priority would be Scenic Forest allocations where timber management is proposed in areas of limited Visual Absorption Capability, particularly land adjacent to Sensitivity Level I roads. Schedule timber harvest to maintain desired timber size and succession and describe the process by which negative visual impacts will be minimized and enhancement opportunities exploited.

Continue coordination with State Parks and Recreation Commission and the National Park Service, formerly Heritage Conservation and Recreation Service (HCRS) concerning the State Scenic Rivers and Nationwide Rivers Inventory programs. Rivers and their immediate environs, which are State Scenic or recommended for study as additions to the national system of the Wild and Scenic Rivers Act, shall be preserved in a natural condition by avoiding or mitigating adverse impacts. Overuse, which tends to downgrade their natural condition, shall be discouraged. Commercial uses which substantially interfere with activities of the general public will be limited (an example would be to limit commercial rafting access).

Rivers currently inventoried as possible additions to the National System by HCRS are:

1. Icicle Creek from Eight Mile Campground downstream approximately 5.5 miles.
2. Middle Fork Snoqualmie River from its source to four miles upstream from its confluence with the South Fork Snoqualmie River.
3. Wenatchee River from Lake Wenatchee downstream to the Columbia River.
4. Yakima River downstream from Crystal Springs to the management unit boundary.
5. State Scenic Rivers:
 - Skykomish River to junction of the Tye River.
 - Beckler River upstream from Skykomish River eight miles.
 - Tye River from Skykomish to Tye Lake.

Coordination with State Highway Commission for the management of State Scenic and Recreational Highway System roads will be continued. Interstate 90, State Highways 97 and 2 corridors within the management unit will be managed for the maintenance and enhancement of natural beauty, historic sites and viewpoints. Specific attention will be given to: 1. Exit and entrance roadways providing access to scenic observation points, rest areas and Forest Service facilities. 2. Uniform signs and markers designating features and facilities, both State and Forest Service.

Water Management Direction

Management of the riparian zone or streamside management unit (SMU):

Forest Service land management policy in and near streams is covered in Forest Service Manual 2520, riparian areas.

Protection of floodplains and wetlands

Floodplains and wetlands are defined in Forest Service Manual 2527, Interim Directive No. 11 under 2527.05. When the defined situations are encountered in the course of project planning, floodplains and wetlands shall be protected and managed in accordance with I.D. No. 11.

Mitigating measures for timber management

The measures discussed here exceed the state law governing logging practices (Washington Forest Practice Rules and Regulations, 7-16-76, WAC Title 222), except where reference is to see WAC 222.

Full suspension logging systems will be used when cutting in areas of high headwall failure potential cannot be avoided.

Fills for log landings will be compacted in layers when necessary to prevent mass failure and road fill compaction will be treated according to WAC 122.

Large quantities of debris on the edges or sides of landings will not be allowed to remain through the wet season, where this material could cause debris avalanches.

Stream crossings will be designed to prevent failure by being unobstructable or armored to allow overtopping.

Water Quality

In addition to measures under floodplains, lateral drainages on roads with ditches, will be spaced close enough to prevent ditch erosion and erosion of the soil below the outlet of the drainage structure.

Stream crossings will be protected by an intercepting lateral drainage just "up ditch" from the crossing so the intercepted ditch water will be discharged onto an infiltration area. An alternative would be to pave the ditch if the cutbanks can be prevented from raveling.

Roads which are chronic sediment sources will be rehabilitated.

Cutting of shade vegetation along streams will be controlled to meet water temperature objectives. The potential for blowdown or damage of stream vegetation will be assessed before harvesting in or adjacent to special streamside management unit timber classes.

Debris will be disposed of in a manner which will prevent its entry or reentry into the stream.

The impact on the nutrient balance of receiving waters will be assessed before project approval.

Recreation

High concentration of campers at undeveloped sites along streams has been shown to increase bacteria counts in those streams. If necessary, measures will be taken to either provide sanitary facilities or to prevent the concentration from occurring.

Horses are also of concern because of bacteria. A horse has a much greater potential for stream contamination than a human, due to the indiscriminate droppings directly into streams. Also, trails used by horses must be designed to remain firm and dry. If horse travel becomes excessive, or if the trail is inadequately designed, it may become trenched and muddy. Water bars may be broken down. Water caught and channeled by the damaged trail could carry the horse droppings, sediment and turbidity into receiving streams. Such deteriorated trail conditions would also increase the contamination from big game animals attracted to the trails.

If soil and water monitoring determines horse-caused trail deterioration to be contributing to environmental damage, then horse use must be modified or discontinued until the trail can be rebuilt or maintained to handle such traffic.

Municipal Water Supply

Drinking water standards in the "Safe Drinking Water Act" (PL 93-5-23) are for treated water and are the legal responsibility of the purveyor of the water.

The Forest Service is required to provide raw water from national forest land which is capable of meeting safe drinking water standards after treatment.

Relative to silviculture practices and water quality standards, the legal obligation that the Forest Service has on all watersheds, including municipal water supply, is to conduct activities in accordance with best management practices as defined in WAC 222.

The Domerie Creek municipal watershed has the following provisions: 1) only approximately 7 percent of the National Forest lands within the watershed shall be timber harvested per decade, 2) at the time projects are proposed, consideration will be given to construction of minimum impact roads, temporary roads, and roads closed to public access, and 3) projects within the influence zone of Domerie Creek will meet management requirements of Class I Streams.

If the selected land management plan will not meet the needs or desires of a municipality, an informal agreement on procedural matters may be approved by the Forest Supervisor and properly authorized

officials of the municipality. The informal agreement (memorandum of understanding) shall clearly state the general responsibilities, cooperative relationships, dates of periodic meetings and review, the methods of communication and exchanges of information (FSM 2543.21). The Regional Office will review the document before it is signed.

When the memorandum of understanding deals with restrictions of use not identified in this plan, such as additional restrictions on recreation, timber harvesting, grazing or regulations on sanitation or entry, it must be approved by the Regional Forester (FSM 2543.22).

When the municipality feels the need for restriction beyond the bounds of multiple use, a formal agreement signed by the Chief of the Forest Service will be required (Regulation CFR 251.9 — FSM 2543.22). This agreement will clearly and specifically identify the kinds of uses to be restricted, the nature and the extent of the restriction, the special protective measures which may be necessary or desirable, the assistance to be given to the Forest Service in the enforcement and the payments, if any, which shall be made to compensate the United States for losses of revenue resulting from the restrictions (Series 1000 Organization and Management FSM 6/78 Amendment 35).

Transportation Management Direction

The transportation system, Service Levels and mode of trail travel are shown on the Land Allocation Map

Roads

The traditional analysis by transportation planners insures that alternative land use plans are feasible and cost effective from the standpoint of transportation needs and mobility (7712.1 FSM 9/78 Amend. 32). More specific access management direction, however, has been provided for the Alpine Lakes Area. There are approximately 1,250 miles of road within the management unit. The construction and management of any road is a management concern and a potential public issue. In the long controversy over Alpine Lakes, the public has expressed concern for approximately 80 individual roads. This concern has generally focused upon how the existing systems affect access to the Wilderness. In order to resolve problems that result from this situation, management direction, in the form of Service Levels, is shown for each of these roads on the Land Allocation Map for each alternative. The locations on the maps are corridors, not precise locations. Five Service Levels have been identified that range from obliteration to optimum operating conditions for high volume mixed traffic. A Service Level is a combination of operating conditions that are ultimately expected to occur on a given road segment. It is based upon the effects of a number of factors which include average daily traffic, traffic mix, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, convenience, operating costs and impacts on lands being accessed.

In practice, specific levels are determined and recommended for individual road segments for each land management plan or alternative. The Service Level for the selected alternative will become the basis for subsequent project design. Project planning and design will determine maintenance levels, road geometric standards, surface type, cost-share agreements, special use permits and subsequent traffic rules and road regulations.

Although the public may desire to have this more specific information at this time, it requires more precise project planning. The objective of any planning process is to assist the decision maker by progressively eliminating alternatives until the appropriate project design becomes apparent. If road standards were stated now, a key part of the evaluation process required during the design phase would be eliminated. Alternatives that would provide for the desired Service Level at a lower cost to the public could be prematurely ruled out. With this approach, subsequent planning will only consider those alternatives that provide the Service Level identified for the selected land use alternative.

The Forest Service has no jurisdiction over state and county road systems. The Service Levels shown are intended to illustrate how the management of National Forest lands would affect state and county road systems. The Service Levels for the selected alternative will serve as the basis of cooperative road agreements with these agencies. Management direction for five Service Levels for roads within the management unit follow.

Service Level A

This Level will ultimately require a combination of standard, surface type, maintenance and management necessary to provide ideal forest road traffic operating conditions and a minimum of traffic-related environmental impacts. Vehicles should be able to operate with a minimum of conflict at the design speed of the road. The road should provide maximum mobility and travel efficiency for a wide variety of vehicles. The road surface should be constructed and maintained to provide a smooth, dust-controlled gravel or paved surface. These facilities are of primary importance for the transportation of resources and resource users. They provide key access to large or popular land areas and are intended to be open and maintained for public recreation travel during the snow-free season. They are often a continuation of the state or county road systems and the transition will be a consideration in their design. However, the roads should only be wide enough for safe and leisurely passage of vehicles traveling at moderate speeds. High speeds (+ 40 MPH) detract from the recreational value of forest roads. The roads should avoid long tangents and the appearance of high speed commercial transportation routes.

Roads designated to be managed for Service Level A are, or have potential to be, double-lane roads.

Service Level B

This Level will require a combination of standard,

surface type, maintenance and management necessary to provide operating conditions that are more restricted than Service Level A and may produce some traffic conflicts. For example, logging trucks may slow other traffic during periods of frequent timber transport or when recreational traffic is heavy. When use conflicts arise, the roads may be temporarily closed to certain users. Less consideration will be given to user comfort and mobility than with Service Level A. During the snow free season, these roads are open and maintained for moderate use levels (100 average daily traffic or less). This traffic volume is generally within the safe and efficient capacity of a high standard single lane road. Service Level B roads are frequently surfaced with dust-abated gravel, but routes may be paved for environmental or economic purposes.

Service Level C

This Service Level will ultimately require a combination of operating conditions that will attract only low use levels. Comfort and convenience will not be a dominant consideration. Dust will be controlled only when it produces a safety hazard or an environmental problem. Wheel ruts may be present in the roadway and there may be sections of rough or unstable running surface. Because safety conditions with different types of vehicles on the road may be marginal, these roads may be closed for extended periods to some types of vehicles or users. Level C roads may also be closed when conditions would make them impassable without serious structural or environmental damage. Timber sales and sale volume should be appropriate to the Service Level. During periods when these roads are open to the public, they will be signed to indicate that they may not be suitable for passenger car use.

Service Level D

These are roads which are closed to public recreation travel by vehicles over 40 inches in width. The specific authority for closing roads on the forest development system is contained in 36 CFR 261.50.

The closure of roads in this plan is intended to protect or enhance national forest resources such as Wilderness, threatened or endangered species and their habitats, cultural resources, soil and water quality. Temporary public access may be granted for seasonal activities such as firewood gathering or Christmas tree cutting.

A resident or landowner cannot be denied access. Present mining laws dictate that a miner has a right-of-entry for lawful mineral exploration and development. Access and use of Forest Service roads cannot be denied for this type of activity (7731.41e FSM 9/78 Amend. 32).

Service Level E

This category prescribes the obliteration of a road. "Mine-to-market" public roads and roads in which the Forest Service has share cost partners will not be obliterated until the Forest Service acquires all necessary rights. A drainage pattern shall be restored and the road will be effectively blocked. Generally, natural processes will restore the road to

a natural condition. In those situations where climatic conditions, vegetation or persistent illegal public vehicle travel will not allow natural restoration, it may be necessary to rip, plow or scarify the road surface and round the slopes to the approximate original contour.

Where trails are intended to replace abandoned roads and permanent bridges exist, they can be incorporated into the trail system. They may be replaced with facilities more suited for trail use.

The following roads of major issue will be obliterated (Service Level E) in this Alternative. On the Allocation Map these are shown as trails.

West Fork Miller Road —	3½ miles
Taylor River Road —	2½ miles
Fish Lake Road —	1½ miles
Beverly Creek Road —	1 mile

Where direction calls for relocation of trailheads and portions of roads obliterated, the actual implementation of that direction will take place only when budgets allow for construction of the new trailhead and a replacement trail built.

Summer Trails and 4x4 Routes

Transportation systems are undergoing constant development. The trails and 4x4 routes shown for each land use alternative represent what is expected to ultimately occur when the need arises and funds are available. The locations on the maps represent ridge and valley corridors in which trails and 4x4 routes are to be constructed, reconstructed or relocated. The mode of use (i.e. horse, bike, 4x4) will not change until trails have been reconstructed or determined adequate for that type of use. 4x4 routes are over 40 inches in width and will be inventoried and regulated as roads.

A Service Level concept for trails and routes similar to that used for roads, has been developed and depends upon these major factors:

1. The ability of the accessed land to withstand construction, reconstruction and maintenance.
2. The ability of the accessed land to sustain the expected amount and type of use.
3. How effectively impacts can be absorbed and opportunities enhanced by management techniques such as permit systems, site hardening, public education and other strategies for adjusting the amount and pattern of travel.
4. The public's desires and expectations. In effect, the Service Level concept is intended to provide the recreationist with facilities that cover a full range of experiences. The recreationists can, therefore, choose the area and experience level they would like. They can have some assurance that their expectations will be realized and that their experience will be pleasant.

Four Service Levels and four travel modes (hiker, bike, horse, 4x4) have been identified. The service levels shown on the alternative land use plans are intended to apply to the mode of travel identified for that trail or route segment. 4x4 routes are available for bike, horse and hiker use. Bike trails are available for horse and hiker use. Horse trails are available for hiker use. Identified hiker trails are not available to the other modes of travel. Any trail or route in this plan may be temporarily or seasonally closed to enhance or protect resource values.

Service Level A

These will require a combination of standards, maintenance and management that would accommodate heavy traffic for the entire use period. The route will blend into the natural features of the area. Users should not expect solitude. Socializing with others will be a part of the recreation experience and contact with others may be frequent to continuous. Visitors will be aware of being in a predictable situation where outdoor skills are not needed. Trailheads will be easily accessed by automobile and comfort and convenience will be provided. In addition to recreation, informative (cultural and historical) and therapeutic (non-ambulatory or sight-impaired user) routes are included in this Service Level.

Service Level B

These will accommodate moderate use and will only modify natural conditions to the extent necessary to protect the environment and provide for visitors with limited experience and average physical ability. Users should expect to find opportunities to both socialize and have a moderate degree of solitude during low use periods. Trailheads and facilities will be provided only for resource protection. Separate, but not necessarily convenient, parking will be provided for trails accessed by road.

Service Level C

These will accommodate light and infrequent travel. Trails will be maintained only for resource protection and special groups or individuals with experience in rugged mountain terrain. The trail, particularly at the start, should appear primitive. Modifications to the natural environment should be kept to an absolute minimum. The user should experience a moderate (during peak use periods) to high degree of solitude from other individuals or small groups. The trail should provide the user with an opportunity for testing skills and experiencing a sensation of physical exertion and a feeling of accomplishment. 4x4 routes, as with other modes in this Service Level,

1/ On the Allocation Maps the obliterated roads are shown as trails.

2/ **4 x 4 Route** — A designated route for vehicles in excess of 40 inches wide, but constructed and managed as a recreation facility for 4 wheel drive vehicles. Synonymous with "Jeep Trail".

3/ Also see specific trail direction under Other Recreation, page 16.

will provide the most difficult challenge to the user but not at the expense of soil, water or other resources. The difficulty will be provided by obstacles or irregularities in the running surface, narrow clearing or openings, short radius curves that require repeated lock to lock turns and abrupt humps and sags in grade. Mud wallows will be located so that mud, soil and water returns to the wallow and are not carried or allowed to flow off site. Long sustained grades or combinations of grade and alignment that will cause wheel spinning are to be avoided. In order to reduce impact, routes should have design speeds of not more than five miles per hour. Stream crossings will be located and constructed to prevent bank cutting and approaches will be armored for a sufficient length to prevent soil or water from being carried into or out of the stream.

Service Level D

These will identify those trails that will be abandoned in order to accomplish the land-use objectives of each alternative. If necessary, these trails would be restored to a natural condition.

Recreation Management Direction

Opportunity Spectrum Classes

Recreation Opportunity Spectrum (ROS) — Land delineations which identify a variety of recreation experiences in six classes along a continuum from primitive to modern-urban. Each class is defined in terms of the degree to which it satisfies certain recreation needs based on area size, the extent to which the natural environment has been modified, the type of facilities developed and the degree of outdoor skills needed to enjoy the area. The six classes are: (1) primitive—representing the most remote, undeveloped and inaccessible opportunities (2) semi-primitive non-motorized (3) semi-primitive motorized (4) roaded natural (5) rural and (6) modern-urban—representing the most developed, accessible and convenience-oriented experience available.

Modern-Urban (MU) ROS Class

Encounters and association with other individuals and groups are prevalent, as is the convenience of sites and opportunities. These factors are more important than the setting of the physical environment. Opportunities for wildland challenges, risk taking and testing outdoor skills are minimal.

These areas are characterized by a substantially urbanized environment, although the background may have natural elements. Timber management and other resource utilization practices are frequently evident. Vegetative cover is often imported and manicured. Soil protection is usually accomplished with hand surfacing and terracing. Sights and sounds of humans predominate. Large numbers of visitors can be expected both on-site and in nearby areas. A considerable number of facilities are de-

signed for the use and convenience of large numbers of people and include electrical hookups and contemporary sanitation services. Controls and regimentation are obvious and numerous. Facilities are provided for special activities. Automobiles are fully accommodated and forms of mass transit are often available to carry people throughout the site.

This ROS Class is not present in the Alpine Lakes Area.

Rural (R) ROS Class

Encounters with individuals and groups are prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment although these sites are physically removed from the city. Opportunities for wildland challenges, risk taking and testing of outdoor skills are generally unavailable, except for activities like downhill skiing. Small communities situated entirely within a forested environment are included in this category.

This ROS Class appears as the developed site land allocation in all management alternatives. For inventory criteria, up to 500 acres are used to map this class. The areas are modified primarily to enhance specific recreation activities. Sights and sound of humans are readily evident. Concentration of users is moderate to high. Recreation management is appropriate to developed facilities designed for use by large numbers of users often for specialized activities. The areas are readily accessible by automobile.

Visual — Landscape modification for recreation facilities and activities may be dominant in the foreground but must harmonize with the natural environment, provide for user safety and convenience and meet the "modification" Visual Quality Objective (VQO). Opportunities and facilities for high quality scenic viewing experiences may be provided.

Maps — Provide detailed information including: recreation opportunities, camping areas and services provided, road and trail locations, trail standards, land status, emergency services, travel restrictions and directions for resource protection.

Regulations and Controls — Provide the minimum necessary for resource protection, visitor satisfaction and safety. The high density of use may require considerable regulation and user control. Provisions will be made to inform the public of necessary regulations.

Facilities — Recreation facilities are provided for user convenience, safety and satisfaction consistent with resource protection. Experience Level 3 and 4 day-use sites and campgrounds may be constructed. New day-use and overnight facilities may be developed when adequate facilities are not provided

by other agencies or by the private sector. Trail related facilities (bridges, stream fords, hand rails, trail tread improvements, etc.) will be provided for the handicapped and the disadvantaged.

Access — Safe and convenient road and trail access will be provided to and through the area. Access is for moderate to very heavy concentrations of users. Additional guidelines are given in transportation management direction and the visual management direction.

Signing — Adequate signs (including directions and distances) are provided along major access roads to direct users to developed facilities. Signs will be used for user convenience, safety and resource protection. Information and interpretive signs are provided for user education and enjoyment at historical and cultural features, special management areas and other special attractions.

Roaded Natural (RN) ROS Class

Opportunities exist for both encounters with others and for isolation from the sights and sounds of humans and their activities. Opportunity exists for a high degree of interaction with the natural environment. Challenge and risk are relatively low. Practice and testing of outdoor skills may be important. Opportunities for both motorized and non-motorized forms of recreation are possible.

This ROS Class occurs in General Forest and Scenic Forest Land Allocations. It includes areas less than ¼ mile from roads open to public travel, railroads, major power lines and within resource modification areas. For inventory criteria, any size area can be mapped in this class, but generally it falls between 100 and 2,000 acres. This class consists of predominantly natural environments. Sights and sounds of people are encountered with moderate frequency and usually harmonizes with the natural environment. Concentration of users is moderate to low. Recreation management emphasizes dispersed motorized and non-motorized activities. Both road and trail access are readily available. This is the most intensely used and extensively traveled class within the management unit.

Visual — Landscape modification for recreation facilities and activities may be prominent in the foreground but must remain harmonious with the natural landscape. The "partial retention" VQO applies in all other distance zones. Only minimum standard facilities will be provided for scenic viewing.

Maps — Provide detailed information concerning: recreation opportunities, camping facilities and services provided, road and trail locations, trail standards, land status, emergency services, travel restrictions and directions for resource protection.

Regulations and Controls — Few on-sites controls and regulations are used because the density of use

is low. Regulations and controls will be the minimum necessary for resource protection, visitor satisfaction and safety.

Facilities — Recreation facilities may be provided for user safety and satisfaction consistent with resource protection. Experience Level 2 campgrounds if determined to be needed shall be maintained to standard. Experience Level 1 campgrounds may be constructed when adequate facilities are not provided by other agencies or by the private sector. Trail related facilities (bridges, stream fords, hand rails, trail tread improvements, etc.) may be provided for the handicapped and the disadvantaged, however, they will be primarily constructed and maintained for user safety and convenience and in accordance with the transportation management direction.

Access — Safe and convenient road and trail access may be provided to and through the area. Manage access for low to moderate concentrations of users. Establish road, trail and area closures as necessary to achieve experience, safety and resource protection objectives. Secure and maintain recreation road and trail right-of-way over private land when necessary to meet recreation management objectives. Provide adequate and safe loading facilities for livestock, boats and snowmobiles. Parking areas at trailheads and water access points shall accommodate prescribed trail service levels and water management objectives within this and more primitive ROS classes. Additional guidelines are given in transportation management direction and the visual management direction.

Signing — Provide signs on all recreation roads and trail junctions, and at all trailheads. Signs will indicate route numbers, distances and destinations. Provide signing at facilities for convenience, safety and for resource protection. Some signs for user education and enjoyment will be provided at historic and cultural features, special management areas and other special attractions.

Semi-Primitive Motorized (SP/M) ROS Class

Some opportunity exists for isolation from the sights and sounds of humans and their activities. A high degree of interaction with the natural environment, moderate challenge and risk, and the chance to use outdoor skills are available. Motorized equipment is permitted in portions of the area.

This ROS Class occurs in the Dispersed Recreation land allocation. Includes areas greater than ¼ mile from roads and less than ¼ mile from trails open to motorized use. For inventory criteria, more than 500 acres will be mapped for this class which have predominantly unmodified natural environments. A minimal incidence of the sights and sound of humans is produced by a low concentration of users. Trail access will accommodate both motorized and non-motorized travel.

Visual — Landscape modification for recreation facilities and activities may be prominent in the foreground, but must remain harmonious with the natural landscape. The "partial retention" VQO applies in all other distance zones. Facilities will not be provided for scenic viewing. Trails, however, will be routed to take advantage of viewing opportunities when possible.

Maps — Provide detailed information concerning: recreation opportunities, camping facilities and services provided, road and trail locations, trail standards, land status, emergency services, travel restrictions and directions for resource protection.

Regulations and Controls — A minimum of on-site controls and regulations are used primarily for resource protection and user safety.

Facilities — Recreation facilities are limited to those necessary to achieve resource protection. Experience Level 1 campgrounds may be constructed. New overnight facilities may be developed when adequate facilities are not provided by other agencies or by the private sector. New facilities will be normally limited to campsite designation and rustic sanitation facilities at areas with heavy user concentrations such as at lakes. Trail related facilities will be constructed and maintained primarily for user safety and resource protection and in accordance with the transportation management direction.

Access — Safe and convenient road access will be only provided within one-quarter mile of the area. Manage the area for low concentrations of users. Motorized recreation equipment is permitted within portions of the area as designated by the transportation management direction. Establish trail closures as necessary to achieve experience, safety and resource protection objectives. Secure and maintain recreation trail right-of-way over private land when necessary to meet recreation management objectives. Trailhead facilities will be provided in Roaded Natural ROS areas. Additional guidelines are given in transportation management direction and the visual management direction.

Signing — Provide signs at all trail junctions and trailheads indicating routes, distances and destinations. Provide minimum additional signing for user convenience, safety and resource protection.

Semi-Primitive Non-motorized (SP/NM) ROS Class

Opportunity exists for isolation from the sight and sounds of humans and their activities, but not as often as for "Primitive" ROS Class. A high degree of interaction with the natural environment, a moderate challenge and risk and the opportunity to use outdoor skills are available in this environment.

This ROS Class occurs in the Dispersed Recreation land allocation. They generally include areas greater than ¼ mile and less than 3 miles from system roads

and ORV trails open to public travel. For inventory criteria, areas more than 2,000 acres will be mapped. These areas are characterized by an unmodified natural environment free of evidence of sights (foreground and middle ground) and sounds of humans and their activities. The concentration of users is low. There is no road access and trail access is limited to non-motorized travel.

Visual — Landscape modification for recreation facilities and activities will remain subordinate and harmonious in foreground and inconspicuous in middle ground and background. Facilities will not be provided for scenic viewing. Trails however, will be routed to take advantage of viewing opportunities when possible. Maps — Provide detailed information concerning: recreation opportunities, camping facilities and services provided, road and trail locations, trail standards, land status, emergency services, travel restrictions and directions for resource protection.

Maps — Provide detailed information concerning: recreation opportunities, camping facilities and services provided, road and trail locations, trail standards, land status, emergency services, travel restrictions and directions for resource protection.

Regulations and Controls — A minimum of on-site controls and regulations are required primarily for resource protection and user safety.

Facilities — Recreation facilities are limited to those necessary to achieve resource protection. Experience Level 1 campgrounds may be constructed. New overnight facilities may be developed when adequate facilities are not provided by other agencies or by the private sector. New facilities will be normally limited to campsite designation and rustic sanitation facilities at areas with heavy user concentrations such as around lakes. Trail related facilities will be constructed and maintained primarily for user safety and resource protection and in accordance with the transportation management direction.

Access — Safe and convenient road access will be only provided to within one-quarter mile of the area. Manage the area for low concentrations of users. Motorized recreation equipment is prohibited within the area. Establish trail and area closures as necessary to achieve experience, safety and resource protection objectives. Secure and maintain recreation trail right-of-ways over private land when necessary to meet recreation management objectives. Trailhead facilities will be provided in adjacent Roaded Natural ROS Class areas. Additional guidelines are given in transportation management direction and the visual management direction.

Signing — Provide signs at all trail junctions and trailheads indicating routes, distances and destinations. Provide minimum additional signing for user convenience, safety and resource protection.

Primitive (P) ROS Class

Isolation from the sights and sounds of humans and their activities, the feeling of being in the natural environment, and a high degree of challenge and risk are available in these areas and a relatively high degree of outdoor skills are required. For inventory criteria, more than 2,000 acres will be mapped in this class which are greater than 3 miles from roads open to public travel.

This ROS class is included in the Dispersed Recreation land allocation. Because of distances from road access, users can be expected to stay overnight.

Visual — Landscape modification for recreation activities will remain subordinate and harmonious in foreground and inconspicuous in middle ground and background. Trails however, may be routed to take advantage of viewing opportunities.

Maps — Provide detailed information concerning: recreation opportunities, camping facilities and services provided, road and trail locations, trail standards, land status, emergency services, travel restrictions and directions for resource protection.

Regulations and Controls — Minimum on-site controls and regulations will be provided only for resource protection and user safety.

Facilities — Minimal recreation facilities will be provided and only for resource protection. Campgrounds will not be constructed or maintained. Minimal trail related facilities will be provided primarily for resource protection and in accordance with the transportation management direction.

Access — Safe and convenient road access will be only provided to within three miles of the area. Manage the area for very low concentrations of users. Motorized equipment is prohibited within the area. Establish trail and area closures as necessary to achieve experience, safety and resource protection objectives. Secure and maintain recreation trail right-of-way over private land when necessary to meet recreation management objectives. Trailhead facilities will be provided in Roaded Natural ROS Class areas. Additional guidelines are given in transportation management direction and the visual management direction.

Signing — Provide the minimum number of signs necessary for user safety and resource protection.

Winter Recreation

Each major recreational activity — skiing, snowmobiling, etc. — will have areas designed and managed to accommodate them. Other activities may be limited or prohibited in these areas if they conflict with the primary activity or if overcrowding occurs. The opinion of users will be consulted.

Each Ranger District will have a hazard evaluation system coordinated with the Regional system and available to the public.

Patrol and safety may be provided through a combination of permittee and/or Nordic ski patrols. The Forest Service may provide leadership and training in such patrol activities.

Management that may include, influence or be influenced by private property will require joint planning and special coordination with the property owner(s).

Different skill levels of users will be considered when designing trails and related facilities. A spectrum of opportunities for winter recreation (including primitive dispersed opportunities without facilities) will be maintained.

Any development such as parking areas, groomed trails or staging areas will include sanitation facilities commensurate with those expected of the area.

Commercial recreation use will be encouraged in areas where there is a demonstrated need or opportunity which compliments and/or is not in conflict with use of the area by the general recreating public.

National forest managers will coordinate with and support the Sno-Park and Snowmobile programs. Normally, provision for plowed parking will be made through these programs.

Alpine ski area permittees will be encouraged to integrate winter dispersed recreation into their operations if and when the opportunity and demand exists.

Where a need for groomed trails is identified, such facilities will normally be provided through special use permit. The permittee may be allowed to charge user fees.

Winter recreation facilities, i.e. parking lots, groomed ski trails, ORV use zones, cross country ski trails and the like, shall attempt to avoid south facing aspects where significant fish and wildlife winter use occurs. To prevent adverse impacts to subnivean (under the snow) ecosystems, compaction of snow in meadows and other high use wildlife areas shall be avoided.

Maintain existing developed winter sports complexes at the size currently under special use permit as depicted on Alternative E Allocation Map, unless through the Ski Area Master planning process a need for expansion is demonstrated. Need could be:

- 1) additional capacity to satisfy existing demand,
 - 2) additional capacity to satisfy future demand and,
 - 3) to maintain the quality of the skiing experience.
- Permittees will be encouraged to incorporate dispersed winter recreation opportunities into their operations if opportunity and demand exist.

Manage the Dardenelles area (Sections 4, 8, 10, 16 T. 26 N., R. 16 E.) to retain its potential for future development as an alpine ski area.

Cooperate with private landowners, the State of Washington, user groups and concessionaires in development of dispersed winter recreation opportunities along the I-90, Highway 97 and U.S. Highway 2 corridors. In I-90 corridor, commercial development shall be concentrated at Easton and the Snoqualmie Pass areas with non-commercial zone between Rocky Run and Easton Hill.

Other Recreation

1. Maintain existing campgrounds to established maintenance and administrative standards at the following Experience Levels (measure of facilities provided): 1/

Experience Level 1	Experience Level 3
Tucquala Meadows	Taylor River
Fish Lake	Commonwealth
	Denny Creek
	Money Creek
	Miller River
	Foss River
	Beckler River
	White Pine
	Fish Pond
	Glacier View
	Beverly Creek
	Riverside
	Chatter Creek
	Rock Island
	8-mile
	Johnny Creek
	Owhi
	Red Mountain
	Cle Elum River
	Crystal Springs
	Bonanza
	Tronsen
	Park
	Mineral Springs
Experience Level 2	
Scatter Creek	
Esmeralda	
De Roux Creek	
Experience Level 4	
Swauk	
Salmon La Sac	
Wish Poosh	
Kachess	
Nason Creek	
Tumwater	

2. Convert the following existing campgrounds in Icicle Creek to day use sites and maintain to established maintenance and administrative standards at Experience Level 3.

Bridge Creek
Ida Creek

3. Maintain all existing day use sites to standard at Experience Level 3.

Asahel Curtis
Lake Keechelus
Deception Falls
Swiftwater
Red Top
Wish Poosh

4. Construct, as needed to meet demand the following Experience Level 3 campgrounds.

Ranger District	Site Name and Inventory Number	PAOT Capacity
North Bend	Mountain View (no number)	720
Ellensburg	Mineral Springs Extension — 51	200
	Swauk Extension (North) — 61	200
	Swauk Extension (South) — 60	100
Leavenworth	8-Mile Extension (no number)	150
	Johnny Creek Extension (no number)	300
	Chatter Creek Extension (no number)	150
	Upper Chatter Creek (no number)	540
	Tronsen Meadow — 83	200
Lake Wenatchee	Wildhorse — 102	100
	White Pine Extension — 104A	200
	Nason Ridge — 97	200
Skykomish	Fir Gove — 49	100
	Wildflower Flat — 85	100
	Scenic (no number)	100

5. Construct, to meet demand, the following Experience Level 4 campgrounds.

Ranger District	Site Name and Inventory Number	PAOT Capacity
North Bend	Tinkham (no number)	235
Cle Elum	Speelyi — 91	1500
	Kachess Extension — 16	280
Leavenworth	Tumwater Extension — 61	380

6. Conduct further study to determine conflicts between recreation use of the Money Creek Campground, (Skykomish Ranger District) and bald eagle needs. If conflicts are found that cannot be mitigated, the campground will be removed with recreation demand being met by the Beckler River, Miller River or development of other available sites. 2/

1/ Experience Level 1 Recreation Development — A developed camp or picnic site with minimum site modification. Rustic or rudimentary improvements designed for the protection of the site rather than comfort of the user.

Experience Level 2 Recreation Development — A developed camp or picnic site with little site modification. Rustic or rudimentary improvements designed for the protection of the site rather than comfort of the user.

Experience Level 3 Recreation Development — A developed camp or picnic site with moderate site modification. Facilities provided equally for protection of site and comfort of users.

Experience Level 4 Recreation Development — A developed camp or picnic site with heavy modification. Some facilities are provided strictly for comfort and convenience of users but luxury facilities are not provided.

2/ Also see bald eagle direction under Wildlife, Fish and Plants, page 29.

7. Acquire necessary easements over private lands, construct connecting trail segments, reconstruct or relocate before designating the following as National Recreation Trails (NRT) under P.L. 90-543 or National Historic Trails (NHT) under P.L. 89-665:

Nason Ridge Trail (1583) (NRT)
County Line Trail (1394) (NRT)
Little Kachess Trails (1312, 1346) (NRT)
Lake Serene Trail (1068) (NRT)
Annette Lake Trail (1019) (NRT)
Snow Lake Trail (1013) (NRT)
Iron Goat Trail (1074) (NHT or NRT)
Denny Creek Wagon Trail (1021) (NHT or NRT)
Granite Mountain Trail (1016) (NRT)
Franklin Falls Trail (1036) (NRT)

8. Construct, reconstruct and maintain all recreation trails for the amount and type of use indicated on Alternative E Allocation Map.

9. Develop and maintain trailheads to provide safe parking, sanitation and other facilities commensurate with the expected use on the Service Level of trail(s) being accessed. Trailheads currently requiring additional development include:

Stafford Creek
Beverly Creek
Bear/Miller Creek
Blewett Pass
Scatter Creek
Fish Lake Guard
Station
Salmon La Sac
Cooper Lake
Knox Creek
French Cabin Creek
Gold Creek
Kachess Campground
Kachess Lake (Sec. 5,
T.21N., R.13E.)
Denny Creek
Mineral Creek
Pratt River
Taylor River
Proctor Creek
Lake Serene
Index Creek
Lake Elizabeth
Evans Lake
Lost Lake
Rainy Pass
Rock Lake
Merritt Lake
Butcher Creek
Hatchery Creek
Snowy Creek
Tunnel Creek
North Fork
Tolt River

10. Provide opportunities for dispersed area recreation activities as defined within each recreation opportunity spectrum (ROS) class described earlier and as depicted on the ROS Map accompanying Alternative E.

11. Give notice to permittees within Gale Creek and Lake Cle Elum recreation residence tracts that the sites are identified for campground development and that the permits will be terminated and residences must be removed to allow site restoration prior to development. Continue to issue annual permits until actual site development is programmed (approximately 5 years prior to construction).

12. Maintain all existing organization camps under permit.

13. Develop group camping facilities adjacent to Icicle Creek west of Rock Island campground.

14. Develop boat access at the Kachess Campground for Little Kachess Lake and recommend a county ordinance for a 10 mile per hour speed limit on Little Kachess Lake.





15. Manage the Redtop Mountain area for enhancement of its rock hounding opportunities. ^{1/} Where possible, withdraw the area from mineral entry to allow continued public recreation mining ^{2/} use. To make withdrawals along legal sub-division lines, areas outside the collection area may be included.

Manage the streambed and flood plain of portions of Peshastin, Negro, and Ruby Creeks in Sections 1, 2, 12, and parts of 3 and 13, T. 22 N., R. 17 E. and in Sections 36, T. 23 N., R. 17 E. for recreational gold placer mining opportunities. Withdrawal will be restricted to the smallest portions of public land needed to include the stream beds and alluvial banks to avoid interference with lode mining opportunities in the adjacent hill sites. All other areas identified as having recreational mining opportunities (See Figure 2) would be maintained and remain accessible for recreational mining unless claims or mineral leases are filed to restrict public entry.

Recreation use would be expected to follow the pattern for extended and day use shown on Figure 3. Focal points within the day use areas would have potential for heavy use.

^{1/} **Rock Hounding** — A recreational activity related to recreation mining for the purpose of obtaining non-metallic specimens as raw material for rock cutting, polishing or related activity.

^{2/} **Recreation Mining** — A transitory on-the-ground activity engaged in for the pleasure of finding a mineral such as gold or other mineral specimens. This activity is non-commercial and is carried out for leisure time purposes (hobby) rather than to develop a valuable mineral deposit under provision of the mining laws. Normally independent of a mining claim.

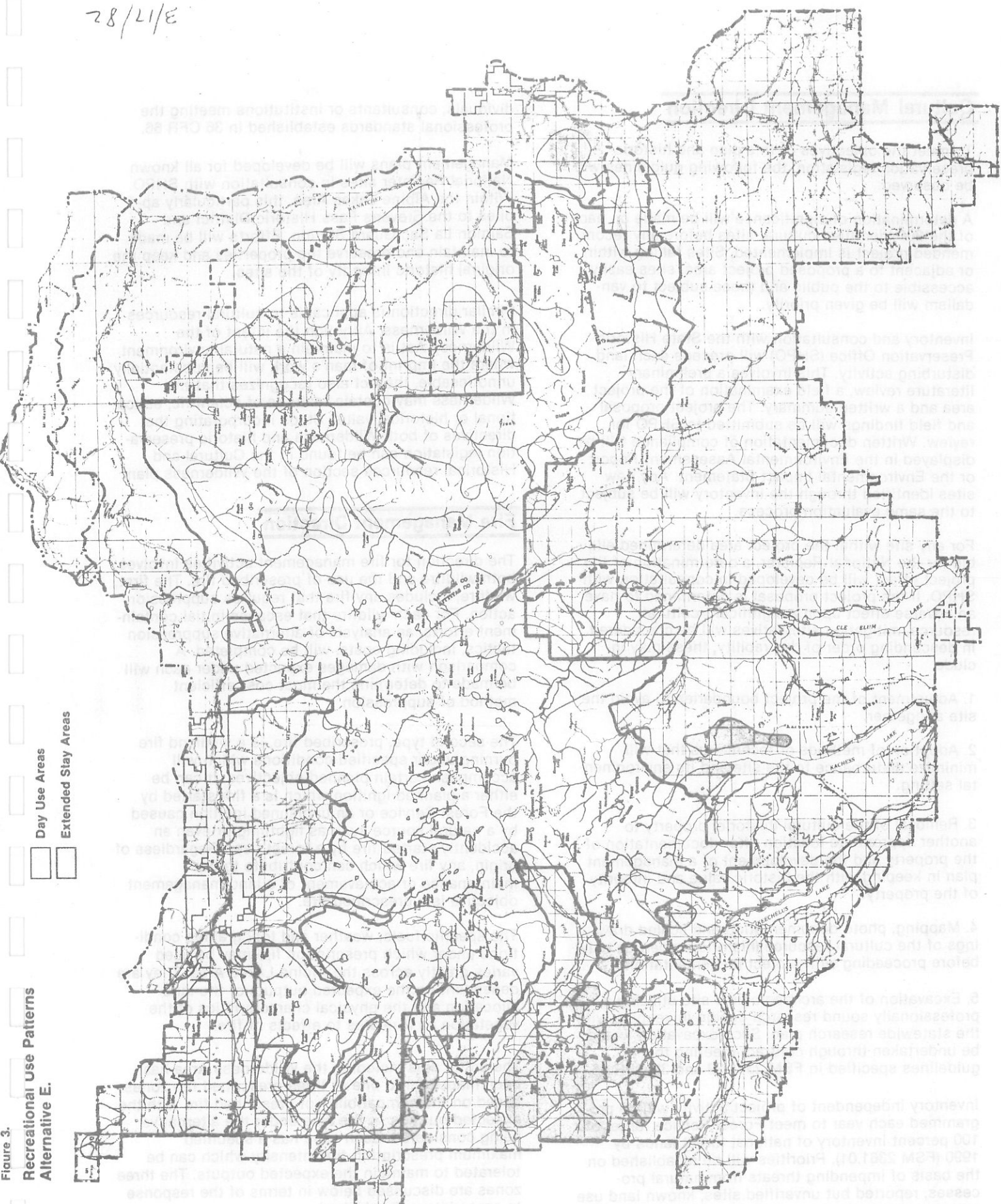
	Known mineralization, showing area or mine name and dominant commodity.
	Favorable geology, showing area or mine name and dominant commodity.
	Hypothetical mineral potential, showing area name and dominant commodity (where known).
	Recreation mining site or area.



3/17/82

Figure 3.
Recreational Use Patterns
Alternative E.

Day Use Areas
Extended Stay Areas



Cultural Management Direction

To meet the objectives of this plan and historic preservation legislation, the following guidelines will be observed:

A determination of significance will be made on each of the 200 identified cultural sites before any recommended project is implemented. Sites falling within or adjacent to a proposed project area, sites easily accessible to the public and those subject to vandalism will be given priority.

Inventory and consultation with the State Historic Preservation Office (SHPO) will precede each land disturbing activity. This involves a preliminary literature review, a field examination of the project area and a written summary. The project proposal and field findings will be submitted to SHPO for review. Written documentation of compliance will be displayed in the Environmental Assessment Report or the Environmental Impact Statement. Any new sites identified through the inventory will be subject to the same evaluation process.

For any site within the project area determined eligible for the National Register, a determination of the project effect will be developed in consultation with SHPO. If the project proposal is determined to have an adverse effect upon a significant cultural resource, mitigation alternatives will be considered. In descending order of desirability, these may include:

1. Adjustment of the project boundaries to avoid the site altogether.
2. Adoption of methods or techniques that will minimize disturbance to the site and its environmental setting.
3. Removal of the cultural (historic) property to another appropriate location after documentation of the property and the development of a management plan in keeping with the historic value and integrity of the property.
4. Mapping, photo documentation and scaled drawings of the cultural resource (historic properties only) before proceeding with project implementation.
5. Excavation of the archaeological site utilizing a professionally sound research design in keeping with the statewide research plan. Such excavation would be undertaken through contract meeting the guidelines specified in FSM 2361.29 and 36 CFR 66.

Inventory independent of project activity will be programmed each year to meet Forest Service target of 100 percent inventory of national forest lands by 1990 (FSM 2361.01). Priorities will be established on the basis of impending threats from natural processes, reported but unverified sites, known land use patterns, terrain features and vegetational cover. The inventory will be directed by an in-house cultural resource specialist or through contracts with in-

dividuals, consultants or institutions meeting the professional standards established in 36 CFR 66.

Management plans will be developed for all known National Register sites in consultation with SHPO. Within the Alpine Lakes Area, this particularly applies to the Stevens Pass Historic District and Salmon La Sac Guard Station. Efforts will be made to maintain and preserve the properties and keep the original historic integrity of the sites.

Similar direction is applicable to cultural resources in the Wilderness. Although the intent of the Wilderness Act is to maintain a natural environment where the imprint of man's work will be substantially unnoticeable, the Act also recognizes that the Wilderness may contain features of scientific, educational or historical value. Steps incorporating the directives of both Wilderness and historic preservation legislation can be found in the Cultural and Historical resources section of the Wilderness plan.

Fire Management Direction

The direction for fire management activities involves both wildfire and the use of prescribed fire. The first, wildfire, includes any fire that requires suppression action. For each wildfire that escapes initial containment efforts, an analysis of alternative suppression tactics, including costs, will be completed. A comparison with damages expected under each will be made to determine the most cost efficient method of suppression.

