

Plumas National Forest
Land and Resource Management Plan

Appendix B

Research and Technical Planning Needs

I. Recreation

A. Research Needs

1. Establish recreational carrying capacity criteria, especially those capacities relating to dispersed use and Wilderness.
2. Establish criteria for "usable acres" as defined in the Recreation Opportunity Spectrum.

B. Technical Planning Needs

1. Refine the Recreation Opportunity Spectrum mapping to more closely reflect on-the-ground recreation setting.

II. Cultural Resources

A. Research

1. Conduct palynological studies to determine past climate vegetation and tree line movement.

B. Technical Planning Needs

1. Refine survey strategies through statistically valid testing of cultural resource density/sensitivity models to increase efficiency of inventories.
2. Sample or excavate different site types to build a framework for site appraisal.
3. Construct a chronological sequence by judicious excavation of sites with histories of long occupations.

III. Range

A. Research Needs

1. Determine cost-effectiveness of converting sagebrush to grass.
2. Establish relationship of grazing to riparian area maintenance.

B. Technical Planning Needs

1. Determine if conflict exists between cattle grazing and plantation management.
2. Through range utilization study, establish utilization guidelines for the eastside of the Forest.
3. Study large fire areas and appropriate clearcut blocks to determine new transitory range capacity and duration.
4. Evaluate effects of grazing on deer habitat in selected allotments.

IV. Timber

A. Research Needs

1. Improve methods and guidelines for production and use of high quality nursery stock.
2. Improve methods and guidelines for site preparation and release, especially for natural regeneration of true fir on slopes over 30 percent.
3. Develop standards for acceptable soil nutrient export for biomass utilization.
4. Improve growth and yield projections, including yield tables for plantations and uneven-aged timber management.
5. Develop practical application of existing technology, in the form of revised computer analysis programs, to relate logging skyline load potential, excursion, and inherent equipment limitations, so as to achieve an economic balance between resource utilization and protection.
6. Develop cost-effective, non-herbicide method of vegetation control for steep slopes.
7. Develop cost-effective, non-burning method of logging residue reduction on steep slopes.
8. Study effects of group selection harvesting.

B. Technical Planning Needs

None

V. Soil and Water

A. Research Needs

1. Develop water yields for Sierra Nevada watersheds.
2. Develop sediment yield models for Sierra Nevada watersheds.
3. Determine "cumulative effect" analysis for Sierra Nevada watersheds.
4. Develop soil compaction models for Sierra Nevada watersheds.
5. Develop soil loss models for Sierra Nevada watersheds.

B. Technical Planning Needs

1. Inventory watershed conditions, and complete (and maintain) the Watershed Improvement Needs (WIN) Inventory.
2. Inventory riparian areas and their conditions.
3. Complete and maintain the water uses inventory.
4. Inventory and analyze the physical, chemical, and biological water quality of high priority streams and lakes.
5. Inventory the instream (non-consumptive) flow needs of high priority streams.

VI. Geology

A. Research Needs

1. Establish standardized methodology, valid for all rock/soil types, quantifying the degree of landslide risk due to various management activities. Incorporate the methodology into the planning process.

B. Technical Planning Needs

1. Field verify the photo-interpreted land instability risk mapping on the PNF.

VII. Lands

A. Research Needs

None

B. Technical Planning Needs

1. Refine the "Classification for Land Ownership Adjustment" map boundaries in the Planning Records and transfer to 7 1/2" topographic maps.

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Appendix C

Tentative Ten-Year Timber Sale Action Plan

I. Timber Management Controls

Regulation is the organization and control of the Forest's growing stock to achieve a sustained yield of Forest products. Regulation is accomplished by controlling the growth and removal of the growing stock. A Forest in a completely regulated condition would provide a sustained yield harvest equal to volume growth in any decade.

A completely regulated Forest may never be fully obtained, due to factors such as climate, natural disaster, and land base changes. However, the concept of regulation as an objective is used to control present harvest levels and plan future harvests to assure a reasonably sustained yield.

A Forest consisting of stands with highly variable stocking levels and age class distribution is made to approach regulation through scheduled regeneration harvest over a period of time called the "conversion period". During the conversion period an attempt is made to:

1. obtain the maximum yield of timber possible,
2. provide a non-fluctuating yield, and
3. provide a balance of age classes and stocking levels capable of maintaining the Forest's full potential growth at the end of the conversion period.

Two methods of control are generally employed during the conversion period:

Area Control - This method is generally associated with even-age silviculture. It provides for harvesting and regenerating areas of equal productivity. The expected result at the end of the conversion period is an equal distribution of age classes.

Volume Control - This method can be applied to even or uneven-aged management schemes. It provides for somewhat equal yields over the conversion period based on present and predicted stand volumes.

Implementation of the timber management portion of this plan requires maintaining a degree of control over both volume and area to achieve optimum yields both during the conversion period and thereafter.

Volume Control

The Allowable Sale Quantity (ASQ) is established as the maximum harvest from the Forest for a decade. The ASQ established in this Plan is 41.1MMCF or 265.5 MMBF/yr for the first decade (1986-1995). The scheduled volume offered in any given year may exceed the average annual ASQ, but the decade scheduled volume must be in compliance. This scheduled volume is based on growth and yield projections from the suitable, regulated timberlands. Additional volume may be obtained from special cutting to facilitate other resource management on other forested lands. The total ASQ is subdivided into non-interchangeable categories to assure adequate volume control. To accomplish this, the PNF will monitor volume sold by regeneration cutting prescription. The volumes offered during the first decade may not exceed the following subdivided volumes by more than 10 percent:

Table C-1
Average Annual Allowable Quantity by Cutting Method

<u>Cutting Method</u>	<u>MMCF</u>	<u>MMBF</u>
<u>Regeneration Harvest:</u>		
Clearcutting	22.33	144.0
Shelterwood (1st Step)	2.84	18.3
Shelterwood (2nd Step)	2.01	13.0
Group Selection	3.41	22.1
<u>Intermediate Harvest:</u>		
Stand Maintenance	6.62	42.7
Commercial Thinning	3.83	<u>25.4</u>
Total	41.04	265.5

Area Control

Regeneration harvest may not exceed the following by more than 10% in the first decade:

Table C-2
Regeneration Acreage

<u>Cutting Method</u>	<u>Decade Acreage</u>
Clearcut	40,000
Shelterwood	6,000
Group Selection	<u>8,000</u>
Total	54,000

The ASQ and regeneration acreage controls may have to be adjusted to reflect changing conditions. Some changes are inevitable. The effect of the following conditions will be evaluated to determine whether new controls are needed:

1. Changes in the land base (resulting from new planning evaluations or land status changes);
2. Inability to successfully meet the regeneration volume or acreage because of inadequate financing and/or manpower or irresolvable restrictions on regeneration and stand maintenance methods (such as brush control);
3. Failure to meet restocking time limits or accomplish regenerated stand maintenance;
4. Inventory changes resulting from catastrophic damage such as fire or insect and disease attack;
5. Consistent and significant differences between the 1980 Forest inventory and new compartment examination data;
6. Changes in the projected clearcut/shelterwood/group selection regeneration acreage ratios resulting from prescriptions based on intensive examinations that consider local environmental factors; and
7. Consistent trends in per-acre volume yields that differ from the predicted yields.