The second type, prescribed fire, is a wildland fire burning under specified conditions which will accomplish certain planned objectives. It can be either a planned ignition which is a fire started by the Forest Service or an unplanned ignition caused by a natural source such as lightning or even an accidentally started fire by a forest user. Regardless of origin, any fire which can contribute to the maintenance or achievement of a land management objective is a prescribed fire.

The specific fuels, weather and topographic conditions under which prescription fire may be used varies greatly across the Alpine Lakes Area. They are dependent on the expected outputs of the land allocation and the physical characteristics of the vegetation as it relates to effects of fire.

The entire area including the Wilderness Area has been mapped into one of three prescribed fire zones based on the compatibility of prescribed fire with the expected outputs of the area under the alternative being considered. Each zone has a specified maximum prescription fire intensity which can be tolerated to maintain the expected outputs. The three zones are discussed below in terms of the response to prescription fire desired.

Zone I (Low Intensity)

This includes all areas where the intensity of prescribed fires must not (1) reduce tree stocking below that necessary to maintain sustained timber harvest output levels; (2) reduce ground cover (herbaceous material, litter and duff) below that which is necessary to maintain water quantity and quality outputs; or (3) reduce soil productivity. The outputs of the General Forest and Scenic Forest allocations can be maintained under intensity of prescription fires acceptable in Zone I.

Zone II (Moderate Intensity)

This includes those areas where a limited modification of the vegetation complex creates the vegetation diversity necessary to maintain the wildlife habitats and visual variety in the landscape required in the allocation. Sufficient ground vegetation, litter or duff cover must be maintained to protect water quantity and quality. A prescribed fire must enhance both short and long range recreation and other resource objectives. The Dispersed Recreation allocation requires a limited amount of prescription fire to maintain its suitability over the long run.

Zone III (High Intensity)

This includes areas within the Wilderness where the management objectives are to maintain natural processes. Extensive vegetation modification by natural processes may occur, provided life or property values outside the areas are not threatened. The principle constraint on prescription fire intensity in this zone will be to insure, with a high degree of certainty, that the fire will be confined to the area intended to be treated.

Within each of the mapped zones, there will be isolated areas where fires from unplanned ignitions will meet the prescribed fire intensity limits for the zones but would be damaging to improvements on the site. These fires will be suppressed as any wildfire. Developed recreation and administrative sites, special use improvements, cultural and historical sites and private properties are examples. Likewise it will be necessary to use prescription fire with intensities higher than those for the specified zone to accomplish certain site specific management objectives. These applications of prescription fire will be accomplished using controlled ignition patterns rather than random ignitions. The prescribed fire intensity of these projects is still constrained to the extent necessary to maintain the expected outputs of the allocation. Examples might include the using of prescription fire of a high intensity in Zone I to prepare a planting site after timber harvest or using a moderate intensity fire to accomplish a wildlife habitat improvement project in the Zone I.

It is essential that the boundaries between the different prescribed fire use zones afford logical control opportunities. Where two zones with different prescription intensities interface, the most conser-

vative prescription dominates and the boundary is adjusted to major topographic or vegetational breaks which insure isolation of each area. In some cases, significant boundary adjustments would be required because of the uniformity of vegetation and topography.

See the Prescribed Fire Zone Map (Figure 4) for the location of where the various intensity prescription fires may be applied.

More specific requirements are provided in Tables 3 through 6 which displays fire management direction.

It is important to emphasize that before any unplanned ignitions are allowed to burn under prescription without aggressive suppression, all conditions of the prescribed fire intensity zone must be met; and an individual situation analysis must be made. In addition to the basic land area allocation and its accompanying direction, the following specifics will be considered:

- Season of year — (spring, summer, or fall)
- Vegetation type — (role of fire in ecosystem)
- Recent fire danger
- Forecast fire danger
- Smoke dispersion situation
- Specific location — topography and proximity to boundary
- Availability of suppression forces should burning conditions become unfavorable and require suppression

The information needed to make these decisions must be immediately available to avoid delays in taking suppression action. Figure 5 is a suppression decision matrix which will be used to develop this process.

All industrial operation or other activities with fire starting potential will be regulated by existing Regional Forester restrictions.

Annual fire protection programs will consist of prevention, detection, pre-suppression and fuels management activities in combinations which allow accomplishment of specified resource output objectives at the least cost.

Pre-attack inventories and planning will be accomplished as outlined in R-6 Pre-attack Handbook 5109.15 for all areas.

Only retardants which have been evaluated by the Environmental Protection Agency for toxicity will be used in domestic watersheds and along anadromous fish streams.

All prescribed burning will meet these conditions: The desired results or objectives must be established in quantitative terms, the weather and fuel moisture parameters must be such that the objectives can be met and project accomplishment must be measured, monitored and evaluated.

3/17/82

Figure 4.
Prescribed Fire Zones
Alternative E.

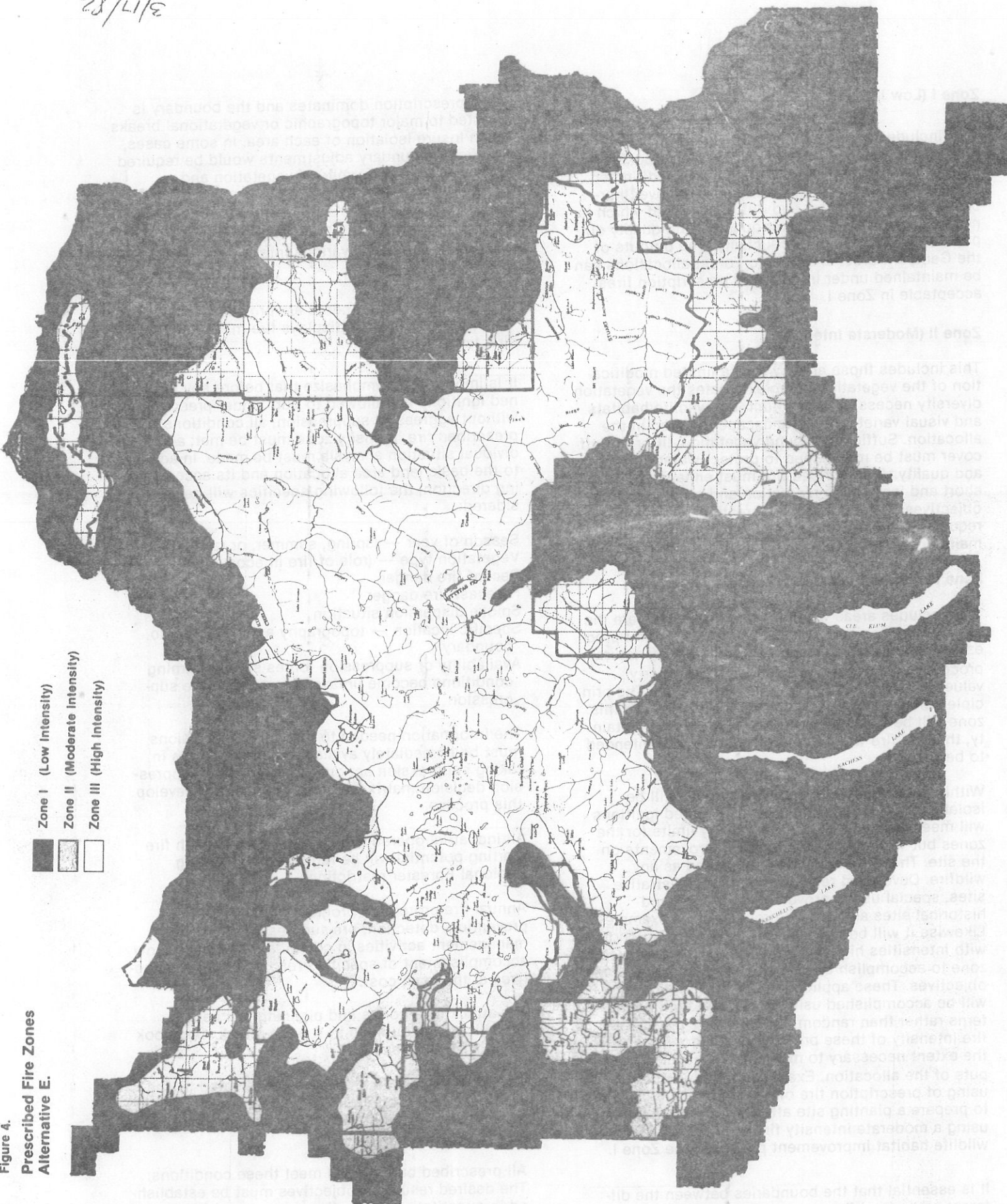


Table 3.

Fire Behavior Parameters Consistant With Prescription Fire Intensity Zones.¹

Vegetation Type	Fire Behavior Parameter	Intensity Zone I (Low)	Intensity Zone II (Moderate)	Intensity Zone III (High)
ponderosa pine zone	Forward Rate of Spread	3 chains/hr	3-8 chains/hr	8-12 chains/hr
	Flame Length	3 ft	3-5 ft	5-6 ft
	Fireline Intensity (energy release)	70 BTU's/sec/ft	70-150 BTU's/sec/ft	150-300 BTU's/sec/ft
	Scorch Height	10 ft	10-20 ft	20-30 Ft
	Exposed Soil	10%	10-25%	25-40%
all other forested zones	Forward Rate of Spread	2 chains/hr	2-6 chains/hr	6-12 chains/hr
	Flame Length	2 ft	2-4 ft	4-6 ft
	Fireline Intensity (energy release)	40 BTU's/sec/ft	40-120 BTU's/sec/ft	120-200 BUT's/sec/ft
	Scorch Height	8 ft	8-16 ft	16-24 ft
	Exposed Soil	10%	10-25%	25-40%
alpine meadow zones	Forward Rate of Spread	3 chains/hr	3-8 chains/hr	8-12 chains/hr
	Flame Length	3 ft	3-5 ft	5-6 ft
	Fireline Intensity (energy release)	50 BTU's/sec/ft	50-150 BTU's/sec/ft	150-300 BTU's/sec/ft
	Scorch Height	N/A	N/A	N/A
	Exposed Soil	10%	10-25%	25-40%

¹These parameters are preliminary estimates and should be refined through field evaluation of actual fires. It is felt that they are conservative.

Table 4.

Fire Management Direction by Land Allocation Title.

	DEVELOPED SITES	GENERAL FOREST	SCENIC FOREST	DISPERSED RECREATION
MAXIMUM FIRE SIZE	Existing Sites — Suppression efforts will be directed at confining all starts to the smallest possible size. Potential Sites — Fires within prescription intensity limits for the zone will be suppressed at the nearest natural breaks. All fires which exceed prescription will be suppressed at smallest size.	Suppression efforts are directed to containing individual starts within the size constraints listed in Table 5	The size constraints applicable to General Forest apply, but are constrained to the foreground so as not to dominate the landscape as viewed from Scenic Forest roads or trails. Burned areas in foreground should be visible no longer than 1 minute from highways, 3 minutes from forest roads, and 15 minutes from trails with the scenic classification.	The goal is no more than 10% of the seen area from principle viewing points shall be allowed to burn.
MAXIMUM BURNED AREA PER DECADE BY WILDFIRE	Accumulated burned area should not exceed 5% of area for existing sites or 20% of area of proposed sites every decade.	Maximum burned acreages per decade are included in Table 6	Maximum burned acreages per decade are included in Table 6. The maximum size of continuous burned areas in foreground are the same as for individual fires.	The maximum burned area per decade should not involve more than 20% of the seen area.
FIRE CONTROL LINES AND MOP-UP	Evidence of control activities must be obliterated after the fire is mopped up. Mop-up will not unnecessarily disturb the surface. Disturbed areas will be revegetated with native vegetation	No constraints on the types of fireline used as long as Visual Resource Management objectives are considered. Disturbed areas will be stabilized and seeded to minimize surface soil movement. Fertilizer will be utilized to augment vegetation establishment.	Evidence of control activities must be obliterated after mop-up in those areas viewed directly from Scenic Forest roads and trails. Disturbed areas will be revegetated with natural vegetation in foreground. Other areas will be seeded, fertilized or otherwise stabilized.	Control activities will utilize natural topographic or vegetation breaks wherever possible. Firelines will be the minimum to contain the fire. Stabilization will be limited to minimizing off-site effects.
USE OF MECHANIZED EQUIPMENT	Evidence of mechanized equipment use will be removed or obliterated after the fire is suppressed.	Tractors not permitted on slopes over 40% or on areas where soil compaction or surface disturbance would be intolerable. (See Soil Resource Inventory for specific soils).	Evidence of the use of mechanized equipment as viewed from Scenic Forest roads and trails will be obliterated. Use of tractors in immediate foreground from Scenic Forest roads and trails will require line officer approval.	The full range of firefighting equipment may be utilized. No new road access will be developed to move firefighting equipment. Firelines will be stabilized and made impassable for wheeled vehicles.
USE OF FIRE RETARDANTS	Ground applied colorless retardant or those with fugitive color are preferred. Aerially applied retardant may be used in cases where life or public safety is involved or where necessary to successfully execute suppression strategies.	Retardants may be used on fires which exceed prescribed intensity levels and threaten size limitation goals. There are no restrictions on the type or kind of retardant used.	The General Forest direction is applicable except that water or colorless retardant should be used in the foreground as viewed from Scenic Forest roads.	Retardant may be utilized to contain any fire which exceeds the prescribed intensity levels and threatens acreage limitations or adjacent allocations.
USE OF HELICOPTERS	Helicopters may be utilized to move fire suppression resources but no new landing sites will be constructed.	No limitations on the use of helicopters. Helispot construction will meet all safety requirements and will be maintained as part of the transportation system.	The only limitation on the use of helicopters is that no new landing sites will be constructed in the foreground as viewed from Scenic Forest roads and trails.	Helicopters may be used on all fires where the decision to suppress is made. Natural openings will be utilized as much as possible. Clearing for new sites will be the minimum to use the facility safely. Helispots are considered temporary improvements.
LEVEL OF PRE-ATTACK IMPROVEMENT	Fire protection needs will be designed for each site. Helispots will be prelocated; water systems will accommodate fire needs; and access roads will accommodate fire fighting equipment.	Helispots will be located to provide access to all areas of Class III flammability areas within 30 minutes walk from landing sites. In Class II flammability areas within 60 minutes walk, and in Class I flammability within 120 minutes. Fuel breaks may be utilized in Class II flammability and above areas. Tanker fills will be spaced to provide 30 minutes spacing along roads.	The General Forest direction applies except that improvements will not dominate the foreground when viewed from Scenic Forest roads and trails.	Pre-attack improvements will be limited to those needed to confine fires to this Allocation. Fuel breaks will not be accessible to wheeled vehicles.

Table 4 (Continued)

Fire Management Direction by Land Allocation Title.

	DEVELOPED SITES	GENERAL FOREST	SCENIC FOREST	DISPERSED RECREATION
PREScribed FIRE WITH CONTROLLED IGNITION	<p>Prescribed burning should be limited to that material which cannot be utilized by the users of the site.</p> <p>Evidence of prescribed burning must be removed before the next occupancy season begins.</p> <p>Low intensity fire may be used to control surface fuel buildup for fire protection purposes.</p>	<p>The full range of prescribed burning application is available except when soil productivity is threatened.</p> <p>Utilization is encouraged over disposal by burning of residues resulting from management practices.</p> <p>Most cost effective methods will be utilized.</p>	<p>Evidence of prescribed burning be removed within one season in the foreground as viewed from Scenic Forest roads and trails.</p> <p>All direction for General Forest applies.</p>	<p>Prescribed burning will be limited to vegetation manipulation for fire protection, wildlife habitat improvement, or special fire studies.</p> <p>Debris from construction and maintenance activities may be burned if utilization is not feasible.</p> <p>Project size will be limited so as not to dominate the landscape.</p>
FUELS MANAGEMENT	<p>Fuel loadings will be modified to a level which insures creeping intensities that afford reasonable opportunities for control of accidental fires.</p>	<p>Reduce fuel loadings from management activities such that the projected fires intensities do not exceed Level III flammability as measured five years after creation.</p>	<p>In addition to the direction for General Forest, those residues from management activities in the foreground from Scenic Forest roads and trails will be removed or disposed of consistent with Visual Resource Management timing guidelines.</p>	<p>Fuels management activities will be limited to modifying potential fire intensity along boundaries of areas with more restrictive fire management objectives to permit reasonable opportunities for containment.</p>

Table 5.

Maximum Individual Size for Wildfires in General Forest and Scenic Forest Allocation.

Vegetational Zone	Stand Development Stage	Fire Character ¹			
		I	II	III	IV +
		acres ²			
Ponderosa Pine	Mature	*	*	150	75
	Seedlings, Saplings & Poles	*	100	50	25
	Reforestation (slash)	*	*	100	50
Douglas fir	Mature	*	300	100	50
	Seedlings, Saplings & Poles	*	100	50	25
	Reforestation (slash)	*	*	100	50
All Other Zones	Mature	*	200	100	50
	Seedlings, Saplings & Poles	*	100	50	25
	Reforestation (slash)	*	*	100	50

* Fires at these intensities are considered to be prescription fires and therefore have no maximum size constraints.

¹ I — Low level creeping fire; II — Low level spreading fire; III — Moderate intensity free spreading on ground; IV — high intensity fire spreading on ground; V — very high intensity crown fires.

² The acreage limits displayed in this table are estimates applicable in the interim until the Forest Plans are completed on the respective forests.

Table 6.

Maximum Burn Area Per Decade for Wildfires in the General Forest and Scenic Forest Allocations.

Vegetational Zone	Stand Development Stage	Fire Character Class ¹				
		I	II	III	IV +	Total
		acres ²				
All Zones	Mature	*	10,000	3,000	1,000	14,000
	Seedlings, Saplings & Poles	*	1,500	500	100	2,100
	Reforestation (slash)	*	15,000	3,500	1,500	20,000

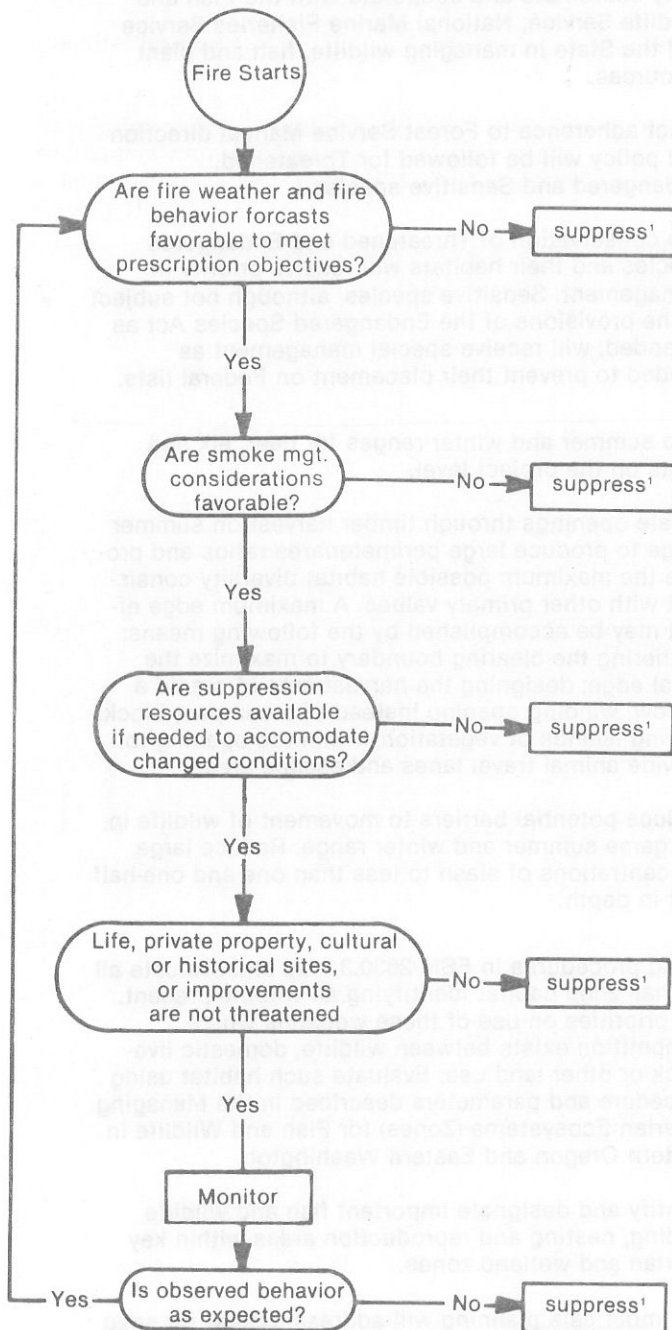
* Fires at these intensities are considered to be prescription fires and therefore have no maximum size constraints.

¹ I — Low level creeping fire; II — Low level spreading fire; III — Moderate intensity free spreading on ground; IV — high intensity fire spreading on ground; V — very high intensity crown fires.

² The acreage limits displayed in this table are estimates applicable in the interim until the Forest Plans are completed on the respective forests.

Figure 5.

Suppression Decision Matrix



¹When the suppression decision is made, the specific tactics applied will be limited to those which can contain the fire at the least cost under the fuel conditions, weather and fire location conditions present.

Air Management Direction

Prescribed burning activities will be consistent with the requirements of the "Smoke Management Plan" administered by the Washington State Department of Natural Resources. Air quality will be given full consideration in the analysis of escape wildfires.

Land Ownership Direction

Because approximately 30 percent of the land in the Alpine Lakes management unit is in private ownership, the need for cooperation between the Forest Service and individual land owners is obvious. The future need for homes and certain recreational facilities is expected to be met by the private sector, but other objectives — the protection of visual quality, wildlife enhancement, etc. — must be met by public land managers. Another reason for land ownership adjustment is the desire of public and private landowners to manage their lands more efficiently and at lower cost.

Perfect agreement between administrators of the area and every land owner is unlikely but an effort is required to achieve the most harmonious relationship possible. To that end, public and private lands in the management unit were systematically inventoried and classified. It became apparent as a result of this process that the exchange or purchase of some lands would be desirable to enhance land management, protect certain values or avoid conflict. Such adjustments, however, would have to be studied and initiated by administrators of this management plan and this classification process is not, in itself, a land adjustment program.

Land in the management unit was divided into five categories guided by: 1. Land allocations determined by capability and suitability analysis and proposed land uses and, 2. Forest Service policy as set forth in FSM 5530.3 having to do with distinct combinations of ownership patterns, intrinsic natural values and present and projected land uses. Legal subdivisions rather than category boundaries may be used to facilitate future adjustments.

Each alternative contains a different mix of lands assigned to these categories.

Category I

National forest lands will be retained and non-national forest lands acquired as directed by Congress for a specific purpose as defined in legislation, including all Wilderness and Intended Wilderness lands.

Category II

Priority is given for retaining national forest lands or acquisition on non-public lands. Criteria for acquisition of non-public lands include:

1. Lands which have been allocated to primitive types of dispersed recreation.

2. All special interest area allocations such as recreation, scenic and geological areas.

3. Land which has been determined necessary for wildlife, visual or recreation needs.

Category III

Land in this category is primarily in the general forest allocation where management direction emphasizes commodity production. There is generally neither a high priority for public ownership as in Categories I and II nor is there a priority for private ownership as in Category IV. The Forest Service may acquire lands in this category in some cases. In other situations, lands would be available for disposal. These lands include:

1. Relatively solid blocks of national forest lands which will not be breached through land adjustment.
2. Adjustment opportunities that improve wildlife habitat, recreation and visual quality will be given priority.
3. Improved ownership patterns through consolidation will be the major emphasis and will be conducted as the opportunity presents itself.
4. Winter range for deer and elk as recognized by mutual agreement with the State Game Department will be given priority for acquisition.

Category IV

These lands are classified as candidates for Forest Service disposal or private lands to remain private. Lands which may be available for exchange to acquire other lands of higher priority, include:

1. Isolated small parcels of land which are impractical to manage.
2. Situations where higher and/or better use (more intensive) or development can be provided by the private sector.
3. Areas necessary for community expansion or intensive agriculture opportunities exist.

Category V

These lands require an intensive study before priorities of ownership can be recommended.

Following the above direction, lands within the Alpine Lakes have been classified and mapped for each alternative.

Private land that is acquired by the federal government will be managed consistently with the allocations that surround the acquired lands.

See Lands Ownership Map Alternative E for location of land ownership adjustment recommendations.

Wildlife, Fish and Plant Management Direction

Fully coordinate and cooperate with the Fish and Wildlife Service, National Marine Fisheries Service and the State in managing wildlife, fish and plant resources.

Strict adherence to Forest Service Manual direction and policy will be followed for **Threatened, Endangered and Sensitive species.**

The conservation of Threatened and Endangered species and their habitats will receive priority in management. Sensitive species, although not subject to the provisions of the Endangered Species Act as amended, will receive special management as needed to prevent their placement on Federal lists.

Map summer and winter ranges for deer, elk and goats on the project level.

Create openings through timber harvest on summer range to produce large perimeter/area ratios and provide the maximum possible habitat diversity consistent with other primary values. A maximum edge effect may be accomplished by the following means: feathering the clearing boundary to maximize the lineal edge; designing the harvest area to create a narrow, winding opening instead of a compact block; leaving islands of vegetation within the opening to provide animal travel lanes and escape areas.

Reduce potential barriers to movement of wildlife in big game summer and winter range. Reduce large concentrations of slash to less than one and one-half feet in depth.

Using procedures in FSM-2630.3 map and evaluate all riparian zone habitat identifying all wildlife present. Set priorities on use of these wetlands where competition exists between wildlife, domestic livestock or other land use. Evaluate such habitat using procedure and parameters described in the Managing Riparian Ecosystems (Zones) for Fish and Wildlife in Eastern Oregon and Eastern Washington.

Identify and designate important fish and wildlife feeding, nesting and reproduction areas within key riparian and wetland zones.

All timber sale planning will address habitat for snag and cavity-dependent wildlife. Region 6 snag policy will apply as a minimum. Dead trees, both standing

Sensitive Species (Plants or animals) — Those species which (1) have appeared in the Federal Register as proposals for classification and are under consideration for official listing as endangered or threatened species, (2) are on an official State list, or (3) are recognized by the Regional Forester to need special management in order to prevent the need for their placement on Federal or State lists.

and down, will be provided in sufficient numbers to maintain primary cavity excavators. Emphasis for this direction shall be placed on areas adjacent to water and natural openings in the forest canopy.

The following management direction pertains to Threatened, Endangered and Sensitive species:

Verify or establish existence of such species in Alpine Lakes Area and the extent to which the area is used. Verification applies to species that have been seen in the Alpine Lakes Area. Establishment applies to species whose range is shown in the literature of the area.

Develop project level management plans for species that have been verified and established. Consult with State Game Department and/or Fish and Wildlife Service on priority of management directions and project planning.

Add additional species to this list as they become known.

Specific management direction:

Wildlife Species	Management Direction
Gray wolf	<ol style="list-style-type: none"> 1. Verify existence in Alpine Lakes Area and extent it uses area. 2. If verified, consult with U.S. Fish and Wildlife Service in developing management direction. 3. If verified, fully coordinate with Fish and Wildlife Service all land management activities.
Wolverine	<ol style="list-style-type: none"> 1. Verify existence in Alpine Lakes Area and extent it uses area. 2. If verified, consult with State Game Department in developing management direction.
Bald eagle ¹	<ol style="list-style-type: none"> 1. For the Skykomish River area, follow direction contained in the

BALD EAGLE Biological Unit Management Plan (U.S. Forest Service 1979).

2. Verify existence in other portions of the Alpine Lakes Area and extent it uses area.
3. If verified in areas other than described above, consult with Fish and Wildlife Service in developing management direction.

- Spotted owl
1. Develop a management program in conjunction with the adjacent national forest lands to provide a viable population of owls distributed throughout its range.
 2. Management direction to be in compliance with Regional direction.

- Peregrine falcon
1. Establish existence in Alpine Lakes and extent it uses area.
 2. If verified, consult with Fish and Wildlife Service in developing management direction.

- Swainson's Hawk
1. Verify existence in Alpine Lakes and extent it uses area.
 2. If verified, consult with State Game Department in developing Management direction.

- Sensitive Plants
1. During project planning consult with the Washington National Heritage, Regional Forester, and Fish and Wildlife service lists for the most updated status of plants.
 2. If present on project area, develop management direction to mitigate adverse impacts.

¹Also see direction in number 6 under Other Recreation, page 16.

Table 7.

Specially Classified Animal Species in the Alpine Lakes Area.¹

Scientific Name	Common Name	Status ²	Classification ³
<i>Canis lupis</i>	Gray Wolf	+	E
<i>Gulo gulo</i>	Wolverine	+	S
<i>Haliaeetus leucocephalus</i>	Bald Eagle	+	T
<i>Strix occidentalis</i>	Spotted Owl	+	S
<i>Buteo swainsoni</i>	Swainson's Hawk	+	S
<i>Falco peregrinus</i>	Peregrine Falcon	?	E
<i>Rana pretiosa</i>	Spotted Frog	+	S

¹List subject to revision.

² + Indicates that the species has been reported seen in the Alpine Lakes Area.

? Indicates that the species' natural range occurs in the Alpine Lakes, but no sightings have been reported in recent years.

³E indicates endangered, T indicates threatened and S indicates sensitive animals.

(Source: U.S. Fish and Wildlife Service Report 1-3-81-I-79; The Nature Conservancy, Wash. Natural Heritage Program Report 36501; and the Forest Service Regional Forester's list.)

Table 8.

Sensitive Plants Reported to Occur in the Alpine Lakes.¹

Scientific Name	Common Name	Scientific Name	Common Name
<i>Arnica nevadensis</i>	Arnica	<i>Eriogonum umbellatum</i>	Sulfur Eriogonum
<i>Asplenium viride</i>	Green Spleenwort	var. <i>hypoleium</i>	Douglas gentian
<i>Astragalus whitneyi</i> var. <i>sonneanus</i>	Loco Weed, Milk Vetch	<i>Gentiana douglasiana</i>	Sieversia Rose
* <i>Calamagrostis tweedyi</i>	Tweedy's Reedgrass	<i>Geum rossii</i> var. <i>depressum</i>	Stickseed, Forget-me-not
<i>Campanula parryi</i> var. <i>idahoensi</i>	Harebell, Bellflower	<i>Hackelia cinerea</i>	Showy Stickseed
<i>Campanula scabrella</i>	Harebell, Bellflower	* <i>Hackelia venusta</i>	Chelan Globe Mallow
<i>Carex densa</i>	Sedge	<i>Iliamna longisepala</i>	
<i>Carex proposita</i>	Sedge	<i>Lathyrus nevadensis</i> var. <i>puniceus</i>	Nuttall's Peavine
<i>Castilleja elmeri</i>	Indian Paintbrush	<i>Lathyrus ochroleucus</i>	Pea vine
<i>Castilleja parviflora</i> var. <i>albida</i>	Magenta Paintbrush	* <i>Lewisia tweedyi</i>	Tweedy's Lewisia
* <i>Chaenactis ramosa</i>	Branching Chaenactis	* <i>Lomatium cuspidatum</i>	Pointed-leaved Lomatium
* <i>Chaenactis thompsonii</i>	Thompson's Chaenactis	* <i>Lomatium laevigatum</i>	Desert Parsley
<i>Cheilanthes feei</i>	Fern	<i>Lomatium thompsonii</i>	Thompson's Desert Parsley
* <i>Claytonia megarhiza</i> var. <i>nivalis</i>	Wenatchee Claytonia	<i>Lomatium watsonii</i>	Desert Parsley
* <i>Clematis occidentalis</i> var. <i>dissecta</i>	No common name	<i>Lycopodium alpinum</i>	Club Moss
* <i>Cryptantha thompsonii</i>	Thompson's Cryptantha	<i>Nicotiana attenuata</i>	Wild Tobacco
<i>Cypripedium fasciculatum</i>	Clustered Lady's Slipper	<i>Pellaea breweri</i>	Cliff Brake
* <i>Cypripedium montanum</i>	Mountain Lady's Slipper	<i>Penstemon Eriantherus</i> var. <i>whitedii</i>	Beard-tongue
* <i>Delphinium multiplex</i>	Kittitas Larkspur	<i>Physaria alpestris</i>	No common name
* <i>Delphinium viridescens</i>	Wenatchee Larkspur	* <i>Poa curtifolia</i>	Little Mt. Bluegrass
<i>Draba incerta</i>	Whitlow Grass	<i>Polygonum newberryi</i> var. <i>glabrum</i>	Doorweek, Knotgrass
<i>Eburophyton austinae</i>	Phantom Orchid	<i>Polystichum californicum</i>	Holly Fern, Christmas Fern
<i>Elmera racemosa</i> var. <i>puberulenta</i>	Elmera	<i>Salix brachycarpa</i> var. <i>brachycarpa</i>	Alpine Shrub Willow
<i>Erigeron compositus</i> var. <i>discoideus</i>	Fleabane	<i>Senecio elmeri</i>	Groundsel, Squaw-weed
* <i>Erigeron leibergii</i>	Leiberg's Fleabane	* <i>Sidalcea oregana</i> var. <i>calva</i>	Oregon Sidalcea
		* <i>Silene seelyi</i>	Seely's Camplon
		<i>Suksdorfia violacea</i>	No common name
		* <i>Valeriana columbiana</i>	Wenatchee Valerian

¹List subject to revision.

*U.S. Fish and Wildlife Service candidate for endangered or threatened species.

(Source: U.S. Fish and Wildlife Service Report 1-3-81-1-79; The Nature Conservancy, Wash. Natural Heritage Program Report 36501; and Forest Service Regional Forester's List)

Table 9.

Anadromous Fishery.

Stream or River	Fish Species	Estimated Population ¹ (E) Existing (H) Historic	Habitat Range	Value: Commercial (C) Sport Fishery (SF)	Fish/Habitat Improvement	
					Existing	Potential
Wenatchee River	Coho	200 (E)	Nason Cr. to Merrit; upper Wenatchee	None due to depressed stock. Past SF existed		
	spring & fall Chinook	1000 (E)			Turnwater Canyon Dam fish ladder	Fish ladder needs maintaining
Icicle Creek	spring & fall Chinook	2500 (E)	To Leavenworth Fish Hatchery outside Forest boundary	SF	Fish & Wildlife Service Hatchery stock spring Chinook and Steelhead	
	Steelhead	100 (E)		SF		
Peshastin Creek	Coho	500 (H)	To Ingalls Cr. Habitat presently non-existent due to heavy irrigation use	none		Provide minimum flows for anadromous fish use and prevent fish from entering irrigation waterways
	spring Chinook	1000 (H)		none		
Teanaway River	spring & fall Chinook	100 (E)	To Beverly Cr.	Contributes to probable Columbia R. commercial fishery		
Yakima River	Coho	200 (H)	Barriers outside management unit do not allow passage into area			
	spring Chinook	1000 (H)				
	Steelhead	500 (H)				
S. Fork Skykomish River	Coho	5000 (E)	To Alpine Falls on Tye R.; Money Cr.; Miller R. to Forks; Foss R. to Forks; Beckler R. to headwaters	SF & CF	Fish hauling facility at Sunset Falls.	Rearing facilities in Index area Maloney Cr., Miller R., Foss R., Mooney Cr. & Tye R.
	Chinook	100 (E)		CF in Puget		
	Steelhead	500 (E)		Lower Skykomish River SF. C in Puget Sound		
	Chum Sockeye	(H) 10 (E)				

¹These are estimated numbers of fish that return to the streams listed. They do not include fish harvested by sportsmen or commercial fisheries before reaching Alpine Lakes Area.

Timber Management Direction

Current national, regional and Forest direction will apply to the Alpine Lakes management unit.

Regulated timber harvesting will continue in the Alpine Lakes management unit under the authority of the 1963 Wenatchee and Snoqualmie Timber Management Plans as amended.

See Timber Component Map Alternative E for location of standard, special, marginal and unproductive timber components.

Silvicultural practices will be prescribed through project planning.

Maintain a minimum growth rate of 15 rings per inch on the Wenatchee National Forest and 10 rings per inch on the Snoqualmie National Forest. This standard will be used for determining optimum stocking levels.

A 20 year re-entry cycle will be used in stands eligible for stocking control.

Tree regeneration is to be accomplished within 5 years of harvest.

Stocking level control, considering all other resource opportunities, will be practiced on all commercial forest land.

Current timber sale contract merchantability standards will apply to the management unit.

Silvicultural cutting will apply in the following order of priority to maximize growth and minimize mortality:

Major Losses — Stands where significant volume losses have occurred. Significant means any loss which would exceed the total growth in a 20 year cutting cycle.

Endemic Losses Stands where endemic losses are occurring. Endemic losses are those which exceed the total growth for a 5-year action plan period over a manageable size area. Such stands should be scheduled for treatment within the 5-year action plan period.

Predictable Losses — Stands where significant predictable losses will occur. Significant means any loss which would exceed the total growth in a 20 year cutting cycle. Scheduling should be before losses occur.

Decadent — Decadent stands where net growth has declined to more than 30 rings per inch or where losses equal or exceed growth.

Overstocked — Overstocked stands which will respond to stocking level control, may be any stand which would increase in increment if stocking is reduced.

Mature — Other green mature stands with growth faster than 30 rings per inch.

Range Management Direction

The following management direction applies within areas allocated to General Forest and Scenic Forest.

Allocate unutilized forage or available forage increases made possible through timber management activities to commercial grazing after wildlife needs are met.

Do not allocate additional forage for commercial livestock use unless key areas (riparian and wetlands) are in an upward trend.

Structural improvements will be compatible with the prescribed visual quality objectives.

Utilize all available techniques, including herbicides and introduction of non-native plants to improve range condition.

Take aggressive action to control noxious weeds, utilizing non-chemical control when possible.

Provide protection to threatened or endangered plant and animal species, as well as sensitive species.

Allotments outside the Alpine Lakes Area will be utilized, where possible, to allow alternate year use of allotments within the area.

The following management direction applies within areas allocated to Dispersed Recreation and Special Areas.

Allocate available forage in the following priority: wildlife, administrative livestock, recreation livestock, commercial packers.

Intensively manage forage for maintenance of an upward vegetative trend.

Structural improvements will be rustic.

Management techniques involving non-native plants and herbicides will only be used to protect values on adjacent lands.

The following direction applies to specific areas:

1. Continue to manage the Corral-Fortune Creek Allotment for commercial use while maintaining an upward vegetative trend.

2. Because of vegetative changes, the Wildhorse-Whitepine Allotment will be evaluated to determine if it is capable of being continued as a viable commercial grazing Allotment. If it is no longer capable, the allotment will be terminated when the permittee no longer desires to use the area and relinquished his permit. The available forage will be allocated to wildlife and recreation livestock needs.

3. Reduce forage utilization in the Highway 97 corridor of the Swauk Allotment to 25 percent of available forage to meet visual objectives. Particular emphasis must be placed on achieving low utilization of snowberry by moving stock through the area as rapidly as possible.

4. Because of limited forage available for commercial grazing and need for high elevation forage by recreational livestock along the proposed National Recreation Trail, and sensitive plants associated with the area's serpentine soils, only portions of the Stafford Creek Allotment will be maintained for commercial grazing. The permit will be limited to the current permittee. Use will have the following stipulations:

a. Grazing area limited to upper reaches of Bean, Standup and Stafford Creeks.

b. Permitted numbers to be 35.

c. Grazing season limited to August 1 to September 30.

d. Grazing system to be alternate years.

e. There will be no range improvements.

f. Other controls will be used to control stock movement and prevent over-use.

5. Recreation livestock forage needs in the Teanaway Recreation Area (currently within the Stafford Creek Allotment), along the County Line National Recreation Trail and adjacent to the Alpine Lakes Wilderness will receive particular range management emphasis. That emphasis will be on forage inventories, use monitoring, minimum impact camp site and grazing area designation and trail location, construction and maintenance.

Special Areas Management Direction

The proposed boundaries and management direction for Special Areas unique to each alternative can be found on the Land Allocation (roads and trails) Map, resource maps which accompany each alternative and management direction listed for each alternative.

Mt. Index Scenic Area — Overnight developed campgrounds will not be located inside the area. Approach roads, trails, picnic areas and parking inside the area will be located to avoid disturbing scenic values. All activities within the area will be managed to meet the "preservation" visual quality objective. The area will be classified as a Special Interest Area (CFR 294.1).

Tumwater Scenic Area — All management activities outside of the existing highway corridor (200 300 feet either side of the highway center line) will preserve scenic qualities and managed to meet the "preservation" visual quality objectives. Overnight developed campgrounds, will not be located inside the area or within the highway corridor. Picnic areas and parking will be limited to the highway cor-

ridor and will be designed to be compatible with the scenic environment. Activities within the corridor shall harmonize with the landscape. The area will be classified as a Special Interest Area (CFR 294.1).

Teanaway Recreation Area — Will be designated a Special Interest Area (CFR 294.1) and managed principally for dispersed recreation in a substantially natural condition. No roads will be provided or maintained for travel by motorized vehicles intended for highway use. ORV's and snowmobiles will be permitted in areas determined suitable. This area will be placed in the unregulated timber component.

Denny Creek Recreation Area — This area includes the Asahel Curtis Recreation Area, Pacific Crest Trail, Denny Creek Trailhead, Franklin Falls Trail, Old Snoqualmie Pass Wagon Road, Denny Creek summer home tract, the Old Snoqualmie Pass Highway and Interstate 90 highway. The area will be managed principally for recreation use and be designated for special classification. The area will be managed to provide all appropriate facilities needed by the public to enjoy the recreation resources contained within the area or adjacent areas.

Asahel Curtis Recreation Area — This area was classified in 1949 as a Recreation Area. The area will be managed for public recreation use and closed to all other occupancy and use except scientific research may be allowed.

El Durado Research Natural Area — This area contains unique combinations of plant groups, landforms and geology. It will be preserved as nearly as possible in an undisturbed condition. Scientific study will be accommodated.

Tumwater Botanical Area — The area was designated under 36 CFR 251.22 in 1971 to be managed as a near-natural area to protect plant species which occur there.

Nason Ridge Recreation Area — Will be designated under 36 CFR 294.1 and managed principally for dispersed recreation in a substantially natural condition. It shall be roadless.

Annette Lake Recreation Area — Will be designated and managed principally for recreation in a substantially natural condition. The area will be roadless with no motorized vehicles permitted, except snowmobiles will be permitted where determined suitable except on the Annette Lake and Humpback trails. The area and its environmental setting will be managed to avoid disturbing the scenic environment. Trails and camping facilities will be designed to blend with the natural landscape.

Plan Revision Direction

The Alpine Lakes Area Management Act of 1976 specifies that "the Secretary (of Agriculture) shall review the multiple-use plan from time to time and, with full public involvement, shall make any changes he deems necessary to carry out the purposes of this Act."

The Alpine Lakes Area Management Plan will maintain its identity in the forest-wide plans now being developed by the Wenatchee and Mt. Baker-Snoqualmie National Forests. Minor revisions of the Alpine Lakes Plan may occur in the forest plans. A programmed harvest calculation for each forest will include the Alpine Lakes management unit. Major review of the Alpine Lakes Plan will be scheduled to coincide with that of the forest plans at least every five years and it will be revised 10 years after the forest plans are approved. Public demand or management needs may necessitate review or revision sooner.

Currently there are numerous other functional plans in existence which guide management of the Alpine Lakes Area. They are typically detailed site specific plans beyond the scope of planning presented in this Environmental Impact Statement. After implementation of the Alpine Area Management Plan, these existing functional plans with two exceptions will be reviewed and revised as necessary to be in conformance with this plan. The 1963 Timber Management Plans of the Wenatchee and Mt. Baker-Snoqualmie National Forests will remain in effect until revised in their respective forest plans.

The Forest Supervisor may change proposed scheduling to respond to differences between planned annual budgets and appropriated funds. Such scheduled changes will be considered amendments to the plan, but generally will not require an Environmental Impact Statement. An EIS may be required, however, if scheduling changes will result in significant adverse environmental impacts not taken into account in this Statement.

Summary of Effects

Table 10 is a summary of the effects of implementing this management plan. It presents acreage and long term benefits expected from implementation.

Table 10.
Acreage Summary and Annual Long Term Benefits by Resource Complex — Alternative E.