Achieving long-term regulation requires detailed planning and accurate record keeping.

The 10-Year Compartment Plan will serve as a reference against which more refined estimates and actual accomplishments will be compared for the purpose of assessing the progress toward meeting Forest Plan quantity objectives. The chief tools used for comparison will be stand records and the Sale Tracking and Reporting System (STARS). Progress will be verified by inspections and reviews of attainment reports, cut/sell reports, and other reporting systems.

Plumas Timber Harvest Schedule
(Volume in MMBF)

FISCAL YEAR

<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>
185	185	195	195	205	215	230	240	250	265

This harvest schedule is established using the following assumptions:

1. The program that will be carried out may vary from this schedule based on the budget and targets set by Congress, the President, and higher levels of the Forest Service. Traditionally, the Plumas National Forest has requested more sell target and funding than received.
2. Fiscal Years 1988 through 1991 are Region 5 estimates of the program level that will be funded in those years.
3. There is a three to five year delay from the time advance timber sale preparation is funded to the time additional timber volume can be sold. There is minimal opportunity to increase volume sold in less than three years due to environmental analysis and sale layout requirements.

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Appendix D
Timber Management Data

Table D-1
Land Classification for Timber Production

<u>Classification</u>	<u>Acres</u>
1. Non-Forested Land (includes 14,061 acres water)	66,122
2. Forested Land	1,102,395
3. Forested Land Currently Withdrawn From Timber Production <u>1/</u>	42,578
4. Forested Land Not Capable of Producing Industrial Wood	97,061
5. Forested Land Physically Unsuitable	
a. Irreversible damage to soils, watersheds, or productivity likely to occur <u>2/</u>	15,812
b. Unregenerable Within 5 Years of Final Harvest	32,800
6. Inadequate Information To Predict Resources <u>3/</u>	0

1/ Withdrawn by Act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service. This includes:

	<u>Acres</u>
Bucks Lake Wilderness Area	21,000
Lakes Basin Recreation Area	7,800
MFFR Wild and Scenic River	10,385
Challenge Experimental Forest	<u>3,393</u>
Total	42,578

2/ Land Instability Risk Class IV areas that are otherwise capable and available for timber production.

3/ Lands for which current information is inadequate to project responses to timber management. Usually applies to lands capable of producing less than 20 cf/ac/yr.

Table D-1
Land Classification for Timber Production
(cont'd)

<u>Classification</u>	<u>Acres</u>
7. Tentatively Suitable Forested Land (Item 2 less Items 3, 4, 5, and 6)	914,144
8. Forested Land Not Appropriate for Timber Production <u>4/</u>	15,212
9. Total Unsuitable Forested Land (Items 3, 4, 5, 6, and 8)	203,463
10. Total Suitable Forested Land (Item 2 less Item 9)	898,932
11. Total National Forest (Items 1 and 2)	1,168,517

4/ Lands identified as not appropriate for timber production due to:

- a. assignments to other resources to meet Forest Plan objectives,
- b. management requirements, or
- c. not being cost-efficient in meeting Forest Plan objectives over the planning horizon.

Table D-2
Present Forest Conditions

	Softwood Volume (trees greater than 10" dbh)		
	<u>Suitable Land</u>	<u>Unsuitable Land</u>	<u>Total Forest Land</u>
Growing Stock			
MMCF	3,256.25	558.56	3,814.81
MMBF	21,386.04	3,673.47	25,059.51
Live Cull			
MMCF	84.35	11.22	95.57
MMBF	311.79	45.13	356.92
Salvable Dead			
MMCF	58.47	6.30	64.77
MMBF	394.81	42.56	437.37
Annual Gross Growth			
MMCF	53.49	10.23	63.72
MMBF	366.96	70.24	437.20
Annual Net Growth			
MMCF	24.93	6.69	31.62
MMBF	173.21	46.22	219.43
Annual Mortality			
MMCF	28.56	3.54	32.10
MMBF	193.75	24.02	217.77

Table D-3
Timber Inventory by Major Forest Type

Major Forest Type	Acres	%	Net Utilizable Softwood Volume		
			MMCF	%	MMBF 1/
Westside Mixed conifer	694,198	67	3,122	82	20,567
Red Fir	61,315	6	326	8	20,085
Eastside Pine	150,635	14	167	4	1,107
Eastside Mixed conifer	91,447	9	168	4	1,103
Lodgepole Pine	4,343	<1	20	<1	123
Hardwood 3/	41,179	4	12	<1	75
	1,043,117		3,815	MMCF	25,060
					MMBF 2/
Net Utilizable Hardwood Volume:			139	MMCF	749
					MMBF

1/ Scribner

2/ Precision: 11.6% at one standard error

3/ Hardwood Type contains softwood species

Table D-4
Timber Inventory by Species

Species Group	Net Utilizable Volume		%
	MMCF	MMBF	
Douglas Fir	509	3,590	14
Ponderosa and Jeffrey Pine	594	4,000	16
Sugar and Western White Pine	661	4,670	19
Lodgepole Pine	11	63	<1
White and Red Fir	1,880	11,759	47
Mountain Hemlock	<1	2	<1
Incense-cedar	<u>159</u>	<u>976</u>	4
Total Commercial Softwood	3,815	25,060	
Black Oak	139	749	

Table D-5
Timber Inventory by Diameter Class

DBH Class	Number		Volume		Ave. BF per Tree
	MM stems	(%)	MMBF	(%)	
11-17"	29.90	62	4,296	17	140
18-24"	9.63	20	4,111	16	430
25-29"	3.17	6	2,694	11	850
30-39"	3.38	7	6,048	24	1,790
40+"	<u>2.28</u>	5	<u>7,911</u>	32	<u>3,470</u>
Total	48.36		25,060		520

Table D-6
Timberland Productivity

<u>Ave. Stand Age (yrs)</u>	<u>% of Forested Acreage</u>
141-200	24.9
81-140	59.9
41-80	11.2
11-40	Nominal
<11	3.6

Table D-7
Timberland Slope

<u>Slope Class</u>	<u>Acres</u>	<u>% of Total</u>
0-30%	567,000	49
31-60%	483,000	41
>60%	114,000	10

Table D-8
Regenerable Stands

	<u>% of PNF Timberland</u>	<u>Acreage</u>
(1) Poorly-stocked stands (primarily under-utilized site)	36	339,900
(2) Old-growth stands (primarily slow growth rates; decay)	27	258,300
(3) Two storied stands (primarily slow growth rates and decay in overstory; densely-stocked understory)	1	9,400

Table D-9
TSI Backlog

	<u>% of PNF Timberlands</u>	<u>10/82 Acreage</u>
(1) Stands needing release from competing vegetation.	2.0	18,900
(2) Stands needing thinning	1.3	11,900

**Table D-10
Timberland Productivity**

Forest Survey Site Class	Potential Growth (cubic ft/ac/yr)	Suitable Lands (acres)	Unsuitable Lands (acres)	Total (acres)
1	225+	0	0	0
2	165-224	1,205	45	1,250
3	120-164	43,687	7,760	51,447
4	85-119	196,071	18,595	214,666
5	50-84	344,867	34,349	379,216
6	20-49	313,102	39,730	352,832
7	less than 20	<u>0</u>	<u>102,984</u>	<u>102,984</u>
Total		898,932	205,463	1,102,395
			Non-Forest	<u>66,122</u>
			Total PNF	1,168,517

**Table D-11
Range of Rotation Lengths
(age in decades)**

Forest Type	Minimum ^{1/}	Highest
Westside Mixed Conifer		
High Site ^{2/}	5	16
Medium Site	6	16
Low Site	7	16
Red Fir		
Medium site	7	18
Low Site	8	19
Eastside Pine		
Medium Site	7	16
Low Site	8	17
Lodgepole Pine		
Medium Site	4	19

^{1/} Based on 95% of culmination of mean annual increment in utilizable cubic foot volume of merchantable trees without thinning.

^{2/} High Site = Forest Survey Site Classes 2, 3, and 4
Medium Site = Forest Survey Site Class 5
Low Site = Forest Survey Site Class 6

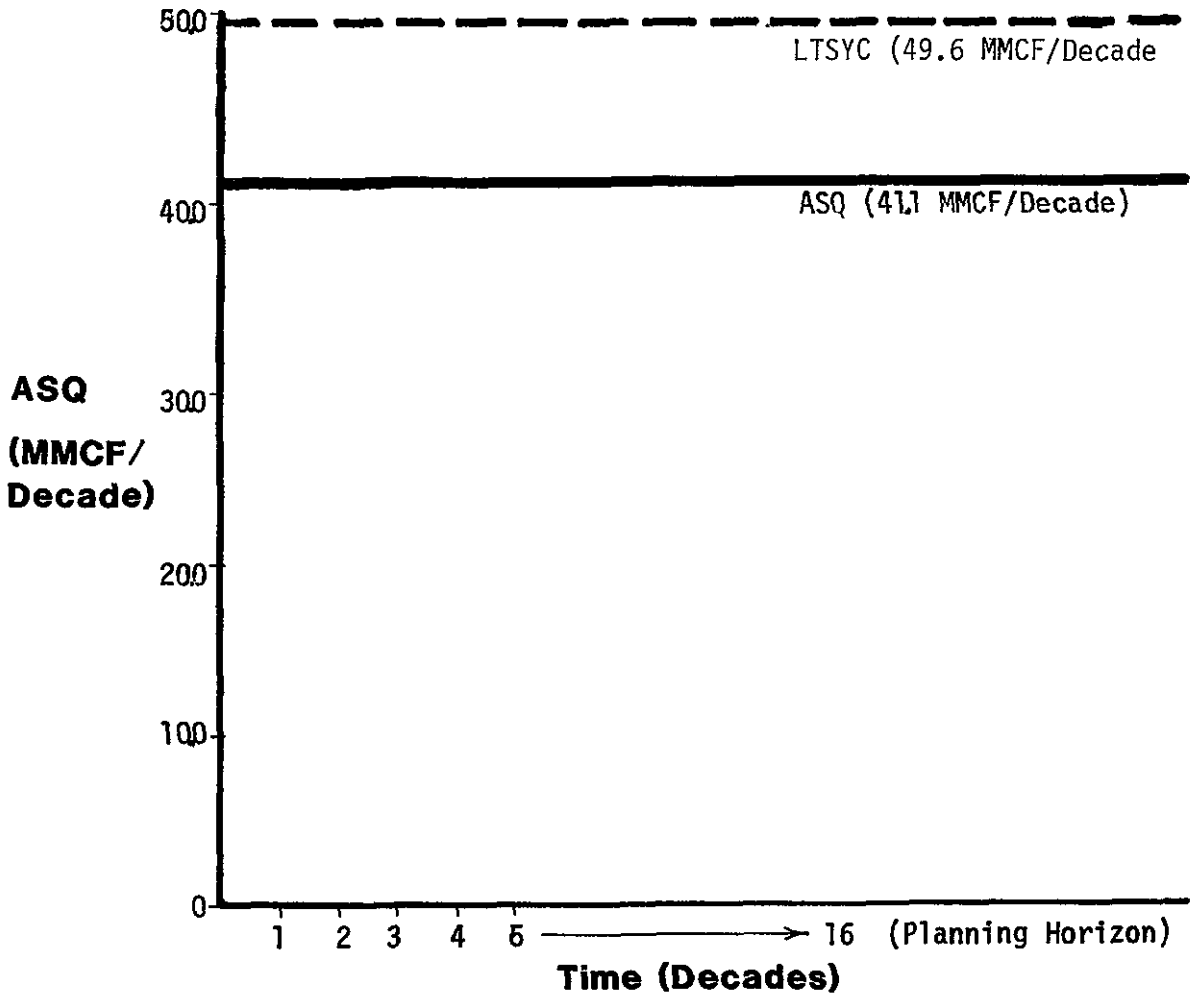
Table D-12
Timber Management Scheduled Outputs and Activities
 (Annual Average in First Decade)