Resource Complex											
Management Unit Allocations	Middle Fork	180	Kachess	Tanaway	Highway 97	Isicle	U.S. 2 East	U.S. 2 West	TOTAL	Wilderness	Nason Ridge
Developed Site	(acres)	50	427	22	87	134	683	1,091	3,773	N/A	52
Special Area	(acres)	0	2,208	47,905	1,242	6,838	11,792	13,423	5,727	N/A	6,306
General Forest	(acres)	4,625	9,208	11,660	45,104	944	11,792	13,423	138,042	N/A	9,811
Scenic Forest	(acres)	9,376	18,911	5,999	10,766	6,220	11,887	14,299	87,232	N/A	4,059
Dispersed Recreation	(acres)	7,106	10,888	523	2,833	8,755	5,549	16,162	54,764	N/A	86
Wilderness Use Zones											
Transition	(acres)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,242	N/A
(RVD's)										183,530	N/A
Semi-Primitive	(acres)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	181,210	N/A
(RVD's)										10,182	N/A
Primitive	(acres)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	338,694	N/A
(RVD's)										169,347	N/A
Trailless	(acres)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	534,551	N/A
(RVD's)											
TOTAL											
Recreation Opportunity Spectrum											
Rural	(acres)	50	427	22	87	134	683	1,091	3,773	N/A	52
(RVD's)											
Roaded Natural	(acres)	80,280	362,205	28,090	155,858	289,900	975,092	1,088,618	4,249,699	N/A	78,390
(RVD's)											
Semi-Primitive Motorized	(acres)	14,379	42,850	20,522	11,111	115	23,054	23,755	153,950	N/A	82,807
(RVD's)											
Semi-Primitive Nonmotorized	(acres)	9,000	47,399	8,656	252,074	90,743	11,271	24,653	124,526	N/A	6,301
(RVD's)											
Primitive	(acres)	7,106	20,564	40,390	2,864	12,627	11,271	24,653	124,526	N/A	6,301
(RVD's)											
Unregulated	(acres)	0	812	5,490	0	519	0	4,482	11,303	N/A	0
(RVD's)											
Unproductive	(acres)	0	0	0	0	426	0	0	426	N/A	0
(RVD's)											
TOTAL		178,136	658,609	156,035	411,796	383,966	1,087,536	1,331,546	5,911,691	N/A	167,598
Wood Fiber Production ¹											
Standard	(acres)	1,842	5,039	3,043	5,591	0	140	6,363	22,957	N/A	0
(MBF)											
Special	(acres)	9,296	26,110	9,422	32,840	6,028	14,219	23,842	137,736	N/A	10,855
(MBF)											
Marginal	(acres)	1,050	3,298	68	9,873	2,018	4,759	12,784	53,546	N/A	3,797
(MBF)											
TOTAL Regulated	(acres)	476	1,153	25	1,508	55	184	1,713	4,885	N/A	0
(MBF)											
Unregulated	(acres)	6,676	12,214	4,029	12,063	2,073	4,893	17,804	67,589	N/A	3,797
(MBF)											
Unproductive	(acres)	4,862	4,865	16,097	649	4,481	3,217	11,879	47,947	N/A	1,225
(acres)											
TOTAL		4,465	25,271	37,524	18,484	12,194	17,465	24,196	151,311	N/A	7,864
Water											
Annual Water Flow Increase due to Timber Harvest	(acre ft)	1,931	3,614	711	1,093	593	2,156	4,963	17,846	0	1,794
Grazing	(acres)	0	20,467	16,760	14,812	0	3,840	0	57,899	15,796	0
Commercial Range	(AUM's)	0	233	201	405	0	106	0	1,007	414	0
Available Forage											
Roads											
Acres		518	1,627	553	1,967	427	896	973	8,176	0	434
Miles		74	261	79	281	61	128	139	1,168	0	62
Aggregate Material	(Cubic Yds)	281,200	522,000	158,000	562,000	122,000	246,000	528,200	2,970,400	0	124,000
Trails											
Hiker only	(Miles)	1	19	2	3	4	11	22	81	137	3
Horse	(Miles)	27	23	26	1	15	13	4	122	314	9
Bike	(Miles)	0	32	17	11	0	5	0	0	0	6
Trailless	(Miles)	0	9	2	0	0	0	0	21	0	0
TOTAL		28	103	107	32	19	28	26	376	451	18
Visual Quality											
Preservation	(Acres)	0	812	5,490	0	4,834	5,370	13,524	30,976	393,360	4,506
Partial Retention	(Acres)	8,813	20,602	9,460	15,568	10,816	12,407	11,325	104,915	0	4,101
Modification	(Acres)	8,508	33,543	35,773	36,240	7,241	17,599	27,763	180,192	0	11,707
TOTAL		4,214	9,726	15,411	8,244	22,891	262	17,106	56,088	0	0
Land Ownership ²											
Category I	(Acres)	0	0	0	0	0	0	0	0	393,360	0
Category II	(Acres)	36,771	101,435	71,772	41,450	42,260	33,457	53,266	420,325	0	20,660
Category III	(Acres)	0	2,902	4,474	28,627	690	13,947	34,488	96,418	0	2,203
Category IV	(Acres)	0	905	0	6,131	315	4,729	1,797	16,520	0	401
Category V	(Acres)	0	0	0	0	0	2,032	0	2,032	0	0
TOTAL		36,771	105,242	76,246	76,208	43,265	54,165	88,551	535,295	393,360	23,264

¹Acres does not include Kachess, Tanaway, and the Elum Lakes.
²Forest Service retain or acquire as directed by Congress.
 Category I — Forest Service land management or special designation.
 Category II — Forest Service land management or special designation.
 Category III — Neither a high priority for retention or acquisition.
 Category IV — Forest Service candidates for disposal or private retention.
 Category V — Additional intensive study needed to determine priority of ownership.
 Figures represent estimated long term potential yield.

Wilderness Management Plan

Introduction

The Alpine Lakes Wilderness straddles the central Washington Cascade Mountain Range in portions of Chelan, King and Kittitas Counties. It is located approximately 40 miles east of Seattle and 30 miles west of Wenatchee, Washington.

Fifty per cent of the State's 3,662,000 residents live within 70 miles of the Wilderness. Easy access to the area is provided by two principal highways: U.S. 2 over Stevens Pass along the northern boundary of the area and Interstate 90 over Snoqualmie Pass adjacent to the southern boundary.

(This description is provided under separate cover titled: The Exterior Boundary of the Alpine Lakes Wilderness, Mt. Baker-Snoqualmie and Wenatchee National Forest, R-6, September 1, 1978)

The unique scenic values of the area were formally recognized by the Forest Service in 1946. At that time, the Pacific Northwest Regional Forester

designated 256,000 acres as the Alpine Lakes Limited Area. That designation was made to protect the recreational values in a near natural condition until studies could provide sound management direction and classification. On July 12, 1976, the 306,934 acre Alpine Lakes Wilderness was designated, with an additional 86,426 acres of land to be included after the acquisition of all private lands within the boundary. Throughout this plan, reference to the Alpine Lakes Wilderness will include all lands in the "Intended Wilderness".

The topography of the Wilderness is dominated by the rugged peaks of the Central Cascade Range, the Stuart Range, and portions of the Chiwaukum and Wenatchee Mountains. The highest mountain is Mt. Stuart, a glacier-carved granitic peak that rises to an elevation of 9,415 feet and is located 19 miles east of the Cascade Crest. Prominent peaks along the crest are Mt. Daniel (7,899 feet), Mt. Hinman (7,494 feet), Chimney Rock (7,727 feet) and Lemah Mountain (7,494 feet). In contrast to these rugged rock outcrops, the valleys tend to be broad and gently sloping, the result of glacial scouring 12,000 years ago.

Four major river drainages originate in the Alpine Lakes. The Snoqualmie and Skykomish Rivers flow westerly to form the Snohomish River which flows

into Puget Sound. The Wenatchee and Yakima Rivers flow easterly to the Columbia River.

Perhaps the most impressive character of the Wilderness is the occurrence of over 700 jewel-like lakes interspersed throughout the glacial cirque basins, high mountain meadows, serrated peaks and deep valleys of the area. These lakes range in size from 257 acres (Lake Dorothy) to many unnamed tarns of less than an acre.

Forests cover approximately 39 per cent of the Wilderness; scattered subalpine, open meadows, grassland and barren rocks about 58 per cent; water about 2 per cent; and glaciers and permanent snowfields about 1 per cent. The vegetative communities vary from the dense stands of huge fir and hemlock in the western valleys to open, flower-covered meadows of the alpine zone and open ponderosa pine stands along the eastern boundary.

In the western valleys, the upper fringes of the Western Hemlock or Coastal Forest Zone are characterized by dense stands of Douglas fir, western hemlock, western red cedar and grand fir. Soils tend to be quite deep and are often rather poorly drained. The upper elevation of this zone is about 3,000 feet.

The Silver Fir or Canadian Zone is present on both slopes of the Cascade Mountains, from 3,000 feet to approximately 5,000 feet. Towering stands of Douglas fir, grand fir and western hemlock grow at the lower elevations blending with Pacific silver fir, Englemann spruce, noble fir and mountain hemlock on higher lands. Soil characteristics vary greatly through this zone, but are generally deep and well drained.

At elevations between 5,000 and 7,500 feet, the Mountain Hemlock or Hudsonian Life Zone is represented. This zone is characterized by open, scattered, often matted and deformed alpine fir, dwarf juniper and alpine larch. Scenic qualities of this zone are enhanced by the many mountain meadows. Summers are short and snow depths range to 20 feet. Soils tend to be shallow and rocky, with frost common each month of the year.

The Sub-alpine Life Zone is present in the Alpine Lakes generally above 7,500 feet. Many areas within the zone remain snow-covered year-round with numerous small glaciers and permanent snow fields present. Soils are very thin to nonexistent. Much of this zone is extremely fragile. The sparse vegetative cover recuperates very slowly once damage occurs.

The Cascade Mountain Range experiences contrasting weather patterns. Moist marine air from the Pacific Ocean is uplifted as it moves east, causing the release of increasing amounts of moisture over the higher elevations. The western lowlands receive an average of 35 inches of rain annually and have mild moist winters and cool dry summers. Along the summit of the Cascades within the Alpine Lakes Wilderness, 30 foot snow depths are often en-

countered. As the air continues east toward the Columbia River Basin, moisture decreases markedly with only 25 inches of precipitation annually at Leavenworth, adjacent to the eastern boundary of the Wilderness. The average mean temperature is about the same on both sides of the Cascades, but the moderating effects of the marine air are greater on the west side, resulting in less variation between summer and winter extremes. On the east side, it is common to have summer temperatures in the 90's and zero degree readings in the winter.

The geologic history of the Cascades began 350 million years ago with repeated deposition of sedimentary and volcanic rocks, accompanied by deformation, metamorphism, intrusion of granitic batholiths and mountain building. Uplift in relatively recent geologic time has given rise to the modern Cascade Range. Repeated alpine glaciation over the last one to two million years has produced the lakes and deep canyons found in the area today. This glaciation, along with the great variability of parent materials, has produced the complex soil patterns and dramatically contrasting topographical features.

Management Goal For the Alpine Lakes Wilderness

The Alpine Lakes Wilderness is a distinct resource to be managed for the use and enjoyment of the American people in such manner as will leave it unimpaired for future use and enjoyment as Wilderness. It will be administered so as to provide for the protection of the area, the preservation of its wilderness character and for the gathering and dissemination of information regarding its use and enjoyment as Wilderness.

Management Analysis

The Alpine Lakes Wilderness has been divided into four management use zones to provide a variety of complementary physical and social settings. Management within each of the zones is in keeping with the Wilderness management goal and within the range of acceptable conditions identified in this plan.

Wilderness Use Zones

The Alpine Lakes Wilderness was established by Congress, in 1976. The Wilderness is characterized by predominantly unmodified natural environments within which a variety of recreational activities may occur. To protect the Wilderness resource and minimize friction between different types of visitors, four Wilderness Use Zones were established. Each calls for a slightly different management strategy.

The Wilderness Zones — Transition, Semi-Primitive, Primitive and Trailless — generally relate to the trail access system and are displayed on the allocation map accompanying each management alternative. A Service Level A trail in Wilderness normally occurs in a Transition Wilderness Use Zone; Level B in Semi-Primitive, etc. Wilderness Use Zones reflect the overall management strategy for the Alpine Lakes Area and are compatible with the road and trail transportation systems and land allocations of the adjacent management unit.

Fire management considerations are independent of the four use zones. Wildfires will be suppressed in the most cost efficient manner. The intent of medium intensity prescription fires would be to maintain natural process without jeopardizing land outside the Wilderness.

Transition Zone

This zone usually is adjacent to major trailheads, where visitors make the transition from roadways to foot or horse travel and are first introduced to the Wilderness area. The Zone may extend from the Wilderness boundary inward along primary travel routes up to 3 miles and at least 500 feet on either side of the travel route. An exception to the 3 mile limit is the 72 miles of Pacific Crest National Scenic Trail. Day users mixed with those traveling to and from the Wilderness interior predominate in the Transition Zone.

Semi-Primitive Zone

This is the second zone in progressive steps toward isolation. The concentration of users is low, but there is evidence of other visitors. Minimum on-site controls and restrictions may be present but are subtle. Facilities are primarily provided for the protection of Wilderness resource values and the safety of users. On-site materials are used where possible. Spacing of groups may be regulated to disperse visitors and provide low to moderate contacts with other groups or individuals.

Primitive Zone

In this zone, the concentration of users is very low and evidence of other area users is minimal. The area is managed to be essentially free from evidence of man-induced restrictions and controls. Only essential facilities for resource protection are used and they are constructed of native materials. No facilities for comfort or convenience of the user are provided. Spacing of groups is informal and dispersed to minimize contacts with other groups or individuals.

Trailless Zone

This zone is intended to preserve the most extensive natural environments. Natural processes and conditions have not and will not be measurably affected by the actions of users. The area is managed to be as free as possible from the influence of human ac-

tivities. Humans are only brief visitors. No facilities are provided. Spacing of groups is informal and dispersed to minimize contacts with other users.

Exhibit A define and summarize the management guidelines for each of the zones. The location of each zone may be found on the Land Allocation Map, Alternative E.

Following are the acreages contained within each management zone:

Transition —	12,242 acres (3%)
Semi-primitive —	32,242 acres (8%)
Primitive —	10,182 acres (3%)
Trailless —	338,694 acres (86%)
Total	393,360 acres

Carrying Capacity

The maximum number of persons which a given zone or specific area can support for Wilderness recreation depends on many factors. Some are physical characteristics of the land, the vegetative communities and animal species present, while others relate to the nature of the uses and users. The following are factors that simultaneously affect the capacities.

1. The ability of the area and its resources to withstand the physical impacts associated with outdoor recreation use.
2. The types of recreational uses which will be permitted.
3. The psychologically acceptable level of physical impact.
4. The capacity of uses and users to generate sociological impacts.
5. The kinds and quality of wilderness experiences desired by visitors.
6. The ability of the managers to control use.

The carrying capacities within the Alpine Lakes Wilderness have been calculated for each of the four use zones. In an average acre within each zone, the following estimated number of recreation visitor days of use per year (coefficients) may be accommodated while maintaining the desired physical and social setting: Transition — 15; Semi-primitive — 5; Primitive — 2; Trailless — 0.5.

Using these coefficients, the carrying capacity for the Wilderness would be:

Transition	183,630 RVD's (34%)
Semi-primitive	161,210 RVD's (30%)
Primitive	20,364 RVD's (4%)
Trailless	169,347 RVD's (32%)
Total	534,551 RVD's

During plan implementation, the Wilderness managers must seek to gain an understanding of how the above factors affect both the Wilderness resource and users' experience. They must continuously evaluate the capacity of the zones and specific areas within the zones to absorb use, adjust the capacities to meet the objectives of this plan and use indirect management tools (i.e., user education) and direct management tools (i.e., mandatory permits to regulate use).

Based on a 7 percent annual increase in use, the above carrying capacity estimates, adequate funding, and proper distribution of use, the Wilderness will be able to satisfy all expected recreation needs until the late 1980's. After which additional management measures such as mandatory entrance permits may be needed.

The following is management direction common to the Alpine Lakes Wilderness without specific reference to the four management zones.

Administration

Management Objectives

To preserve the integrity of the Wilderness resource; to provide uniform and consistent administration by all ranger districts; to conduct necessary administrative activities most protective of the Wilderness resource and with minimal impact on and from adjacent non-Wilderness lands.

Current Situation

The Alpine Lakes Wilderness is jointly administered by the Mt. Baker-Snoqualmie and Wenatchee National Forests. It lies within the jurisdiction of six Ranger Districts: the Skykomish and North Bend Ranger Districts of the Mt. Baker-Snoqualmie National Forest on the west side of the Cascades and the Cle Elum, Ellensburg, Leavenworth and Lake Wenatchee Ranger Districts of the Wenatchee National Forest on the east side of the Cascades. Administrative responsibility for management of the area is shared among all six District Rangers. Because no plan has existed, coordinated administration between the national forests and ranger districts is limited.

Field work is conducted by seasonal Wilderness rangers responsible for enforcing policies and regulations, performing minor trail and other facility construction and maintenance, conducting inventories and aiding visitors. Highly motivated, qualified, trained and experienced wilderness rangers will be essential to achieving the management objectives.

Major facility construction and maintenance is performed by Forest Service trail crews and contractors.

The Wilderness is surrounded by the Congressionally designated Alpine Lakes management unit. Management actions within this surrounding multiple use area have significant effects on the Wilderness resource. The most obvious effects relate to scenic values and access. Because total resource management requires close coordination between the direction for the management unit and the Wilderness management plan, both were prepared simultaneously.

Management Direction

1. Ranger District annual operating plans will be prepared, stating specific local actions needed to achieve operational objectives and to implement management policies and actions stated in this plan.

2. Key personnel from the Wenatchee and Mt. Baker-Snoqualmie National Forests will meet as needed to insure uniform management and coordinate their respective operating plans and other management activities. Coordinated fiscal year Wilderness budget planning will be done to assure that each ranger district's Wilderness management needs are recognized in recurrent funding.

3. Wilderness ranger meetings will be held as needed to coordinate field activities between administrative units.

4. All administrative activity will be conducted to minimize impacts on the Wilderness environment and the experience of users. Field projects will be closely supervised to insure consistency with the goal and objectives of this plan. All non-routine projects will be described in the appropriate ranger districts' annual operating plan and will have an environmental assessment.

5. All administrative facilities will be temporary and seasonal. They will be located away from main trails, popular sites and lakeshores.

6. Wilderness rangers will be selected for desirable combinations of management knowledge, backcountry wilderness and other travel experience and skills, ability to meet and work with the public and commitment to the preservation of the Wilderness resource.

7. Exhibit B shows wilderness ranger areas of responsibility. Following is an estimation of the number of wilderness rangers needed to fully implement this plan:

Mt. Baker-Snoqualmie	— 8
Wenatchee	— 10

8. Wilderness management personnel will become familiar with the special problems, requirements and orientations of the various noncommercial user groups including horsemen, backpackers, climbers, hunters and fishermen. They will also become acquainted with the special problems of commercial users such as packers, guide services and outdoor leadership schools and restrictions on their activities.

9. A close working relationship will be maintained with all state, county and federal agencies as well as large private landowners that use or influence use of the Wilderness to promote understanding of the purposes of Wilderness.

10. Motorized equipment use for administrative purposes must be approved by the Regional Forester. Approval will be on a one-time, case-by-case basis. Requests for approval will include an Environmental Analysis and Report that provides, as a minimum, items in FSM 2326.11(2).

11. Motorized equipment use for emergency purposes must be approved by the responsible line officer.

12. Entrance self registration will be operated at all trailheads to the wilderness. Permits may be used as per Regional policy.

Trails and Travel

Management Objective

To provide a range of challenges to Wilderness users through a spectrum of access opportunities, including cross-country travel and trails of varying difficulty for horse and foot travel; to minimize physical and visual impacts upon the land, conflicts between users and concentrations of use harmful to the Wilderness resource.

Current Situation

Most of the trails on the east side of the Cascades in the Alpine Lakes Wilderness were established near the turn of the century by herdsmen moving sheep through the high mountain country to graze. These trails normally ran from alpine meadow to alpine meadow by the shortest route, circled lakes along their wet, fragile shores and crossed from drainage to drainage by going straight up and through low mountain passes.

Many of the trails on the west side of the Cascades developed as scramble routes by fishermen as they climbed from lake to lake. Like sheep driveways, these trails followed the shortest path of least resistance with little consideration given to scenic vistas, variety of hiking experiences or protection of the environment.

Over the years, the Forest Service has maintained and expanded many of the shepherd and fishermen trails for fire protection and other administrative purposes. Almost all of these trails remain today. However, with increased use and longer seasons of use, the damage resulting from these poorly designed and improperly located trails is growing.

The only major trail that has been constructed primarily for recreational purposes has been the Pacific Crest National Scenic Trail.

Much of the present trail system needs reconstruction or relocation to adequately serve administrative and recreational use. Backpackers and climbers searching out new routes are creating informal expansion of the trail system into new areas. Many of these informal way-trails will require future management to prevent damage.

There are approximately 450 miles of Forest Service system trail in the Wilderness, with over 90 per cent open to both hiker and horse travel. There are 72 miles of the Pacific Crest Trail in the Wilderness. This high standard trail is a major man-created facility that attracts many persons who would not otherwise come to the Wilderness.

There are several large areas without trail access where cross country trips of as long as a week are possible. These areas provide for a pristine wilderness experience, but they generally occur in extremely fragile alpine areas that are vulnerable to over use. These areas also provide the opportunities for observing wildlife, scientific study and cross-country travel. Use, however, is taking its toll. Boot-created trail treads are appearing, favorite camp spots are becoming denuded and opportunities for solitude are diminishing. If not managed, cross-country travel and informal marking of routes will lead to the establishment of new trails, greatly reducing the trailless challenge.

Trails and routes within the Alpine Lakes are described in several guidebooks available through commercial sources. This has had the effect of concentrating use.

Access to the Wilderness boundary varies from asphalt roads to a few low standard roads better suited for pickups and 4 x 4 type vehicles.

There are 40 Wilderness trailheads. See map.

Facilities vary from those having self-registration boxes, information and map boards, corrals, hitchracks, loading chutes and toilets, to some seldom-used entrances having only signs designating the Wilderness boundary and the restriction on the use of motorized equipment.

A Service Level concept for management of the trail systems within the Wilderness has been used to address the issues of amount of use, numbers of encounters with other visitors and patterns of trail use. The designed service level depends upon these major factors:

1. The ability of the Wilderness to withstand facility construction, reconstruction and maintenance.
2. The ability of individual areas to sustain the expected amount and type of use.
3. The available management techniques to provide and manage facilities to minimize user impacts, while meeting desires and expectations (Examples include permits, site hardening, user education and changes in amounts and patterns of travel).

Descriptions of the four Service Levels are found in Exhibit F.

The four Service Levels have been identified for all Wilderness trails and are displayed on the map. The three trail Service Levels (A,B,C) relate closely to the "transition", "semi-primitive" and "primitive" Wilderness Use Zones respectively. The manager can thus relate zone management direction to both areas and trails within areas. The users can, also, choose the trails, area and experience level they desire, with some assurance that their expectations will be realized.

Management Direction

1. Trails will be designed, built, relocated, reconstructed and maintained to provide the level of service appropriate for the planned use (as shown on the Allocation Map). These trails will comply with objectives of this plan and the recommendations of the Wilderness Visual Absorption Capability (VAC) Inventory (see map).

2. Trails will be managed to maintain a balanced spectrum of travel opportunities according to difficulty, mode of travel, distance and type of destination. Standards for trail encounters within each of the four Wilderness Use Zones will be adhered to. Segments that currently do not comply with the standards will be identified. These segments will be listed in order of priority for meeting Service Level standards. All trails will have target dates for meeting standards.

3. Portions of the Wilderness without trails will be managed to remain trailless.

4. Priorities for annual trail maintenance will be specified in each ranger district annual work plan. Annual priorities will be based on weather, rate of snow melt, expected use and availability of personnel.

Highest priority will be trails that open and receive use early and are known to pose hazards to users and have high potential for resource damage, (i.e., avalanche debris, rock slides, extensive blowdowns, etc.).

Second priority will be other trails that open and receive early use.

Third priority will be placed on other Service Level A trails.

5. All Service Level A and B trails will be maintained annually. Service Level C trails will be maintained as needed to protect the Wilderness resource and meet the objective of the zone.

6. Trails will be reconstructed and rerouted to protect the Wilderness resource and meet the objectives of each service level. Priorities will be identified in each ranger district annual work plan.

Highest priority will be short segments posing hazards to users.

Second priority will be short segments where use of the trail is causing resource damage.

Third priority will be relocation of trails where current use is causing resource damage to adjacent areas away from the trail itself, (i.e., trails routed near fragile lake shores). Segments currently known to require rerouting include: Deep Lake, Deception Lakes, Pete Lake, Snow Lake (Sec. 19, T. 23 N., R. 11 E.), and Trout Lake (Sec. 31, T. 25 N., R. 12 E.).

Fourth priority will be reconstruction of long sections as needed to change existing trail standards to meet the objectives of the plan, (i.e., upgrading a trail currently maintained for hikers only to horse use).

7. The practice of placing temporary plastic ribbons, cairns or other devices by visitors to mark informal trails will be discouraged through visitor information. Such markers will be removed as they are found.

8. Trail locations will not be marked using tree blazes.

9. Trail construction and maintenance activities will be accomplished with minimum impact on the Wilderness resource and on the experience of Wilderness users.

10. Stakes and ribbons used to identify trail construction or reconstruction locations or other administrative activity will be temporary and removed immediately after project completion.

11. Constructed bridges will be provided only on Service Levels A and B trails, and only when no other route or crossing is reasonably available (during the primary use period) for essential user safety or to prevent resource damage. Such construction will require an environmental assessment and approval by the Regional Forester.

12. When possible, trail locations will avoid wet soils and meadows. New trail drainage structures will be constructed of natural materials and designed to minimize their visual obtrusiveness. Drainage structures of non-native material will be camouflaged and as replacement is necessary, natural materials will be used.

13. Existing trails no longer compatible with the objectives of this plan will be abandoned and returned to as near a natural state as possible. These trails are shown on the map. Abandoned trails will be monitored periodically.

14. Trailhead facilities will not exceed that required to protect the site and to accommodate the amount and type of use desired within that portion of the Wilderness. Wilderness access trailheads requiring improvement and/or expansion include:

Stafford Creek
Beverly Creek
Scatter Creek
Fish Lake Guard Station
Salmon la Sac
Cooper Lake
Gold Creek
Kachees Campground

Denny Creek
Pratt River
Taylor River
Proctor Creek
Evans Lake
Hatchery Creek
Tunnel Creek
N. Fork Tolt River

15. When possible, through-trails will be routed away from areas of concentrated use, such as lakes and popular campsites, to avoid unnecessary visitor contacts and environmental impacts (also see direction item 6 above).

16. The Pacific Crest Trail will be maintained to the same standard as other Service Level A Wilderness trails and will be managed within the management standards of the "transition" zone to minimize its effect on the Wilderness. Users of the trail within the Wilderness will be subject to the same restraints as other Wilderness visitors.

17. As user demands on the Wilderness increase and as cross-country travel becomes more popular, boot-built paths begin to occur in the "trailless" zone. These paths will not normally be upgraded to system trails. Upgrading may take place only if it has been determined, based on resource degradation standards, that the path is causing unacceptable damage, user awareness and other reasonable measures have failed to prevent the unacceptable social, physical or biological impacts of the path, or an environmental analysis has been prepared relating the trail effects to the goal and objectives of the plan, potential changes in use patterns, carrying capacities, the Wilderness VAC and user experiences.

Signing

Management Objective

To provide signs where necessary to protect the Wilderness resource and for basic visitor protection and orientation.

Current Situation

The presence of many existing signs conflicts with the goals of this plan to preserve the naturalness of the Wilderness resource. They were installed to provide a high degree of visitor orientation and convenience, an objective now considered inappropriate in Wilderness.

A wide variety of signs are present in the area: baked enamel metal signs and wood signs; signs with and without trail numbers and mileages; and signs with many destinations indicated.

Present signing policy for the Wilderness specifies the use of rustic white oak signs with characters

that are lightly charred to enhance their readability. Approximately 75 per cent of the existing signs in the Wilderness are of oak design. Currently, signs are mounted on trees whenever possible.

Privately published maps, trail guides and U.S. Geological Survey maps currently supplement signs in providing information about destinations and distances.

Management Direction

1. Rough-cut, unfinished white oak will be the standard sign material in the Wilderness. Lettering will be routed and lightly scorched. The only exception will be the use of the standard metal logo on Pacific Crest National Scenic Trail signs.

2. All existing signs will be individually evaluated to determine if they meet the sign management objective. Those that do not meet the objective and do not require replacement will be removed. Signs that are needed to meet management objective, but are not of the current design will be replaced when the existing sign is no longer serviceable. The need for signs will be minimized by developing accurate map brochures and other user information systems.

3. Destination mileages will not be placed on signs within the Wilderness.

4. Signing needed for management and regulation of use (including site restoration areas, trail closures, directions to toilets) will be the minimum size possible and will be installed to minimize both the physical impact of the signing system upon the Wilderness resource and the psychological impact on the user. Whenever possible, signs will be worded to have positive psychological impact to the Wilderness visitor (i.e. "Please Camp Elsewhere" rather than "No Camping").

5. To facilitate permanent mounting and to minimize the visual impact, the white oak signs will be placed on trees wherever possible.

6. Signing standards for the Alpine Lakes Wilderness will generally be applied to the Pacific Crest National Scenic Trail. The only exception will be the use of the Pacific Crest Trail logo to identify the trail at its junction with other arterial trails. Identification may be by use of the official logo placed on one tree in each direction along the trail from the junction, or on directional signs at the trails junction with arterial trails.

7. Signing at Wilderness trailheads may consist of trail direction signs, Wilderness boundary signs and such essential official information displays such as fire prevention, regulations governing use of the Wilderness and suggested wilderness behavior. Trailhead signs may include destination mileages.

8. Direction signs at system trail junctions will be

limited to two per trail junction with a maximum of two lines (destinations) per sign.

9. Signs will not be used for directions to "trailless" zones or nonsystem trails.

10. Wilderness boundary identification (including motorized equipment restrictions) will be posted at all the system trail entry points.

11. A standard Wilderness trailhead information signboard will be designed and installed at all Service Level A and B trailheads.

12. Wilderness boundary signs will be placed at other points along the boundary as needed when activities outside the boundary are planned or are likely to occur which would require boundary identification so as not to conflict with Wilderness objectives.

Recreation

Management Objective

To provide a spectrum of opportunities for primitive recreation featuring a natural Wilderness environment, solitude, physical and mental challenge and inspiration consistent with preservation of Wilderness values.

Current Situation

A wide variety of recreation opportunities is available. Over 700 lakes and many miles of streams provide both fishing and viewing opportunities. Numerous game animals including deer, elk, bear, mountain goat and grouse are both viewed and hunted. Non-game birds and animals abound in the area providing viewing and nature study opportunities. The network of developed system trails affords opportunities primarily for summer hiking and horseback riding. Vast, rugged untrailed areas (approximately 86 percent) offer a high degree of solitude in which to pursue many different recreational activities. In 1978, 309,800 visitor-days of use were recorded in the Wilderness, up from 259,000 in 1972 when records for the area were first compiled. The greatest increase in use has been recorded on the Pacific Crest Trail.

In the past, recreation use has been concentrated in July, August and September with winter recreation use of the area very low. Recent improvements in snowshoes and winter camping equipment, as well as the rapidly increasing popularity of Nordic skiing and ski mountaineering, have resulted in increased winter wilderness use. Additional increases can be expected as more people discover wilderness winter beauty and the many opportunities for solitude and unconfined recreation experiences.

Prior to establishment of the Alpine Lakes Wilderness in 1976, several lakes within the area were frequented by floatplanes for both recreational and commercial purposes. Lakes with a history of use include: Waptus, Spade, Marmot, Colchuck, Chiwakum, Fisher,

Otter, Big Heart, Angeline, Chetwood, Copper, Hester, Snoqualmie, Dorothy, Snow, Caroline, Upper Tushachatchie, Gold and Phillippa. Since establishment of the Wilderness, floatplane landing has been curtailed.

Commercial outfitters and guides are required to obtain a special use permit for use of the Alpine Lakes Wilderness. Currently there are 14 special-use permits issued to commercial outfitter-guide enterprises.

The Wilderness currently has a party size limit of 12 persons or any combination of persons and livestock totaling 12. A letter of authorization is required for any party size in excess of the limit.

Recreational use of the Wilderness is expected to increase because of its proximity to and ease of access from heavy population centers. Use is projected to increase at an average annual rate of 7 percent. This will result in an estimated demand for primitive recreation from the Wilderness at well over 1 million visitor days by the year 2000. The increase is expected to be greater as energy becomes more scarce or expensive, discouraging trips to more remote areas.

The cumulative effect of thousands of recreational users is the greatest threat to the integrity of the Wilderness. Some areas show signs of physical deterioration due to excessive or inappropriate use. There has been considerable effort by the two National Forests by means of education, regulation and redirection to encourage behavior that minimizes physical harm to the Wilderness resource and disturbances of the Wilderness experience of others. For most areas, behavior can be influenced by education, on-the-ground contact by Wilderness rangers and indirect regulation, thus forestalling more direct regulation and limitation of use until the future.

Management Direction

1. Where the Wilderness resource or its values are jeopardized, recreation use will be reduced, regulated or excluded based on the calculated carrying capacity of each area.

2. General zone carrying capacities and acceptable levels of resource impact have been established. All areas will be managed within these standards (See Region 6, standards Exhibit C). Compliance with these standards will be monitored.

3. Manage use within the general carrying capacities (see page 37) for the four Wilderness Use Zones as depicted on the Alternative E Allocation Map. Set specific site and area carrying capacities for heavy use areas to meet established standards. Carrying capacity for the Enchantment Area will be 60 persons at one time (PAOT).

4. Regulations limiting the number of visitors will be put into effect only after other reasonable measures

to minimize impacts have failed. Non-regulatory management measures may include: improve, maintain or lower standards of access roads, trailhead facilities and trails; advertise special attributes of the areas; identify the range of recreation opportunities in surrounding areas; educate users to basic concepts of protecting the Wilderness ecosystems; advise users of little-used areas and general patterns of use. Limitations on numbers of users will be applied to particular heavy use locations where carrying capacity levels are exceeded before they are applied to the entire Wilderness. Note: mandatory permits for core Enchantment Area and more restrictive party size limitations may be added to this management direction after final approval of the Alpine Lakes Environmental Impact Statement.

5. Manage the Wilderness to provide a moderate amount of recreation, a variety of user experiences and solitude with low impact on the resource.

6. If it becomes necessary to establish priorities for Wilderness visitation, highest priority will be given uses which (a) least alter the Wilderness environment, and (b) are dependent upon the Wilderness environment. Other users will be encouraged to visit areas outside the Wilderness.

7. Improvements must be necessary for the protection of the Wilderness resource and not for the convenience of users. Authorized improvements will be designed and constructed of natural materials and designed to harmonize with the environment. Corrals will not be permitted for either public or commercial livestock.

8. The landing of aircraft within the Wilderness is prohibited. Air dropping supplies is also prohibited. Exceptions may be granted for administrative purposes and fish stocking.

9. Commercial outfitting and guide permits will be allowed where there is a demonstrated public need compatible with general public use.

10. Special management provisions for the core Enchantment Area will (see Exhibit D, Core Enchantment Area Map):

a. Manage the area within Region 6 Standards of acceptable bio-physical resource impacts. Set encounter levels (social impacts) in excess of current Region 6 Standards but within standards set by this plan.

b. Ban dogs from the area.

c. Provide both primitive pit toilets and vault toilets to handle human waste. Locate pit toilets on suitable sites near camp areas away from fragile vegetation and soils and away from water bodies, wet areas and water courses. Locate vault toilets on sites requiring human waste disposal but not suitable for pit toilet installation. Locate all toilets so as to not distract

from the natural landscape. Service the vault toilets once annually using a helicopter. Service to be carried out during low use periods.

d. Service Level C trail will be maintained from Snow Lakes to Colchuck Lake and from Perfection Lake to Prusik Pass. Additional Service Level C trails will be maintained to toilets as needed to protect the resource.

e. Ban wood campfires from the core area except at Shield, Earle, and Mesa Lakes. The ban is to prevent damage to esthetic snags and to prevent blackened rocks.

f. Require camping in designated campsites or in areas naturally free of vegetation i.e. sand, rock, snow.

g. Designate campsites on most durable soils, away from water courses, on unvegetated sites or on vegetative sites least susceptible to damage (del Moral 1978, Deither 1978).

h. Encourage users to limit stays to two nights in the core area.

i. See numbers 3 and 4 above for direction on carrying capacity and permits.

Land Occupancy and Structures

Management Objective

To maintain the Wilderness free from facilities and structures, except those necessary to protect the Wilderness resource. Management objectives set forth in this plan, and those exceptions permitted by section 4(d) of the Wilderness Act will be met.

Current Situation

Several rustic shelters known to exist are at Tuscohatchie Lake, Sunday Creek, Lake Julius, Pete Lake, South Fork Chiwaukum, Eightmile Lake Trail, Hope Lake and Necklace Valley. Several additional cabin remnants exist on mining claims but are not maintained. A fire lookout structure is maintained and periodically occupied on Granite Mountain.

Water diversion structures exist on a number of lakes. A rock masonry dam between Upper and Lower Snow Lakes and a water diversion tunnel between Snow Lakes and Nada Lake are used and maintained by the National Fish Hatchery. Rock masonry dams are used and maintained by the Icicle Irrigation District on Colchuck Lake, Upper and Lower Klonauqua Lakes and Square Lake.

Drift fences to restrict recreational livestock are in use above Chiwaukum Lake, on the Waptus Lake and Jack Creek Trails and at Meadow Creek and Timothy Meadows Camps.

Management Direction

1. The Granite Mountain lookout administrative facility will be evaluated to determine if it is essential for protection of the Wilderness resource.
2. If, after evaluation of the Granite Mountain Lookout, it is determined nonessential for administration of the Wilderness and not of historical significance, the structures will be removed and the site will be restored to as natural a condition as practical.
3. All structures will be evaluated for their historical significance.
4. After evaluation, any decision to maintain or abandon but not remove structures which meet the criteria for the National Register shall be preceded by the process outlined in 36 CFR 800 for comment by the Advisory Council on Historic Preservation. Abandoned structures will be allowed to deteriorate naturally after following procedures outlined in 36 CFR 800. Any retained or maintained structure will be managed to have a minimum impact on the Wilderness resource.
5. If it is determined, after historical evaluation, that a structure is not of significance, it will be removed by a practical method compatible with the goals of this plan and the site will be restored to as natural a condition as is practical.
6. All drift fences will be removed and less obtrusive methods for constraining livestock, including hitch rails, hitch ropes and picketing methods, will be used.
7. No roads, powerlines, telephone lines, water flow maintenance structures, reservoirs or other improvements will be permitted, except as authorized under Section 4(d) and 5(a) of the Wilderness Act.
8. Current water diversions will not be expanded. They will continue to be maintained by primitive means unless an environmental analysis indicates that the work cannot be accomplished without motorized equipment. Use of motorized equipment will comply with direction described in Administration 10 and 11.
9. Occupancy and structures and use of motorized and mechanized equipment related to legitimate mining prospects will be permitted to the extent required by law and regulations. Every reasonable effort will be made through the operating plan to minimize their effect on the Wilderness resource.

Fish and Wildlife

Management Objective

To provide habitat most conducive to a natural distribution and abundance of native species of fish and wildlife by allowing natural processes to shape

habitat and interactions among species and to permit hunting and fishing in a manner consistent with the preservation of Wilderness values under the Wilderness Act (Section 4(d)).

Current Situation

Wilderness ecosystems provide habitat for many species of wildlife native to the Cascades, as well as several introduced species. The State of Washington has responsibility for establishing and administering regulations for the use of wildlife. The Forest Service has responsibility for habitat management. Big game hunting is an important early fall recreational activity in the Wilderness.

Many lake and stream fisheries exist within the Wilderness. Populations of several trout species, principally eastern brook, cutthroat and rainbow are present. Most of the mountain lakes were originally barren but have been stocked by the Department of Game and private fishing organizations. See Exhibit E for stocked lakes. Fish stocking, (which includes the use of helicopters) is a long-established practice in many lakes. As a result, no waters capable of supporting fish populations are known to be barren at this time. Fishing is heavy in readily accessible areas and is an important recreation experience for many visitors.

The human influence on the distribution and abundance of fish and wildlife populations affects the Wilderness resource. The general absence of fire is reducing the variety of habitat available for grazing or browsing animals; critical winter range is restricted because of human land use patterns outside the Wilderness; and predator control on adjacent lands affects predator-prey relationships within the Wilderness.

Several threatened or endangered wildlife species are reported to frequent areas within the Wilderness. These species are identified in Table 7, page 29.

Management Direction

1. The Forest Service will continue to work closely with the Washington Department of Game in all aspects of fish and wildlife management. Forest recommendations will be predicated on need for protection and maintenance of the Wilderness resource, including fish and wildlife and their respective habitats. Hunting, fishing and trapping will be permitted in accordance with State law under the same restrictions as other recreation use of the Wilderness (FSM 2320.3, item 3a(2) and 13).
2. Seasons and regulations that favor hunting and fishing as a part of a Wilderness recreation experience will be favored.
3. Native animal species will be maintained, with special emphasis on the preservation of threatened or endangered species and their habitats (see Table 7 for species of special interest). Wildlife may be re-

established in the area if eliminated by the influence of man.

4. Study will be conducted to determine the presence and/or habitat needs of threatened or endangered wildlife species during planning of all projects.

5. Discarding of food or garbage that tends to alter the natural feeding behavior of wildlife will be discouraged through visitor education or regulation.

6. Fish stocking will be allowed to continue where it is an established practice (CFR 293.6d and FSM 2323.35b) See Exhibit E for list of water bodies stocking records and stocking methods. A range of Wilderness fishing waters will be sought including naturally barren waters, water with only natural producing fisheries and waters with fish populations maintained by artificial stocking.

Coordinated actions with the Washington Department of Game will be continued. Ranger district annual operating plans will address any specific coordination needs.

7. Fish stocking of individual water bodies will be limited to those methods used prior to establishment of the Wilderness.

8. Native species of fish will be favored in waters with a history of supporting such species. Waters known to contain native species are identified in the stocking inventory, Exhibit E.

9. Information contained in the fish stocking inventory will continue to be updated throughout the life of this plan.

10. Fire will be allowed to play a more natural role in maintaining habitat diversity to insure a natural abundance and distribution of native wildlife species.

11. The special interest list of animals Table 7, will be maintained and updated as additional information becomes available.

Vegetation

Management Objectives

To maintain the system of natural processes that governs the distribution of plant communities and to ensure that natural biotic communities remain undisturbed except by those natural processes (36 CFR 293.2a and FSM 2320.2, Item 3).

Current Situation

Vegetation occurs in three zones characterized as alpine, subalpine and coniferous forest. These areas are essentially in a natural condition, unaffected by the works of humans, except for the exclusion of natural fire. Natural vegetative cover has been altered at heavy use areas, such as popular campsites and along portions of the trail system. Subalpine and

alpine areas show the impact of human influence more than the coniferous forest.

Deadwood for camp fires is generally available except for the heavily used, higher elevation campsites, especially those located near lakes. Firewood will become increasingly scarce in some heavy use areas, especially in alpine and subalpine zones.

The Wilderness contains several sensitive plant species. See Table 8 for the current species list. Management plans intended for use by the two forests will contain maps depicting known locations of the plants.

The use of trees has been limited to material for construction of trails, shelters, cabins and mining needs. Forage is used by wildlife, recreational livestock and commercial livestock. Forage near heavy use areas is often overgrazed by recreation stock. There are extensive areas of dense forest, ice, rock and snow where forage is generally absent.

Management Direction

1. Non-native plant species will not be deliberately introduced. The possibility of accidental introduction through the use of pack and saddle stock will be minimized by prohibiting the use of hay and unprocessed grain as supplemental feed and encouraging the use of processed, weed-free feeds, (i.e. pelletized rations).

2. Projects such as trail construction and campsite designation will provide for preservation of sensitive plant species, see Table 8 for species of special interest. Consultation with the Washington Department of Natural Resources, Washington Natural Heritage Program for recommended management is necessary when sensitive plants are found at a proposed project location.

3. The plants of special interest inventory, Exhibit G, will be maintained and updated as additional information becomes available.

4. Only dead and down material may be used for firewood. Campfires will be prohibited at specific heavy use locations, if analysis indicates that it is being used faster than natural firewood accumulation. Campfires may also be prohibited if use results in visual degradation from blackened rocks, etc. See the Visual Quality section for additional direction. Campfires will be prohibited a) in the core Enchantment Area (see map Exhibit D for core location), b) Rachel Lake, c) Spectacle Lake, d) Escondido Tarns area, e) Tuck and Robin Lakes, f) Park Lakes, and g) other areas as needed. Areas that will be monitored closely for possible future campfire exclusion include: Colchuck Lake, Ridge and Gravel Lakes, upper Necklace Valley, Rampart Ridge Area and Ladies Pass Area.

Water

Management Objective

To preserve water bodies and stream courses in a natural state with minimal modification or human caused contaminants.

Current Situation

Numerous high elevation lakes, glaciers and snowfields serve as natural reservoirs which are of great importance as a water source for surrounding lands. In an average year, the peak snow depth at higher elevations occurs about April 1. Snow accumulation is normally 55 to 60 per cent of the annual precipitation received at 4,000 feet. Thus, natural water storage occurs until late in the summer, when it is needed most in the lower valleys.

Water flowing from the Wilderness into west side rivers serves only minor agricultural and industrial needs of the Puget Sound population centers.

Important water yield from the eastern slopes is presently utilized for irrigation and domestic purposes. Approximately 834 thousand acre feet of water is stored in the Keechelus, Kachess and Cle Elum reservoirs immediately adjacent to the Wilderness. These reservoirs have contributed substantially to the agricultural growth of the Yakima Valley since the late 1920's.

The town of Leavenworth, the Leavenworth Federal Fish Hatchery, the Cascade Orchard District and the Icicle Irrigation District all use water from Icicle Creek, which originates in the Alpine Lakes Wilderness. The Irrigation District has installed regulating structures on four lakes within the Wilderness. They are Upper and Lower Klonauqua, Square and Colchuck Lakes. These structures are under special-use permit, except for the Lower Klonauqua Lake dam which is on land that is currently private. All the structures are relatively unimposing, constructed primarily of native materials substantially unnoticeable. Some structure maintenance is required. The Irrigation District has used helicopter access for this task in the past (See the Administration section for management direction).

The Leavenworth Federal Fish Hatchery maintains a diversion dam and water transmission facility between the Snow Lakes and Nada Lake.

Three water resource inventory (snow course) sites are maintained by the Soil Conservation Service within the Wilderness. They are located in Section 22, T. 23 N., R. 12 E.; Section 18, T. 23 N., R. 13 E.; Section 13, T. 23 N., R. 13 E. All courses are read from the air.

Management Direction

I. Except as provided for in Section 4(d)(4) of the Wilderness Act, watersheds will not be altered or

managed to provide increased water quantity, quality or timing of discharge.

2. Short-term weather modification activities which will produce only occasional, incidental, temporary or transitory changes in the weather with carryover effects on the ground lasting only a few days beyond the actual seeding period may be permitted. Long-term weather modification programs producing repeated or prolonged changes in the weather during any part of successive years and having substantial impacts on the Wilderness resource will not be permitted.

Prior to any weather modification activity within the Alpine Lakes Wilderness, formal application must be filed and be approved by the Chief of the Forest Service. The proponents must, through an environmental analysis accompanying their application, provide reasonable, scientifically supportable assurance that their activities will not produce permanent or substantial changes in natural conditions, nor will they include any feature that might reasonably be expected to produce conditions incompatible in appearance with the environment or reduce the values for which the Wilderness was created.

3. Water yield measurements (including snow survey) will continue to be read from the air or from the ground by primitive means, except as provided for in FSM 2320, 2321.43a.

4. An ongoing program of monitoring throughout the area will determine whether livestock or humans are degrading water quality and gather baseline quality information. Monitoring will focus on heavy use areas with highest priority given the Snow Creek drainage on the Leavenworth Ranger District where a monitoring program will be developed and implemented. Other areas highly susceptible to pollution are identified on the USGS map

found in Gilliam et.al. 1980, Preliminary Evaluation of Lake Susceptibility to Water-Quality Degradation by Recreational Use.

5. Livestock and human use will be regulated to maintain existing water quality levels equal to or exceeding Washington State Class AA and lake water quality standards. Any water body found to be below standard will be restored to the prescribed quality. See WAC 173-201-045 for standards.

Soils

Management Objective

To insure that the rate of soil erosion will not noticeably exceed naturally occurring levels and to allow processes of soil formation to operate unaltered by human activity.

Current Situation

The extreme variability of parent materials and the effects of extensive glaciation has produced a complex distribution of soil types. Over 200 different soils have been identified in the area. Residual rock is frequently covered by or intimately mixed with glacial materials. Soils developed from glacial materials differ considerably, depending on whether they are derived from indurated till, loose outwash, morainal materials or from fine-textured lacustrine deposits. Soil temperature classes range from mesic to frigid. Soil resource inventory maps and general interpretations are available for the entire area. Most of the material is considered geologically recent and mountain slopes are long and very steep, so erosion and soil mantle creep are active over much of the area. Also, portions of the area are covered by a layer of coarse pumice that is highly erosive by wind and water.

Human activity adds to this background erosion by exposing soil along trails. Erosion rates are also increased in and around campsites and shelters by compaction and trampling of vegetation. The use of pack and saddle stock compounds the problem, especially in wet soil and meadows. Trail location and design techniques that reduce the impact of trails are available but have not always been used.

Management Direction

1. Trail location will avoid areas with high erosion potential such as steep slopes, wet soils and meadows where alternatives exist. Highly susceptible areas are shown on the Wilderness Visual Absorption Capacity map.
2. Camp areas will be located, relocated or closed to prevent erosion in excess of Region 6 standards (see Exhibit C).
3. Areas where accelerated soil erosion is occurring due to human activity will be rehabilitated wherever possible. Native species will be used for revegetation.
4. Surface water runoff that collects on trails, in campsites or on other human-created alterations will be controlled to prevent accelerated erosion.
5. Abandoned trails will be rehabilitated if needed to prevent soil erosion or shorten recovery time.

Mining and Minerals

Management Objectives

To assure the rights of mineral claimants as specified in the Wilderness Act, while insuring that their activities create the least possible impact upon the Wilderness resource.

Current Situation

The U.S. Geological Survey and the Bureau of Mines, Department of Interior, conducted a field investigation of the area from 1971 to 1973. The combined report of the two bureaus is published in two open file reports titled Mineral Resources of the Alpine Lakes Study Area, Chelan, King and Kittitas Counties, Washington and Mineral Resources of Additions to the Alpine Lakes Study Area, Chelan, King, and Kittitas Counties, Washington.

The summary of these reports follows. County records indicate about 1,900 unpatented lode and placer claims and approximately 137 patented claims have been located within the area since the 1870's. Most prospects are near the edge of granitic masses along the west and south sides of the area. A recorded total of about 500 tons of gold-silver-copper ore have been extracted from the Wilderness.

The majority of these old unpatented claims were abandoned in 1979 for failure to record pursuant to Section 314 of the Federal Land Policy and Management Act of 1976. Recorded claims in the Wilderness are chiefly in the Middle Fork District and near the Wilderness boundary in the Miller River and Lennox Creek drainages.

Small amounts of copper and molybdenum occur near Mineral Creek, on the east side of Red Mountain near Snoqualmie Pass, and in the Gold Creek Valley. Small base metal deposits occur in the Van Epps Pass area.

Of the several vein-type mineral deposits in the Alpine Lakes, the Dutch Miller mine in the Chain Lakes Basin near LaBohn Gap is the most promising. This small, high-grade deposit is estimated to contain 3,500 tons of copper ore averaging over 11 per cent copper and has potential for discovery of additional ore.

Silver deposits present in the upper West Fork of the Miller River contain 9.71 to 15 ounces of silver per ton. Currently, these deposits are not economically minable, but they represent a potential silver resource.

Gold occurs in detectable amounts in many places in the area, but only the Lennox Mine in the Lennox Creek drainage has produced gold ore.

The Wilderness has no known potential for combustible fuels and only minor potential for fissionable fuels. Small non-economical iron deposits are present. Small lenticular bodies of marbleized limestone occur near Snoqualmie Pass.

Granitic rock and sandstone, suitable for construction and decorative stone, and sand and gravel are present, but these materials are more readily available at other localities outside the Wilderness. The Snoqualmie batholith in the southwest portion of the Wilderness may retain sufficient heat to be

considered a source of geothermal energy. The only known hot springs occur at Goldmeyer on the Middle Fork Snoqualmie River near the boundary of the area.

The primary effect of mining activity on the Wilderness has been past use of motorized vehicles by mining claimants for access between the Middle Fork Snoqualmie Road and claim areas in the Dutch Miller and LaBohn Gap areas. In addition, several cabins and milling facilities have resulted in a considerable scattering of old mining equipment. The visual impact of this material is detrimental to the Wilderness resource.

Under the Wilderness Act, the Alpine Lakes Wilderness will be withdrawn from mineral entry after December 31, 1983. Rights established prior to that date under mining law will remain subject to constraints on exploration and mining to protect surface resources. The U.S. Geological Survey indicates little mineral significance in this area.

Management Direction

1. Until December 31, 1983, the U.S. mining laws and all laws pertaining to mineral leasing are applicable in the Wilderness, as they were prior to classification under the 1964 Wilderness Act. Currently, mining activity is subject to regulations prescribed by the Secretary of Agriculture for the protection of the Wilderness character of the land.

2. The procedural requirements and intent of the National Environmental Policy Act will be followed in evaluating all requests for rights-of-way, tailing dumps, millsites or other mining-related land uses on national forest land (CFR 36, Parts 252.15 through 293.0).

3. A written plan of operations is required from all operators who will likely cause a significant disturbance of surface resources by their prospecting or mining activities (See: FSM 2851.1 and FSM 2323.7).

Activities generally prohibited within Wilderness, including the use of mechanized transport, aircraft or motorized equipment, shall be authorized only when proven essential in accordance with 36 CFR 252.15 (b). A prospecting operating plan, when approved by the forest supervisor, shall serve as authorization for such activities on mining claims in the Wilderness (See: FSM 2851.7 and FSM 2323.7).

Collection of Resource and Use Information

Management Objective

To collect in a non-obtrusive manner consistent with the preservation of the Wilderness resource, resource and recreational use information necessary to: (a) gain information needed to achieve and monitor the attainment of the objectives of this plan and (b) acquire baseline knowledge needed to assess

long-range natural changes and direct and indirect human influence on the Wilderness ecosystem.

Current Situation

A self-registration system supplemented by electric trail traffic counters is in effect in portions of the Wilderness. The system provides an estimate of visitations from 1975 to the present.

Permanent photo points and quadrant transects are being established for baseline soil, vegetation and trail data needed to monitor use impacts.

Vertical aerial photos are available in color, infrared and black and white for the entire Wilderness, as are oblique black and white and color photographs. Earth satellite monitoring images are also available for the Wilderness.

A comprehensive pilot study of the susceptibility of lakeshores to damage from users was conducted during the summer of 1978 by the U.S. Geological Survey. That study and related follow-up work rated the 300 largest lakes in the Wilderness for their relative ability to sustain near-shore use.

Management Direction

1. The collection of resource and use information will be annually coordinated between ranger districts.

2. Site information concerning the location and amount of impacts on soil and vegetation resulting from recreational use will be collected, maintained and used in making future management decisions

(See Soil and Vegetative Monitoring Methodology by G. Morrison for

measuring impacts). The following are priorities and locations for assembling resource information:

a. Vegetation and soil condition and trend information in heavily used camp areas along trails and at other impact areas, such as stock hitching areas, that appear to be near or below Region 6 standards for maximum acceptable degradation (See Exhibit C for standards.) Areas needing study at this time include:

North Bend District—Talapus Lake, Pratt Lake, Melakwa Lake, Snow Lake (Section 19, T. 23 N., R. 11 E.), Snoqualmie/Deer/Bear Lakes.

Cle Elum District—Ridge and Gravel Lakes, Spectacle Lake, Rachel Lake, Rampart Ridge Lakes, Pete Lake, Waptus Lake, Deep Lake, Michael Lake, Hyas Lake.

Leavenworth District—The core Enchantment area, Colchuck Lake, Snow Lakes (Sections 17, T. 23 N., R. 17 E.), Nada Lake, Lake Mary.

Lake Wenatchee District—Lake Julius, Lake Ethel.

Skykomish District—Hope Lake, Lower Deception Lake, Trout Lake, Lake Dorothy.

Baseline information will be collected from each site and will be updated and evaluated. Records will be maintained by each ranger district as a supplement to this plan.

b. Vegetation and soil condition information in areas having high potential for resource degradation in the future. Specific areas will be identified by each ranger district in annual work plans. Probable areas of study will be included in the "transition" Use Zone along Service Level A trails and camp areas and all other camp areas frequented by livestock.

c. Baseline vegetation and soil information will be collected using permanent transects in camps, trails and other areas that currently appear to be well within acceptable standards, but have some potential for future degradation.

3. Quantifiable information concerning the amount, season and pattern of recreation use will be collected and maintained (including information necessary for RIM reporting) for use in making future management decisions. The following are priorities for obtaining use information: Overall statistics required for annual RIM reporting, trails accessing the heavily impacted sites as identified in direction item 2 above, and transition zone areas including the core Enchantment area.

4. University and other government researchers will be encouraged to conduct studies and collect additional data to assess recreation impacts and aid in establishing and revising carrying capacities. This work shall be coordinated between the two national forests.

5. Monitor firewood supply and compile impacts on the Wilderness resource as directed in the Vegetation Section.

6. Assemble information concerning wildlife and fish species composition, population, distribution and behavioral characteristics to determine the effects of Wilderness visitor density and distribution and to supplement the fish stocking inventory (see Exhibit E).

7. Monitor water quality as directed in the Water Section.

8. Complete cultural inventories as directed in the Cultural and Historic Section.

9. Maintain the special interest plants and animals inventories as directed in the vegetation and wildlife sections.

Scientific Study

Management Objective

To provide for and encourage scientific study that is

dependent on a natural setting, that seeks to explain wilderness phenomena, and that is conducted in an unobtrusive manner consistent with preservation of the Wilderness resource.

Current Situation

The Alpine Lakes Wilderness provides opportunities for scientific study and observation in a natural setting. Studies include:

Hanley Thomas A., and Taber, Richard D. *Wildlife Habitat Relationship Guidelines For the Alpine Lakes Wilderness & Management Areas Mt. Baker-Snoqualmie and Wenatchee National Forests* College of Forest Resources, University of Washington, Seattle, Washington, 1979.

Hendee, John C., Roger Clark and Thomas Dailey *Fishing and Other Recreation Behavior at High Mountain Lakes in Washington State* U.S.D.A., Forest Service Research Note PNW-304, Portland, Oregon, 1977.

Dailey, Tom and Dave Redman *Guidelines For Roadless Area Campsite Spacing to Minimize Impact of Human-Related Noises* USDA General Technical Report PNW-35, Portland, Oregon, 1975.

Gilliam, R.J., D.P. Dethier, S.A. Safioles and P.L. Heller 1980. *Preliminary evaluation of lake susceptibility to water-quality degradation by recreational use, Alpine Lakes Wilderness Area, Washington*. USGS, Seattle, Water Resources Investigations open-file Report SO-1124.

U.S.D.I., Geological Survey, Puget Sound Earth Sciences Applications Project *Reconnaissance Data on Lakes in the Alpine Lakes Wilderness Area* U.S.G.S. Open File Report 79-1405, Seattle, Washington, 1975.

University of Washington *The Alpine Lakes — Environmental Geology* Dept. of Geological Sciences, University of Washington, Seattle, Washington, 1972.

Bergston, Clifford *Some Physical and Biological Features of Eight Highland Lakes in the Wenatchee and Snoqualmie National Forests* Unpublished Report on File, College of Fisheries, University of Washington, 1973.

Hendee, John C, Roger N. Clark, Mack Hogness, Dan Wood and Russ Koch *Code-A-Site: A System For Inventory of Dispersed Recreational Sites in Roaded Areas, Backcountry, and Wilderness* U.S.D.A. Forest Service Res. paper PNW-209, Portland, Oregon, 1976.

Bostheson, G.C., Dion, N.P., McConnel, J.B., and Nelson, L.M. *Reconnaissance Data on Lakes in Washington* Washington Department of Ecology Water Supply Bulletin 43, V. 2, 1976.

del Moral, Roger *High Elevation Vegetation of the Enchantment Lakes Basin, Washington Ecology*, 57: 520-530, 1979.

Pratt, R.M. *Geology of the Mount Stuart Area, Washington* Ph.D. thesis, University of Washington, Seattle, Washington, 1958.

Dethier, David *Earth Sciences Information For Planning and Management in the Alpine Lakes Wilderness Area, Washington* U.S.G.S. In-service Report, Seattle, Washington, 1978.

Dethier, D.P., P.L. Heller, and S.A. Safioles 1979. *Reconnaissance data on lakes in the Alpine Lakes Wilderness Area, Washington*. USGS open-file report 79-1465.200.

Management Direction

1. Research projects require Chief of the Forest Service or Regional Forester approval (FSM 2323.9). Only those applications for research that are Wilderness dependent and compatible with the goals and objectives of this plan will be recommended for approval. Research activities that adversely affect the Wilderness resource, the experience of users or conflict with other Wilderness objectives will not be recommended.

2. Research that will help resolve Wilderness management problems will be given highest priority, encouragement and cooperation, as administrative time and funding permit.

3. Data collected for management purposes, such as use figures and ecological data, will be made available to scientists for research purposes.

4. All research projects which require public contact, specimen collecting or ground reference marking, or which require exemption from any regulations, will be conducted under a special-use permit.

Communications

Management Objective

To make information about the Alpine Lakes Wilderness, including management goals and objectives, available to all persons.

To actively attempt to direct non-Wilderness use to alternative areas by orienting all public contact, Forest Service employees and users to this philosophy.

To encourage user behavior which minimizes the impact on the resource and emphasize compliance with requirements or regulations.

Current Situation

The designation of the Alpine Lakes Wilderness, development of new and improved access and extensive publicity have increased public awareness and

interest in the area. As recreational use increases, more inquiries are received concerning the area and its management. Effective and timely information and education will be a key management tool in gaining public acceptance and support for management objectives.

Information about the physical and biological characteristics of the Alpine Lakes Wilderness is available from a number of sources including scientific publications, college texts and popular books which discuss the plants, animals and geology of the region, as well as its human history.

Route descriptions for trails and high routes are available from commercial sources, many of which include advice on camping, traveling techniques and procedures to reduce the user impact upon the resource.

Information explaining the Forest Service philosophy and interpretation of wilderness is available in national forest wilderness publications. Recommended visitor behavior and use ethics are also included.

There is currently no Forest Service map or publication specifically addressing the Alpine Lakes Wilderness. However, each forest has recreation maps available each with portions of the Wilderness displayed. An interim map showing the newly completed Pacific Crest National Scenic Trail route with suggested campsites is currently available.

Management Direction

1. Wilderness rangers, receptionists and other Forest Service personnel who have contact with the public concerning the Alpine Lakes Wilderness will be well acquainted with the wilderness philosophies, management goals and, insofar as possible, current conditions within the Wilderness. In contacts, they will attempt to shift non-wilderness activities to alternative areas, encourage suitable wilderness behavior and create additional awareness, understanding and appreciation of wilderness. The affect of contacts on the user's right to solitude or adventure will be minor.

2. Printed materials will contain information on wilderness management goals. Publishers and authors of trail, climbing and other informational books will be encouraged to include minimum impact and other wilderness management messages in publications discussing the Alpine Lakes. Media contacts will be informed of new management goals and decisions as well as wilderness philosophies pertaining to the Alpine Lakes.

3. An Alpine Lakes Wilderness map/brochure may be developed as needed. Supplemental publications will be developed and existing publications revised periodically to keep them current with management decisions and conditions.

4. Only trails that receive maintenance and are considered safe for use at the service level specified by this plan will be shown on Forest Service publications. Publishers of maps and guidebooks will be encouraged to follow a similar policy.

5. Public involvement and user awareness programs will be used in solving management problems and to help gain acceptance of solutions among users.

6. Attempts will be made to continue and to escalate the involvement of schools, colleges and universities in ongoing volunteer programs. In cooperation with these institutions, students will be encouraged to assist managers in monitoring uses, collecting and evaluating data and educating visitors.

Cultural and Historic Resources

Management Objective

To recognize that cultural resources within and relating to the Alpine Lakes Wilderness are a valuable, nonrenewable resource. To identify, evaluate, preserve, protect and enhance these resources in compliance with Federal and State laws and Forest Service policy.

Current Situation

A cultural resource overview of the Wilderness is being prepared which includes a literature search of all relevant documentary materials and interviews with Indian tribal elders and knowledgeable local residents. In addition, records at the Washington State Office of Archeological Research Center (WARC) are being consulted.

For thousands of years there have been movements of people into and across the Cascades in what is now the Wilderness. From late spring through fall, groups of Wenatchee, Skykomish, Snoqualmie and Kittitas Indians ranged throughout the high country in pursuit of food and household materials. Travel routes were well established by these tribes through Stevens and Snoqualmie Passes, immediately adjacent to the Wilderness. The routes later encouraged commerce and communication between Puget Sound and the Interior Plateau.

The migratory land use patterns by Indians continued with little disruption until the mid-nineteenth century. Earliest Euro-American contact was transitory, leaving few traces in the Wilderness.

The discovery of placer gold as early as 1861 focused the attention of would-be miners into the eastern portions of the area. By 1890, mining camps were common. These developments account for a major proportion of the historic use of the Wilderness. Crude transportation networks connected these settlements to the outside world.

Construction of the Great Northern railroad through Stevens Pass in 1893 and the Chicago, Milwaukee and St. Paul through Snoqualmie Pass in 1909 pro-

vided the first, easy access to the lands surrounding the Wilderness. Homesteads appeared in the early 1900's. Sheep and cattle grazing from these homesteads became common in the alpine meadows. Over time, with population increases and improved access, ever increasing demands have been put on the resource.

Prehistoric and historic land use patterns indicate a high probability of significant cultural resources within the Wilderness. Land management practices within the Wilderness have had few harmful impacts to potential cultural resources, leaving an invaluable but extremely fragile record of our heritage.

Management Direction

1. Complete the cultural overview (in preparation) for the area. Make maps and descriptions accompanying that report a part of this plan.

2. Inventory and evaluate all known cultural sites. Establish priorities of inventory based on proposed trail development, recreation site development, potential mineral exploration or other land-disturbing developments within the Wilderness.

3. Nominate eligible sites to the National Register of Historic Places.

4. Develop management plans, in consultation with the State Historic Preservation Office, for those cultural resources eligible for the National Register of Historic Places. Plans will be developed within five years of site designation.

5. Designated historic sites with surface remains will be protected and may be preserved through user management (relocation of public use away from the site).

6. If natural deterioration is determined to be the management prescription for a designated site, it will be allowed only after thorough recording and documentation is completed.

7. Interpretation of cultural resources in the Wilderness will be done through brochures and maps only after protection measures have been provided.

8. Signs will not be provided for on site interpretation.

Visual Quality

Management Objectives

To develop facilities and conduct management activities to create acceptable visual conditions in keeping with preservation of the Wilderness character.

Current Situation

The unique visual character of the Wilderness is

dominated by jewel-like lakes, snowfields, alpine meadows many diverse vegetative communities and landforms. The landscape remains in a natural condition except for human activities along trail routes and at campsites. Visual quality within the Wilderness is impacted when man's activities alter unique form, line, color or texture of the characteristic landscape. Visual impacts have occurred primarily through vegetative and soil disturbances associated with improperly located camping areas and trails, as well as inappropriate use by both recreational and commercial livestock.

Management Direction

1. Activities will be avoided whenever possible on low Visual Absorption Capability (VAC) areas including fragile alpine soils and vegetation and Variety Class A landscapes.
2. When possible, campsites and trails will be located to take advantage of vegetative and topographic screening.
3. Campsites and trails will generally be located to avoid low and moderate VAC areas.
4. When possible, campsites and heavily traveled trails (Service Level A and B) will be located away from key interest features (scenic meadows, lake edges, streamsides, cultural sites, etc.) so as to not detract from focal interest points or the natural landscape.
5. No permanent structures (tent frames, benches, shelves, corrals, drift fences, etc.) will be constructed to detract from the natural landscape.
6. Domination of the natural landscape by temporary human-made facilities will be minimized by reducing the obtrusiveness with natural form, line, color and texture. The design, location or relocation of these facilities will:
 - a. Be located when feasible within coniferous forest (High VAC), Variety Class B areas.
 - b. Avoid expanding areas of high color contrasts (due to soil displacement) by proper location, draining and grading of trails.
 - c. Locate commercial and recreational livestock camps away from scenic features, and out of foreground view from other camps or primary through-trails.

Fire Management

Management Objective

To permit natural fires to exert their effects on the vegetative patterns within the Wilderness without endangering public safety or values outside the Wilderness; to use suppression techniques which result in the least possible evidence of human activity; and to provide for a fire protection strategy

which achieves the resource management objectives at least cost.

Current Situation

For seventy-five years, suppression efforts have been directed at controlling all fires at the smallest burned area using a full range of suppression resources including helicopters, air tankers, smokejumpers, ground crews, bulldozers and other power-driven equipment. Since the establishment of the Alpine Lakes Wilderness, the control objective has been maintained but certain types of suppression activities have been modified to be consistent with the intent of the Wilderness Act. Activities have been limited to those with no long-term evidence of suppression effort, unless required for the firefighting crew safety. Motorized equipment such as helicopters and chainsaws are used if their impacts are less than those of the alternative methods available. Firelines are constructed only where necessary to contain the fire. They are returned to as near natural-appearing condition as possible after the fire is out. Trees are not cut unless necessary for controlling the fire or for crew safety. Some evidence of pre-Wilderness suppression activities is present.

Success in fire suppression has been effective in reducing, if not eliminating, fire as an influence on plant communities and vegetative patterns. It has also allowed accumulations of dead material and other flammable vegetation to develop to an extent that the potential intensity of a natural fire is higher than if man had not intervened in the natural fire patterns.

The recent frequency of fire in the Wilderness is indicated in Table 11.

Table 11.

Alpine Lakes Wilderness Fires 1970 — 1979

Cause/Forest	Numbers of Fires	Acres Burned
Lightning		
Mt. Baker-Snoqualmie	14	3
Wenatchee	55	524 *
Smoking		
Mt. Baker-Snoqualmie	3	0
Wenatchee	15	4
Campfires		
Mt. Baker-Snoqualmie	16	2
Wenatchee	70	103 **

* 1 fire was 510 acres

** 1 fire was 60 acres

Management Direction¹

1. Naturally occurring fires will be permitted to burn in specific areas, if they meet the prescription parameters for the zone which insures that lands or values outside the Wilderness are not threatened.

See map Figure 4, page 22 for these prescription zones.

The regional interpretation of the Wilderness Act does not consider human caused fires within the Wilderness to be natural occurrences. They, therefore, do not meet the expected criterion of "natural processes prevailing" and will be suppressed. Human caused fire will not be used as prescribed fire in the Wilderness area.

2. The suppression decision matrix found in Figure 5, page 27

will be used to determine appropriate suppression actions on fires. These decisions will be documented when the fire starts and will be reviewed by the District Ranger periodically throughout the duration of the fire. The most cost-efficient tactics within the goals and objectives of this plan will be utilized.

3. Suppression actions will be applied in a manner which has the least impact on the Wilderness resource.

4. A prevention program, consisting of education and enforcement activities, will be directed at maintaining a level of accidental fire occurrence not to exceed the current level of fires per year measured by a 10 year mean.

5. A public education program will be undertaken to explain the natural role of fire in the Alpine Lakes Wilderness ecosystems.

6. The program identified in management direction Item 5 will be undertaken before any prescription fire will be allowed within the Wilderness.

7. All smoke generating activities, including prescribed fire, will be constrained by the Smoke Management Plan administered by the Washington Department of Natural Resources.

8. Retardant may be utilized to contain any fire which exceeds the prescribed intensity levels and threatens acreage limitations or adjacent allocations.

Livestock Use

Management Objective

To allow utilization of forage by recreation pack and saddle stock to the extent it does not jeopardize Wilderness values.

¹Also see Fire section page 21 for a description of fire intensity zones.

Current Situation

Commercial — Approximately 13,000 acres of the Wildhorse Whitepine sheep and goat Allotment with a grazing capacity of 500 animal unit months (AUM) is located within the Wilderness on the Lake Wenatchee Ranger District. The allotment is one of the oldest on the Wenatchee National Forest, having been established in 1907. It has received only periodic use throughout the years, with last use occurring in 1977. Irregular use has been a result of marginal forage production, poor access, late snowmelt and the need for close flock supervision because of the area's high susceptibility to resource damage and conflict with recreation use.

Recreation — Historically, nearly half of the Wilderness visitors used pack and saddle stock. Nearly all of the use occurred east of the Cascades on the Wenatchee Forest where users found a dry climate, open terrain, readily available forage and trails most suited to livestock. The proportion of visitors using livestock has dropped substantially during the past decade, with current use less than 20 percent of the total.

Vegetative and soil resource and visual damage has occurred due to overgrazing of small localized areas adjacent to popular campsites and lakes, early season grazing or grazing of wet meadows and improper tethering and stock handling techniques.

Management Direction

1. Livestock use will be managed so that native plant species will be maintained with special emphasis on the preservation of threatened or endangered species. Known threatened or endangered species requiring protection can be found in Table 8, page 30.

2. Available forage will be used according to the following order of priority: wildlife, administrative livestock, recreation livestock, commercial packers.

3. Pack and saddle stock users will be required to rely on supplemental feed in areas where native forage is not able to recover and maintain its composition and vigor into the next growing season and where grazing would result in degradation of visual quality. Areas where grazing will be prohibited at this time include: the PCT area from Snoqualmie Pass to Upper Park Lake and the PCT area from the Lemah Creek drainage to the ridge south of Waptus Lake (Escondido Tarns area). Additional areas may be added if the above conditions are found to occur.

4. Recreational livestock use will be regulated to the extent necessary to equal or exceed Washington State Class AA and lakewater quality standards and to restore to state standards any water body found to be below standard. See the Water section for additional management direction.

5. Because of vegetative changes, the Wildhorse-Whitepine Allotment will be evaluated to determine if it is capable of being continued as a viable commercial grazing allotment. If it is no longer capable, the

allotment will be terminated when the permittee no longer desires to use the area and relinquishes his permit. The available forage will be allocated to wildlife and recreation livestock needs.

That portion of the Corral-Fortune Creek Allotment within the Wilderness will be maintained. Grazing will be in compliance with the standards and objectives stated in the management plan.

6. Livestock use on trails will be limited to those identified on the Allotment map as open. Trails identified as open will be maintained for livestock use.

7. The public will be made clearly aware of trails open and closed to livestock use. Information will be available at administrative offices, trailheads, in information brochures and on all maps.

8. Commercial outfitting and guide permits will be allowed where there is a demonstrated public need compatible with general public use.

9. See the Land Occupancy and Structures section for management direction concerning livestock-related structures.

10. Non-native plant species will not be deliberately introduced through livestock use. The possibility of accidental introduction will be minimized by prohibiting the use of hay and unprocessed grain as supplemental feed and encouraging the use of processed weed free feeds, (i.e. pelletized rations).

11. Corrals will not be permitted for either public or commercial livestock.

Management Action Program Outline.

The Wilderness management plan text identifies numerous management objectives requiring target dates for implementation. They are scattered throughout the plan. The following list is a summary of those actions.

Action Item	Target Date for Implementation	Responsibility
1. Prepare Ranger District Annual Operating Plans, reference page 39. Plans will: A) Prioritize trail maintenance, reference pages 41-42. B) Prioritize trail reconstruction and rerouting, reference pages 41-42. C) Identify signs for replacement, reference page 42. D) Provide for coordination of resource and use information collection between Ranger Districts, reference pages 49-50.	Annually	District Rangers
2. Conduct interforest management meeting, reference page 39.	As needed	Forest Supervisors

3. Conduct Wilderness Ranger meetings, reference page 39.	As needed	Forest Supervisors
4. Develop baseline inventories and monitor fuel wood availability at sites most susceptible to resource degradation, reference pages 46, 49, 50.	Continuing	District Rangers
5. Develop baseline inventories and monitor water quality, reference page 47.	Continuing	District Rangers
6. Develop baseline inventories and monitor soil and vegetative resource condition and trend, reference pages 49-50.	Continuing	District Rangers
7. Replace non-standard style signs where required to meet management plan objectives, reference pages 42-43.	Continuing	District Rangers
8. Obtain and maintain recreation use data, reference pages 43, 44, 49, 50.	Continuous	District Rangers
9. Maintain and continue to update the inventory of special plants, reference pages 45, 46, 49, 50.	Continuous	District Rangers
10. Maintain and continue to update the inventory of special animals, reference pages 45, 46, 49, 50.	Continuous	District Rangers
11. Maintain and continue to update the fisheries inventory, reference pages 45, 46, 49, 50.	Continuous	District Rangers
12. Monitor condition and trend on areas identified as most susceptible to vegetative and water quality degradation resulting from the use of livestock, reference pages 54-55.	Continuous	District Rangers
13. Maintain trails for intended Service Level and type of use, reference pages 41, 54.	Continuous	District Rangers
14. Establish target completion dates for trails identified for reconstruction or construction at identified standards, reference pages 41, 42.	Begin with plan implementation	Forest Supervisors & District Rangers
15. Control livestock grazing in areas identified as highly susceptible to resource damage, reference page 54.	Begin with plan implementation	Cle Elum District Ranger
16. Post all trails that are closed to particular types of use, reference pages 41, 54, 55.	1 year after plan implementation	District Rangers
17. Develop and print a Wilderness map/brochure, reference page 51.	As needed	Forest Supervisors

¹ See last paragraph under Plan Revision Direction, page 34.

18. Design a standard Wilderness trailhead information signboard, reference page 43.	1 year after plan implementation	Forest Supervisors
19. Evaluate Granite Mountain Lookout for its need as an administrative structure, reference page 45.	2 years after plan implementation	North Bend District Ranger
20. Install Wilderness boundary signs at all trail entry points, reference page 43.	2 years after plan implementation	District Rangers
21. Complete a cultural overview of the Wilderness, reference page 52.	1 year after plan implementation	Forest Supervisors
22. Complete a Wilderness fire management plan, reference page 54.	2 years after plan implementation	Forest Supervisors
23. Inventory and evaluate all existing signs to determine if each meets the management plan objectives, reference page 42.	2 years after plan implementation	District Rangers
24. Install standard trailhead information signs at all Service Level A and other high use Wilderness trailheads, reference page 43.	3 years after plan implementation	District Rangers
25. Remove all livestock drift fences, reference page 45.	3 years after plan implementation	Cle Elum and Leavenworth District Rangers
26. Evaluate the Wildhorse-Whitepine Commercial Grazing Allotment for final disposition, reference page 54.	3 years after plan implementation	Lake Wenatchee District Ranger
27. Remove all signs that are not in compliance with the objectives of the management plan, reference page 42.	4 years after plan implementation	District Rangers
28. Evaluate all known structures for their historical significance, reference pages 45, 50.	4 years after plan implementation	Forest Supervisors

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Wilderness Plan Exhibits

Exhibit A-1.

Wilderness Management Guidelines, Transition Zone.

ZONE DESCRIPTION

Area is characterized by predominantly unmodified natural environment. These zones usually are adjacent to major trailheads where the user makes the transition from motorized access to foot or horse travel and is first introduced to the Wilderness. They normally extend from the Wilderness boundary inward along primary travel routes up to 3 miles and 500 feet on either side of the travel route. An exception to the 3 mile criteria is the 72 miles of Pacific Crest National Scenic Trail. Day use of area often predominates or is equally mixed with destination travelers also using the interior of the Wilderness.

Experience Opportunity

A feeling of vastness is important, but not essential. The user has the opportunity for a higher degree of interaction with the natural environment, often with low or moderate challenge and risk. Opportunities for exploring and experiencing isolation contrast with adjacent, more developed areas outside the Wilderness.

Concentration of day users is moderate to high at least 50 percent of the season. Visible evidence of past use easily noticeable. The zone is managed to allow for less experienced users to be introduced to Wilderness settings and practice use ethics. Facilities are provided for concentrated use near established travel routes, to provide for protection of on-site and adjacent resources and to provide necessary user safety (i.e., bridges, warning signs, etc.).

PHYSICAL SETTING

Site Modification

People-caused changes will be within Region 6 Nondegradation Standards. Where possible, camping areas and trails will take advantage of vegetative and topographic screening. Where possible, they will be located outside foreground view (200 ft.) from lakes, trails and key interest features.

Visual Elements (form, line, color, texture)

Trails, camp areas and other human activities may co-dominate the natural landscape in foreground viewing areas (100 ft.) but must be harmonious. Human activities will remain subordinate to natural landscape in middleground and background distances.

Facilities

Those essential for the protection of the Wilderness resource and user safety may co-dominate natural landscape in foreground from trails and use areas. They will remain subordinate in foreground (200 ft.) from lakes and key interest features and will remain harmonious in middle ground and background distances.

Materials

Natural materials will dominate. Dimensional and non-native materials are acceptable but should harmonize with the natural environment.

SOCIAL SETTING

Noise

People-caused sound¹ rated at D'-10 are not heard on an average of more than 4 times per hour from a distance 1/4 mile within the zone.

Encounters

Encounters with other parties frequent as groups move to and from trailheads and along the PCT. No more than 7 encounters per day with other traveling groups during the entire use season. No more than 2 other camping parties visible from a campsite.

Group Size

Any combination of persons and recreation livestock not exceeding 12 (without written authorization).

Camps

Overnight camps within the zone only at designated sites or out of sight of trails. Designated sites will be shown on the Wilderness map and marked on the ground if necessary.

Open fires may be banned or limited to designated sites within seen areas, foreground of lakes, streams, and trails. Limited toilet facilities are permissible at heavy use areas for resource protection and human safety.

¹These people-caused noise levels are expressed as D' values. D' = Level of detectability as measured by the System of Prediction of Acoustical Detectability (SPreAD) and associated guidelines. (Harrison, Clark, and Stankley. 1979).

Livestock

Recreational stock is permitted except in camp areas. Stock is held overnight outside foreground of lakes and streams and out of sight of camp areas and trails.

Commercial stock is only permitted to travel through the zone to and from permitted range.

Pets

Pets must be under reliable voice control and/or physical restraint to protect both people and wildlife within the zone.

MANAGERIAL SETTING**Off-Site Evidence of Control**

Management control necessary to protect the ecological and social elements throughout the Wilderness are strongly evident outside the Wilderness, at trailheads and at boundary portals. Formal regulations, orders, and/or permits may be necessary to achieve management objectives. Formal and informal user education programs may be initiated to inform users about what to expect and how to use the area for optimum benefit to all. Visual Information Systems actions are designed to help meet management objectives not to promote use.

On-Site Evidence of Controls

Frequent opportunity for visitor contact with Wilderness Rangers and other management personnel. Wilderness Rangers will attempt to contact 50 percent of the users during the normal use season.

Signs

Trailhead signs will be conspicuously placed to indicate names of destinations, directions and distances to major internal sites and areas. Signs within the Wilderness boundary will be placed at all trail junctions to indicate major destinations and direction. Numerous signs may be placed for administrative purposes and for user safety.

Trails

Service Level A trails will normally be constructed, maintained and managed to accommodate heavy traffic for the entire use season. The routes will blend into the natural features of the area, be safe and pleasant to use. It will be obvious to the users that they are in a safe and predictable situation where they will not be called upon to use a high degree of outdoor skills.

A-2.

Wilderness Management Guidelines, Semi-primitive Zone.

ZONE DESCRIPTION

Area is characterized by predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. The zone is managed in such a way that minimum on-site controls and restrictions may be present but are subtle. Spacing of groups may be formalized to disperse use and provide low to moderate contacts with other groups or individuals.

Experience Opportunity

Moderate opportunities for exploring and experiencing isolation, from the sights and sounds of man, independence, closeness to nature, tranquility, and self-reliance through the application of woodsmanship and primitive recreation skills. These opportunities occur in a natural environment that normally offers a moderate degree of challenge and risk.

PHYSICAL SETTING

Site Modification

People-caused changes will be within Region 6 Non-degradation Standards. Camping areas, where possible, will be located on sites within coniferous forest areas. Sites should be located to take advantage of topographic and vegetative screening. Outside of coniferous areas where no vegetative or topographic screening is available camps will be located, where possible, outside foreground view (200 ft.) from lakes, trails and key interest features. Site design (trails and camps) should remain subordinate to the natural landscape.

Visual Elements (form, line, color, texture)

Human activities will remain subordinate in foreground distance zones (200-300 ft.) and will not be recognizable in middleground and background distances.

Facilities

Those necessary for protection of the Wilderness resource and user safety will remain subordinate in foreground distance zones (200-300 ft.) from trails, lakes and key interest features. They should remain not evident and harmonious with natural landscape in middle ground and background distances.

Materials

Natural materials will dominate. Dimensional and non-native materials may be used but must remain not evident to the average user.

SOCIAL SETTING

Noise

People-caused sound¹ rated at D-5 between camps and are not heard on an average of more than 12 times per day by traveling groups.

Encounters

No more than 7 encounters per day with other traveling groups during 50 percent of the season. No more than 1 other camping party visible from a campsite.

Group Size

Any combination of persons and recreation livestock not exceeding 12 (without written authorization).

Camps

Camps located to meet sight and sound standards. Campsites may be designated by user awareness techniques, regulation and/or permit.

Open fires may be banned or limited to designated sites. Limited primitive toilet facilities may be provided at heavy use areas for resource protection and human safety.

Livestock

Recreational stock is permitted except in camp areas. Stock is held overnight outside foreground of lakes and streams and out of sight of camp areas and trails.

Commercial stock is only permitted to travel through the zone to and from permitted range.

Pets

Pets must be under reliable voice control and/or physical restraint to protect both people and wildlife within the zone.

MANAGERIAL SETTING

Off-Site Evidence of Control

Management control necessary to protect the ecological and social elements throughout the Wilderness is strongly evident outside the Wilderness, at trailheads and at boundary portals. Formal regulations, orders, and/or permits may be necessary to achieve management objectives. Formal and informal user education programs may be initiated to inform users about what to expect and how to use the

¹People-caused noise levels as calculated by SPreAD.

area for optimum benefit to all. Visual Information System actions are designed to help meet management objectives not to promote use.

On-Site Evidence of Controls

High to moderate presence of Wilderness Rangers who contact an average of 30 percent of overnight users. Percent contact depends on outdoor skill level of typical user groups. Management and research technicians engaged in monitoring or project work, trail crews, etc. will conform to established social and ecological standards unless specifically authorized otherwise. Work will be scheduled for low public use periods where feasible.

Signs

Within the zone, place the minimum number of signs necessary to protect the Wilderness resources, and for administration.

A maximum of two directional signs with a maximum of two destinations per sign to be placed at trail junctions. Information about distances and attractions (i.e., lakes, meadows, cultural features etc.) will not be included. Signs may be used if necessary to direct users to designated campsites and toilets.

Trails

Service Level B trails will normally be constructed, maintained and managed to accommodate moderate use for the majority of the use season. The route will only modify natural conditions to the extent necessary to protect the environment and provide for safe use by a user with limited experience, and average physical ability.

Wilderness Management Guidelines, Primitive Zone.

ZONE DESCRIPTION

Area is characterized by essentially unmodified natural environment. Concentration of users is very low and evidence of other area users is minimal. The zone is managed to be essentially free from evidence of restrictions and controls. Spacing of groups is informal and dispersed to minimize contacts with other groups or individuals.

Experience Opportunity

High opportunity for exploring and experiencing isolation from the sights and sounds of man, independence, closeness to nature, tranquility, and self-reliance through the application of primitive recreation skills. These opportunities occur in an environment that offers a high degree of challenge and risk.

PHYSICAL SETTING

Site Modification

People-caused changes are within Region 6 Non-degradation Standards. Camping areas where possible to be located on sites within coniferous forest areas. In all cases sites should be located to take advantage of topographic and vegetative screening. Outside of coniferous areas where no vegetative or topographic screening is available camps to be located where possible outside foreground view (200 ft.) from lakes, trails, and key interest features. Location of trails and campsites should encourage maximum dispersion of visitors.

Visual Elements (form, line, color, texture)

Human activities will remain not evident in foreground distances (200-300 ft.) and not recognizable in middleground and background.

Facilities

Very few facilities will be provided and only for resource protection. They should remain not evident in foreground distance from trails, lakes and key interest features and not recognizable in middleground and background.

Materials

Only native materials will be used.

SOCIAL SETTING

Noise

People-caused sounds¹ rated at D'-1 between camps are not heard on an average

of more than 6 times per day by traveling groups.

Encounters

No more than 5 encounters with other traveling groups per day during 50 percent of the use season. No more than 1 other camping party visible from a camp site.

Group Size

Any combination of persons and recreation livestock not exceeding 12 (without written authorization).

Camps

Users will be encouraged to locate camps to meet sight and sound standards. Campsites will not normally be designated.

Open fires may be banned. Limited, primitive toilet facilities may be provided for resource protection and human safety.

Livestock

Grazing stock is permitted except in established camp areas. Recreation stock is held overnight outside foreground of lakes and streams, away from camp areas and out of sight of trails.

Commercial stock is only permitted to travel through the zone to and from permitted range.

Pets

Pets must be under reliable voice control and/or physical restraint to protect both people and wildlife within the zone.

MANAGERIAL SETTING

Off-Site Evidence of Control

Management control necessary to protect the ecological and social elements throughout the Wilderness are evident outside the Wilderness, at trailheads and at boundary portals. Formal regulations, orders, and/or permits may be necessary to achieve management objectives. Formal and informal user education programs may be initiated to inform users about what to expect and how to use the area for optimum benefit to all. Visual Information System actions are designed to help meet management objectives, not to promote use.

¹People-caused noise levels as calculated by SPreAD.

On-Site Evidence of Controls

Wilderness Rangers contact an average of 10 percent of the parties using the area during the normal use season. Wilderness administration groups will conform to party size limitations, and where feasible work will be scheduled for low use periods.

Signs

Within the zone, provide minimum information necessary to protect Wilderness resource. A maximum of two directional signs with a maximum of two destinations per sign to be placed at trail junctions. Distances and place name information will not be provided.