Management Practice	Acres/Year	Allowable Sale Quantity (MMCF/yr)	Allowable Sale Quantity (MMBF/yr)
<u>Regeneration Harvest</u>			
Clearcutting	4000	22.33	144.2
Shelterwood (1st step)	600	2.84	18.3
Shelterwood (2nd step)	600	2.01	13.0
Group Selection	800	4.33	28.0
<u>Intermediate Harvest</u>			
Stand Maintenance (Sanitation and selection)	5286	5.70	36.6
Commercial Thinning	<u>5000</u>	<u>3.93</u>	<u>25.4</u>
Total	16286	41.04	265.5
<u>Other Practices</u>			
Timber Stand Improvement			
Release	4789		
Precommercial Thinning	<u>1192</u>		
Total	5981		
Reforestation ^{1/}			
Regeneration Harvest	5400		
Brush Conversion	<u>400</u>		
Total	5800		

^{1/} Includes natural and artificial.

Figure D-1

Optimum Long Term Sustained Yield Capacity (LTSYC) and Allowable Sale Quantity (ASQ)



FOREST SURVEY SITE CLASS		M.A.I. AT CULMINATION (CU FT. / AC / YR.)		MIXED CONIFER OLD GROWTH		MIXED CONIFER		WHITE FIR		RED FIR		PONDEROSA PINE				DOUGLAS FIR				LODGE POLE PINE		REDWOOD		BLACK OAK	
		DUNNING 1/		DUNNING & REINEKE 2/		SCHU MACHER 3/		SCHU MACHER 4/		MEYER 5/		OLIVER & POWERS 6/		MCARDLE 7/		SCHU MACHER 8/		DAHMS 9/		LINDQUIST & PALLEY 10/		POWERS & SCHNUR 11/			
		PP	LD	WF	SP	INDEX	CULM. M.A.I.	INDEX	CULM. M.A.I.	INDEX	CULM. M.A.I.	CLASS	INDEX	CULM. M.A.I.	INDEX	CULM. M.A.I.	INDEX	CULM. M.A.I.	INDEX	CULM. M.A.I.	INDEX	CULM. M.A.I.	INDEX	CULM. M.A.I.	
		II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
1	225 +					110	263									140	270				240	558			
																					220	460			
																					200	377			
																					180	300			
																					160	239	12/		
2	165 224	IA	200	I	175	90	204	80	217	60	214														
3	120-184	I	175	II	150	70	145	70	163	40	136														
						60	121	60	120																
4	85-118	II	150	III	125	50	98	50	81	30	104														
5	50-95	III	125	IV	100	40	76	40	64	20	76														
						38	57																		
6	20-45	V	75																						
7	LESS THAN 20																								

1/ D Dunning 1942 Calif For & Range Exp Sta. Note 28
 2/ D Dunning & L H Reineke, 1933 USDA Tech Bull 354
 3/ F X Schumacher 1926 UC Ag Exp Sta. Bull 407
 4/ F X Schumacher 1926 UC Ag Exp Sta. Bull 456
 5/ W H Meyer, 1938 USDA Tech Bull 630 (Site classes not the same as those of Dunning)
 6/ W W Oliver & R F Powers 1978 USDA Res Pap FSW-133
 7/ R E McArtie et al 1949 USDA Tech Bull 201 (Site classes not

the same as those of Dunning)
 8/ F X Schumacher, 1930 UC Ag Exp Sta Bull 491
 9/ W G Dahms, 1973 Proc Sym Mgnt LP Ecosystems
 10/ J L Lindquist & M N Palley, 1963 Calif Ag Exp Sta Bull 796
 11/ Site curves from R F Powers, 1972, USDA Res Note PSW 262, and yields from G. I. Schuur, 1937, USDA Tech Bull 560
 12/ Highest recorded value - culmination not reached

Forest Survey Site Classes and their Equivalents

Table D-13

Table D-14
Timber Strata

Timber strata are a description of different kinds of timber stands based on Regional timber type, tree size class, and stand density. The first digit is the Regional timber type. Those found on the Plumas in significant quantity include: Mixed Conifer (M), Eastside Pine (P), Eastside Mixed Conifer (F), Red Fir (R), and Lodgepole Pine (L).

The second digit is the tree size class. They are:

<u>Code</u>	<u>Size Class</u>
1	Seedlings and saplings
2	Poles
3	Small sawtimber
4	Medium sawtimber
5	Large sawtimber
6	Two storied stands

The third digit is stand density based on percent of crown closure of all commercial conifers in the overstory and understory of stands apparent on aerial photographs. They are:

<u>Code</u>	<u>Density</u>	<u>Percent Closure</u>
-	Non-stocked	0-9
S	Sparse	10-19
P	Light	20-39
N	Medium	40-69
G	Heavy	70-100

These codes are combined into stratum labels such as M4G (mixed conifer, medium sawtimber, heavy stocking) or P2P (eastside pine, poles, light stocking).

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Appendix E

Seral Stages

During FORPLAN computer runs, the following habitats were tracked as Forestwide outputs, and in addition Habitats H-1X through H-5C were tracked by Timber Working Group.

<u>Habitat</u>	<u>Definition</u>
H-SX	Brush, Grass
H-00	Barren, Water
H-HD	Pure Hardwood Stands
H-X3	Hardwood-Conifer Stands
H-1X	Seedling, Sapling
H-2X	Poles
H-3A	Small Sawtimber <40% Crown Closure
H-3B/C	Small Sawtimber >40% Crown Closure
H-4A	Large Sawtimber <40% Crown Closure
H-4B/C	Large Sawtimber >40% Crown Closure
H-5C	Large Sawtimber >40% Crown Closure, and 200 years and older

For Plan implementation, the following Wildlife Habitat Relationships habitat types and seral stages will be tracked and monitored. The Seral Stage targets by Habitat Type are listed in each Management Area. A forestwide summary of the acres required to meet seral stage targets by habitat types as aggregated from the management Areas follows. Complete descriptions of WHR Habitat Types and Seral Stages are available as publications in the Planning Records.