Trails

Service Level C trails will normally be constructed, maintained and managed to accommodate light and infrequent travel. Routes will be maintained only for resource protection and to provide safe use by special groups or individuals with experience in rugged mountain terrain. The modification of natural environment would be minimal. The route should provide the user with an opportunity for testing skills and experiencing a sensation of physical exertion and a feeling of accomplishment.

A-4.

Wilderness Management Guidelines, Trailless Zone.

ZONE DESCRIPTION

Area is characterized by an extensive unmodified natural environment. Natural processes and conditions are not measurably affected by the actions of users. The zone is managed to be as free as possible from the influence of human activities.

Experience Opportunity

Provides an outstanding opportunity for isolation and solitude, free from evidence of human activities and with very infrequent encounters with users. The user has outstanding opportunities to travel cross-country utilizing a maximum degree of outdoor skills, often in an environment that offers a very high degree of challenge and risk.

PHYSICAL SETTING

Management will be to sustain or enhance the natural ecosystems so that evidence of man will not be noticeable for more than one season. Adjacent areas and zones will be managed to protect the natural integrity of the TRAILLESS zone.

Site Modification

Limited to only those which are considered necessary for resource protection.

Visual Elements (form, line, color, texture)

Human activities will emulate those of the natural landscape. Use will be dispersed to preserve natural appearing color and texture of vegetation.

Facilities

None will be provided.

SOCIAL SETTING

Noise

People-caused sounds¹ rated at D-1 are audible between camps and not heard on an average of more than 2 times per day by traveling groups.

Encounters

Maintain the opportunity to travel with no more than the one encounter per day between groups for a minimum of 50 percent of the season and no more than two encounters per day during the remainder of the use season. No other camping party visible from a campsite.

Group Size

Any combination of persons and recreation livestock not exceeding 12 (without written authorization).

Camps

Overnight camps will be encouraged on adjacent PRIMITIVE or other zones when and where possible. Encourage users to camp not more than one night in one site within the zone. Open fires discouraged except in emergencies. Toilet facilities will not be provided.

Livestock

Recreational stock use is discouraged. Recreation stock will be held overnight outside the foreground of lakes and streams, away from camp areas, and out of sight of trails.

Commercial stock is permitted. Grazing is allowed where and when compatible with other Wilderness uses and where damage does not occur to the Wilderness resource.

Pets

Pets must be under reliable voice control to protect wildlife within the zone.

MANAGERIAL SETTING

Off-Site Evidence of Control

Management control necessary to protect the ecological and social elements throughout the Wilderness, is evident outside the Wilderness, at trailheads and at boundary portals. Formal regulations, orders, and/or permits may be necessary to achieve management objectives. Formal and informal user education programs may be initiated to inform users about what to expect and how to use the area for optimum benefit to all. Visual Information System actions are designed to help meet management objectives, not to promote use.

On-Site Evidence of Controls

Patrols and monitoring of conditions by Forest Service and other appropriate state and Federal agency personnel only as necessary to achieve management objectives.

Scientific study and ecological monitoring actions will be scheduled to meet social setting criteria.

Signs

Within the zone provide only minimum information necessary to protect the resource. Signs may be placed in the other three use zones so as to minimize need for signs in TRAILLESS areas.

¹People-caused noise levels as calculated by SPreAD.

Exhibit B.

Wilderness Ranger Areas of Responsibility

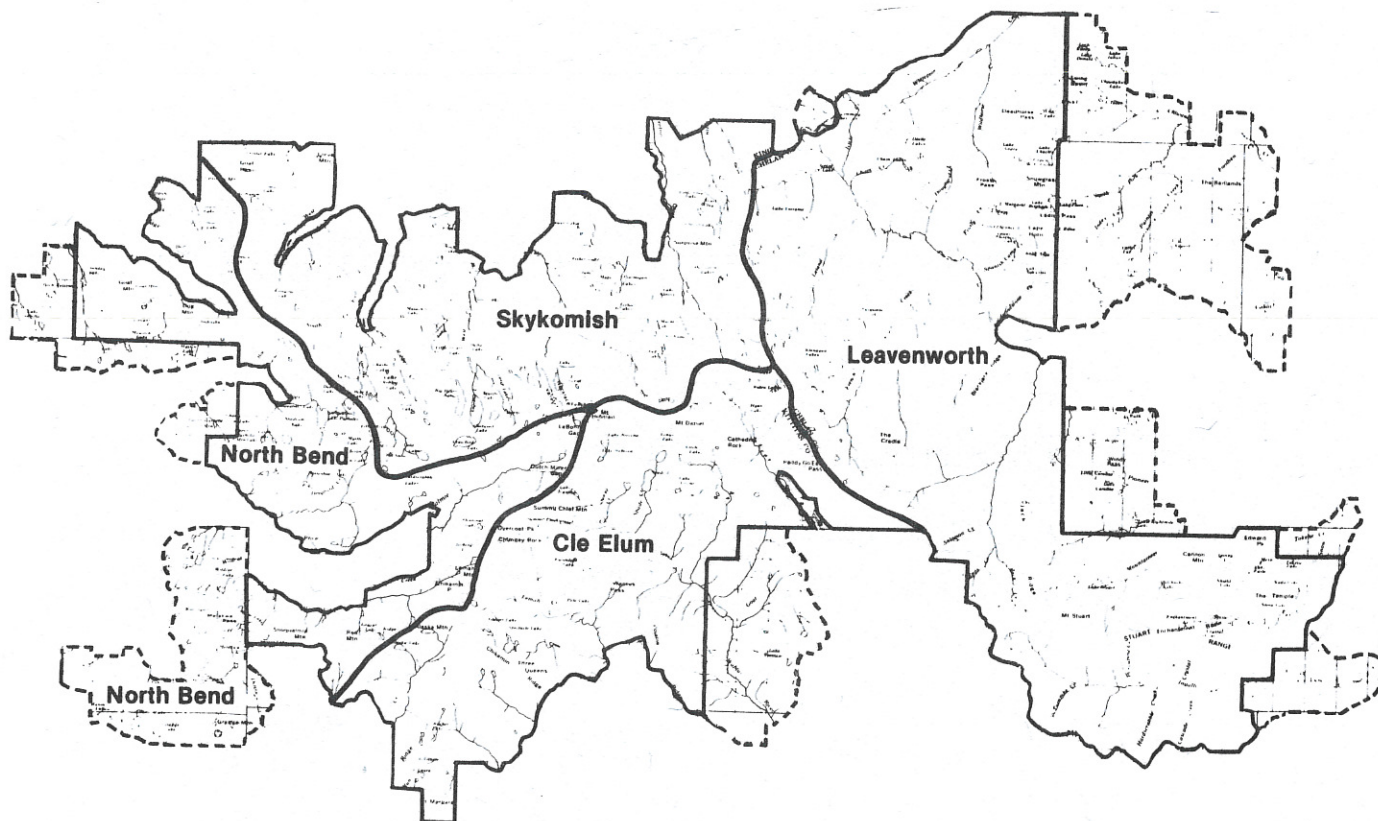


Exhibit C.

Region-6 Wilderness Management Standards.

Title 2300 — Recreation Management

2320.2 — Objectives. Increased use of Wilderness is leading to unacceptable degradation of resources and loss of solitude in Wilderness areas throughout the Region. The downward trend has reached the point where specific areas of most Wilderness no longer meet the two primary goals which are to (1) retain a primeval character and preserve natural ecosystems for future generations, and (2) provide outstanding opportunities for solitude or a primitive experience. While much of the unacceptable change is subtle and takes place over time, the results are obvious: loss of vegetation at camp sites, multiple trails, excessive widening of trail treads, exposure of roots and killing of trees by horses, crowding at focal points and complete removal of snags and dead down material in localized areas.

The key to meeting the goals of the Wilderness Act in future management lies in establishing specific and detailed objectives for logical management units of each Wilderness. Objectives must define, in measurable terms, the physical, biological, and social conditions which a manager seeks to attain. The basic intent of Wilderness management is nondegradation. However, any use will cause some change. Management objectives must spell out the acceptable limit of change.

The following objectives define the basic conditions or range of conditions that are acceptable for management of Wildernesses in the Pacific Northwest Region:

Soil

Displacement of soil from human activity will be limited to a rate that closely approximates the natural process, excluding natural disasters.

Soil compaction should not exceed limits which will prevent natural plant establishment and growth, except at some campsites (see vegetation), administrative facilities, and on designed trail tread.

Water

Maintain the natural quality of streams and lakes. There should be no measurable long term (more than 48 hours) degradation of water quality as a result of human's activity, including Forest Service administrative activity.

Vegetation

Maintain healthy, native vegetation in campsites. Some pristine areas should be managed for no loss of ground cover. At more heavily used areas, some loss of ground cover will be anticipated, but it should not exceed 400 square feet at any one site or

1 percent of any acre. There should be no loss of trees.

There should be no long-term modification of natural plant succession as a result of human activities on areas outside accepted campsites, trails, and administrative sites. Acceptable modifications are those which will recover in one growing season.

Dead standing (snags) and down vegetation should be managed to approximate natural conditions. All dead standing vegetation should be left in place unless it is an unacceptable hazard. Dead, down vegetation may be removed in amounts that can be replaced annually through natural accumulation.

Vegetation impacts along trails will be confined to the planned location, and within the design specifications for construction.

Wildlife

Maintain historical natural animal populations, use patterns and species compositions.

Social Setting

Encounters with other groups while traveling should be managed to provide for experiences ranging from one encounter per day to six per day.

Provide camping solitude ranging from no camps visible or audible from another camp to a maximum of two camps visible and audible.

Camps should be separated from other camps and set back from trails, meadows, lakes and streams at least 200 feet.

Size of parties should range from a maximum 6-12 people and livestock combined. Exceptions for larger parties, not to exceed a total of 30 people and livestock combined, may be provided through the Wilderness Management Plan where objectives for a particular zone will accommodate them. In all cases, larger parties will be authorized by a special-use permit which defines route of travel, camping locations and other conditions necessary to meet Wilderness management objectives.

Planning for management of the Wilderness must address all of the regionwide objectives. Any exceptions to these objectives must be justified and documented with plans. Additional objectives that are specific to an individual Wilderness or portion thereof may be required.

Most of the Wildernesses should be divided into zones to provide a variety of complimentary physical and social settings within the range of acceptable conditions defined by the regionwide objectives. From the user's standpoint, some zones should meet the exceptions of those seeking a primeval setting with a high degree of solitude and challenge. Others should meet the needs of those who want a wilderness experience with somewhat less solitude and challenge.

Core Enchantment Area.

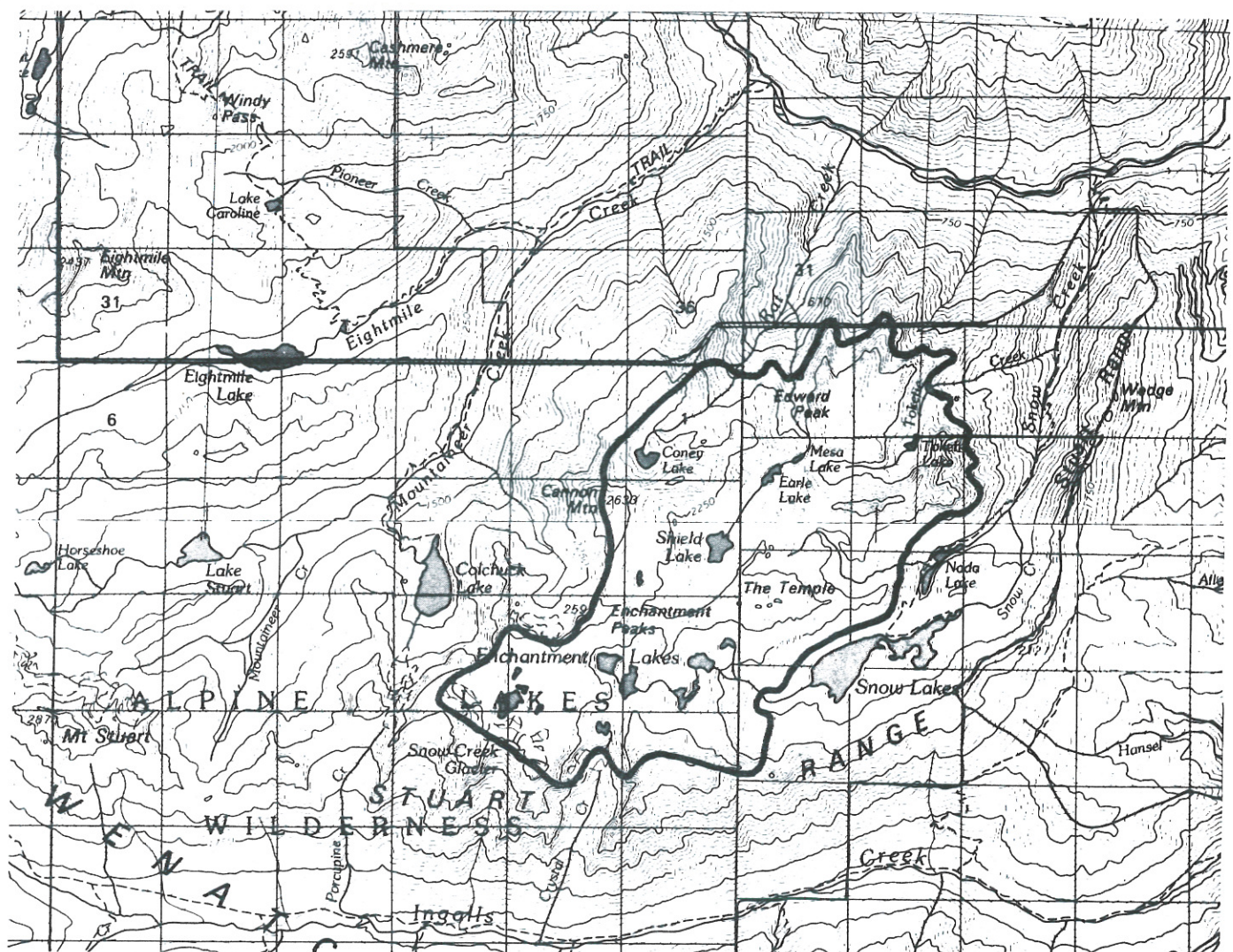


Exhibit E.

Wilderness Fisheries Inventory.

CT — Cutthroat
HLCT — Henry Lake Cutthroat
TLCT — Twin Lake Cutthroat
RB — Rainbow

MWRB — Mt. Whitney Rainbow
CCRB — Cape Cod Rainbow
GLDN — Golden Rainbow
EB — Eastern Brook
KA — Kamloops

F — Fixed Wing Air Stocking
R — Helicopter Stocking
P — Pack Animal Stocking
BP — Back Pack Stocking

Name	Location	Species	Stocking History	Stocking Method
North Bend Ranger District				
Anderson Lake	T. 25 N., R. 10 E. Sec. 35			
Avalanche Lake (Lower Burnt Boot)	T. 23 N., R. 12 E. Sec. 10	RB	1967, 77	
Bear Lake	T. 24 N., R. 11 E. Sec. 5	RB,CT,MWRB	1953,61,65,68,71,76,77	F
Bear Lakes	T. 25 N., R. 10 E. Sec. 14			
Bench Lake (Upper Paradise)	T. 25 N., R. 10 E. Sec. 15	TLCT	1973	
Big Snow Lake	T. 24 N., R. 11 E. Sec. 26	TLCT	1954,68,76	F
Blazier Lake	T. 24 N., R. 10 E. Sec. 33	RB,CT,MWRB	1953,61,66,71,78	
Boomerang Lake	T. 24 N., R. 10 E. Sec. 6			
Cad Lake	T. 22 N., R. 10 E. Sec. 1			
Chain Lakes	T. 24 N., R. 13 E. Sec. 20	CT	1958	
Carole Lake	T. 24 N., R. 11 E. Sec. 19	CT,RB,MWRB	1957,61,71,75	
Chair Peak Lake	T. 23 N., R. 10 E. Sec. 24			
Charlie Brown Lake	T. 24 N., R. 11 E. Sec. 19	MWRB,RB	1970, 78	
Cougar Lake	T. 25 N., R. 10 E. Sec. 33	CT,GRAY,GLDN,TLCT	1947,59,65,68,73,74	
Crawford Lake	T. 24 N., R. 12 E. Sec. 23	CT,GLDN	1957,66,78	
Crystal Lake	T. 22 N., R. 10 E. Sec. 1	CT,MWRB,TLCT	1970,73,74	
Deer Lake	T. 24 N., R. 11 E. Sec. 15	RB,CT,MWRB,	1953,61,67,69,72,77	F
Denney Lake (Evelyn)	T. 22 N., R. 10 E. Sec. 1			
Derrick Lake	T. 23 N., R. 10 E. Sec. 2	CT,MWRB	1954,61,65,73	F
Derrick Lake Pothole	T. 23 N., R. 10 E. Sec. 11			
Dream Lake	T. 24 N., R. 11 E. Sec. 5	RB,CT,MWRB	1953,64,69,77	R
Edds Lake	T. 23 N., R. 11 E. Sec. 24	CT,GLDN	1952,60,66,68,78	
Elbow Lake	T. 23 N., R. 10 E. Sec. 2	MWRB	1977	
Frozen Lake	T. 23 N., R. 10 E. Sec. 23	TLCT,MWRB	1973,78	
Gem Lake	T. 23 N., R. 10 E. Sec. 13	KA	1963	
Goat Lake	T. 24 N., R. 11 E. Sec. 28	RB,CT,CCRB	1958,63,67,76	
Gravel Lake	T. 23 N., R. 11 E. Sec. 23	CT,	1960,77	R
Green Ridge Lake	T. 24 N., R. 11 E. Sec. 30	MWRB	1973	
Hatchet Lake	T. 23 N., R. 10 E. Sec. 10			
Hester Lake	T. 23 N., R. 11 E. Sec. 3	CT,RB,MWRB	1947,62,70,71,78,79	
Hi-Low Lake	T. 24 N., R. 11 E. Sec. 29	CT,RB,TLCT	1955,60,65,69,72,78	
Hi-Low Potholes	T. 24 N., R. 11 E. Sec. 30			
Honey Lake	T. 24 N., R. 10 E. Sec. 5	RB	1951,68,70	
Horseshoe Lake	T. 24 N., R. 11 E. Sec. 28	RB,CT,CCRB	1958,63,67,76,77	
Horseshoe Lake	T. 23 N., R. 10 E. Sec. 2	RB	1972	
Ice Lake	T. 23 N., R. 10 E. Sec. 23	TLCT	1973	
Iceberg Lake (Upper Burnt Boot)	T. 23 N., R. 12 E. Sec. 11	RB	1957,67,77	
Island Lake	T. 22 N., R. 10 E. Sec. 4	RB,CT,MWRB	1953,61,66,70,73,77	R
Judy Lake	T. 24 N., R. 11 E. Sec. 19	CT	1957,60,67,77	
Kaleetan Lake	T. 23 N., R. 10 E. Sec. 23	RB	1971	F
Lake Caroline	T. 23 N., R. 10 E. Sec. 10	RB,CT	1945,62,66,70,76	F
Lake Isabella	T. 25 N., R. 9 E. Sec. 36	CT,RB	1954,65,68,72,76	
Lake Kanim	T. 25 N., R. 10 E. Sec. 11	CT	1957,58,66,68,73	
Lake Kullakulla	T. 23 N., R. 10 E. Sec. 32	CT,RB	1953,61,65,68,71,76	F
Lake Philippa	T. 25 N., R. 9 E. Sec. 25	RB,KA,CT,MWRB	1954,63,70,77	F
Le Fay Lake	T. 24 N., R. 11 E. Sec. 28	RB		
Lennox Lake	T. 25 N., R. 10 E. Sec. 24	RB	1962,66,69,75	
Little Cougar Lake (Goat Mt. Lake)	T. 25 N., R. 10 E. Sec. 28	CT,GLDN	1956	
Little Derrick Lake	T. 23 N., R. 10 E. Sec. 2	CT,MWRB	1954,61,65,73	
Little Kulla Lake	T. 23 N., R. 10 E. Sec. 32	CT,RB,MWRB	1950,1960,63,66,71,77	
Little Mason Lake	T. 23 N., R. 10 E. Sec. 32	MWRB	1978	
Little Pratt Lake	T. 23 N., R. 10 E. Sec. 35			
Loch Katrine	T. 25 N., R. 9 E. Sec. 24	CT,GLDN,RBMW	1953,59,65,71,77	F
Lower Garfield Mt. Lake	T. 24 N., R. 10 E. Sec. 24	CT,MWRB	1957,78,78	
Lower Hardscrabble Lake	T. 24 N., R. 11 E. Sec. 36	GRAY	1947	
Lower Lake Tuscohatche	T. 23 N., R. 10 E. Sec. 35	RB	1953,61,69,70	F
Lower Melakwa Lake	T. 23 N., R. 10 E. Sec. 25			
Lower Paradise Lake	T. 25 N., R. 10 E. Sec. 15	CT,KA,TLCT	1948,62,64,70,73	F

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Name	Location	Species	Stocking History	Stocking Method
North Bend Ranger District				
Lower Wildcat Lake	T. 23 N., R. 10 E. Sec. 12	CT,RB	1954,69	F
Lunker Lake	T. 24 N., R. 11 E. Sec. 29	CT,RB,MWRB	1957,60,65,69,77	
Marten Lake	T. 24 N., R. 10 E. Sec. 2	RB	1953,61,69,73	R
Mason Lake	T. 22 N., R. 10 E. Sec. 5	RB,MWRB	1958,61,68,76,79	F
Merlin Lake	T. 24 N., R. 11 E. Sec. 27	RB	1967,77	
Middle Paradise Lake	T. 25 N., R. 10 E. Sec. 15	CT,KA,TLCT	1948,62,64,73,74	R
Mowich Lake	T. 24 N., R. 10 E. Sec. 4	RB	1951,61,66,71,79	
My Lake	T. 23 N., R. 10 E. Sec. 26	CT,TLCT,MWRB	1966,73,78	
Myrtle Lake	T. 24 N., R. 11 E. Sec. 22	RB,CT,MWRB	1957,61,63,68,73,79	
Nimue Lake	T. 24 N., R. 11 E. Sec. 27	MWRB	1977	
Nordrum Lake	T. 24 N., R. 11 E. Sec. 20	CT,TLCT	1954,60,65,69,77	
Olallie Lake	T. 22 N., R. 10 E. Sec. 3	RB,CT,MWRB	1957,61,66,71,74,79	F
Overcoat Lake	T. 23 N., R. 12 E. Sec. 2	RB,	1966	
Pothole Lake	T. 24 N., R. 11 E. Sec. 5	RB,	1957,64,77	R
Pratt Lake	T. 23 N., R. 10 E. Sec. 34	RB,CY	1953,61,65,72	F
Price Lake	T. 23 N., R. 11 E. Sec. 3			
Quartz Lake	T. 24 N., R. 11 E. Sec. 31	CT,RB	1955,67,73	
Rainbow Lake	T. 22 N., R. 10 E. Sec. 4	RB	1958	
Rock Lake	T. 24 N., R. 11 E. Sec. 29	Brown	1979	
Shamrock Lake	T. 23 N., R. 10 E. Sec. 3	RB	1977	
Snoqualmie Lake	T. 24 N., R. 11 E. Sec. 16	CT,RB,MWRB	1956,57,61,63,65,68,73	F
Snoqualmie Lake Potholes (Lower)	T. 24 N., R. 11 E. Sec. 21	RB	1967,72,77	
Snoqualmie Lake Potholes (Upper)	T. 24 N., R. 11 E. Sec. 22	RB	1967,72,77	
Snow Lake	T. 23 N., R. 11 E. Sec. 19	RB,KA,CT,TLCT	1953,63,68,72,77	F
Spider Lake	T. 23 N., R. 10 E. Sec. 30	CT	1938	
Sunday Lake	T. 25 N., R. 10 E. Sec. 30			
Talapus Lake	T. 22 N., R. 10 E. Sec. 3	CT,RB	1955,59,72	
Thompson lake	T. 23 N., R. 10 E. Sec. 19	RB,CT,KAM,MWRB	1958,63,68,72,77	F
Unnamed Lake	T. 24 N., R. 11 E. Sec. 21	RB	1976	R
Unnamed Lake	T. 24 N., R. 10 E. Sec. 5			
Unnamed Lake	T. 23 N., R. 10 E. Sec. 13			
Unnamed Lake	T. 23 N., R. 10 E. Sec. 14			
Unnamed Lake	T. 23 N., R. 10 E. Sec. 33			
Unnamed Lake (2000' Snow Lk)	T. 23 N., R. 11 E. Sec. 20			
Unnamed Lake (3000' Snow Lk)	T. 23 N., R. 11 E. Sec. 20			
Unnamed Lake (NW of Hester)	T. 23 N., R. 11 E. Sec. 3			
Unnamed Lake (S of Nimue)	T. 24 N., R. 11 E. Sec. 27			
Unnamed Lake (SW of Big Snow)	T. 24 N., R. 11 E. Sec. 26			
Unnamed Lakes	T. 23 N., R. 10 E. Sec. 35			
Upper Garfield Mt. Lake	T. 24 N., R. 10 E. Sec. 24	RB,MWRB,CT	1945,47,57,73,78	
Upper Hardscrabble Lake	T. 24 N., R. 11 E. Sec. 36	GRAY,MWRB	1947,74	
Upper Hester Lake	T. 23 N., R. 11 E. Sec. 4	MWRB	1977	
Upper Lake Tuscohatche	T. 23 N., R. 10 E. Sec. 36			
Upper Loch Katrine	T. 25 N., R. 9 E. Sec. 25			
Upper Melakwa Lake	T. 23 N., R. 10 E. Sec. 25	CT,RB	1947,65,72,76	F
Upper Wildcat Lake	T. 23 N., R. 10 E. Sec. 11	CT,RB	1954,69,74	F
Williams Lake	T. 24 N., R. 13 E. Sec. 20	CT	1958,70,74	F
Windy Lake	T. 23 N., R. 10 E. Sec. 23	RB,MWRB	1969,1977	

Skykomish Ranger District

Al's Lake	T. 24 N., R. 13 E. Sec. 7	TLCT,RB	1971,75	
Alturas Lake	T. 25 N., R. 12 E. Sec. 28	CT,TLCT	1947,61,65,68,73	
Angeline Lake	T. 24 N., R. 12 E. Sec. 14	CT	1947,61,66	F
Azurite Lake	T. 24 N., R. 12 E. Sec. 14	CT,RB	1946,47,55,60,65,69,73	F
Big Heart Lake	T. 24 N., R. 12 E. Sec. 10	CT,RB	1946,47,55,60,65,69,73	F
Bonnie Lake	T. 24 N., R. 12 E. Sec. 13	GLDN,TLCT	1968,73	
Camp Robber Lake	T. 24 N., R. 11 E. Sec. 11	RB,TLCT	1969,74	
Cecil's Lake	T. 24 N., R. 11 E. Sec. 13			

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Name	Location	Species	Stocking History	Stocking Method
Skykomish Ranger District				
Charlie Lake #1	T. 24 N., R. 11 E. Sec. 11	CT,RB	1949,64,69,74	
Charlie Lake #2	T. 24 N., R. 11 E. Sec. 11	CT,RB	1947,64,69,74	
Charlie Lake #3	T. 24 N., R. 11 E. Sec. 11	CT,RB	1949,64,69,74	
Chetwoot Lake	T. 24 N., R. 12 E. Sec. 23	CT,TLCT	1953,65,68,72,77	F
Clarice Lake	T. 25 N., R. 13 E. Sec. 31	EB,RB	1955,65,72	F
Cleveland Lake	T. 25 N., R. 11 E. Sec. 5	CT	1949	
Cloudy Lake	T. 24 N., R. 13 E. Sec. 8	CT,RB	1966,71,75,78	
Coney Lake	T. 25 N., R. 10 E. Sec. 12	RB,MWRB	1951,67,75	
Copper Lake	T. 24 N., R. 12 E. Sec. 3	EB,RB,TLCT	1955,61,68,73	
Crawford Lake	T. 24 N., R. 12 E. Sec. 23	CT,GLDN	1957,66,68	
Crystal Lake	T. 25 N., R. 10 E. Sec. 1	CT,MW TLCT	1970,73,74	
Deception Lakes	T. 25 N., R. 13 E. Sec. 28	RB,CT	1951,61,66,69	
Delta Lake	T. 24 N., R. 12 E. Sec. 2	RB,CT,MWRB	1955,60,65,73	
Elelyn Lake (Elvin Lk)	T. 24 N., R. 14 E. Sec. 5			
Emerald Lake	T. 24 N., R. 13 E. Sec. 7	TLCT	1971,78	
Evans Lake	T. 25 N., R. 11 E. Sec. 24	RB,KA,MWRB	1948,63,74,79	
Fisher Lake	T. 25 N., R. 12 E. Sec. 26	CT,GLDN,RB,TLCT,HLCT	1955,60,65,69,71,79	F
Foehn Lake	T. 24 N., R. 13 E. Sec. 18	CT,GLDN	1957,74	
Foolsgold Lake	T. 24 N., R. 11 E. Sec. 23	TLCT	1973	
Francis Lake	T. 25 N., R. 11 E. Sec. 29	KA,RB,TLCT	1962,69,74	R
Glacier Lake	T. 25 N., R. 13 E. Sec. 16			
Gold Lake	T. 24 N., R. 11 E. Sec. 24	CT,RB	1954,69	F
Golden Lake	T. 24 N., R. 12 E. Sec. 14	CT	1947,61,66	
Gouging Lake	T. 25 N., R. 11 E. Sec. 31	RB	1951	
Gus's Lake	T. 24 N., R. 11 E. Sec. 13	CT	1957	
Hinter Lake	T. 25 N., R. 11 E. Sec. 35	CT	1963,65,77	
Jade Lake	T. 24 N., R. 13 E. Sec. 2	RB,CT	1939,51,79	F
Jade Lake	T. 24 N., R. 13 E. Sec. 7	CT	1971,78	
Jewel Lake	T. 24 N., R. 12 E. Sec. 12			
June Lake	T. 25 N., R. 12 E. Sec. 26	CT TLCT	1967,73,78	
La Bohn Lakes	T. 24 N., R. 13 E. Sec. 17	TLCT	1977	
Lake Dorothy	T. 24 N., R. 11 E. Sec. 3	EB,RB,TLCT	1954,61,65,68,69,72,74,78	F
Lake Ilswoot	T. 24 N., R. 13 E. Sec. 8	RB,CT,TLCT	1953,66,68,72,77	F
Lake Lepul	T. 24 N., R. 13 E. Sec. 8	GLDN	1977	
Little Chetwoot	T. 24 N., R. 12 E. Sec. 23			
Little Heart Lake	T. 24 N., R. 12 E. Sec. 3	RB,CT	1957,61,68,73	F
Little Myrtle Lake	T. 24 N., R. 11 E. Sec. 23	MWRB	1977	
Little Plug Lake	T. 25 N., R. 13 E. Sec. 17			
Locket Lake	T. 24 N., R. 13 E. Sec. 7	RB	1939,53,69,76	R
Lower Fisher Lake	T. 25 N., R. 12 E., Sec. 25			
Lower Jewel Lake	T. 25 N., R. 12 E. Sec. 22			
Lower Murphy Lake	T. 25 N., R. 13 E. Sec. 4	CT,RB	1959,69	
Lower Ptarmigan Lake	T. 25 N., R. 12 E. Sec. 25	CT,GLDN	1946,59,60,64,68	F
Lower Tank Lake	T. 24 N., R. 13 E. Sec. 19	CT	1957	
Malachite Lake	T. 24 N., R. 11 E. Sec. 36	RB,CT,TLCT	1957,1961,62,66,70,76	F
Marlene Lake	T. 24 N., R. 11 E. Sec. 23	RB,KA,TLCT	1948,63,77	
Marmot Lake	T. 25 N., R. 13 E. Sec. 31	CT	1954,60,65,70,73	F
Mary Lake	T. 25 N., R. 12 E. Sec. 26	CT	1954,67,78	
Mig Lake	T. 26 N., R. 12 E. Sec. 36			
Moir Lake	T. 24 N., R. 11 E. Sec. 23	RB,CT	1948,70,77	
Nazanne Lake	T. 24 N., R. 12 E. Sec. 1	RB,CT	1948,62,64,67,76	
No Name Lake	T. 24 N., R. 13 E. Sec. 2	RB,MWRB	1947,79	
Opal Lake	T. 24 N., R. 13 E. Sec. 17	CT,TLCT,RB	1966,71,75,78	
Otter Lake	T. 24 N., R. 12 E. Sec. 11	CT	1960,68	F
Panorama Lake	T. 25 N., R. 11 E. Sec. 25	RB	1970	
Pugsley lake	T. 24 N., R. 11 E. Sec. 10	EB	1961	F
Purvis Lake	T. 25 N., R. 11 E. Sec. 26	CT	1943	
Rock Lake	T. 25 N., R. 11 E. Sec. 25	EB	1979	
Smith Lake	T. 24 N., R. 11 E. Sec. 32	RB,MWRB	1970,79	
Spark Plug Lake	T. 25 N., R. 13 E. Sec. 17	RB,CT,TLCT	1951,61,66,73	F
Surprise Lake	T. 25 N., R. 13 E. Sec. 16			
T'ahl Lake	T. 24 N., R. 13 E. Sec. 18	CT,GLDN	1957,78	
Terrace Lakes	T. 25 N., R. 12 E. Sec. 36	CT	1950,1967,71,77	

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Name	Location	Species	Stocking History	Stocking Method
Skykomish Ranger District				
Top Lake	T. 25 N., R. 11 E. Sec. 24	CT,MWRB	1972,79	
Trico Lake (Basin Lk)	T. 24 N., R. 14 E. Sec. 5	TLCT	1973	
Trout Lake	T. 25 N., R. 12 E. Sec. 31	RB,CT MWRB	1958,62,64,69,70,72,73,76	F
Turnwater Lake	T. 25 N., R. 11 E. Sec. 28	RB	1972,77	
Gamson Lake (E of Cecil Lk)	T. 24 N., R. 11 E. Sec. 13			
Unnamed Lake	T. 24 N., R. 11 E. Sec. 24			
Unnamed Lake	T. 24 N., R. 11 E. Sec. 25			
Unnamed Lake	T. 25 N., R. 12 E. Sec. 23			
Unnamed Lake	T. 24 N., R. 12 E. Sec. 3	CT	1977	
Unnamed Lake	T. 24 N., R. 12 E. Sec. 14			
Unnamed Lake	T. 24 N., R. 13 E. Sec. 15			
Unnamed Lake	T. 24 N., R. 12 E. Sec. 22			
Unnamed Lake	T. 24 N., R. 12 E. Sec. 23			
Unnamed Lake	T. 24 N., R. 12 E. Sec. 24			
Unnamed Lake	T. 25 N., R. 13 E. Sec. 16			
Unnamed Lake	T. 25 N., R. 13 E. Sec. 34	TLCT,HLCT	1979	
Unnamed Lake	T. 24 N., R. 12 E. Sec. 15			
Unnamed Lake	T. 24 N., R. 13 E. Sec. 17			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 34			
Unnamed Lake (E of Big Snow)	T. 24 N., R. 11 E. Sec. 25			
Unnamed Lake	T. 24 N., R. 11 E. Sec. 13	RB	1976	
Unnamed Lake (NE of Camp Robber)	T. 24 N., R. 11 E. Sec. 12			
Unnamed Lake (NW of Decep. Pass)	T. 24 N., R. 13 E. Sec. 1			
Unnamed Lake (S of Azurite Lk)	T. 24 N., R. 12 E. Sec. 14			
Unnamed Lake (S of Azurite Lk)	T. 24 N., R. 12 E. Sec. 14			
Unnamed Lake (S of Gold Lk)	T. 24 N., R. 11 E. Sec. 25			
Unnamed Lake (SW of Gold Lk)	T. 24 N., R. 11 E. Sec. 25			
Unnamed Lake (SW of Little Heart)	T. 24 N., R. 11 E. Sec. 12			
Unnamed Lake (W of Decpt. Pass)	T. 24 N., R. 13 E. Sec. 1			
Unnamed Lake (W of Gus Lk)	T. 24 N., R. 11 E. Sec. 13			
Unnamed Lake(4)	T. 24 N., R. 13 E. Sec. 11			
Unnamed Lake	T. 25 N., R. 12 E. Sec. 26			
Upper Jewel Lake	T. 25 N., R. 12 E. Sec. 22			
Upper Murphy Lake	T. 25 N., R. 13 E. Sec. 10	RB,CT	1949,59,69	F
Upper Ptarmigan	T. 25 N., R. 12 E. Sec. 36	CT	1954,61,7	F
Unnamed Tank Lake	T. 24 N., R. 13 E. Sec. 18	CT	1957	
View Lake	T. 24 N., R. 12 E. Sec. 12	CT,HLCT	1962, 76	
Cle Elum Ranger District				
Alaska Lake	T. 23 N., R. 11 E. Sec. 25	CT	1952,53,61,66,68,70,72,74,76	BP,F
Beaver Puss Lakes	T. 22 N., R. 11 E. Sec. 12	CT	1967	BP
Box Canyon Lake	T. 22 N., R. 1 E. Sec. 10	RB,CT	1937,41,48,58,67,71,76	P,BP
Chickamin Lake	T. 23 N., R. 12 E. Sec. 14			
Circle Lake	T. 24 N., R. 13 E. Sec. 24	RB,CT	1949,77	P,F
Deadhead Lake	T. 24 N., R. 13 E. Sec. 36	CT	1959,77	BP,F
Deep Lake	T. 24 N., R. 14 E. Sec. 30	RB,CT	1958,60,62, 64,68,70,72,75,77	F
Deer Lakes	T. 24 N., R. 14 E. Sec. 30	RB	1937,48,53	F
Diamond Lake	T. 23 N., R. 13 E. Sec. 36	CT	1956,58,60,62,64,66,68,70,72,75	F
Escondido Lake	T. 23 N., R. 13 E. Sec. 09	CT,HLCT	1941,48,79	P,F
Glacier Lake	T. 23 N., R. 12 E. Sec. 23	CT,GT	1949,59,66,78	P,BP
Goat Lake	T. 23 N., R. 14 E. Sec. 20	CT,RB	1935,41,51	
Gold Lake	T. 22 N., R. 11 E. Sec. 12	RB	1966,70,78,79	BP
Hi Box Lake	T. 22 N., R. 12 E. Sec. 12	CT,RB	1959,68,78	BP
Hyas Lake	T. 24 N., R. 14 E. Sec. 20	RB,EB	1963,64,66,67,68,69,70,74,76,77,79	F
Joe Lake	T. 23 N., R. 12 E. Sec. 22	CT	1952,54,61,64,66,68,70,72,74,76	F
Lake Ivanhoe	T. 24 N., R. 13 E. Sec. 32	CT	1963,72	F
Lake Laura	T. 22 N., R. 11 E. Sec. 13	CT,RB	1955,65,78	P,BP
Lake Lillian	T. 22 N., R. 11 E. Sec. 13	CT	1943,49,53,61,64,66,72,79	P,F

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Name	Location	Species	Stocking History	Stocking Method
Cle Elum Ranger District				
Lake Michael	T. 23 N., R. 14 E. Sec. 22	RB	1963,64,65,66,67,68,70,72,75,79	F
Lake Rebecca	T. 24 N., R. 13 E. Sec. 21	CT	1976	F
Lake Rowona	T. 24 N., R. 13 E. Sec. 21	CT	1968,76	
Lake Terrence	T. 23 N., R. 14 E. Sec. 28	RB	1959,60,62,63,64,65,66,70,72,79	F
Lake Vicente	T. 24 N., R. 13 E. Sec. 25	CT	1941,65,67,70	P,F
Lemah Lake	T. 23 N., R. 12 E. Sec. 13	CT	1950	
Lila Lake	T. 22 N., R. 12 E. Sec. 3	CT,RB	1955,62,68	
Lower Parks Lake	T. 23 N., R. 12 E. Sec. 25	RB,CT	1941,48,55,59,61,70,72,76	P,F
Lower Robin Lake	T. 24 N., R. 14 E. Sec. 9	RB,CT	1949,51,55,62,65,74,76,77	P,F
Margaret Lake	T. 22 N., R. 12 E. Sec. 22			
Moonshine Lake	T. 23 N., R. 14 E. Sec. 10	RB	1940,48	P
Peggy's Pond	T. 24 N., R. 14 E. Sec. 19	CT	1953,59,61,64,66,72	P,F
Pete Lake	T. 23 N., R. 13 E. Sec. 20	CT,RB,EB	1960,62,64,66,69,71,73,75,76,77	F
Rachel Lake	T. 22 N., R. 12 E. Sec. 10	CT	1948,52,55,58,61,64,66,68,71,73	P,F
Rampart Lakes	T. 22 N., R. 11 E. Sec. 1	CT	1948,52,63,66,68,71,73	P,F
Ridge Lake	T. 23 N., R. 11 E. Sec. 23	RB,CT	1952,64,72,77	BP
Shovel Lake	T. 24 N., R. 13 E. Sec. 27	CT	1950,53,62,66,70,74	F
Spade Lake	T. 24 N., R. 13 E. Sec. 26	CT	1940,77	P,BP
Spectacle Lake	T. 23 N., R. 12 E. Sec. 23	CT	1974	F
Squaw Lake	T. 24 N., R. 14 E. Sec. 29	RB,CT	1937,41,51,54,72,77	P,F
Squitch Lake	T. 24 N., R. 14 E. Sec. 33	RB,CT	1951,54,62,67	F
Stonesthrow Lake	T. 22 N., R. 12 E. Sec. 22	CT,RB	1966,68,71,73,79	F,BP
Summit Chief Lake	T. 23 N., R. 13 E. Sec. 6	GT	1970	BP
Tuck Lake	T. 24 N., R. 14 E. Sec. 8	CT	1943,49,52,53,59,62	P,F
Tuck's Pond	T. 24 N., R. 14 E. Sec. 8			
Twin Lakes	T. 22 N., R. 12 E. Sec. 22	RB,CT	1940,45,60,62,63,65,67,73,79	P,F,BP
Unnamed Lake	T. 24 N., R. 14 E. Sec. 9			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 16			
Unnamed Lake	T. 24 N., R. 13 E. Sec. 27			
Unnamed Lake	T. 24 N., R. 13 E. Sec. 31			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 32			
Unnamed Lake	T. 23 N., R. 13 E. Sec. 20			
Unnamed Lake	T. 23 N., R. 13 E. Sec. 20			
Unnamed Lake	T. 23 N., R. 13 E. Sec. 26			
Unnamed Lake	T. 23 N., R. 13 E. Sec. 36			
Unnamed Lake	T. 23 N., R. 12 E. Sec. 14			
Unnamed Lake	T. 23 N., R. 12 E. Sec. 25			
Unnamed Lake	T. 23 N., R. 14 E. Sec. 8			
Unnamed Lake	T. 23 N., R. 14 E. Sec. 22			
Unnamed Lake (NE of Alta Mt)	T. 23 N., R. 12 E. Sec. 34			
Unnamed Lake (SE of Peggy's Pond)	T. 24 N., R. 14 E. Sec. 19			
Unnamed Lake (SW of Peggy's Pond)	T. 24 N., R. 14 E. Sec. 19			
Unnamed Lakes	T. 23 N., R. 13 E. Sec. 8 NE			
Unnamed Lake	T. 23 N., R. 13 E. Sec. 26			
Upper Parks Lake	T. 23 N., R. 12 E. Sec. 26	RB,CT	1941,48,55,59,61,70,72,76	P,F
Upper Robin Lake	T. 24 N., R. 14 E. Sec. 9	RB,CT	1949,51,55,62,65,74,76,77	P,F
Venus Lake	T. 24 N., R. 13 E. Sec. 23	CT	1977	F
Waptus Lake	T. 23 N., R. 13 E. Sec. 12	RB,EB	1965,66,68,69,70,74,75,76,77,79	F
Lake Wenatchee Ranger District				
Lake Donald	T. 26 N., R. 16 E. Sec. 19	RB,CT	1940,50,59,64,74,79	P,F
Lake Ethel	T. 26 N., R. 16 E. Sec. 18	RB,EB,CT	1950,54,55,60,64,66,67,70,72,74	P,F
Lake Julius	T. 26 N., R. 16 E. Sec. 20	CT	1941,42,46,48,55,67	P,F
Loch Eileen	T. 26 N., R. 16 E. Sec. 19	CT	1937,41,46,53,55,61,67,71,74,79	P,F
Lower Grace Lake	T. 25 N., R. 15 E. Sec. 2	CT	1936,59,61	P,BP
Upper Grace Lake	T. 25 N., R. 15 E. Sec. 1	CT	1936,59,61	P,BP

Wilderness Fisheries Inventory.

CT — Cutthroat
HLCT — Henry Lake Cutthroat
TLCT — Twin Lake Cutthroat
RB — Rainbow

MWRB — Mt. Whitney Rainbow
CCRB — Cape Cod Rainbow
GLDN — Golden Rainbow
EB — Eastern Brook
KA — Kamloops

F — Fixed Wing Air Stocking
R — Helicopter Stocking
P — Pack Animal Stocking
BP — Back Pack Stocking

Name	Location	Species	Stocking History	Stocking Method
Leavenworth Ranger District				
Bob's Lake (Little Klonauqua)	T. 24 N., R. 14 E. Sec. 10	CT	1972	F
Carrie Lake	T. 24 N., R. 14 E. Sec. 23			
Cartes Lake	T. 25 N., R. 16 E. Sec. 21			
Chiwaukum Beaver Ponds	T. 26 N., R. 16 E. Sec. 33			
Chiwaukum Lake	T. 26 N., R. 16 E. Sec. 29	CT',EB	1936,39,40,41,42,44,46	P,BP
Coney Lake (Rat Lk)	T. 23 N., R. 16 E. Sec. 1	CT	1954,73	F,R
Cradle Lake	T. 24 N., R. 15 E. Sec. 20	RB,CT	1942,46,53,65,70	P,F
Crystal Lake	T. 23 N., R. 16 E. Sec. 23	GT	1966	BP
Cuitin Lake	T. 25 N., R. 14 E. Sec. 25	RB,CT	1941,55,59,67,71	P,F
Cup Lake	T. 25 N., R. 15 E. Sec. 36			
Doelle Lakes	T. 25 N., R. 15 E. Sec. 5	CT	1941,54,61,76	P,F
Eightmile Lake	T. 24 N., R. 16 E. Sec. 33	RB,CT',MACK	1959,62,64,65,66,67,70,71,72,74,79	P,F
Enchantment Lake #1 (Naiad)	T. 23 N., R. 16 E. Sec. 13	CT, RB	1953,61,66,74,79 (66)	F(BP)
Enchantment Lake #10	T. 23 N., R. 16 E. Sec. 14	GT	1960,66	F,BP
Enchantment Lake #2	T. 23 N., R. 16 E. Sec. 13	CT	1953,61,66,72,74,79	F
Enchantment Lake #3	T. 23 N., R. 16 E. Sec. 13	CT	1953,61,66,72,74,79	F
Enchantment Lake #4	T. 23 N., R. 16 E. Sec. 13	CT	1953,61,66,72,74,79	F
Enchantment Lake #5	T. 23 N., R. 16 E. Sec. 14	CT	1953,61,66,72,74,79	F
Enchantment Lake #6 & 7	T. 23 N., R. 16 E. Sec. 14			
Enchantment Lake #8	T. 23 N., R. 16 E. Sec. 14			
Enchantment Lake #9	T. 23 N., R. 16 E. Sec. 14	GT	1960,66	F,BP
Granite Mt. Potholes	T. 24 N., R. 14 E. Sec. 5	RB	1957,77	BP
Grass Lake	T. 25 N., R. 13 E. Sec. 12			
Hart Lake	T. 23 N., R. 17 E. Sec. 9	EB'		
Honour Lake	T. 26 N., R. 16 E. Sec. 29	EB'		
Hope Lake	T. 26 N., R. 13 E. Sec. 35	RB,EB,CT	1933,37,56,79	
Horseshoe Lake	T. 23 N., R. 15 E. Sec. 12	RB,CT	1941,79	P
Intermittent Lake	T. 25 N., R. 13 E. Sec. 27			
Intermittent Lake	T. 24 N., R. 15 E. Sec. 25			
Intermittent Lake	T. 24 N., R. 16 E. Sec. 16			
Jack Lake	T. 23 N., R. 15 E. Sec. 12	CT	1954	F
Josephine Lake	T. 26 N., R. 14 E. Sec. 25	RB,CT	1955,62,66,67,70,71,72,73,74,79	F
Jung Frau Lake	T. 24 N., R. 14 E. Sec. 5	CT	1957	
Knox Lake	T. 25 N., R. 16 E. Sec. 5	CT	1961,72,76,79	F
Lake Alice	T. 25 N., R. 15 E. Sec. 24	CT	1933,36,39,41,62,67	P,F
Lake Augusta	T. 25 N., R. 16 E. Sec. 22	RB,CT	1940,49,51,55,59,65,67,70,72,79	P,F
Lake Brigham	T. 25 N., R. 15 E. Sec. 13	CT	1933,36,39,41,42,44,71	P,F
Lake Caroline	T. 24 N., R. 16 E. Sec. 29	RB,CT	1940,47,51,53,54,60,66,70,73,79	P,BP,F
Lake Charles	T. 25 N., R. 16 E. Sec. 1			
Lake Colchuck	T. 23 N., R. 16 E. Sec. 10	RB,CT	1939,40,42,53,54,58,63,68,74,79	P,F
Lake Earle	T. 23 N., R. 16 E. Sec. 7	CT	1939, (est.)	P
Lake Edna	T. 25 N., R. 15 E. Sec. 13	CT	1936,54	P,F
Lake Flora	T. 25 N., R. 15 E. Sec. 13	RB,CT	1933,39,41,42,44,50,53,61,66,74	P,F
Lake Ida	T. 25 N., R. 15 E. Sec. 28	CT	1934,36,37,51,55,71,79	P,F
Lake Ingalls	T. 23 N., R. 15 E. Sec. 23	RB,CT	1950,54,65,67,71,74	P,F
Lake Lorraine	T. 25 N., R. 15 E. Sec. 13	CT	1939,65,74	P,F
Lake Margaret	T. 25 N., R. 13 E. Sec. 15	RB,CT	1940,41,44,47,51,53,59,66,70,72	P,F
Lake Mary	T. 25 N., R. 15 E. Sec. 14	RB,CT	1941,56,59,66	P,F
Lake Ruth	T. 24 N., R. 16 E. Sec. 16	RB	1965,70	BP
Lake Stuart	T. 23 N., R. 16 E. Sec. 8	CT	1964,65,66,67,68,70,71,72,74,79	P,F
Lake Susan Jane	T. 26 N., R. 13 E. Sec. 25	RB,CT	1941,51,61,63,67,70,72,77	P,BP
Lake Sylvester	T. 25 N., R. 15 E. Sec. 25	CT	1970,79	F
Lake Victoria	T. 24 N., R. 16 E. Sec. 16	RB,CT	1940,54,61,65,67,70,72,79	P,F
Larch Lake	T. 26 N., R. 15 E. Sec. 25	RB,CT	1941,42,46,47,53,54,60,64,65,66,74	P,F
Leland Lake	T. 24 N., R. 14 E. Sec. 4	CT	1939,41,46,55,59,67	P,F
Little Caroline Lake	T. 24 N., R. 16 E. Sec. 29	CT	1951,73	P,R
Little Eightmile Lake	T. 24 N., R. 16 E. Sec. 33	EB'		
Lower Big Jim Mt. Lake	T. 25 N., R. 16 E. Sec. 14	CT	1951,64,71	F
Lower Chain Lake	T. 25 N., R. 15 E. Sec. 5	CT	1941,54,61,67	BP,F

Wilderness Fisheries Inventory.

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EB — Eastern Brook
KA — Kamloops

F — Fixed Wing Air Stocking
R — Helicopter Stocking
P — Pack Animal Stocking
BP — Back Pack Stocking

Name	Location	Species	Stocking History	Stocking Method
Leavenworth Ranger District				
Lower French Potholes	T. 24 N., R. 14 E. Sec. 15			
Lower Jason Lake	T. 24 N., R. 14 E. Sec. 29	CT ³		
Lower Klonauqua Lake	T. 24 N., R. 14 E. Sec. 3	RB,CT	1940,54,60,64,70	P,F
Lower Lake Florence	T. 25 N., R. 15 E. Sec. 23	CT	1938,41,55	P,F
Lower Phoebe Lake	T. 24 N., R. 14 E. Sec. 5	CT ³		
Lower Snow Lake	T. 23 N., R. 17 E. Sec. 17	EB ¹		
Mesa Lake	T. 23 N., R. 17 E. Sec. 7	CT	1939 (est.)	P
Middle Chain Lake	T. 25 N., R. 15 E. Sec. 5	CT	1941,54,61,67	BP,F
Middle Jason Lake	T. 26 N., R. 16 E. Sec. 30	CT ³		
Nada Lake (Hart)	T. 23 N., R. 17 E. Sec. 17	EB ¹		
Seven Lakes	T. 23 N., R. 16 E. Sec. 14			
Shield Lake	T. 23 N., R. 16 E. Sec. 12	CT	1939 (est.)	P
Spirit Lake	T. 23 N., R. 15 E. Sec. 15			
Sprite Lake	T. 24 N., R. 14 E. Sec. 26	RB	1937,52	P,F
Square Lake	T. 25 N., R. 13 E. Sec. 22	RB,CT	1935,36,39,40,41,54,67,79	P,F
Swallow Lake #1	T. 25 N., R. 13 E. Sec. 26	CT	1935,36,66	P,F
Swallow Lake #2	T. 25 N., R. 13 E. Sec. 35	CT	1935,36,66	P,F
Swallow Lake #3	T. 25 N., R. 13 E. Sec. 34	HLCT ⁴	1979	BP
Swallow Lake #4	T. 25 N., R. 13 E. Sec. 35	HLCT ⁴	1979	BP
Swimming Deer Lake	T. 26 N., R. 14 E. Sec. 35	CT	1970,72,77	BP
Thunder Mtn. Lakes	T. 25 N., R. 13 E. Sec. 15	RB,CT	1939,77	P,BP
Toketie Lake	T. 23 N., R. 17 E. Sec. 8	CT	1939	P
Trap Lake	T. 25 N., R. 13 E. Sec. 10	CT	1954,57,66,74	F
Trout Lake	T. 24 N., R. 15 E. Sec. 24	RB,CT	1942,45,46,51,55,62,65,66,70,72	P,F
Turquoise Lake	T. 25 N., R. 14 E. Sec. 36	CT	1941,53,71,74	P,F
Unnamed Lake	T. 24 N., R. 15 E. Sec. 35			
Unnamed Lake	T. 24 N., R. 13 E. Sec. 15			
Unnamed Lake	T. 25 N., R. 13 E. Sec. 27	HLCT ⁴	1979	BP
Unnamed Lake	T. 24 N., R. 14 E. Sec. 2			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 3			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 3			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 4			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 5			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 9			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 9			
Unnamed Lake	T. 24 N., R. 14 E. Sec. 10			
Unnamed Lake	T. 25 N., R. 15 E. Sec. 8			
Unnamed Lake	T. 24 N., R. 15 E. Sec. 24			
Unnamed Lake	T. 26 N., R. 13 E. Sec. 35			
Unnamed Lake	T. 24 N., R. 15 E. Sec. 36			
Unnamed Lake	T. 24 N., R. 16 E. Sec. 16			
Unnamed Lake	T. 24 N., R. 16 E. Sec. 20			
Unnamed Lake	T. 23 N., R. 15 E. Sec. 23			
Unnamed Lake	T. 25 N., R. 13 E. Sec. 27	HLCT ⁴	1979	BP
Unnamed Lake	T. 25 N., R. 13 E. Sec. 26	HLCT ⁴	1979	BP
Unnamed Lake	T. 23 N., R. 16 E. Sec. 12			
Unnamed lake	T. 23 N., R. 17 E. Sec. 7			
Upper Big Jim Mt. Lake	T. 25 N., R. 16 E. Sec. 14			
Upper Chain Lake	T. 25 N., R. 15 E. Sec. 5	CT	1941,54,61,67	BP,F
Upper French Potholes	T. 24 N., R. 14 E. Sec. 16			
Upper Jason Lake	T. 26 N., R. 16 E. Sec. 31	CT	1953	F
Upper Klonauqua Lake	T. 24 N., R. 14 E. Sec. 3	RB,CT	1940,1954,60,64,70	P,F
Upper Lake Florence	T. 25 N., R. 15 E. Sec. 14	CT	1938,41,51,71	P,F
Upper Phoebe Lake	T. 24 N., R. 14 E. Sec. 5	CT	1936,57,64	P,F
Upper Snow Lake	T. 23 N., R. 17 E. Sec. 17	EB ¹		
Wolverine Lake	T. 25 N., R. 13 E. Sec. 22	RB	1940,41,46,79	P,F
Welcome Lake	T. 24 N., R. 14 E. Sec. 2	CT	1979	F

1. Eastern Brook, self supporting —no record of planting date.

2. Mackinaw population self-supporting-EB prevail in outlet stream—no records of either plant.

3. Self-sustaining CT from Upper Lake plants.

4. Henry Lake Cutthroat obtained from National Marine Fisheries Service and stocked by Trailblazers club.

Exhibit F.

Trail Service Levels.

Service Level A — Managed to accommodate heavy traffic for the entire use period. The trail blends into the natural features of the area and is easy to use. Users should not expect solitude. Socializing with others may be a part of the recreation experience and contact with others may be frequent to continuous among users. It will be obvious to the users that they are in a predictable situation where they will not normally need to use advanced outdoor skills.

Service Level B — Managed to accommodate moderate use for the majority of the use period. The trail only modifies natural conditions to protect the environment and provide for the user with limited outdoor experience and average physical ability. Users should expect to find opportunities to both socialize and have a moderate degree of solitude during low use periods.

Service Level C — Managed to accommodate light and infrequent travel. Routes maintained only for resource protection and to provide use by special groups or individuals with experience in rugged mountain terrain. The modification of natural environment will be minimal. During all seasons, the user should experience a moderate to high degree of solitude from other individuals or small groups. The route should provide the user with an opportunity for testing skills and experiencing physical exertion and a feeling of accomplishment.

Service Level D — Identifies those trails to be abandoned in order to accomplish the Wilderness management objectives. If necessary, these trails will be obliterated and the land restored to a natural condition through revegetation.

Alpine Lakes Area Management Act of 1976



Public Law 94-357
94th Congress, H. R. 7792
July 12, 1976

An Act

To designate the Alpine Lakes Wilderness, Mount Baker-Snoqualmie and Wenatchee National Forests, in the State of Washington.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Alpine Lakes Area Management Act of 1976".

Alpine Lakes
Area Manage-
ment Act of
1976.
16 USC 1132
note.
16 USC 1132
note.

FINDINGS AND PURPOSES

SEC. 2. (a) The Congress finds that:

(1) The Cascade Mountains of the State of Washington between Stevens Pass and Snoqualmie Pass, commonly known as the Alpine Lakes region, comprise an environment of timbered valleys rising to rugged, snowcovered mountains, dotted with over seven hundred lakes, displaying unusual diversity of natural vegetation, and providing habitat for a variety of wildlife.

(2) This region is abundant in its multiple resources, including an abundant source of pure water, commercial forests, an outdoor laboratory for scientific research and educational activities, and opportunities for great diversity of recreational use and enjoyment during all seasons of the year, in particular for quality hunting, fishing, motorized recreation, skiing, picnicking, camping, rock collecting, nature study, backpacking, horseback riding, swimming, boating, mountain climbing, and many others, together with the opportunity for millions of persons traveling through the periphery of the area to enjoy its unique values.

(b) Purposes of this Act: In order to provide for public outdoor recreation and use and for economic utilization of commercial forest lands, geological features, lakes, streams and other resources in the Central Cascade Mountains of Washington State by present and future generations, there is hereby established, subject to valid existing rights an Alpine Lakes Area, including an Alpine Lakes Wilderness, an "Intended Wilderness" and a management unit, comprising approximately nine hundred and twenty thousand acres.

16 USC 1132
note.

Description and
map; publica-
tion in Federal
Register.

Administration.

SEC. 3. (a) The Alpine Lakes Wilderness (hereinafter referred to as "the wilderness"), the "Intended Wilderness", and the peripheral area (hereinafter referred to as the "management unit"), shall comprise the areas so depicted on the map entitled "Alpine Lakes Area" and dated June 1976, which shall be on file and available for public inspection in the Office of the Chief, Forest Service, Department of Agriculture. The Secretary of Agriculture (hereinafter referred to as the "Secretary") shall, as soon as practicable after the enactment of this Act, publish in the Federal Register a detailed description and map showing the boundaries of the wilderness, "Intended Wilderness", and the management unit.

(b) The Secretary shall administer the Federal lands in the management unit in accordance with the laws, rules, and regulations applicable to the national forests in such a manner as to provide for the management of all of the resources of the management unit.

Pub. Law 94-357

- 2 -

July 12, 1976

16 USC 1131
note.

Additions, pub-
lication in Fed-
eral Register.

(c) The Federal lands designated as the Alpine Lakes Wilderness shall be administered in accordance with the provisions of this Act and with the provisions of the Wilderness Act (78 Stat. 890), which-ever is the more restrictive.

(d) Federal lands depicted on the map and legal description as "Intended Wilderness" shall become part of the Alpine Lakes Wilderness at such time as the adjacent non-Federal lands, interests or other

property become wilderness according to the provisions of section 3(e) of this Act, at which times the Secretary shall file a map and legal description of such additions in the Federal Register.

(e) Non-Federal lands depicted on the map and legal description as "Wilderness" and "Intended Wilderness" shall become part of the Alpine Lakes Wilderness when acquired by the Federal Government in conformance with the acquisition program required by section 4 of this Act.

LAND ACQUISITION AND EXCHANGE

16 USC 1132
note.

SEC. 4. (a) Within the boundaries of the wilderness and "Intended Wilderness", the Secretary is authorized and directed to acquire with donated or appropriated funds, by gift, exchange, or otherwise, such non-Federal lands, interests, or any other property, in conformance with the provisions of section 4 of this Act: *Provided*, That any such lands, interests, or other property owned by or under the control of the State of Washington or any political subdivision thereof may be acquired only by donation or exchange. Nothing in this Act shall be construed to limit or diminish the existing authority of the Secretary to acquire lands and interests therein within the Alpine Lakes Area in accordance with established law. Notwithstanding any other provision of law, any Federal property located within the management unit may, with the concurrence of the agency having custody thereof, be transferred without consideration to the administrative jurisdiction of the Secretary for use by him in carrying out the purposes of this Act. The Secretary shall exercise caution in exchanging land so as not to impair substantially the programmed allowable timber harvest of the Mount Baker-Snoqualmie and Wenatchee National Forest. Amounts appropriated from the Land and Water Conservation Fund shall be available for the acquisition of lands and interest for the purposes of this Act.

(b) In exercising his authority to acquire property by exchange, the Secretary may accept title to any non-Federal property located within the wilderness and "Intended Wilderness", and convey to the owner of such property any national forest land within the State of Washington under the jurisdiction of the Secretary: *Provided*, That the Secretary may accept cash for or pay cash to the grantor in such an exchange in order to equalize minor differences in the values of the properties exchanged.

Notice of classification, publication in Federal Register.

(c) (1) As non-Federal lands and interests in the wilderness and "Intended Wilderness" are acquired, and as they become protectable and administrable as wilderness, the lands shall become part of the Alpine Lakes Wilderness, and the Secretary shall publish from time to time a notice of such classification in the Federal Register. It is the intention of Congress that acquisition of the "Intended Wilderness" shall be completed no later than three years after the date of enactment of this Act. At any time after three years from the date of enactment

July 12, 1976

- 3 -

Pub. Law 94-357

of this Act, an action may be instituted by an owner, all of whose lands within the boundaries of the "Intended Wilderness" have been managed in such a way so as not to become unsuitable or unmanageable as wilderness (except for disturbance affecting a minor land area and found by the Secretary to have resulted from strictly accidental and unintentional circumstances), against the United States in the district court for the district in which such lands are located, to require the Secretary to acquire immediately all of said owner's interest in such lands, interests and property and to pay in accordance with this section 4 just compensation for such lands, interest, and property the plaintiff may have which are not yet acquired pursuant to this section 4. By February 1 of each year, the Secretary shall report in writing to the Committees on Interior and Insular Affairs of the United States House of Representatives and the Senate, on the status of negotiations with private owners to effect exchanges and acquisition of non-Federal property.

Report to congressional committees.

Payments.

(2) The United States will pay just compensation to the owner of any lands and interests acquired by and pursuant to this Act. Such compensation shall be paid either: (A) by the Secretary of the Treasury from money appropriated pursuant to this Act from the Land and Water Conservation Fund, or from any other funds available for such use, upon certification to him by the Secretary, of the agreed negotiated value of such property, or the valuation of the

property awarded by judgment, including interest at the rate of 8 per centum per annum from the date of the acquisition of the property or the date of filing an action according to the provisions of section 1(c)(1) of this Act, whichever is earlier, to the date of payment therefor; or (B) by the Secretary, if the owner of the land concurs, with any federally owned property available to him for purposes of exchange pursuant to subsection 4(b); or (C) by the Secretary using any combination of such money or federally owned property.

(3) Just compensation shall be the fair market value of the lands and interests acquired by and pursuant to this Act, and shall be determined as of the date of acquisition: *Provided, however*, That the fair market value of those lands acquired from owners who, from the time of enactment of this Act to the time of acquisition of any such lands, have managed all lands within the "Intended Wilderness" under their ownership so as not to make such lands unsuitable or unmanageable as wilderness (except for disturbance affecting a minor land area and found by the Secretary to have resulted from strictly accidental and unintentional circumstances), shall be the sum of (A) the value of such lands and interests at the date of acquisition, plus (B) any loss of value of timber from casualty, deterioration, disease, or other natural causes from January 1, 1976, to the date of acquisition, with all existing and lost or damaged timber valued at the highest of (i) its market value on the date of acquisition, (ii) its market value on January 1, 1976, or (iii) the mean average market value between those dates: *And provided further*, That nothing in this Act shall be deemed or construed to deny to owners of non-Federal lands, or to change their rights to access to such lands or to manage the same for any otherwise lawful purpose prior to acquisition thereof by the Secretary. For the purposes of this section, the owner of property is defined as the holder of fee title unless said property is subject to an agreement of sale entered into prior to April 1, 1976.

Pub. Law 94-357

- 4 -

July 12, 1976

WILDERNESS MANAGEMENT PLAN

Enchantment
Area, study.
16 USC 1132
note.

SEC. 5. In conjunction with the preparation of a wilderness management plan for the wilderness designated by this Act, the Secretary shall prepare a special study of the Enchantment Area of the Alpine Lakes Wilderness, taking into consideration its especially fragile nature, its ease of accessibility, its unusual attractiveness, and its resultant heavy recreational usage. The study shall explore the feasibility and benefits of establishing special provisions for managing the Enchantment Area to protect its fragile beauty, while still maintaining the availability of the entire area for projected recreational demand.

MULTIPLE USE PLAN

16 USC 1132
note.

SEC. 6. (a) Within two years of the enactment of this Act, the Secretary shall, in accordance with the provisions of this Act and other applicable acts governing the administration of the National Forest system and with full public involvement required by this and other pertinent law, prepare, complete and begin to implement in accordance with the provision of subsection (b) a single multiple-use plan for the Federal lands in the management unit.

16 USC 528
note.

(b) The management of the renewable resources will be in accordance with the Multiple-Use Sustained-Yield Act of 1960 (74 Stat. 215; 16 U.S.C. 528-531), with other applicable laws and regulations of the United States, and will be such to obtain multiple use and sustained yield of the several products and services obtained therefrom.

Notice, publication in
Federal Register.
Transmittal to
President and
Congress.

(c) The Secretary shall publish a notice of such plan in the Federal Register and shall transmit it to the President and to the United States House of Representatives and to the Senate. The completed plan will take effect and will be implemented no earlier than ninety calendar days and no later than one hundred and fifty calendar days from the date of such transmittal.

(d) The resources of the management unit shall be managed in accordance with the provisions of the multiple-use plan until such time as the plan may be revised according to the provisions of this section.

(e) The Secretary shall review the multiple-use plan from time to time and, with full public involvement, shall make any changes he deems necessary to carry out the purposes of this Act.

(f) The Secretary shall permit and encourage the use of renewable resources within the management unit, and nothing in this Act shall be construed to prohibit the conduct of normal national forest programs during the formulation of, nor to prohibit inclusion of such programs in the multiple-use plan required by this section.

AUTHORITIES OF THE STATE OF WASHINGTON

Hunting and
fishing.
16 USC 1132
note.

SEC. 7. (a) The Secretary shall permit hunting and fishing on lands and waters under his jurisdiction in accordance with applicable Federal and State laws. Except in emergencies, any regulations pursuant to this subsection shall be issued only after consultation with the fish and game departments of the State of Washington. Nothing in this Act shall be construed as affecting the jurisdiction or responsibilities of these agencies.

July 12, 1976

- 5 -

Pub. Law 94-357

(b) Nothing in this Act shall deprive the State of Washington or any political subdivisions thereof of its right to exercise civil and criminal jurisdiction within the area or of its right to tax persons, corporations, franchises, or other non-Federal property, in or on lands and waters within the area.

AUTHORIZATION OF APPROPRIATIONS

SEC. 8. There is hereby authorized to be appropriated for the acquisition of lands and interests to carry out the purposes of this Act, not more than \$20,000,000 in fiscal year 1977, \$17,000,000 in fiscal year 1978, and \$20,000,000 in fiscal year 1979, such sums to remain available until appropriated without fiscal year limitation. To prepare the multiple-use plan required by section 6 of this Act, there is authorized to be appropriated not more than \$500,000. Appropriation requests by the President to implement the multiple-use plan shall express in qualitative and quantitative terms the most rapid and judicious manner and methods to achieve the purposes of this Act. Amounts appropriated to carry out this Act shall be expended in accordance with the Budget Reform and Impoundment Control Act of 1974 (88 Stat. 297).

Approved July 12, 1976.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 94-1154 (Comm. on Interior and Insular Affairs),
SENATE REPORT No. 94-1002 (Comm. on Interior and Insular Affairs),
CONGRESSIONAL RECORD, Vol. 122 (1976):
June 8, considered and passed House.
June 29, considered and passed Senate.



United States
Department of
Agriculture

Forest
Service

Mt. Baker-
Snoqualmie
National
Forest

Wenatchee
National
Forest



Alpine Lakes Area Land Management Plan

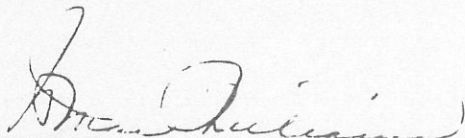
Wilderness Monitoring
Visitor Registration
Trailhead Signing



WILDERNESS MANAGEMENT
MT. BAKER-SNOQUALMIE NATIONAL FOREST
WENATCHEE NATIONAL FOREST

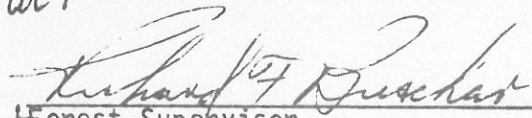
ALPINE LAKES

WILDERNESS MONITORING
VISITOR REGISTRATION
TRAILHEAD SIGNING



Forest Supervisor
Mt. Baker-Snoqualmie
National Forest

5-5-83
Date

WLF


Forest Supervisor
Wenatchee
National Forest

5-5-83
Date

April, 1983

CONTENTS

	PAGE
I OVERVIEW	1
II MONITORING PLAN	3
III MONITORING	
A) Group Size	4
B) Carrying Capacity	4
C) Encounters	4
D) Noise	5
E) Firewood Supply	6
F) Air Quality and Visibility	7
G) Site Degradation	7
H) Water Quality	8
IV VISITOR REGISTRATION	
A) Introduction	10
B) Process of Registration System	10
C) Validation of Visitor Registration Stations	11
D) Validation Techniques	12
E) Visitor Registration Box Design	12
F) Visitor Registration Box Location	13
V TRAILHEAD SIGNING	14

APPENDIX

Exhibit 1	Bulletin board
Exhibit 2	Bulletin board
Exhibit 3	Wilderness register
Exhibit 4	Trailhead wilderness register
Exhibit 5	Biophysical Charge Indicators
Exhibit 6	Social Charge Indicators

WILDERNESS MONITORING PLAN

I OVERVIEW

Management of wilderness requires reliable data. Guesswork and personal experiences, feelings, and intuition, although important, may not provide all the information needed. Poor wilderness management decisions based on inadequate or incorrect information can be very costly, prove unnecessary inconvenience to the user, and can even result in irreversible damage to the resource.

A October 14, 1981 proposed Directive for Wilderness Management from the Washington Office included guidelines for Monitoring. Accentually it stated:

Monitoring involves the collection of information on selected Limits of Acceptable Change (LAC) indicator(s) for the purpose of:

- determining how close current conditions are to the established LAC standards,
- to determine why conditions (favorable or unfavorable) are the way they are,
- to provide an information base for showing trends and developing, analyzing, and implementing change,

It recommended that the following criteria be considered in developing a monitoring program:

- it usually is not realistic nor necessary to monitor a LAC indicator throughout an entire wilderness,
- one LAC indicator may be monitored in one management area and not in another,
- the frequency of monitoring a particular LAC indicator may vary from one management area to another (e.g., one indicator may be monitored weekly during the summer in management area X and monthly in management area Y),
- the frequency of monitoring one LAC indicator may vary from another LAC indicator (e.g., indicator A may be monitored each year and indicator B once every 3-5 years),
- the tools and techniques used to monitor a particular LAC indicator may vary from one management area to another, recognizing that this may result in incomparable data.

Monitoring LAC indicators on a sample basis requires identifying sites or management areas in which the LAC indicators occur. These sites or management areas should be accurately identified and permanently documented. The following location criteria should be considered in identifying sites or management areas:

- locations where the current situation is believed to be close to or exceeding LAC standards
- locations where the rate of change would be rapid
- locations where unacceptable change would be of a long-term or permanent nature (i.e., slow recovery)
- locations where change is anticipated due to current or planned wilderness uses
- locations that are of particular management concern or special value
- locations where several indicators can be monitored at the same time
- locations where change could be reasonably attributed to a particular wilderness use
- locations where comparable information has been previously collected.

The "Alpine Lakes Area Land Management Plan" set the objectives for the "Limit of Acceptable Change" (LAC). The objectives define the basic conditions or range of conditions that are acceptable for management of Wilderness. They are presented in the "Collection of Resource and Use Information" section page 49, Exhibit A-1 through A-4, pages 57-63, and Exhibit C page 65 of the "Plan".

The specific categories which were designated to be measured include:

- | | |
|----------------------------|---------------------------------|
| "A" Group Size, | "E" Firewood Supply, |
| "B" Carrying Capacity, | "F" Air Quality and Visibility, |
| "C" Encounters, | "G" Site Degradation, |
| "D" Noise (between camps), | "H" Water Quality. |

This monitoring plan has been designed to concern itself with the measurement of the eight categories listed above. Additional examples of biophysical and social change indicators which we may want to measure in the future can be found at the end of this plan (Exhibit 5 and 6).

The amount of time, money, manpower, and information collected must be guided by both our obligation to implement the "Plan" and to keep within reality of the short term funding situation. The decision need also consider a balance between overwhelming complexity and over simplification of measuring procedures.

The objective of this plan is to meet direction in the Alpine Lakes Wilderness Plan and to have all managers define, collect, and apply inventory data in a similar manner.

II MONITORING PLAN

Monitoring Element	Actions Effects To Be Monitored	How	Monitoring Frequency	Expected Precision & Reliability	Unit(s) Of Measure	Data Storage Location	Evaluation Responsibility	Monitoring Job Cost	Standard	Action to Meet Standard
WILDERNESS A Group Size	Whether the group size limitations are being met.	Visitor Registration at trailhead and wilderness Ranger Surveys	Annual from trail registration and wilderness Ranger Sampling.	Moderate	Percent of visitors in groups and group size.	Trail Registration Analysis Printout & File (2320)	District Ranger	Included in B02 and B03 costs	See pages 57-63 of the "Plan" Exhibit A-1 through A-4	Formal Regulations, orders, and/or permits, user education see Pg. 57-65
	Whether the actual RVD's exceed the established carrying capacity.	Visitor Registration at trailhead and wilderness Ranger Surveys.	Annual from trail registration and wilderness Ranger Sampling.	Moderate	Recreational Visitor Day (RVD)	Trail Registration Analysis Printout & File (2320)	District Ranger	Included in B02 and B03 Costs	See Page 38 of the Plan Carrying Capacity	Formal Regulations, orders, and/or permits, user education see Pg. 57-65
C Encounters	Whether the actual encounters exceed the established number	Visitor Registration and Wilderness Ranger Surveys	Annual Summary of Registration data and sampling on two high use weekends for all suspected high use travel zones	Low for Registration data and moderate on sampling data	Actual number of encounters.	Trail Registration Analysis Printout & File (2320)	District Ranger	Included in B02 and B03 Costs	See pages 57-63 of the "Plan" Exhibit A-1 through A-4	Formal Regulations, orders, and/or permits, user education see Pg. 57-65
	Whether established noise standards are being met.	Field surveys and estimates Use "Predicting Impact of Noise on Recreationists noise Pollution Prediction Model, USDA Project Record 8023-1202 April 1980.	Initially at 5% of Code-A-Site sites, thereafter every 10 years for each selected site.	Low with estimates, high with Model application.	Decibels	Code-A-Site	District Ranger	Included in B02 and B03 Costs	See pages 57-63 of the "Plan" Exhibit A-1 through A-4	Formal Regulations, orders, and/or permits, user education see Pg. 57-65 Campsite Location

II MONITORING PLAN, Cont'd.

Monitoring Element	Actions Effects To Be Monitored	How	Monitoring Frequency	Expected Precision & Reliability	Unit(s) Of Measure	Data Storage Location	Evaluation Responsibility	Monitoring Job Cost	Standard	Action to Meet Standard
E Firewood Supply	Impact of Firewood use on vegetation.	Field Surveys	Initially with Code-A-Site then once every two years at heavy use areas	High	Abundant Available Scarce None	Code-A-Site	District Ranger	Included in B02 and B03 costs.	See Pages 46 Natural accumulation to meet demands	Ban or limit open fires or user education.
F Air Quality & Visibility	Meet Clean Air Act of 1977	Air Quality; Use State monitoring program Visibility Use State Guidelines	Per State DOE or as needed for smoke management	High	Total Suspended solids, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, Lead	File 2120	Air Quality State DOE Visibility Fire Staff District Ranger Review	Include in F04 costs	See State DOE Air Quality Standards and State Implementation Plan for Visibility	
G Site Degradation	Whether people caused changes are within non-degradation standards.	Code-A-Site & camera. Soil and vegetative monitoring Method by Morrison	Initially with Code-A-Site thereafter once every 10 years Camera points established 5% of the sites	High	Vegetation and soil loss or modification	Code-A-Site	District Ranger	Included in B02 and B03 Costs	See non-degradation standards Pg. 65 Exhibit C any pages 57-65	Formal regulations orders, and/or permit user education, site rehabilitation site relocation
H Water Quality	No Long term (more than 48 hours) degradation of water quality as a result of human activity.	Base line stations using water quality monitoring plan.	Once every 1 to 10 years as directed.	High	turbidity, clarity, sediment, PH acidity, alkalinity, nutrients	STORET	Water Staff	Included in F03 cost	Equal or exceed Wash. State Class AA standard See Pg. 47	Formal regulations orders, and/or permit user education, site rehabilitation site

III MONITORING

A. Group Size

Group size data can be obtained through Computer Visitor Registration Analysis by Travel Zone, Date and Size. See Visitor Registration. Wilderness Rangers should also keep a tally of group size that they encounter.

B. Carrying Capacity

The carrying capacities within the Alpine Lakes Wilderness have been calculated for each of the four use zones. In an average acre within each zone, the following estimated number of recreation visitor days of use per year (co-efficients) may be accommodated while maintaining the desired physical and social setting: Transition--15; Semi-primitive--5; Primitive--2; Trailless--0.5.

Using these co-efficients, the carrying capacity for the Wilderness would be:

Transition	183,630 RVD's (34%)
Semi-primitive	161,210 RVD's (30%)
Primitive	20,364 RVD's (4%)
Trailless	169,347 RVD's (32%)

The Visitor Registration Analysis will be used to help monitor carrying capacity. This program calculates visitor days of use from travel zone/nights spent data. After travel zones are established it will be necessary to allocate RVD's for each of the zones.

C. Encounters

Encounters with other parties in the wilderness is one of the more difficult impacts to measure. The complexity of travel routes, which characteristically overlap and intertwine, and the variability in travel decisions are so great that analytic measurements are not practical.

Visiting parties arrive at the area at various dates and clock times, enter at particular access points, select routes of travel and move along them. The parties may overtake and pass slower parties moving in the same direction (overtaking encounters), pass parties moving in the opposite direction (meeting encounters), or pass by parties camped in areas visible from trails or other travel routes, such as lakes (visual encounters). Parties that stay overnight select campsites which they may share with other camping parties (camp encounters). On an ensuing day, camping parties leave the campsite and continue on their chosen routes, and eventually leave the area.

Our objective is to reduce use at overused locations and to avoid excessive levels of various types of encounters between visitors (on trails and at campsites). However, there has been no way to relate changes in total use or redistribution of use to the number of encounters per party or to the amount of use of particular places within a wilderness.

Systems that are too complex for analytic solutions are often approached by simulation modeling. Therefore, a wilderness travel simulation model was developed to provide a better way to formulate and evaluate management policies regarding use. The simulation model provides a practical way to test use patterns quickly. Variability in visitor behavior is incorporated in the model, but in just a few minutes use can be simulated for an entire season or a number of seasons. The model records and displays in appropriate formats all the desired information on use and encounters.

This system seems to hold the best solution on how to measure and manage encounters. At this time it appears that it may be beyond our financial feasibility to install it. The long-range direction will be to work towards a reliable system such as the simulation model that will both predict encounters and test proposed management actions prior to initiating actions.

During the interim the data print-out from trail registration along with having wilderness rangers record actual encounters will be used to provide us an estimate of encounters.

By looking at the Trail Registration Analysis for each travel zone you can obtain a rough idea of where encounters may be approaching or exceeding the standard. Both print-outs, people present by calendar day and groups present by calendar day need to be examined.

The travel zones which appear to have the potential of exceeding the standard should then be sampled by the Wilderness Ranger. The best procedure may be to ask wilderness users how many encounters they had experienced. This must be done in an informal way. Users should not be stopped and surveyed. The Wilderness Ranger should also record the encounters they experience on a day to day basis. A formal way of documenting and retaining this information will need to be developed by each field unit.

D. Noise

Sound is a physical phenomenon; its magnitude can be measured, or at least calculated. But noise is an interpretation that the magnitude of a sound (such as from one of mechanical or non-mechanical sources) has reached unacceptable levels, durations, or qualities. No absolute standards define these thresholds. Yet, recreationists' complaints about noise are familiar to most managers, and there are clearly some common (albeit not universally shared) notions as to what constitutes unacceptable acoustical impact in certain settings.

Noises often associated with wilderness areas are:

1. Mechanical

- a. Fixed and rotary-winged aircraft.
- b. Ground vehicles from transportation systems outside the boundary.

c. Devices with motors (e.g., chainsaws, generators).

2. Non-Mechanical

a. Humans

- Voices (talking, loud talking, singing, yelling).
- Campending (chopping wood, clanging pounding stakes, cooking utensils, pounding).

b. Domestic animals (e.g., pets or livestock).

c. Sporting and entertainment devices (e.g., gun shots).

These sounds are all "intrusive" as opposed to those "natural" background noises one would expect to find outdoors, such as running water, rustling of leaves stirred by the wind, birds singing.

There are three factors which determine how far an intrusive noise will travel before it is "masked" by the background noise level. These are:

1. the loudness and pitch of the intrusive noise,
2. the loudness and pitch of the background noise.
3. the presence of environmental factors such as landform barriers or trees which can decrease the loudness of the intrusive noise, and

A step-by-step guide for the computation of acoustic impact of a particular sound source on a particular listener location is available. The mathematics involved in making an acoustical impact prediction are not difficult. To use this process, obtain a copy of "Predicting Impact of Noise on Recreationists, 1980, Forest Service--USDA, Equipment Development Center, 444 East Ponita Avenue, San Dimas, California 91773".

This procedure also provides a method of calculating the buffer distance needed from a sound source for various field conditions.

The maximum acceptable d' values used in the wilderness plan can be found in Exhibit A-1 through A-4 of the plan.

E. Firewood Supply

Only dead and down material may be used for firewood. Analyze available firewood to determine if firewood is being used faster than natural accumulation. Use Code-A-Site to record availability, and trends in firewood supply.

F. Air Quality and Visibility

The Clean Air Act and its subsequent amendments establish air quality standards for selected pollutants. Of these, only suspended particulate levels is likely to be impacted by activities within the wilderness. This would be by dust from trail construction and use and smoke from campfires and natural fires being permitted to burn within prescription parameters. Only the prescription fires will have any measurable impacts on air quality and then only in the immediate area of and for the duration of the fire.

Meeting smoke management requirements is one of the prescription parameters which must be met before a start will be allowed to burn. Refer to the "Prescribed Natural Fire Action Plan - Alpine Lakes Wilderness" for specific air quality considerations relative to these fires.

The monitoring of ambient air quality for conformance to National Clean Air Act Standards is the responsibility of the Washington State Department of Ecology. They have an established monitoring program which is supplemental by local pollution control authority programs. Together there is considerable data currently being gathered. Periodic review of this information is necessary to determine if activities outside the wilderness are adversely impacting wilderness air quality. If negative impacts are experienced the Forest Service will make the appropriate control authorities aware so they can revise their existing control programs to reduce the impacts.

Under the Clean Air Act the Forest Service as the Federal Land Manager has the responsibility to review the impacts of any proposed major emitting facility which will affect air quality related values within wilderness areas. If the impacts are unacceptable the Federal Land Manager will recommend to Environmental Protection Agency (EPA) that permits be denied. EPA must accept this recommendation. Any monitoring of existing conditions needed to make the above evaluation will be a requirement imposed by EPA on the proponent.

Visibility protection as required by the Clean Air Act is more difficult to deal with at this time. No intergral vistas have been identified within the wilderness in accordance with National Direction. The State Department of Ecology is currently revising their State Implementation Plan (SIP) to include visibility protection requirements for wilderness and other Class I areas. A draft copy is now available. This document when completed will provide monitoring guidelines for visibility.

G. Site Degradation

The Code-A-Site procedure will be used to collect basic data on all known public and commercial campsites in the wilderness. Additional data to be collected on the Code-A-Site card includes:

1. Firewood supply trend (See E. Firewood)
2. Noise d¹ value (See D. Noise)

3. An estimate of loss of ground cover by square feet.
4. Loss of tree cover as a result of human activity.

Items 3 and 4 should be recorded under "Additional data" and keyed to 21 (impact of previous use).

Permanent photo points and transects will continue to be established to monitor use impacts on vegetation and soil. (See "Soil and Vegetation Monitoring Methodology" by Morrison, 1981, for technique and the Management Plan page 49 for priority).

H. Water Quality

The quality of waters in the Alpine Lakes Wilderness is presently as high as natural waters can be in the Puget Sound Basin. This has been ascertained by several different investigators in recent years. It is true in spite of visible signs of overuse by recreationists in several areas. Soil compaction, denudation of campsites and lake shores, litter and uncertain sanitary conditions have occurred. These conditions however appear to not have advanced to the point of affecting water quality. Therefore, since the conditions themselves are adverse to good wilderness management, steps will be taken to reduce these impacts and control use. It follows then that water quality should remain unaffected.

The one foreseeable potential threat to water quality in the wilderness is acid rain generated by populous industrial up wind areas. The rainfall in the Alpine Lakes Wilderness has been shown to be more acidic than deemed natural. Thus far however, the waters do not appear to be impacted by this lower pH.

In short budget times it would seem that wilderness water quality monitoring would have a low priority compared to other wilderness monitoring needs and areas undergoing far more intensive and environmentally disturbing activities such as timber harvest, road construction and ORV use.

In the long run as funding allows, this assumption of insignificant impact should be checked occasionally; perhaps once every 10 years. A network of sampling locations should be identified on streams and lakes selected as being the most likely to be sensitive to wilderness uses. These locations would form the nucleus of a long term reference base for investigation of changes in water quality. Criteria for choosing sampling locations would involve such things as level of human and wildlife use, buffering characteristics of watersheds, flushing or turnover rates, wildfire potential, etc. Parameters to be watched would be such things as turbidity, clarity, sediment, concentration, pH acidity, alkalinity, nutrients, chlorophyll, bacteria, etc.

Along with these fixed locations there could be a rotating or random sampling of other waters in the wilderness to possibly catch unforeseen problems and gradually spread out geographically the water quality data bank.

A team of specialists will be formed by the forest water staff to work up the sampling station selection criteria for the wilderness. They will also reevaluate existing data and set a schedule for periodically searching out and evaluating work done outside the Forest Service that bears on the issue of water quality in the Alpine Lakes Wilderness. One particular group to watch is the The National Atmospheric Deposition Program (NADP), of which the Forest Service is a member.

As directed in the plans Implementation Schedule the water staff will establish and maintain the water quality monitoring program. The monitoring plan will be prepared by November 1, 1983.

III VISITOR REGISTRATION

A. Introduction

Direction from the Alpine Lakes Land Management Plan states that: "Entrance self registration will be operated at all trailheads to the wilderness. Permits may be used as per Regional policy."