<u>Habitat Type (# of Seral Stages)</u>	<u>Acres/Seral Stage</u>	<u>Total Acres Habitat Type</u>
Big Sagebrush * (3)	1096	3288
Black Oak ** (3)	3721	11163
Digger Pine ** (3)	600	180
Juniper ** (3)	475	1425
Lodgepole (7)	169	1183
Mixed Conifer (7)	36933	258531
Perennial Range *** (1)	95	95
Ponderosa Pine (7)	1739	12173
Red Fir (7)	2890	20230

* Use Open, Moderate, or Dense

** Use Pole, Medium, or Large Tree Stage

*** No stages have been assigned; includes wet and dry meadows and grasslands.

Seral Stage Description

1. Shrub/Tree Seedling-Sapling. Includes brushfields, plantations, and natural stands of trees with crown diameter less than 5 feet (stem diameter less than 5 inches dbh).
2. Pole. Trees with crown diameter 6-12 feet (5.0 to 11.9 dbh); all canopy cover classes.
3. Medium Tree (Small Sawtimber). Trees with crown diameter 13-24 feet (12.0 to 23.9 inches dbh);
 - 3 A. 0 to 39% tree canopy cover.
 - 3 B/C. 40% or greater tree canopy cover.
4. Large Tree (Large Sawtimber). Trees with crown diameter 25 feet and greater (24 inches and larger dbh).
 - 4 A. 0 to 39% tree canopy cover.
 - 4 B/C. 40% or greater canopy cover.
5. Multi-Storied. Stands with trees of all ages or with at least two distinct tree layers and 40% or greater tree canopy cover.

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Appendix F

Allotment Management Strategies

To establish the link between range activities and the resource, and to simplify the choice of management options, five management strategies are defined. Each of these strategies can be viewed as a management objective. In strategies B through D, multiple-use is considered as a constraint on the degree of grazing emphasis, while Strategy E is subject only to basic stewardship of land and water resources.

The five strategies with management objectives are:

A. Environmental Management Without Livestock

Livestock are excluded by fencing, riding, public education, and by incentive payments. The environment is protected from natural or other disasters, such as wildfires and pest epidemics. Resource damage is corrected to achieve basic stewardship. Costs for this strategy are charged to other benefiting resource areas (watershed management and timber management) and to stewardship resource areas (fire protection, pest control, and lands).

B. Environmental Management With Livestock

Livestock use is kept within the apparent present capacity of the range environment. Investments for range management are applied only to the extent required to achieve basic stewardship in the presence of grazing. Investments for implementation may be very low. Resource damage resulting from past use is charged to benefiting or stewardship resource areas. The goal for the strategy is to attain livestock control; no attempt is made to achieve livestock distribution.

C. Extensive Management of Environment and Livestock

Management systems and techniques, including fencing and water developments, are applied as needed to obtain relatively uniform livestock distribution and plant use, and to maintain plant vigor. Livestock forage production is maximized. No attempt is made to maximize livestock forage production by improvement practices such as seeding.

D. Intensive Management of Environment and Livestock

All available technology for range and livestock management is considered. Livestock forage production is maximized, consistent with maintaining environmental quality and providing for multiple use. Existing vegetation may be replaced through improvement in growing conditions. Structures may be installed to accommodate complex livestock management systems and practices. Advanced livestock management practices are commonplace.

E. Environmental Management With Livestock Production Maximized

Stewardship of soil and water is required. Timber may be completely removed. Multiple use is not a constraint. Feasibility of implementing this strategy is questionable.

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Appendix G

Wildlife and Plant Species Classification

	Mgt. Indi- cator	Endan- gered	Sensi- tive	Special Interest	Har- vest	Main- tenance
Peregrine Falcon	X	X				
Bald Eagle	X	X				
Spotted Owl	X		X			
Goshawk	X		X			
Golden Eagle	X					X
Osprey						X
Prairie Falcon	X					X
Canada Goose (Waterfowl)	X				X	
Deer	X				X	
Marten	X		X			
Trout	X				X	
Largemouth Bass	X				X	
Juniper Cave Snail						X
Arabis constancei	X		X			
Cypripedium californicum				X		
Cypripedium fasciculatum				X		
Darlingtonia californica				X		
Fritillaria eastwoodiae	X		X			
Lupinus dalesae	X		X			
Monadella stebbinsii	X			X		
Penstamen personatus	X		X			
Silene invisus	X		X			
Trifolium lemmonii				X		
Vacinium coccinium	X		X			
Cupressus bakeri				X		
Drosera Rotundifolia				X		
Lewisia cantelowii	X		X			
Sedum albomarginatum	X		X			
Viola tomentosa				X		
Veronica cusickii				X		

Wildlife and Plant Species Classification

	Mgt. Indi- cator	Endan- gered	Sensi- tive	Special Interest	Har- vest	Main- tenance
Chenipodium						
gigantospermum				X		
Pinus washoensis				X		
Astragalus						
lentiformis			X			
Astragalus webberi			X			
Ivesia aperta			X			
Ivesia baileyi			X			
Ivesia						
seriocoleuca			X			
Ivesia webberi			X			
Senecio eurycephalus						
var. lewisrosei			X			
Cypridium montanum				X		

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Appendix H
Developed Recreation Sites 5/87

Plumas National Forest

Campgrounds, Free-Use

Cleghorn Bar
Lower Bucks
Little North Fork
Rogers Cow Camp
Milsap Bar
Grizzly Creek
Conklin Park
Meadow View
Laufman
Snake Lake
Deanes Valley
Silver Lake
Bradys Camp
Crocker

Campgrounds, Fee

Lightning Tree
Grasshopper Flat
Grizzly
Jackson Creek
Lakes Basin
Crocker
Boulder Creek
Lone Rock
Long Point
Wyandotte
Little Beaver
Running Deer
Whitehorse
Mill Creek
Sundew
Cottonwood Springs
Chilcoot
Spring Creek

Frenchman
Big Cove
Gansner Bar
North Fork
Queen Lily
Hallsted
Black Rock
Peninsula

Campgrounds, Group

Lakes Basin
Red Feather
Hutchins
Cottonwood Springs
Long Point

Picnic Areas

Jackson Creek
Portola
Antelope
Round Valley
Black Rock

Observation Sites

Fern Falls Trail
Mills Peak
Frazier Falls
Feather Falls
Bucks Lake

Boating Sites

Coot Bay
Mallard Cove
Lightning Tree
Camp 5
Honker Cove
Canyon Dam
Lost Cove
Black Rock
Tooms
Maidu
Sandy Point
Frenchman
Gold Lake

Swimming Sites

Clio
Blue Water
Pancake

Fishing Sites

Little Antelope
Grizzly Forebay
Crystal
Turkey Point
Salmon Egg Shoal
Nighcrawler Bay
Snaligaster Point
Lunker Point

Trailheads

Bald Rock
Feather Falls
Three Lakes
Ebbe Stampmill
Smith Lake
Bear Lakes
Graeagle
Long Lake

Documentary Sites

Elizabethtown
Crocker Guard Station
Walker Mine Tramway
Pioneer Cabin
Torrey Graves
Frenchman Grave
Bear Creek Guard
Station
Hallsted Hydraulic
Face
Soapstone Hill Wagon
Road
French Hotel
Letterbox Townsite
Rich Bar

Interpretive Sites,
Minor

Nature Trail (Red
Fir)
Round Valley

Interpretive Sites,
Admin.