Visitor registration will provide a major part of the overall monitoring plan. Since we are directed to use registration we should obtain as much useful information as we can from it. As a start we can use this data for:

- | | |
|---|--|
| 1) RIM, RVD's | 10) Entry and Exit points |
| 2) Budget development | 11) Length of stay |
| 3) Establishing maintenance and construction priorities | 12) Destination |
| 4) Economic benefits based on ZIP Code for place of origin and distanced traveled | 13) Peak use |
| 5) Party size | 14) Season of use |
| 6) Method of travel | 15) Distribution of use |
| 7) Head of stock | 16) Encounters (estimate) |
| 8) Activities | 17) Development or removal of visitor allocation and dispersion system |
| 9) Provide input data into computer simulation models which predict the effect of management alternatives | 18) Visitor motivation |
| | 19) Potential to sample visitors by mail |

The costs of operating registration systems are significant and must be considered. Not only are these costs in the form of visitor inconvenience, but cost of administering the system and validating compliance can be large. However, this system is the least expensive method for collecting needed information.

Most problems with this system start from establishing stations where they were difficult for the visitor to see and get to, especially if on horseback. They lacked instruction, information, maps and in many cases, were not even properly stocked with registration cards and pencils. Registers, in most situations, are best located near the trailhead. They should be well marked, provide the necessary information for the visitor to understand why he must register, and be kept well stocked with information and map brochures.

The manned trailhead system can also be used to supplement trail register data through the personal contact with the visitor, and to provide the visitor an understanding of why he should register.

B. Process of Registration System

1. See E and F, pages 12 and 13 for details concerning the design and installation of the visitor registration station.
2. Use Visitor Registration Card (FS-2300-32, 7/79).
3. Obtain and use "The Users Permit and Visitor Registration Analysis System, revised July, 1980". How to obtain follows:

Submit Batch Run:

```
@ RUN
@ ASG, A VIPER*RUNS.
@ PRT, S VIPER*RUNDS. GUIDE.
@ FIN
```

This system is designed to analyze and summarize information (input data) collected by field units on visitor permits (FS-2300-30) or visitor registration cards (FS-2300-32). The system, all program files and common data files are maintained by the Washington Office, Recreation Staff. The system is on-line at Fort Collins Computer Center (FCCC) for direct access by field units with remote batch processing capability. This user's guide provides instructions for collecting, preparing, editing and submitting the input data for computer processing.

4. Provide clear instructions at registration stations for visitor registration.
5. Inform the public and user groups about the registration system and its purpose through press and radio releases and personal contacts in the field and meeting with groups.
6. Frequent maintenance is essential. No data can be obtained if a station runs out of forms, and the lack of pens or pencils will deter many visitors. A poorly maintained station tells the visitor that the registration is not important to the agency.
7. Prompt editing, especially by people familiar with the area and its use, has numerous advantages. Incomplete or obviously inaccurate data can sometimes be corrected without resorting to guessing. Keeping reasonably current on editing and coding avoids an overwhelming job with insufficient time at the end of the season, just before the report is due.

C. Validation of Visitor Registration Stations

The major drawback of self-registration boxes is the erratic compliance rate among hikers. Most studies show that compliance rates--the proportion of users who voluntarily register at registration boxes--vary from 60 to 80 percent. However, the compliance rate can be as low as 30 percent or as high as 90 percent.

Although managers tend to lack confidence in trail register information because of this variation, low compliance rates do not necessarily indicate visitor opposition. More often, visitors say, they did not notice the box or were in a hurry, too wet, too lazy, etc.

All use monitoring systems have estimates of error associated with them. The registration box is no exception. To use this system it is necessary to determine the compliance rate for the individual boxes.

D. Validation Techniques

There are three basic techniques for validating boxes:

1. Station a person near the registration box to tally the percentage of people who comply. From 60 to 70 hiking parties need to be observed during a season to obtain an accuracy of plus or minus 10 percentage points. Roughly speaking a box on a trail visited by about 10 parties a day needs to be monitored for about 4 hours each week during a 4 month season.
2. A second technique for validating a registration box involves an electronic device, such as a pressure-plate counter or photo-electric traffic counter located down the trail from the box. If trail use is quite low, if accurate estimates of compliance rates are not needed, and if field personnel can regularly check and maintain the counting devices as part of routine patrol work, the electronic device might be preferable to the human validation technique.
3. Another technique for validating registration boxes is automatic photography, using either time-lapse or a device that triggers a camera whenever a potential registrant approaches the box. The camera is focused on the box and records several frames of activity in the vicinity of the box. The developed film can be analyzed to calculate the compliance rate for the time the camera was in use.

As long as individuals cannot be recognized and the film is destroyed following its use, photography is a legal validating technique. The recognition problem as well as potential vandalism of the camera can be avoided by placing the camera far enough away from the trail and box so that it won't be detected.

This technique is most suitable for trails where fairly accurate compliance rates are required but personnel is limited.

It is important to remember that the purpose of validation is to estimate compliance rates for each registration box. Factors affecting compliance rates may be different from one location to another. A particular trailhead box may have a compliance rate of 80 percent, while another box on the same trail system, but several miles away, may have a compliance rate of only 50 percent.

E. Visitor Registration Box Design

1. The R-6 Standard Wilderness Registration Station will be used. See Recreation Facility Catalog D-3000 for details of design. (See Exhibit 3)
2. The new concept in trailhead "Information Centers" incorporating a self issuing registration facility is also acceptable for use. The information centers, a product of Region 1, consist of two sign panels to be used at major entries and one sign panel at less-used trailheads. Districts should consider the new design when installing new stations or replacing existing stations at major trailheads. (See Exhibit 4)

3. Stations must be kept harmonious with the forest environment, but they also need to be conspicuous and attractive to be noticed and used.
4. Maps above registration boxes may be used to help attract visitors to the station, and to depict wilderness zones, if used.
5. Sign wording is critical in providing positive motivation to register. The standard wording as shown on plate D-3000 has been shown to be effective and should be used.
6. As recommended in Trailhead Signing item (e) on page 14 the registration box should be used in conjunction with a bulletin board.

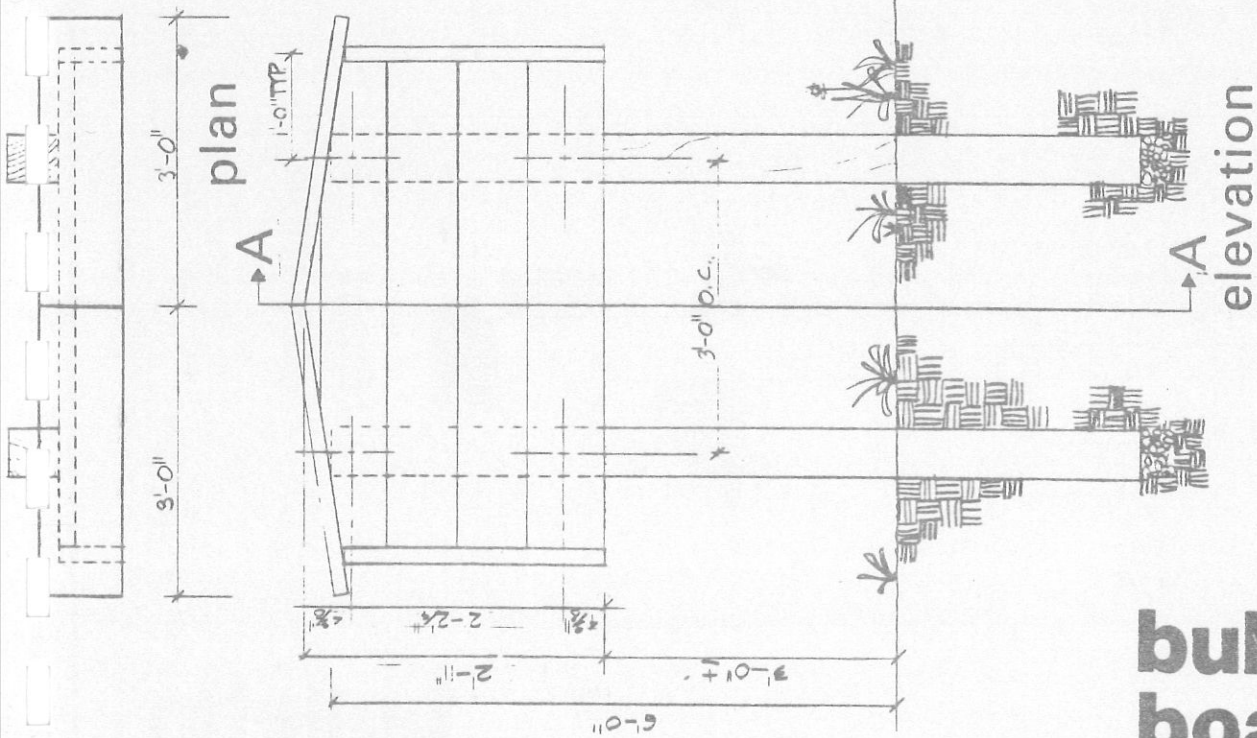
F. Visitor Registration Box Location

1. Locations up the trail are clearly superior to end of road trailhead parking areas in obtaining visitor compliance. Locations away from the parking area, up the trail some distance, produced higher compliance rates by hikers, and at least as high compliance by horsemen.
2. Signboards at the edge of a parking lot may be lost in the clutter and confusion of cars and other signs. In contrast a sign up the trail stands out.
3. In areas with appreciable horse use, the station location should provide room for stock and include a hitching rail. The registration station should be designed to invite a stop to adjust cinches, stirrups, or packhorse loads. A sign near the trailhead could inform visitors, especially horsemen, of the distance to the station and point out that it is a good place to check saddles and other pack, somewhat like a highway sign, "rest area ahead".
4. The location of Registration Stations will be at the discretion of the District Ranger.

V. TRAILHEAD SIGNING

1. The "Alpine Lakes Area Land Management Plan" states "Signing at Wilderness Trailheads may consist of trail direction signs, wilderness boundary signs and such essential official information displays such as fire prevention, regulations governing use of the wilderness and suggested wilderness behavior. Trailhead signs may include destination mileages."
 - a. On service level A and B trailheads the R-6 Standard Bulletin Board D-1006 or the R-1 information center may be used. (See Exhibit 1 and 4)
 - b. On service level C and, while in use, D trailheads either the R-6, D-1006 or the smaller R-6, D-1004 may be used. (See Exhibit 1 and 2)
 - c. The new concept in trailhead "information centers" incorporating a self issuing registration facility is acceptable for use at service level A and B trailheads. The information center, a product of Region 1, consists of two sign panels to be used at major entries and one sign panel at less used trailheads. (See Exhibit 4)
 - d. Existing non standard bulletin boards will be replaced with standard designs if they are inadequate or when they become worn out.
 - e. To reduce the number of signs at the trailhead and to help reduce vandalism, it is recommended that bulletin boards be placed up the trail (also see visitor registration box location on page 12). A wide spot in the trail should be constructed so that users can step off the trail to read the messages on the bulletin board. The bulletin board may be used in conjunction with the registration box. It will help attract people, hopefully resulting in an increase in registration compliance.
 - f. When applicable, motorized restriction signs will be placed at the trailhead as opposed to the wilderness boundary.
 - g. Trailhead signs should indicate the trail's name, the trail's number and may show the distance to the most prominent destination.
 - h. Use restriction signs should be mounted on the trailhead sign.
 - i. Trail maintenance volunteer signs may be mounted on the bulletin board or on its own post. The combination of trailhead, use restriction and volunteer signs on one post has a poor appearance and should be avoided.

APPENDIX



- 2" x 10' ROUGH SAWN DOUGLAS FIR CAP
- BEVEL TOP OF POST AS SHOWN
- FROM 2x10 ROUGH SAWN DOUGLAS FIR T&G FINISH AS SHOWN
- 1/2" x 8" GALV. CARRIAGE BOLT WITH NYT FLAT GALV WASHER BOTH SIDES. COUNTERSINK NUT END FLUSH WITH 6x6. REMOVE EXCESS LENGTH AFTER INSTALLATION.
- FROM 2x8 ROUGH SAWN DOUGLAS FIR SHAPE AS SHOWN
- 2x8 ROUGH SAWN DOUGLAS FIR T&G
- 6x6 PRESSURE TREATED ROUGH SAWN DOUGLAS FIR POST

- FINISH GRADE
- COMPACTED SUBGRADE
- 3" CRUSHED GRAVEL MAX SIZE 1 1/2"

note IN PROBLEM SOIL AREAS SET POST IN 1'-6" CONCRETE DIAMETER CONCRETE COLLAR. SLOPE TOP TO DRAIN. LEAVE END OF POST EXPOSED TO GRAVEL.

THOROUGHLY NAIL ENDS & TOPS TO BOARDS WITH 16d GALV. COMMON NAILS. LEAVE WOOD NATURAL OR STAIN TO MATCH DESIGN THEME OR ENVIRONMENT.



section A-A

elevation

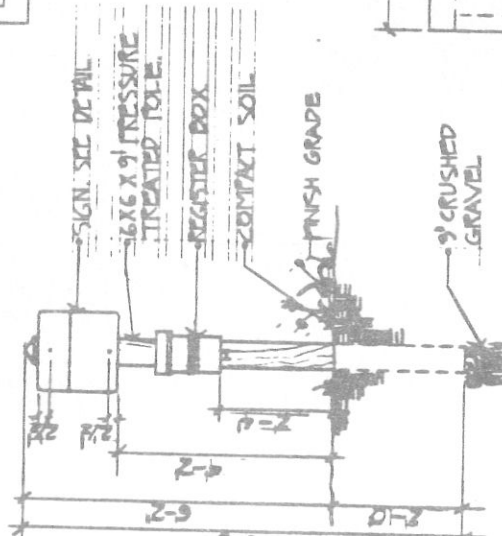
bulletin board



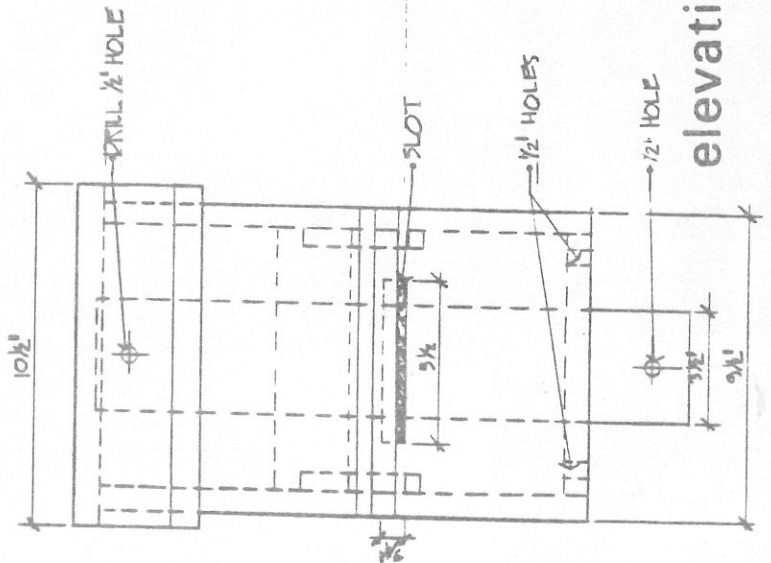
EXHIBIT 2

REGISTER BOX TO BE MADE WITH 3/4" MARINE PLYWOOD EXCEPT FOR FRONT AND BACK WHICH ARE 1/2" MARINE PLYWOOD

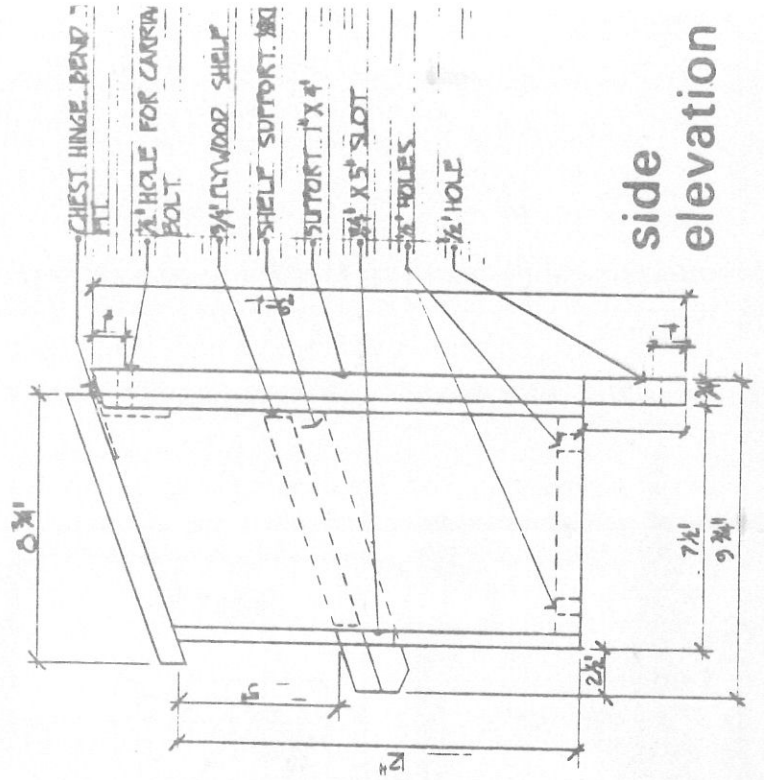
FOREST SERVICE WILL PROVIDE OPERATING INSTRUCTIONS, CHAIN & PENCIL



elevation



elevation



side elevation

sign detail



plan

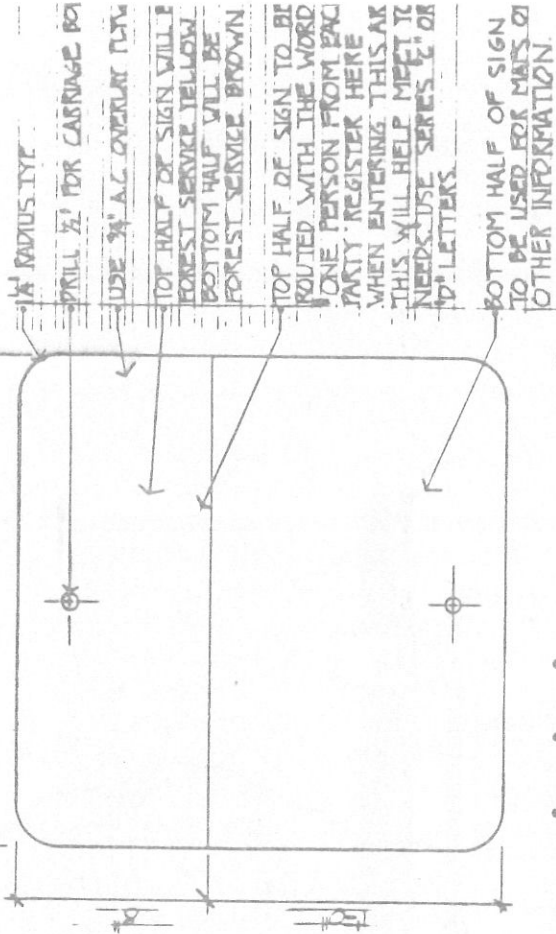
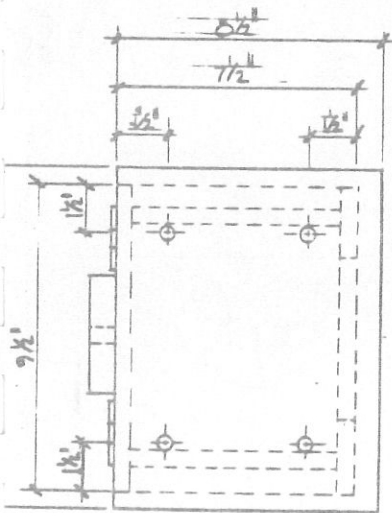
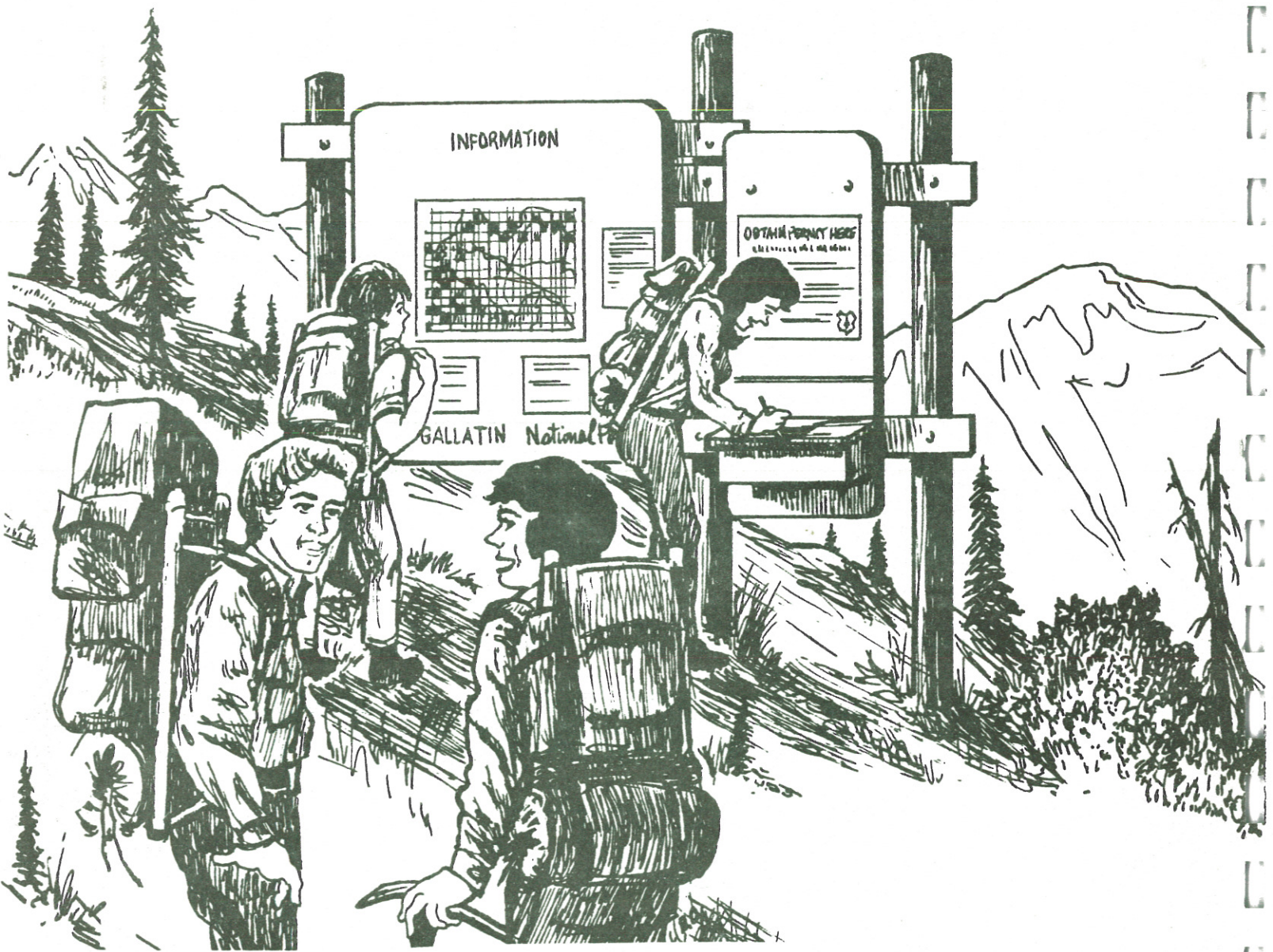


EXHIBIT 3

wilderness register



trailhead
information
center

Examples of Biophysical Change Indicators
(Exhibit 5)

Fish & Wildlife	Vegetation	Soil	Water	Air
population	area loss	bulk density	State standards	State standards
composition	cover reduction	drainage	visual appearance	visibility
habitat quantity or quality	composition change	erosion rate	turbidity	particulate matter
violations and/or harassments	breakage or scarring	area of bare soil	O ₂ , CO ₂	sulfur dioxide
T&E species	root exposure	condition class of campsites	coliforms	
	deterioration rate		attributeable occurrences of human sickness	
	T&E species			
	condition class of campsites			

Examples of Social Change Indicators
(Exhibit 6)

Visitor Use	Encounters	Campsites	Trails	Other
parties at trailhead per day	parties met per trail segment	number of sites	width of trail	number of violations
parties in a management area per day	parties met at destination per night	size of sites	depth of trail	number of search and rescues
parties per activity	visual encounters between campsites	density of sites	segments with drainage problem	number and type of complaints (dissatisfactions)
parties per size	acoustic level at campsites	visual quality	multiple trailing	improper low-impact visitor use
parties per method of travel		size, number, or density of campfire rings	visual quality	cultural resource disturbance
parties per season				
parties per peak period, i.e., weekends holidays			unsafe conditions for intended use	



Alpine Lakes Area

Land Management Plan

Implementation Schedule

Mt. Baker-Snoqualmie and Wenatchee

National Forests



I. Management Unit

Done

Develop additional info. for decision matrix

Update Salmon La Sac Guard Station Plan and Consult with SHPO

Develop hazard evaluation system

F.Y. 82

Develop multi-year investment program for NRT & NHT, trails listed page 41, and trailheads page 17. (Sequence new trail construction before obliteration of existing roads.)

Map summer and winter range for:

- Deer
- Elk
- Goats

Recommend establishment of RNA at El Durado -

* Recommend county ordinance for speed limit on Little Kachess

Review existing functional plans and revise or eliminate (ORV, Watershed Plans, Share Cost, etc.)

Develop group camp at Icicle Creek and West of Rock Is. Camp

Notify permittees at Gale Creek and Lake Cle Elum residence tracts ref. termination

Complete pre-attack inventories outside wilderness

Map, evaluate, prioritize, etc., all riparian zones

Needs publicity

Page Reference	Who Responsible	Due Date
20, 27	Fire Staff	Done
20	Cle Elum	Done
15	Each District	Done
55 41 17	Rec. Staff	12/82 <i>Designate</i>
28	Forest Plan	12/82
28	Forest Plan	12/82
28	Forest Plan	12/82 } <i>Done</i>
33	Wenatchee Lands	10/82 <i>Prelim work done in preparation of 11/82</i>
17	Cle Elum	7/82 <i>Done</i>
34	Forest Plan	12/82 <i>Done in forest plan</i>
17	Leavenworth	Budget req. '82 Timber Sale '83 Construction '85 <i>in 1980 Cont Program</i>
17	Cle Elum	7/82 <i>Done</i> <i>on Notice + on Annual Permit</i>
21	Fire Staff	10/82 <i>Done</i>
28	Forest Plan	12/82 <i>Done</i>

Check Interim Policy and Interforest manual supplements, revise or remove.

- * Remove existing road closure and gate Fortune Creek Road.

Develop programmed harvest

- * Establishment documentation for Special Areas (list page 33) - *Included Eldorado*

F.Y. 83

Develop corridor plans:

I-90

US-2

Scenic Forest Corridors

*Corridor Plans
Mostly in
Plans but Plans
Not Completed*

Develop boat access for Little Kachess

Establish easements as needed for National Recreation and Historic Trails (see list)

Complete Stevens Pass Historical Plan and consult with SHPO

Develop group camp at Icicle Creek and west of Rock Is. Camp

Establish quantitative objectives for prescribed fire areas outside (W)

Withdraw from mineral entry Redtop Mountain

Evaluate Wildhorse - Whitepine Allotment for possible termination

F.Y. 84

Bring Stafford Creek Allotment into compliance with new direction a-f.

Determine areas suitable for ORV's in Teanaway Area

Develop inventory and monitoring for Stafford Creek Allotment along County Line Trail.

--

map

34

7

8

8

8

17

17

20

17

21

17

32, 54

33

33

33

Rec. Staff

Cle Elum

Forest Plan

Rec. Staff

Need to Complete

Forest Plan

Forest Plan

Forest Plan

Cle Elum

Each District

Sky, Lake
Cult. Staff

Leavenworth

Fire staff

Cle Elum

Lk. Wen.

Cle Elum

Cle Elum

Cle Elum

10/82

6/82

12/82

10/82

1/83

1/83

1/83

10/83

'83 continuing

2/83

Timber harvest

Partially '83

In Program

12/83

10/83

12/83

12/84

10/84

12/84

Done

Done

Done

Reinstate Plan in Forest

Plan says we will work on Forest

Classified

Done

Done

Done

Done

Need to do

In Process

Needs Approval

Timber harvest

Partially '83

In Program

Done

In RO

Needs Setup

Allotment

Needs Termination

Done

Process

Now starting

Needs

Done

Reduce forage utilization
along Highway 97

Construct 8-mile Extension Camp

Construct Johnny Cr. Camp Extension

Determine suitable areas for
Snowmobiles in Annette Lake
Recreation Area.

F.Y. 85

Develop group camp at Icicle Creek and
west of Rock Is. Camp

F.Y. 90

Inventory cultural sites

Other Sequence

Convert Bridge Creek and Ida Creek
Campgrounds to day use sites

Obliterate:

W. Fork Miller (3-1/2 mi) check
legal process to close
Taylor River (2-1/2 mi)
Fish Lake (1-1/2 mi)
Beverly Creek (1 mi) *Done*

Make nominations for
NRT and NHT (Trails)

Designate fish and wildlife
feeding, nesting and reproductive
areas within riparian and
wetland zones

Withdraw from mineral entry:
Pashastin, Negro, Ruby Creeks.

33	Cle Elum	12/84 <i>Done</i>
16	Rec. Staff Wenatchee	10/84 - <i>quits to</i> <i>22 in program</i> <i>for 87-88-89</i>
16	Rec. Staff Wenatchee	10/84 <i>in program for</i> <i>87 Const.</i>
33	Cle Elum North Bend	10/84 <i>Done</i>
17	Leavenworth	<i>In CT</i> Construction '85 <i>Program</i>
20	Rec. Staff	1990 - <i>In process</i>
16	Leavenworth	After Johnny Cr. Construct. <i>Done</i>
11	Skykomish	To follow <i>Not</i> construction <i>Done</i> of new trail- heads (see trails schedule)
11	N. Bend	
11	Cle Elum	
11	Cle Elum	
17	Rec. Staff	Complete as easements are established and standards reached. <i>Following</i>
28	Each District	Project by <i>Done</i> Project
17	Cle Elum	Defer, low priority <i>Antiquity</i> <i>Defer</i>

II. Wilderness

Done

Post trails at wilderness boundary

Keep accidental fire occurrence at not to exceed current level (set up monitoring)

Establish system and monitor vegetation and soil condition at heavily used camp areas. (see list)

F.Y. 82

- * Review existing closures (camping at lakes). Revise as necessary.

Establish and maintain water quality monitoring program.

- * Adjust trail stock closures to conform with plan

- * Establish order banning dogs in in Enchantments

Review all existing brochures to comply with plan (Forest map, PCT brochure, etc.). Revise or discard.

- * Establish system to maintain Enchantments at 60 PAOT

Complete cultural overview in (W)

- * Have public education program to explain role of natural fire

- * Decision on other areas for campfire closure. Especially:

Colechuck Lake
Ridge & Gravel Lakes
Upper Necklace Valley
Rampart Ridge Area
Ladies Pass

Done

Develop use measuring and monitoring system for carrying capacity

Page Reference	Who Responsible	Due Date
43	Each District	Done
54	Fire Staff	Done
49	Each District	Done
--	Each District	12/82 <i>Being Done by Supervision</i>
47	Water Staff	10/82 Plan - <i>Done in Core Area</i> 10/83 Implem. <i>Needs Work</i>
55	Each District	10/82 - <i>Done</i>
44	Leavenworth	6/82 - <i>Done</i>
51	Rec. Staff	6/82 <i>Done</i> <i>Containing</i>
43	Leavenworth	6/82 - <i>working on</i>
52	For. Plan	12/82 <i>Done</i>
54	Fire Staff PIO	10/82 <i>Done</i>
46	Cle Elum. Skykomish Leavenworth	<i>Done</i> <i>Continuing</i> 9/82
38, 43 50 (3)	Rec. Staff	Dev. 10/82 Impl. 7/83 <i>Done</i> <i>Need to implement</i>

Needs publicity

* Establish methods of encouraging two day limit of stay in Enchantments

* Develop order prohibiting use of hay and unprocessed grain; develop publicity

* Establish order prohibiting campfires at:

Enchantment area
Rachel Lake
Spectacle Lake
Escondido Tarns
Tuck & Robin Lakes
Park Lakes

Establish monitoring system for trail encounter - comply with R-6 standards

* Establish no-grazing order for certain areas on PCT, with publicity (needs signature of Sup. MBS)

F.Y. 83

Establish monitoring system for trail encounter comply w/R-6 Standard

Develop use measuring and monitoring system for carrying capacity

Reconsider need for a wilderness map based on reaction to Mountaineer's Map. Give priority to using this map in lieu of FS map

Establish encounter levels for Enchantments

Make nominations to NRHP for cultural properties in (W)

* Establish location of designated campsites in Enchantments

Remove all corrals

Remove all drift fences

44

Leavenworth

6/82 *Done*

46

Wenatchee
Rec. Staff

5/82 *Done*

44, 46

Rec. Staff

7/82

46

Rec. Staff

7/82

46

Rec. Staff

7/82

46

Rec. Staff

7/82

46

Rec. Staff

7/82

46

Rec. Staff

7/82

41

Rec. Staff

Dev. 10/82 *Done*
Impl. 7/83

54

Rec. Staff
Wen. Lead

5/82 - FS closures
Needs work

41

Rec. Staff

Dev. 10/82
Impl. 7/83

38, 43
50 (3)

Rec. Staff

Dev. 10/82
Impl. 7/83

51

Rec. Staff

4/83 - *Do not need*
Done

44

Leavenworth

Monitor after implementation of other *one* restrictions

52

Rec. Staff

Following Forest Plan

44

Leavenworth

10/83 *Done*

44

Cle Elum

9/83 *Done*

45

Leavenworth

9/83 *Done*

Needs Publicity

Establish registration stations, sign boards, etc., at approximately 40 entrance points; make design uniform.

Install standardized sign boards at trailheads

Establish and maintain water quality monitoring program

F.Y. 84

Evaluate Granite Mountain Lookout for admin. and historical value and follow-up

~~Complete installation of monitoring station~~

F.Y. 86

Standardize signs and replace old ones

Evaluate all structures for historic value and follow-up

40

Rec. Staff

4/83 - Major Points complete

42

Each District

4/83 Done at major TH.

47

Water Staff

10/82 Plan
10/83 Impl.

Need work

45

North Bend

10/84 Done

~~Each District 10/84~~

42

Each District

10/86 Done

45

Each District

10/86

Needs work

II. PIO Action by 6/82

- A. Develop public information handout covering changes and rules, closures, etc. (See * on previous pages).
- B. News releases about management changes and implementation programs.
- C. Ranger contacts with local groups, town/county government.
- D. Consider rules supplement to be included with Mountaineers Map.
- E. Contact special interest groups about management changes.
- F. Contact Signpost, Mountaineers, ALPS about management changes.
- G. Develop training for Information Center (Seattle), receptionists, recreation guards, wilderness rangers, District Staff, etc., covering new rules, regulations and implementation program.

Dave

Forest Service

Pacific
Northwest
Region

Wenatchee and
Mt. Baker-Snoqualmie
National Forests



PRESCRIBED NATURAL FIRE ACTION PLAN

ALPINE LAKES WILDERNESS

1982





United States
Department of
Agriculture

Forest
Service

RO

Date

January 3, 1983

ply to

5100 Fire Management

Subject

Prescribed Natural Fire Action Plan
for the Alpine Lakes Wilderness

To

Forest Supervisors, Mt. Baker-Snoqualmie and Wenatchee NFs

Enclosed is your Regional Forester approved Fire Action Plan for Alpine Lakes Wilderness area.

We appreciate your diligence in the development of this plan. If we can be of any assistance in the implementation phase, please feel free to call on me or my staff.

Robert J. McDonald
ROBERT J. McDONALD
Director of
Aviation and Fire Management

Enclosure

cc: Recreation
A&FM, Ralph Kunz
" Maynard Rost

MT BAKER-SNOQUALMIE NF
S O

JAN 5 '83

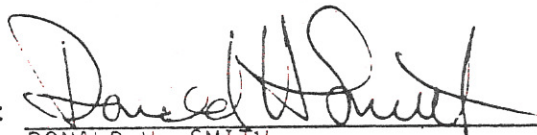
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Forest Supv			
Deputy F.S.			
F.S. Secretary			
Planning			
Public Affairs			
Administration			
Engineering			
Fire Management			
Lands & Minerals			
Recreation			
Biol. & Earth Science			
Timber			
Rangers			
Personnel			
F&A			



PREScribed NATURAL FIRE ACTION PLAN
ALPINE LAKES WILDERNESS

USDA FOREST SERVICE
Wenatchee National Forest
Mt. Baker-Snoqualmie National Forest

Proposed and
Agreed To By:



DONALD H. SMITH
Forest Supervisor
Wenatchee National Forest

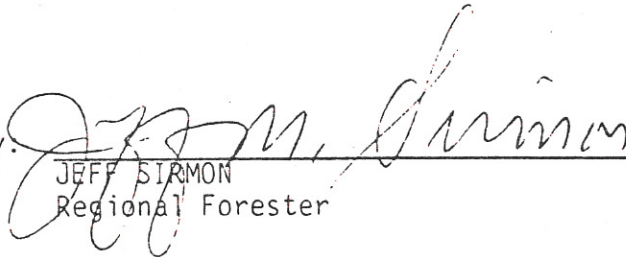
9/27/82
Date



J. D. MacWILLIAMS
Forest Supervisor
Mt. Baker-Snoqualmie National Forest

10/4/82
Date

Approved by:



JEFF SIMON
Regional Forester

12/29/82
Date

Preface

This is an Action Plan for implementing wilderness fire management direction described in the Alpine Lakes Area Plan.

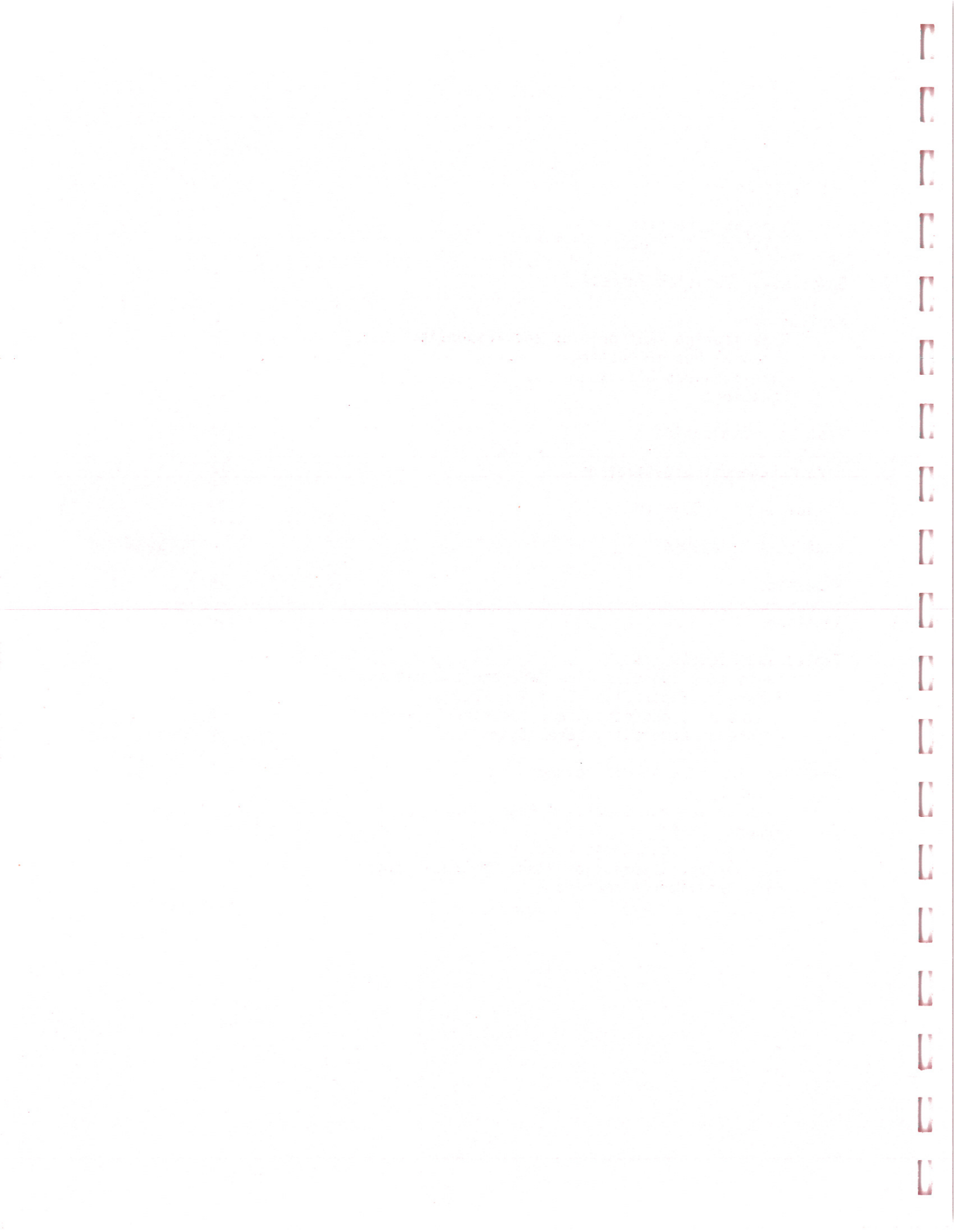
This plan was developed jointly by the Fire Staffs and Public Information Officers from the Wenatchee and Mt. Baker-Snoqualmie National Forests, the Fuels Specialist and planning assistant who did most of the work for the Area Plan, the Region 6 Fire Planning Specialist, the District Ranger from the Leavenworth Ranger District and the fuels specialist from the Skykomish Ranger District, the Recreation Assistant from the North Bend District and the Fire Management Assistants from the North Bend, Cle Elum, Skykomish Ranger Districts and from the Wenatchee Valley Fire Zone.

This Action Plan incorporates the use of the Alpine Lakes Area Plan, the Regional, Forest, and District mobilization plans, systematic dispatch plans, respective fire prevention plans, respective preattack plans and manual policies from 5100 and 2300 sections of the Forest Service Manual.

All nine of the requirements listed in FSM 5121.1 are met with the approval of this plan.

TABLE OF CONTENTS

	<u>PAGE</u>
Introduction	1
Purpose	1
Current Direction	1
Wildfire vs. Prescribed Fire	2
Suppression Decision Process	4
Monitoring	9
Organization (Authorities and Responsibilities)	9
Personal Qualifications	9
Fire Monitors Duties	11
Equipment	11
Post Fire Evaluation	12
Fire Management Organization	12
Visual and Air Quality	13
Financial Management	13
Reporting	14
Revision	14
Tables and Figures	
Table 1, Wilderness Fire Management Direction	3
Figure 1, Suppression Decision Matrix	7
Figure 2, Coordination and Decision Flow Chart	8
Figure 3, Complexity Level Chart	10
APPENDIX (includes the following)	
Glossary	
Information and Education Plan	
Report Forms	
Region 6 Preparedness Level Plans	
Appropriate Suppression Plan (Optional Format)	
Fire Behavior Parameters	



ALPINE LAKES WILDERNESS PRESCRIBED NATURAL FIRE MANAGEMENT
Action Plan

Wenatchee and Mt. Baker-Snoqualmie National Forest

I. INTRODUCTION

A. Purpose

The purpose of this plan is to specifically identify actions necessary to implement management direction from the Alpine Lakes Area Management Plan.

B. Current Direction

The current direction for managing the wilderness portion of the Alpine Lakes Area is as follows:

1. Naturally occurring fires will be permitted to burn in specific areas, if they meet the prescription parameters for the zone which insures that lands or values outside the Wilderness are not threatened. The map, Figure 4, page 22 of the Alpine Lakes Area Management Plan, displays these prescription zones. Human caused fires will not be used to meet prescriptions.
2. The suppression decision matrix (Figure 1) will be used to determine appropriate suppression actions on fires. These decisions will be documented when the fire starts and will be reviewed by the District Ranger periodically throughout the duration of the fire. The most cost-efficient tactics within the goals and objectives of this plan will be utilized.
3. Suppression actions will be applied in a manner which has the least impact on the Wilderness resources.
4. A prevention program, consisting of education and enforcement activities, will be directed at maintaining a level of human caused wildfire occurrence not to exceed the current level of fires per year measured by a 10 year mean.
5. A public education program will be undertaken to explain the natural role of fire in the Alpine Lakes Wilderness ecosystems.
6. The program identified in Item 5 above will be undertaken before any prescription fire will be allowed within the Wilderness.
7. All smoke generating activities, including prescribed fire, will meet the requirements of the Smoke Management Plan administered by the Washington Department of Natural Resources.

8. Retardant may be utilized to contain any fire which exceeds the prescribed intensity levels and threatens acreage limitations or adjacent allocations.

C. Definition of Wildfire vs Prescribed Fire

As stated in Title 5100, Chapter 5150 of the Forest Service Manual, a "prescribed fire is a fire burning under specified conditions which will accomplish planned objectives in compliance with an approved plan". The ignition of the fire can be either planned or unplanned, but the prevailing conditions and the expected results must be "specific, predictable, and measurable". In this plan the terms "Natural Fires", lightning fires and unplanned ignitions are synonymous and do not refer to human-caused fires.