Mohawk R.S.
Greenville R.S.
Boulder Creek
Station
Quincy R.S.
Oroville R.S.
Challenge R.S.
Laufman R.S.

Information Sites

Antelope Kiosk
Lake Davis Kiosk
Frenchman Kiosk
Gansner Bar
Challenge

Other Sector

Playground, Park

Paradise Rifle Range

Picnic Area

Paradise Lake
Massack
Lowell Bader Park

Hotel, Lodge, Resort

Elwell Lodge
Gray Eagle Lodge
Camp Layman
Gold Lake Lodge
Bucks Lodge
Pine Aire Motel

Organization Site

Sierra Bible Camp
Camp Timberwolf
Mormon Trail Camp
Oakland Camp

Recreation Residence

Site

Layman Bar
Bucks
Haskins

Information Site

Shady Rest
Haskins Valley

Campground, Family

Greenville County

Other Concessions

Mountain Base Camps

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Appendix I
Recreational Development Scale

Development
Scale

Level of Site Modification

- 1 Minimum Site Modification. Rustic or rudimentary improvements are designed for protection of the site rather than comfort of the users. Use of synthetic materials is excluded. Controls over users are subtle. Spacing is informal and extended to minimize contacts between users. Motorized access is not provided or permitted.
- 2 Little Site Modification. Rustic or rudimentary improvements are designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Controls over users are subtle. Spacing is informal and extended to minimize contacts between users. Motorized access is provided or permitted. Primary access is over primitive roads. Interpretive services are informal, almost subliminal.
- 3 Site Modification Moderate. Facilities are designed equally for protection of the site and comfort of the users. Contemporary/rustic design of improvements usually involves native materials. Inconspicuous vehicular traffic controls are usually provided. Roads may be hard surfaced and trails formalized. Development density is about 3 family units per acre. Primary access may be over high standard roads. Interpretive services are informal, but are generally direct.
- 4 Site Heavily Modified. Some facilities are designed strictly for comfort and convenience of users. Luxury facilities are not provided. Facility design may incorporate synthetic materials. Artificial surfacing of roads and trails is extensive. Vehicular traffic control is usually obvious. Primary access usually over paved roads. Development density is 3-5 family units per acre. Planted materials are usually native. Interpretive services are often formal or structured.

- 5 High Degree of Site Modification. Facilities are mostly designed for comfort and convenience of users and usually include flush toilets; they may include showers, bathhouses, laundry facilities, and electrical hookups. Synthetic materials are commonly used. Trails are surfaced. Access is usually by highspeed highways. Development density is 5 or more family units per acre. Plant materials may be exotics. Formal interpretive services are usually available. Formalized designs and contemporary architecture may be used. Mowed lawns and clipped shrubs are not unusual.

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Appendix J

Specifications for Road Construction/Reconstruction

	LOCAL ROADS	COLLECTOR ROADS	ARTERIAL ROADS
PURPOSE (see FSM 7710 51)	Provides access to a specific resource activity such as a campground, trailhead, timber sale, range allotment, or mineral lease, etc	Collects traffic from local roads and connects to a Forest arterial, serving multi-resource activities.	Provides maximum mobility, user comfort, and travel efficiency for through traffic serving multi-resource activities.
	<u>Closed Roads</u>	<u>Open Roads</u>	
Availability	Permanent system road with intermittent use Kept at Maint Level I when closed	Permanent system road with constant use (allowing seasonal closure). Kept at Maint Level II or greater,	Constant service provided
Design Speed	Typically less than 10 MPH.	5 MPH minimum	Average 10 to 25 MPH.
Lanes	Single lane	Typically single lane.	Typically double lane
Width	Typically 12' traveled way. Turnouts, special equipment needs, curve widening, and some drainage systems require width variations.	Typically 12' traveled way. Turnouts, curve widening, special equipment needs, and some drainage systems require width variations.	Refer to FSM 7721.11
Turnouts	Minimum 50' long with 25' transitions.	Minimum 100' long with 50' transition Spacing maximum 1,000'	Minimum 100' long with 50' transitions; typically intervisible
Turnarounds	Turnarounds at maximum spacing of 1000 feet and/or dead ends as needed for road construction	Turnarounds at maximum spacing of 1000 feet and/or dead ends as needed for road construction	N.A.

	<u>Closed Roads</u>	<u>Open Roads</u>		
Horizontal Alignment	Typical minimum 25' radius.	Typical minimum 50' radius	Refer To FSH 7709 11	Refer to FSH 7709 11
Curve Widening	Based on design vehicle and curve radius.	Based on design vehicle and curve radius.	Refer to FSH 7709 11	Refer FSH 7709 11
Vertical Alignment	Typical minimum 100' radius.	Typical min. 100' radius.	Refer to FSH 7709 11	Refer to FSH 7709 11
Grade <u>1/</u>	4-15% desirable. 5% at switchbacks.	4-10% desirable, but allow. 12% for 500' 15% for 200'	Refer to FSH 7709.11	Refer to FSH 7709 11
Drainage <u>2/</u>	As supported by Maint Level I, including rolling dips, outslope water bars, and temporary crossings	As supported by Maint. Level II. Generally includes outsloping with dips and/or drivable water bars. Pipes used only as necessary.	Permanent, not to impede traffic Sized for service life of the road	Permanent, not to impede traffic.
Clearing Limits	Typically 2' beyond top of cut and 2' beyond hinge point or to point where fill is considered not harmful to permanent vegetation, whichever is greater	Typically 4' beyond top of cut and 4' beyond hinge point or to point where fill is considered not harmful to permanent vegetation, whichever is greater	As needed.	As needed
Surface	Typically native surface.	Typically native surface (except in developed rec. areas).	Typically gravel or native surface; sometimes asphalt concrete.	Typically all-weather, gravel, chipseal, or asphalt concrete.
Maintenance	Typically Level I.	Typically Level II or III, but rec roads may vary from Level III to V	Level III or higher	Level III higher.