Conversely, a wildfire is one that fails to meet any one (or more) of the above stated conditions. Further, a prescribed fire that exceeds prescription will be considered a wildfire. A program of prescribed fire resulting from unplanned ignitions (natural fire) is the focus of this plan. The plan will be geared to accomplishing the objectives stated in Alpine Lakes Area Land Management Plan, Page 53.

TABLE I - WILDERNESS FIRE MANAGEMENT DIRECTION

(This is an additional column to Table 4 on page 24 and 25 of the Alpine Lakes Area Plan.)

Maximum fire size-- The size of a prescribed fire will be dependent on availability of suppression forces, threat to improvements, other fires in progress, weather conditions and threat to lands adjacent to the Wilderness boundary.

Maximum burned area per decade by fire-- If fire is to regain its former role in the Wilderness, then the only limits will be based on water quality degradation or threat to life and property or minimizing unacceptable effects on wilderness resources due to unnatural fuel accumulation.

FIRE CONTROL LINES & MOP-UP-- Control activities will use natural topographic or vegetation breaks wherever possible. When firelines are necessary, they will be only as wide as needed to control the fire. Wet lines and cold trailing will be utilized wherever possible. Only those snags which are hazardous to helicopter operations or pose a safety threat to fire fighters will be felled. Most will be left standing. Material removed for fireline construction will be replaced, and bone yards will be dismantled. The charred material will be allowed to burn out when the fire is being mopped up. There will be no restrictions on the use of explosives for constructing control lines.

USE OF MECHANIZED EQUIPMENT

Pumps and power saws will be permitted, although non-mechanized techniques will be considered and adopted when feasible.

USE OF HELICOPTERS

Helicopters may be used on all fires as they produce less enduring impact than other modes of transportation. Natural openings for helispots will be favored and clearing new sites will be minimized. Cleared helispots are considered temporary improvements, and will be returned to a natural appearance after use.

LEVEL OF PRE-ATTACK IMPROVEMENT

Pre-attack projects that effect vegetation manipulation will not be undertaken. Existing helispots will not be maintained and water developments will not be constructed.

PRESCRIBED FIRE IGNITIONS

Prescribed burns will be as a result of natural unplanned ignitions.

FUELS MANAGEMENT

Fuels will be allowed to accumulate naturally, and will be modified only as a result of a lightning fire burning under prescription. No fuels management projects will be undertaken.

POST FIRE ACTIVITY

All human caused disturbances in a fire area will be restored to near natural conditions.

II SUPPRESSION DECISION PROCESS

The District Ranger or designated representative will immediately apply the Wilderness Fire Decision Guide (matrix). For existing fires, this will be repeated prior to 10 A.M. each day the prescription fire continues to burn. Decision rationale will be documented on a decision guide form and verbally communicated to the Forest Dispatcher through the Fire Management Assistant. An Appropriate Suppression Action plan will also be developed for each day as described in Section G.

A. FIRE STARTS

The location of the fire start must be plotted accurately enough to determine the appropriate prescribed fire intensity zone, vegetation type and fuel model, and topographic information. Using this information and Table 3, page 23, of the Alpine Lakes Area Management Plan the upper limits of tolerable fire behavior are determined. In addition, a preliminary assessment must be made to determine if the fire started from human or natural causes and whether it is on National Forest or threatening National Forest lands. Appropriate suppression action will be taken on all human-caused fires.

B. REGION 6 PREPAREDNESS LEVEL I-III

The Preparedness Level Guide from the Region 6 Mobilization Plan will be used according to the following:

1. At R-6 Preparedness Level I, the Regional Coordinator will be contacted and kept informed of fire conditions. Natural fires may be managed.
2. At R-6 Preparedness Level II, the District Ranger retains decision making authority, but it is essential that the Forest Supervisor becomes closely tied in with the decision process since the Regional situation will have a direct bearing on the Forest's ability to manage prescribed natural fires. Natural fires may be managed.
3. At R-6 Preparedness Level III, all new ignitions in the Wilderness will have appropriate suppression action taken. Current prescribed fires may or may not be suppressed.

C. FIRE BEHAVIOR PROJECTIONS

Using observed data from the most appropriate weather station (may not be the nearest) and forecasted conditions, an assessment of fire behavior for the current burning period as well as for the next five days should be made. This should include rate of spread (adjusted for topographic breaks), flame length, and fireline intensity. If the forecast includes a drying trend beyond the five-day period, the anticipated fire spread should be projected through the period and updated daily until there is a significant weather change that would moderate fire behavior.

A new fire behavior prediction will be made for each burning period using the most current weather data. The decision not to suppress is predicated on the fact that the predicted fire behavior is within tolerable limits as specified in Table 3 of the Alpine Lakes Management Area Plan and the spread is confined to the intended prescribed fire intensity zone.

D. SMOKE MANAGEMENT CONSIDERATIONS

Any start will be assessed for conformance with the requirements of the Washington State Smoke Management Plan. Immediate conformance to air quality standards is not always possible if appropriate suppression action is taken. Therefore, when the fire starts, the best possible assessment must be made of the potential smoke dispersion and stability expected during the anticipated duration of the fire. Usually the meteorological conditions which result in unacceptable fire intensities or spread rates on the west side of the Washington Cascades are those that produce unacceptable smoke dispersion. On the east side, the effects of residual smoke drifting into the fruit growing valleys, must be considered certain times of the year.

E. SUPPRESSION RESOURCE AVAILABILITY

This is the most critical decision point. It is an unacceptable situation if we cannot respond with sufficient suppression resources to contain a fire that exceeds prescription parameters. Likewise it is unacceptable to undertake a prescribed fire project without adequate funding to accomplish the project monitoring needed to verify that prescription parameters are being met. Daily, during the life of any fire burning within prescription, a preliminary or "what if" Appropriate Suppression Plan will be developed (example in appendix). This plan will determine the most cost efficient strategy and the amount, kinds, and costs of resources needed to contain the fire if it has the potential to become a wildfire, or bring it back within prescription.

The forest must be prepared to provide the necessary forces to contain any escaped fire from its local pool of suppression resources. This could include using the resources of adjacent forests. The forest dispatchers must determine daily, in conjunction with their counterparts on adjacent forests, the maximum number of forces that could be mobilized considering commitments to other fires that may have already been made.

F. THREAT TO LIFE, PRIVATE PROPERTY, IMPROVEMENTS, AND CULTURAL OR HISTORICAL SITES AND WILDERNESS BOUNDARIES

Districts will maintain maps which identify (1) areas of concentrated public use where there is likely to be a threat to human life, (2) private property where values may be damaged or are different from those that we consider on our adjacent lands (the Forest Service will not suppress prescribed natural fires burning toward patented wild land within Wilderness unless a facility or improvement needs to

be protected),^{1/} (3) physical improvements that would be damaged or destroyed by fire, or (4) inventoried cultural or historical sites that have been determined critical and in need of protection. If the projected spread of any fire threatens any of the above kinds of areas or a wilderness boundary, action will be taken to appropriately suppress the fire and/or protect the site. An acceptable strategy is to take containment action on the portion of the fire which threatens the area of concern.

G. APPROPRIATE SUPPRESSION ACTION

Once a decision has been made for Appropriate Suppression Action, FFF is used and the fire cannot be managed again as a prescribed fire. When a suppression decision is made, the specific strategies applied may be to contain, confine, or control the fire. An Appropriate Suppression Action Plan or, if the fire situation is complex enough and warrants the procedure, an Escaped Fire Situation Analysis will be made and should identify the most cost efficient and appropriate methods of suppression. Initial response will be in accordance with Preplanned Dispatch Action Cards and Preattack inventories. Reinforcement actions will be guided by the Forest Mobilization Plans.

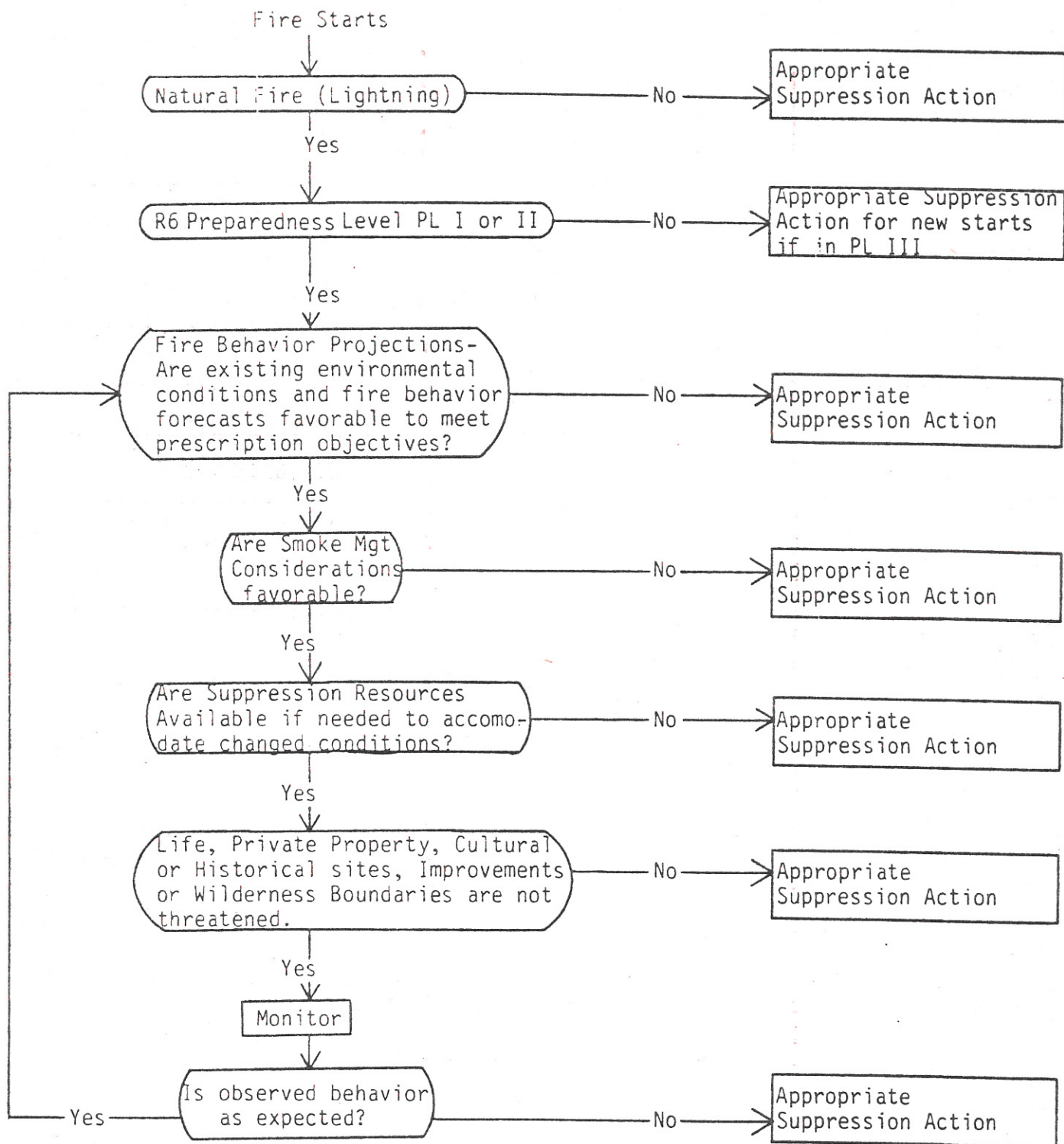
H. GENERAL

An analysis of the general Fire behavior predictions, smoke management considerations and the availability of suppression resources should be maintained daily regardless of whether there is a fire or not.

^{1/} A fire burning within prescription is not going to damage private wildland. If the landowner or Department of Natural Resources (DNR) feel that it is not appropriate for the land involved, they may take appropriate suppression action. Also, if a fire originates on patented land within the wilderness area, the Forest Service will not take action on the fire unless it poses a threat to National Forest land or unless it is during a reciprocal agreement period or by cooperative agreement with the DNR.

FIGURE 1

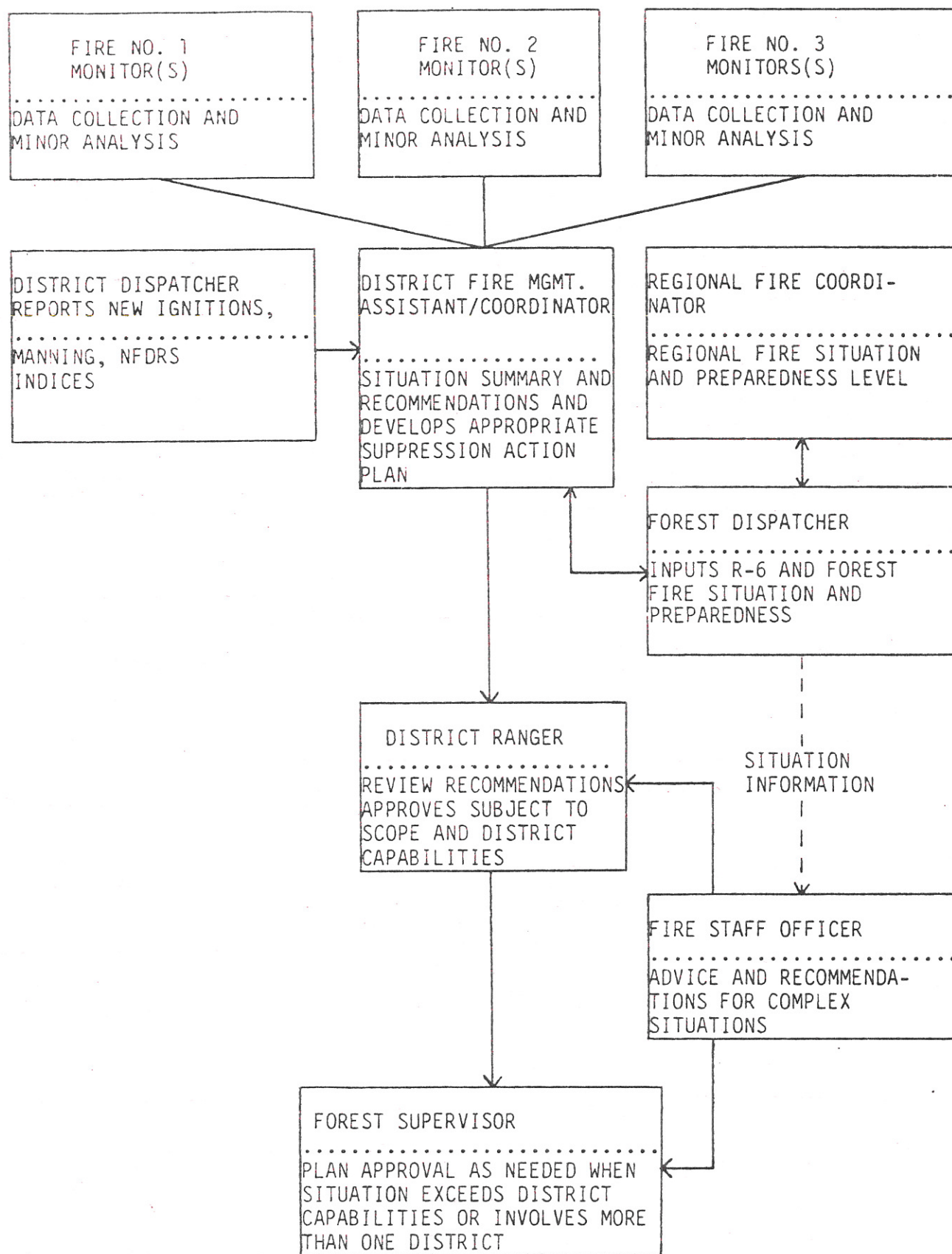
WILDERNESS FIRE DECISION GUIDE
(Suppression Decision Matrix)



THE CURRENT DECISION IS CIRCLED ABOVE

Fire Name _____
 Approved by _____
 Date _____ Time _____
 7

FIGURE 2
COORDINATION AND DECISION FLOWCHART



III. MONITORING

Monitoring is to provide an appropriate observation of the prescribed fire to verify the fire behavior is as expected, the objectives are being met, and to measure impacts. This will usually be done by trained personnel working on the ground and in the area of the fire. Monitoring also may be supplemented or in some cases accomplished entirely from intermittent aerial observation or lookout points.

The operational phase of monitoring is broken into five categories; personnel qualifications, training, organization, duties, and equipment. The intent of this section is to emphasize the need for highly trained and qualified personnel to insure that quality decisions are made, and that the safety of Forest Service personnel and the general public are provided for.

A. ORGANIZATION (AUTHORITIES AND RESPONSIBILITIES)

The organizational structure for information decision making transfer is illustrated in the Action Plan Flow Chart, Figure 2. Monitors will transmit data to the unit's Fire Management Assistant. Data from the fire will be analyzed by the FMA and other District Staff Assistants and/or Specialists, as needed, and recommendations relayed to the District Ranger for decision.

Forest Supervisor and Forest Fire Staff Officer--Will keep informed of all developments concerning prescribed fires in the wilderness and when necessary give direction or make decision when the situation has impacts or is influenced by requirements beyond district responsibilities; such as when suppression resources required for appropriate suppression exceed District capabilities.

B. PERSONNEL QUALIFICATIONS

Personnel monitoring prescribed fires may range from trained personnel with minimum experience, to fire behavior officers to management teams. The level of expertise needed for a particular fire will depend on the situation complexity. The situation complexity is dictated by, but not limited to, fire location, number of fires, fire intensity zone, actual and projected fire behavior, weather conditions, and fire danger rating. See the Complexity Level Chart (Figure 3).

The goal is to provide the highest qualified people for wilderness fire monitoring with safety as the controlling factor. In determining wilderness fire monitor qualifications, the following criteria were established:

1. Complexity Level I--at least Crew Boss qualified. Specialized training in fire behavior, safety, and monitoring procedures.
2. Complexity Level II--at least Sector Boss qualified. Specialized training in monitoring procedures.

FIGURE 3

COMPLEXITY LEVEL CHART

COMPLEXITY LEVEL INDEX	COMPLEXITY LEVEL I	COMPLEXITY LEVEL II
FIRE LOCATION	FIRE OVER 1 MILE FROM PRESCRIPTION BOUNDARY OR NO THREAT TO WILDERNESS BOUNDARY	FIRE WITHIN 1 MILE FROM PRESCRIPTION BOUNDARY OR IN CLOSED CANOPY FOREST. MAY THREATEN WILDERNESS BOUNDARY
HEAVY PUBLIC USE CURRENTLY IN AREA	NO	YES
BURNING INTENSITY (Flame Length)	< 3 FOOT FLAME LENGTH	3 FOOT FLAME LENGTH OR > 3 FOOT FLAME LENGTH INTERMITTENTLY
FIRE BEHAVIOR PREDICTIONS	NO SIGNIFICANT CHANGE	COULD POSSIBLY EXCEED PRESCRIPTION PARAMETERS TEMPORARILY

C. FIRE MONITOR DUTIES

Fire monitoring is a data gathering function only.

1. Aerial Monitors--Turn in regular fire behavior report. Specifically, map fire, locate nearby campers, note changes in fire behavior, report access routes, suggest changes in situation complexity, and monitor smoke conditions.

2. On Site Monitors

- a. Complexity Level I

If not already known, determine ignition source (lightning or human caused), collect and report data on fire behavior, on-site weather, fuel models, topography, vegetation; map the fire, predict size and area, suggest changes in situation complexity--A data gathering function only. Crew Boss rated individuals will monitor Complexity Level I fires only.

- b. Complexity Level II

Collect and analyze data on fuels, fire behavior, vegetation, topography, fuel models; calculate rate of spread probabilities, predict size and area, request spot forecasts, map the fire, evaluate data, make recommendations to FMA, contact and inform any publics in the area. May require scouts for data accumulation. Individuals rated Sector Boss and higher will monitor Complexity Level II fires.

D. EQUIPMENT

For prescribed fire monitoring, a minimum amount of equipment will be required to ensure safety and adequate data collection. Minimum equipment needs include the following:

Fire Shelter(s)	Radio
Belt Weather Kit	Fireline Handbook
Necessary forms	Hand Tools
Nomex clothing and safety equipment	First Aid Kit
Fusees	Flashlight
Clinometer	Fire Map
Compass	

OPTIONAL EQUIPMENT

Camera and film	100 foot tape
Fuel Model keys	Duff pins
	Rate of Spread Markers
	TI-59

IV. POST FIRE EVALUATIONS

Post-fire evaluation studies will be established to validate the expected results discussed in the introduction:

1. Perpetuation of fire dependent ecosystems.
2. Creation of a natural mosaic of vegetation which will affect the size and intensity of future fires.
3. Maintenance of plant/animal relationships that have evolved with fire.
4. Reduction of unnatural fuel accumulations due to past fire suppression.

Evaluation differs from monitoring in that monitoring is concerned with an actively burning fire, whereas evaluation assesses a result, or appraises what happened or resulted from a special action.

Major resource elements to be evaluated include soil, air, water, and vegetation and wilderness values. In addition to these basic resources, changes in ecosystem diversity, visual quality, fuel build-up, wildlife habitat, and range condition must be considered. These post-fire studies should be long term in nature, showing not only the immediate effects of burning, but also the effects over time.

Resource specialists will be contacted by the District Rangers to establish long term fire effect studies on prescribed natural fire sites to assess the effects of various fire intensities on different plant communities over time.

One of the ecological benefits to be derived from a prescribed natural fire program is the opportunity to evaluate fire effects in a natural setting, apart from outside influences such as salvage logging and emergency revegetation with non-native species.

V. FIRE MANAGEMENT ORGANIZATION

- A. NATURAL PRESCRIBED FIRE - Each District will, as a minimum, train at least 3 people qualified to monitor Complexity Level I fires and 1 person to monitor Complexity Level II fires. Qualified people may be shared between Districts.
- B. WILDFIRE - Whenever suppression is needed the following resources are available for use, depending on other fires in the area, Class II fire overhead teams from each Forest, a supply of miscellaneous overhead located on each forest, equipment, including aircraft, either owned or under rental agreement. All of these resources are identified in the systematic dispatch plans for each forest, mobilization plans, and fire action (mobilization) plans for each District. In addition, other resources including aerial delivery shared resources are available and listed in the Region 6 Mobilization Plan.

Each forest also has available project crews trained and equipped for fire suppression.

VI. VISUAL AND AIR QUALITY

On November 30, 1979 the Environmental Protection Agency published, in the Federal Register, the advance notice of proposed rule-making for Class I Visibility Areas; in the same issue of the Federal Register, E.P.A. identified all Class I Visibility Areas which included the Alpine Lakes Wilderness.

Since prescribed natural fire occurring in the Wilderness is unplanned, of a temporary nature, and irregularly occurs, it is felt that it will not cause a significant degradation of visibility standards.

Some sensitive areas within and outside the Wilderness include the following:

- A. On-site areas, such as scenic vistas, which wilderness users are interested in photographing or viewing.
- B. Off-site areas, such as the Puget Sound Basin may receive residual smoke from airflow down the west slopes from within the Wilderness, and the Icicle Creek drainages which may receive smoke from Snowgrass Mt. and the Enchantments area during periods of inversion.

Spot weather forecasts can be obtained from the National Weather Service, Washington DNR, and Wenatchee Fire Weather Office for smoke dispersal forecasts for the Alpine Lakes area. In addition, special spot forecasts using sounding information (air temperature profile) can be given upon request within one-half hour. These can be related to either smoke dispersal or fire behavior. This information will be used, as well as local knowledge of air drainage and wind patterns, to predict the effect of smoke from a natural fire on air quality in adjacent areas.

Other factors such as smoke from sources outside the Wilderness, time of year, amount of visitor use, probable length of smoke dispersal problem, and economics will be considered in decisions to contain a natural fire due to poor smoke dispersal.

Objectives, goals and requests by the State of Washington to manage visibility and/or smoke residue will be complied with.

VII. FINANCIAL MANAGEMENT

When budget proposals for each fiscal year are first being developed, a budget estimate for expenditures for managing the prescribed natural fire program will be prepared by the two Forest Supervisors.

Using the Alpine Lakes Wilderness average of 7 lightning-caused fires per year and assuming fifteen person-days per fire at \$80 per person-day, the estimated cost of monitoring a prescribed natural fire program in the Alpine Lakes Wilderness would be \$8,400 per year. This cost will vary, depending on the level of monitoring and appropriate suppression required by each ignition. As experience is gained in monitoring and suppression skills, on-site monitoring requirements may be lessened and suppression resources reduced, thereby reducing costs.

For aerial detection and aerial monitoring it is estimated that \$1600/year would be the average cost. The average annual cost estimated for this plan is \$10,000/year with 1/6 to the Mt. Baker-Snoqualmie National Forest and 5/6 to the Wenatchee National Forest area.

VIII. REPORTING

Prescribed natural fires by definition are fires that meet management objectives, and are therefore non-statistical according to current Forest Service Handbook direction. Should a prescribed natural fire exceed its parameters and need to be suppressed as a wildfire, a 5100-29 will be completed. The existing 5100-29 does not provide enough detail concerning prescribed natural fires, and much data may be lost. The documentation of these fires has significant value for long-term management planning, and is an important part of the total fire management job.

Because existing forms are unable to adequately handle the documentation needed for prescribed natural fires, Form 5100-29P (see Appendix 2) will be completed for each prescribed natural fire that occurs in the Alpine Lakes Wilderness. This form, with the daily fire monitoring form, 5100-14 (Appendix 2), will be completed and sent to the District Ranger for review not later than October 1 of each year. This data will then be microfilmed as part of the TRI system.

All actions and decisions regarding prescribed natural fires will be documented.

Prescribed natural fires will be reported through normal channels to the Regional Office. Additionally, a narrative report will be submitted through the Regional Office to B.I.F.C. whenever significant changes occur. This narrative will provide information for the Daily National Situation Report.

An annual review of each year's operation will be conducted and an annual report will be prepared and submitted to the Regional Office. These should document both the wildfires and prescribed fires that occur, the costs associated with each, anticipated effects of the natural fires, problems that arose and suggested steps to remedy them, and any public comments and media coverage that dealt with the Wilderness fires.

IX. REVISION

This plan will be evaluated annually and revised as needed.

APPENDIX

GLOSSARY

INFORMATION AND EDUCATION PLAN

FIRE MONITORING REPORT

PRESCRIBED NATURAL FIRE REPORT

REGION 6 PREPAREDNESS LEVEL PLAN

APPROPRIATE SUPPRESSION ACTION PLAN

FIRE BEHAVIOR PARAMETERS CONSISTENT WITH PRESCRIPTION FIRE INTENSITY ZONES
(From Alpine Lakes Area Land Management Plan)

GLOSSARY

1. Confine (confine a fire) - To restrict a fire within determined boundaries established either prior to the fire, during the fire, or in an escaped fire situation analysis.
2. Constraints - Controls on practical application of fire management program elements. They may be legal or administrative, applied at the local, State, Regional or National levels, and involve environmental, economic, social or political factors.
3. Contain (contain a fire) - To surround a fire, and any spot fires therefrom, with control line, as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions.
4. Contingency Plan - Provides for the timely recognition of approaching critical fire situations and timely decisions establishing priorities to resolve those situations.
5. Control (control a fire) - To complete the control line around a fire, any spot fires therefrom, and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control line; and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under foreseeable conditions.
6. Decision Criteria - "A method or yardstick by which to establish priority and to measure accomplishment." Usually these are a set of statements which contain standards by which you can prioritize and measure accomplishment of actions, tasks, or plans to be implemented.
7. Escaped Fire - A fire which has exceeded, or is anticipated to exceed, initial action capabilities or the fire management direction or prescription.
8. Escaped Fire Situation Analysis - A decision analysis of those factors influencing suppression of an escaped fire from which a plan of action will be developed. The analysis includes the development of alternative suppression strategies and net effect of each.
9. Fire Management - All activities required for the protection of resources and values from fire, and the use of fire, to meet land management goals and objectives.
10. Fire Management Areas - One or more parcels of land with clearly defined boundaries and with established fire management direction which is responsive to land and resource management goals and objectives.

11. Fire Management Zone - A sub-area of a management area, or planned area, with reasonably uniform fire spread/intensity potential and fire effects potential.
12. Monitor - The observation of an on-going prescribed fire.
13. Planned Area - Any geographic area for which a fire management area plan, or a forest land and resource management plan, has been developed, and which includes specific fire management direction for wildlife protection and if applicable, the use of prescribed fire.
14. Planned Ignitions - A fire started by a deliberate management action.
15. Prescribed Fire - A wildland fire burning under specified conditions which will accomplish certain planned objectives. The fire may result from either planned or unplanned ignitions.
16. Prescription - A pre-designated set of criteria established for the use of prescribed fire to accomplish specific land and resource management objectives.
17. Surveillance - To keep close watch, but not take active suppression action, on a wildfire.
18. Unplanned Ignition - A fire started at random by either natural or human causes, or a deliberate incendiary fire.
19. Wildfire - Any wildland fire that is not prescribed and requires a suppression response.

INFORMATION AND EDUCATION PLAN

Objective: To instill public understanding and acceptance of fire management goals in the Alpine Lakes Area, as directed in the Alpine Lakes Area Land Management Plan Final Environmental Impact Statement. A key objective in the Information and Education Plan will be to continue the role of fire prevention in human caused fires.

*ACTION

ASSIGNED TO:

COMPLETION DATE:

Development of basic fact sheet to include background information and map for distribution to news media and appropriate publics. Additional fire prevention message would be appropriate.

Hart

5-20-82
and
annually

Draft a general news release

DeHart

5-20-82

Distribute internal newsletter to inform USFS employees of intended action

DeHart, Hart

5-25-82

Contact Congressional delegations, state legislators, county commissioners, and other appropriate agencies (DNR, State Game Dept., etc.)

Forest Supervisors

6-1-82

Make local community contacts. Additional fire prevention message would be appropriate.

Appropriate Dist.
Rangers

6-5-82

Mail out news release and fact sheet to news media; complete personal contacts with selected news editors, reporters, etc. to provide background and encourage feature coverage. Additional fire prevention message would be appropriate.

Hart, DeHart

6-7-82

Initiate direct mailings to key forest(s) users and groups (to include cover letter, fact sheet, map, etc.)

Hart, DeHart

6-10-82

Conduct awareness training for appropriate receptionists and wilderness rangers

Hart, Quick

6-15-83 as
needed
annually

Develop basic slide program for use in public speaking opportunities. Additional fire prevention message would be appropriate.

Hart

6-15-83
use as
needed
annually

Develop standard briefing sheet for news media and general public use during each prescribed fire. Additional fire prevention message would be appropriate.

DeHart, Ziebart

6-15-83 and annually

Produce signs for placement at trailheads to the wilderness 1) general signs to explain basics of policy and 2) specific signs to explain an actual fire. Additional fire prevention message would be appropriate

Hart, Zierbart

6-20-83 and annually

Issue news release when first fire occurs (first time a fire situation happens - big news release). Close coordination required between forests. (Follow-up news release also issued for fire progress and when fire is out and results are known)

Appropriate NF
(Hart, DeHart)

When Fire occurs

Encourage feature news coverage of a fire in progress

Hart, DeHart

When Fire Occurs

Post appropriate signs at trailheads where fire is burning

Districts

When Fire Occurs

Issue fire season wrap-up news release detailing how fire management activities worked out

Hart, DeHart

Annually by 10/15

* Most action items to be closely coordinated with Regional Office.

FIRE MONITORING REPORT

FIRE NAME _____ MONITORS: _____

FIRE # _____

FIRE MANAGEMENT UNIT _____

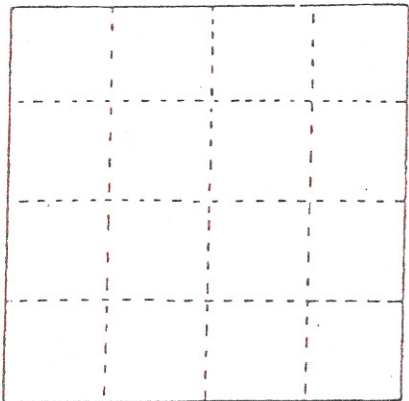
LOCATION: _____ 1/4 of _____ 1/4, Sec. _____ T. _____ R. _____

I. SITE		OBSERVATIONS							
Point #	_____								
Date	_____								
Time	_____								
Slope %	_____								
Aspect	_____								
Elevation	_____								
II. WEATHER 1/									
Wind Dir.	_____								
Wind Speed	_____								
- Max	_____								
- Min	_____								
- Average	_____								
Dry Bulb	_____								
Rel. Hum.	_____								
10 HRTL	_____								
III. FUEL (Before/After)									
Duff (inches)	_____								
0-1/4"	_____								
1/4-1"	_____								
1-3"	_____								
3+ Sound	_____								
3+ Rotten	_____								
Aver Depth	_____								
IV. FIRE BEHAVIOR									
Fuel Model 2	_____								
Fire Type 3	_____								
Flame Length	_____								
- Max	_____								
- Aver	_____								
Flame Height	_____								
- Max	_____								
- Aver-	_____								
Rate of Spread	_____								

REMARKS

- 1 Weather OBS must be taken at 1300 hours daily.
- 2 Albin's HFFL Models 1-11.
- 3 Surface, running, creeping, smoldering, crowning, torching, spotting.

PRESCRIBED NATURAL FIRE REPORT

1. Fire Name _____				2. S.O. Fire No. _____ (1-3)											
3. Forest (4-5) _____		4. District (6-7) _____		5. State (8-9) _____		6. County (10-11) _____									
7. Location				18. Flame Length (Min/Max) (70-73) _____											
Scale: _____ inches = 1 mile 				19. Flame Length (Average) (74-75) _____											
Location Description a. Town-ship (12-15) _____ b. Range (16-19) _____ c. Section (20-21) _____ d. Meridian _____ e. Latitude (22-25) _____ f. Longitude (26-30) _____				20. E.R.C. (Min/Max) (76-79) _____											
				21. E.R.C. (Average) (80-81) _____											
				22. Out of Presc. YY MM DD HH (82-89) _____											
8. Slope (31-32) _____				23. Back in Presc. (90-97) _____											
9. Aspect (33) _____				24. Type of Action (98) _____											
10. Elevation (34-35) _____				25. Person Days Expended (99-102) _____											
11. Ecoclass (36-37) _____				26. Fire Out YY MM DD (103-108) _____											
12. Fuel Model (38-39) _____				27. Days in Presc. (109-111) _____											
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>YY</td> <td>MM</td> <td>DD</td> <td>HH</td> </tr> <tr> <td colspan="4">(40-47)</td> </tr> </table>				YY	MM	DD	HH	(40-47)				28. Days out of Presc. (112-113) _____			
YY	MM	DD	HH												
(40-47)															
13. Origin _____ (48-55)				29. Total Burn Days (114-116) _____											
14. Discovery _____ (56-63)				30. Acres Burned (Presc) (117-120) _____											
15. Manned _____				31. Acres Burned (Wildfire) (121-124) _____											
16. Rate/Spread (Min/Max) (64-67) _____				32. Monitor Time (M.D.) (125-127) _____											
17. Rate/Spread (Average) (68-69) _____				33. Monitor Cost (128-132) _____											
Remarks (Continue on additional sheet if needed)															
Submitted By: _____				Date: _____ Approved By: _____ Date: _____											

This form is intended for use on prescribed fires from unplanned ignitions and may be used both in and out of Wilderness areas.

It is formatted to computerize all data entry for ease of retrieval and for statistical studies. Form 5100-29 must be filled out when fire goes out of prescription and is declared wildfire.

Block Number and Instructions

1. Fire Name - Use geographic landmark.
2. Contact Forest dispatcher for number. A special number will be assigned for prescribed fires. If fire goes out of prescription and becomes a wildfire, a 5100-29 must be prepared in addition to this form, 5100-29P.
3. Use 5100-29 codes from FSH 5109.14, item 3.
4. Use 5100-29 codes from FSH 5109.14, item 4.
5. Use 5100-29 codes from FSH 5109.14, item 1.
6. Use codes from TRI cell data base.
7. Use codes from FSH 5109.14, item 33.
8. Enter 2 digit figure; use 99 for slopes 100% +.
9. Use codes from FSH 5109.14, item 28.
10. Record first two digits of elevation; i.e., 6100 feet = 61.
11. Use 2 digit code from R6-Ecol-79-002.
12. Use 2 digit code from NFFL models.
13. Y=Year; M=Month; D=Date; H=Hour.
14. Y=Year; M=Month; D=Date; H=Hour.
15. Y=Year; M=Month; D=Date; H=Hour.
16. Record in chains per hour.
17. Use average during burning period from OBS on monitor Form 5100-14.
18. Record in feet.
19. Use information from 5100-14.

Block Number and Instructions

20. Obtain from AFFIRMS data.
21. Obtain from AFFIRMS data.
- *22. Enter year-month-date-hour fire was declared wildfire.
- *23. Enter code for major type of wildfire suppression action taken:
 1. Direct, frontal attack
 2. Flanking
 3. Indirect
 4. Backfire
 5. Burnout
 6. Aerial retardant
 7. Surveillance
 8. Other (give details in "remarks" column)
- *24. Number of person days for wildfire suppression. One person day = 12 hours.
25. Year-Month-Date-Hour fire declared out.
26. Enter number of days.
- *27. Enter number of days as wildfire.
28. Sum of 26 and 27.
29. Enter total acres burned in prescription.
- *30. Enter total acres burned as wildfire.
31. Person days spent monitoring prescription fire.
32. In \$, include salaries, per diem, aircraft, etc., to nearest \$100.

Remarks - Include any pertinent information not covered above; include use of different monitoring skills, unique problems, etc. Attach additional sheets if needed.

* Only if fire goes out of prescription.

REGION 6 MOBILIZATION PLAN

PREPAREDNESS LEVEL I

Typical Conditions

Project Fire in Progress

One Forest requires limited assistance.

No Project Fire in Progress

One or more areas with Action Class 3H.

PREPAREDNESS LEVEL II

Typical Conditions

Project Fire(s) in Progress

One Forest or area requiring broad-scale assistance, including overhead, crews, and equipment.

No Large Fire(s) in Progress

One area or more with Action Class 4 and R2 or R3.

PREPAREDNESS LEVEL III

Typical Conditions

Project Fire(s) in Progress

Several Forests and two or more areas requiring broadscale assistance including overhead, crews, and equipment.

No Large Fire(s) in Progress

Action class 5 in one or more areas. R3 in several areas.

APPROPRIATE SUPPRESSION ACTION PLAN
(For Optional Use)

Fire Name _____ Date _____ Time _____

Current Size _____ acres. Fuel _____ Location _____

Expected fire behavior next burning period (describe rate of spread, intensity, smoke direction, etc. expected during next burning period):

Fuel Type, Topography, and Natural Fuel Breaks or Firebreaks expected to be encountered during next burning period:

Appropriate Suppression Strategies (if needed):

A. Select Confine, Contain, or Control _____. (Definitions on reverse.) This selection should be based on urgency, calculation of probabilities (short- and long-range), opportunities, and cost efficiency.

B. Strategy description (Discuss specific actions to be taken if appropriate suppression were to be necessary).

C. Expected Fire Size when suppressed _____ acres (describe boundaries on map).

D. Suppression resources needed to implement strategy (list the specific resources needed with support to be used, the name, quantity, their locations).

Prepared by _____

Approved by _____ Date _____ Time _____

Fire Behavior Parameters Consistant With Prescription Fire Intensity Zones.¹

Vegetation Type	Fire Behavior Parameter	Intensity Zone I (Low)	Intensity Zone II (Moderate)	Intensity Zone III (High)
ponderosa pine zone	Forward Rate of Spread	3 chains/hr	3-8 chains/hr	8-12 chains/hr
	Flame Length	3 ft	3-5 ft	5-6 ft
	Fireline Intensity (energy release)	70 BTU's/ sec/ft	70-150 BTU's/ sec/ft	150-300 BTU's/ sec/ft
	Scorch Height	10 ft	10-20 ft	20-30 Ft
	Exposed Soil	10%	10-25%	25-40%
all other forested zones	Forward Rate of Spread	2 chains/hr	2-6 chains/hr	6-12 chains/hr
	Flame Length	2 ft	2-4 ft	4-6 ft
	Fireline Intensity (energy release)	40 BTU's/ sec/ft	40-120 BTU's/ sec/ft	120-200 BUT's/ sec/ft
	Scorch Height	8 ft	8-16 ft	16-24 ft
	Exposed Soil	10%	10-25%	25-40%
alpine meadow zones	Forward Rate of Spread	3 chains/hr	3-8 chains/hr	8-12 chains/hr
	Flame Length	3 ft	3-5 ft	5-6 ft
	Fireline Intensity (energy release)	50 BTU's/ sec/ft	50-150 BTU's/ sec/ft	150-300 BTU's/ sec/ft
	Scorch Height	N/A	N/A	N/A
	Exposed Soil	10%	10-25%	25-40%

¹These parameters are preliminary estimates and should be refined through field evaluation of actual fires. It is felt that they are conservative

Zone I (Low Intensity)

This includes all areas where the intensity of prescribed fires must not (1) reduce tree stocking below that necessary to maintain sustained timber harvest output levels, (2) reduce ground cover (herbaceous material, litter and duff) below that which is necessary to maintain water quantity and quality outputs, or (3) reduce soil productivity. The outputs of the General Forest and Scenic Forest allocations can be maintained under intensity of prescription fires acceptable in Zone I.

Zone II (Moderate Intensity)

This includes those areas where a limited modification of the vegetation complex creates the vegetation diversity necessary to maintain the wildlife habitats and visual variety in the landscape required in the allocation. Sufficient ground vegetation, litter or duff cover must be maintained to protect water quantity and quality. A prescribed fire must enhance both short and long range recreation and other resource objectives. The Dispersed Recreation allocation requires a limited amount of prescription fire to maintain its suitability over the long run.

Zone III (High Intensity)

This includes areas within the Wilderness where the management objectives are to maintain natural processes. Extensive vegetation modification by natural processes may occur, provided life or property values outside the areas are not threatened. The principle constraint on prescription fire intensity in this zone will be to insure, with a high degree of certainty, that the fire will be confined to the area intended to be treated.

Within each of the mapped zones, there will be isolated areas where fires from unplanned ignitions will meet the prescribed fire intensity limits for the zones but would be damaging to improvements on the site. These fires will be suppressed as any wildfire. Developed recreation and administrative sites, special use improvements, cultural and historical sites and private properties are examples. Likewise it will be necessary to use prescription fire with intensities higher than those for the specified zone to accomplish certain site specific management objectives. These applications of prescription fire will be accomplished using controlled ignition patterns rather than random ignitions. The prescribed fire intensity of these projects is still constrained to the extent necessary to maintain the expected outputs of the allocation. Examples might include the using of prescription fire of a high intensity in Zone I to prepare a planting site after timber harvest or using a moderate intensity fire to accomplish a wildlife habitat improvement project in the Zone I.

It is essential that the boundaries between the different prescribed fire use zones afford logical control opportunities. Where two zones with different prescription intensities interface, the most conser-

vative prescription dominates and the boundary is adjusted to major topographic or vegetational breaks which insure isolation of each area. In some cases, significant boundary adjustments would be required because of the uniformity of vegetation and topography.

See the Prescribed Fire Zone Map (over) for the location of where the various intensity prescription fires may be applied.

More specific requirements are provided in Tables 3 through 6 which displays fire management direction. (See Alpine Lakes LMP)

It is important to emphasize that before any unplanned ignitions are allowed to burn under prescription without aggressive suppression, all conditions of the prescribed fire intensity zone must be met; and an individual situation analysis must be made. In addition to the basic land area allocation and its accompanying direction, the following specifics will be considered:

- Season of year — (spring, summer, or fall)
- Vegetation type — (role of fire in ecosystem)
- Recent fire danger
- Forecast fire danger
- Smoke dispersion situation
- Specific location — topography and proximity to boundary
- Availability of suppression forces should burning conditions become unfavorable and require suppression

The information needed to make these decisions must be immediately available to avoid delays in taking suppression action. Page 7 is a suppression decision matrix which will be used to develop this process.

All industrial operation or other activities with fire starting potential will be regulated by existing Regional Forester restrictions.

Annual fire protection programs will consist of prevention, detection, pre-suppression and fuels management activities in combinations which allow accomplishment of specified resource output objectives at the least cost.

Pre-attack inventories and planning will be accomplished as outlined in R-6 Pre-attack Handbook 5109.15 for all areas.

Only retardants which have been evaluated by the Environmental Protection Agency for toxicity will be used in domestic watersheds and along anadromous fish streams.

All prescribed burning will meet these conditions: The desired results or objectives must be established in quantitative terms, the weather and fuel moisture parameters must be such that the objectives can be met and project accomplishment must be measured, monitored and evaluated.



Prescribed Fire Zones

- Zone I (Low Intensity)
- Zone II (Moderate Intensity)
- Zone III (High Intensity)