1/ Grades in excess of those shown require a documentation of need and special design Assistance from a geotechnical engineer is required for "highly" erosive soils or "highly" unstable slopes

2/ Culverts and other drainage structures larger than 36" diameter require hydrologic calculation

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Appendix K
Visual Management System

VISUAL QUALITY OBJECTIVES

The Visual Management System (VMS) was developed to provide a process for the management of the "seen" aspects of both the land and the activities which occur on it. This Appendix gives background information on the management of visual quality on the PNF, as well as listing the visual guidelines used by Forest personnel. The process involves inventory, analysis, and the determination of visual management objectives and provides for their input into an integrated resources planning and decision making process.

In the inventory and analysis of the National Forest, all lands are identified and delineated on maps for both Variety Classes and Sensitivity Levels. Since these maps are general in nature, project level determination is necessary to validate or adjust them as appropriate. The synthesis of this information is used to determine Visual Quality Objectives (VQOs) for managing Forest lands.

Variety Classes are determinations of scenic quality based upon degrees of variety found in the physical features of the land. Variety is based on large areas of land called Character Types which are delineated and defined by the visual characteristics of landforms, waterforms, rock formations, and vegetative patterns. The greater variety provided, the higher the scenic quality. Three Variety Classes are identified and delineated within each Character Type.

Sensitivity Levels are measurements of people's concern for scenic quality. Travel routes, water bodies, and other use areas are identified along with the user's concern for aesthetics. In order to map Sensitivity Levels, Distance Zones--Foreground, Middleground, Background--are identified and delineated. Landform is generally used to determine whether or not an area is visible or may be seen, since vegetative screening might be altered as a result of management activities or natural causes.

The Variety Classes and Sensitivity Levels are combined to determine the Visual Quality Objectives (VQOs). VQOs describe different degrees of acceptable alteration of the natural landscape. The Objectives are considered the measurable standards for the management of the "seen" aspects of the land.

Two short-term management efforts may be required. The first is to upgrade landscapes containing visual elements that do not meet the established VQOs. The second is to improve landscapes having a potential for greater natural-appearing variety. Once this is attained, one of the following five Quality Objectives is then applied.

Preservation (P): Only ecological change is allowed.

Retention (R): People's activities are not to be evident to the casual forest visitor.

Partial Retention (PR) : People's activities may be evident but must remain subordinate to the characteristic landscape.

Modification (M): Activities may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. Activities should appear as a natural occurrence when viewed in the foreground or middleground.

Maximum Modification (MM): Activities may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background.

GUIDELINES FOR ATTAINMENT OF VISUAL QUALITY OBJECTIVES

The Forest Service has developed and published a series of documents titled National Forest Landscape Management, Volumes 1 and 2. These publications were designed to facilitate employee training and use, and to display practical application of visual resource management concepts on National Forest System Lands. A brief explanation and list of existing publications in each volume is provided below. Should additional publications be produced as part of this series, they shall be included as a part of this appendix.

NATIONAL FOREST LANDSCAPE MANAGEMENT SERIES BY VOLUME AND CHAPTER

Volume 1

National Forest Landscape Management, Volume 1, is a training document that was distributed throughout the National Forest System in April 1973. It is used as a basic text to illustrate the concepts, elements, and principles of the landscape management program on the National Forests. This program seeks to identify the visual character of the landscape and analyze, in advance, the visual effects of resource management actions. Volume 1 was prepared by landscape architects, land management specialists, and research scientists from throughout the Forest Service.

This volume consists of only one document titled, "National Forest Landscape Management, Volume 1". It was published by the Forest Service, U.S. Department of Agriculture, in February 1973 as Agriculture Handbook Number 434.

Volume 2

National Forest Landscape Management, Volume 2, consists of several chapters, each dealing with the application of Volume 1 principles to a specific function or area of concern in the field of resource management. The effort to produce individual chapters was spearheaded by the Forest Service utilizing contributions from research scientists, industry, and universities. Each chapter was published separately, as they were completed for the purpose of prompt dissemination of useful information. All existing chapters in Volume 2 are listed below.

1. NFLM VOLUME 2, CHAPTER 1, The Visual Management System, Agriculture Handbook Number 462, 1976.
2. NFLM VOLUME 2, CHAPTER 2, Utilities, Agriculture Handbook Number 478, July 1975.
3. NFLM VOLUME 2, CHAPTER 3, Range, Agriculture Handbook Number 484, May 1977.
4. NFLM VOLUME 2, CHAPTER 4, Roads, Agriculture Handbook Number 483, March 1977.
5. NFLM VOLUME 2, CHAPTER 5, Timber, Agriculture Handbook Number 559, 1980.
6. NFLM VOLUME 2, CHAPTER 6, Fire, Agriculture Handbook Number 608, April 1985.
7. NFLM VOLUME 2, CHAPTER 7, Ski Areas, Agriculture Handbook Number 617, June 1984.

All documents identified above in Volume 1 and 2 are available from the Superintendent of Documents, Washington, D.C.

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Appendix L

Ten-Year Developed Site Rehabilitation Plan

Rehabilitation includes returning the site to its originally designed capacity. Facilities may be upgraded, and resource treatment and specialized facilities for handicapped users may be provided. Utilization of sturdy, vandal-proof materials will be stressed. Rehabilitation emphasis is generally being place on heavy use, larger capacity campgrounds. Projects must have a new site or revised site plan approved by the Regional Office within three years of the project. Rehabilitation priorities are:

1. Little Grass Valley Complex (Red Feather, Running Deer, Wyandotte, Black Rock)
2. Cottonwood/Spring Creek Campgrounds
3. Frenchman/Big Cove Campgrounds
4. Crystal Point Access
5. Lakes Basin Campground
6. Sun Dew Campground
7. Grasshopper/Grizzly Campgrounds
8. Chilcoot Campground
9. Silver Lake/Mill Creek Campgrounds
10. Antelope Complex (Bolder, Lone Rock, Long Point)
11. Frenchman/Antelope/Davis Kiosk
12. Lightning Tree Campground
13. Laufman Campground
14. Snake Lake Campground
15. Hallstead Campground
16. Whitehorse Campground
17. Red Bridge Campground
18. Milsap Bar Campground
19. Feather Falls Trailhead

Should the Rehabilitation Plan be funded to its full potential, other sites would be added to this list.

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Appendix M

Guidelines for Widths of Streamside Management Zones

Stream ** Class	Horizontal Width and Adjustment (feet)* for each stream side.				
		Perennial	Intermittent	Ephemeral	
I	<u>Percent Slope</u>				
		0-30	100	50	
		30-60	150	100	
		>60	200	200	
		<u>Channel Stability</u>	<u>Sideslope Stability</u>		
		Stable	Stable	0	0
			Unstable	+50	+50
		Unstable	Stable	+25	+25
			Unstable	+100	+100
	II	<u>Percent Slope</u>			
		0-30	100	50	
		30-60	100	50	
		>60	150	75	
		<u>Channel Stability</u>	<u>Sideslope Stability</u>		
		Stable	Stable	0	0
			Unstable	+50	+50
		Unstable	Stable	+25	0
			Unstable	+100	+100
III		<u>Percent Slope</u>			
		0-30	100	50	
		30-60	100	50	
		>60	100	50	

GUIDELINES FOR WIDTHS OF STREAMSIDE MANAGEMENT ZONES (cont'd.)

Stream ** Class	Horizontal Width and Adjustment (feet)* for each stream side				
			Perennial	Intermittent	Ephemeral
	<u>Channel Stability</u>	<u>Sideslope Stability</u>			
	Stable	Stable	0	0	
		Unstable	+50	+50	
	Unstable	Stable	0	0	
		Unstable	+50	+50	
IV	<u>Percent Slope</u>				
		0-30		50	25
		30-60		50	25
		>60		50	50
	<u>Channel Stability</u>	<u>Sideslope Stability</u>			
	Stable	Stable		0	0
		Unstable		+25	+25
	Unstable	Stable		0	0
		Unstable		+50	+50

* Streamside Management Zone (SMZ) widths must be expanded to include the extent of riparian vegetation. The widths displayed above are recommendations and are to be increased or decreased according to on-site conditions. The recommended adjustments can be made by adding the displayed width additions according to channel and sideslope stability. Other factors should also be considered, including channel aspect, streamside vegetation height, fish and wildlife habitat conditions, and treatments planned within and adjacent to the SMZ.

** See FSH 2509.22

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Appendix N

Fire Management Protection Program

1. The selected fire management protection program requires the current budget plus 40% for the first decade, and the current budget for Decades 2 and 5.

The Forest-wide fire management protection organization for the current budget program is:

- 20 prevention patrol units,
- 11 5-person engine units,
- 5 10-person handtool crews,
- 1 20-person Hotshot crew,
- 1 helicopter with crew
- 6 fixed-location lookouts, and
- 1 initial attack tractor.

The Forest-wide fire management protection organization for the current plus 40% budget program is:

- 20 prevention patrol units,
- 21 5-person engine units,
- 8 10-person handtool crews,
- 1 20-person Hotshot crew,
- 1 helicopter with crew,
- 6 fixed-location lookouts, and
- 1 initial attack tractor.

2. The fire management effectiveness index (FMEI) is a relative measure of wildfire suppression effectiveness of the fire management organization which can be calculated by the equation:

$$\text{FMEI} = \frac{\text{Annual (FFP+FFF+NVC)} - \text{Fuel Investment}}{\text{National Forest Acres Protected}}$$

The FMEI for the current budget program is 4.02. The FMEI for the current plus 40% budget program is 4.52.

3. The Fire Management Action Plan, to be prepared, will guide implementation of the selected fire management program.
4. The proposed annual extent of fuel treatment by prescribed fire to the planning horizon is:

Table N-1
Annual Fuel Treatment
 acres/year

<u>Decade</u>	<u>Fire Mgmt.</u>	<u>Timber Mgmt.</u>	<u>Other Purposes</u>	<u>Total</u>
1	250	8,103	1,790	10,143
2	150	7,699	2,625	10,474
3	150	6,363	2,370	8,883
4	150	7,969	2,460	10,579
5	150	7,675	2,910	10,735

5. The expected annual extent of wildfire to the planning horizon, by intensity and fire size class is:

Table N-2
Expected Average Annual Burned Acres by Wildfire

	Size Classes				Total
	A&B	C	D	E+	
Fire Intensity Class 1					
Decade 1	32	0	0	0	32
Decade 2	34	0	0	0	34
Decade 3	36	0	0	0	36
Decade 4	21	0	0	0	21
Decade 5	22	0	0	0	22
Fire Intensity Class 2					
Decade 1	90	54	10	111	265
Decade 2	93	55	10	121	279
Decade 3	99	59	11	125	294
Decade 4	113	55	5	120	293
Decade 5	117	56	5	129	307
Fire Intensity Class					
Decade 1	15	42	0	0	205
Decade 2	16	43	0	217	276
Decade 3	17	46	0	228	291
Decade 4	14	51	0	230	295
Decade 5	14	51	0	235	300

Table N-2
(cont'd)

Expected Average Annual Burned Acres by Wildfire

	Size Classes				Total
	A&B	C	D	E+	
Fire Intensity Class 4					
Decade 1	0	64	18	261	343
Decade 2	0	66	18	293	377
Decade 3	0	71	20	323	414
Decade 4	5	53	20	630	708
Decade 5	5	54	25	641	725
Fire Intensity Class 5					
Decade 1	0	4	0	1470	1474
Decade 2	0	4	0	1546	1550
Decade 3	0	5	0	1631	1636
Decade 4	0	7	35	918	960
Decade 5	0	7	35	944	986
Fire Intensity Class 6					
Decade 1	0	0	0	0	0
Decade 2	0	0	0	0	0
Decade 3	0	0	0	0	0
Decade 4	0	0	0	0	0
Decade 5	0	0	0	0	0
Total					
Decade 1	137	164	28	1277	1606
Decade 2	143	168	28	2281	2620
Decade 3	152	181	31	2489	2853
Decade 4	153	166	25	2560	2904
Decade 5	158	168	30	2652	3008

6. Fire management direction is summarized as follows:

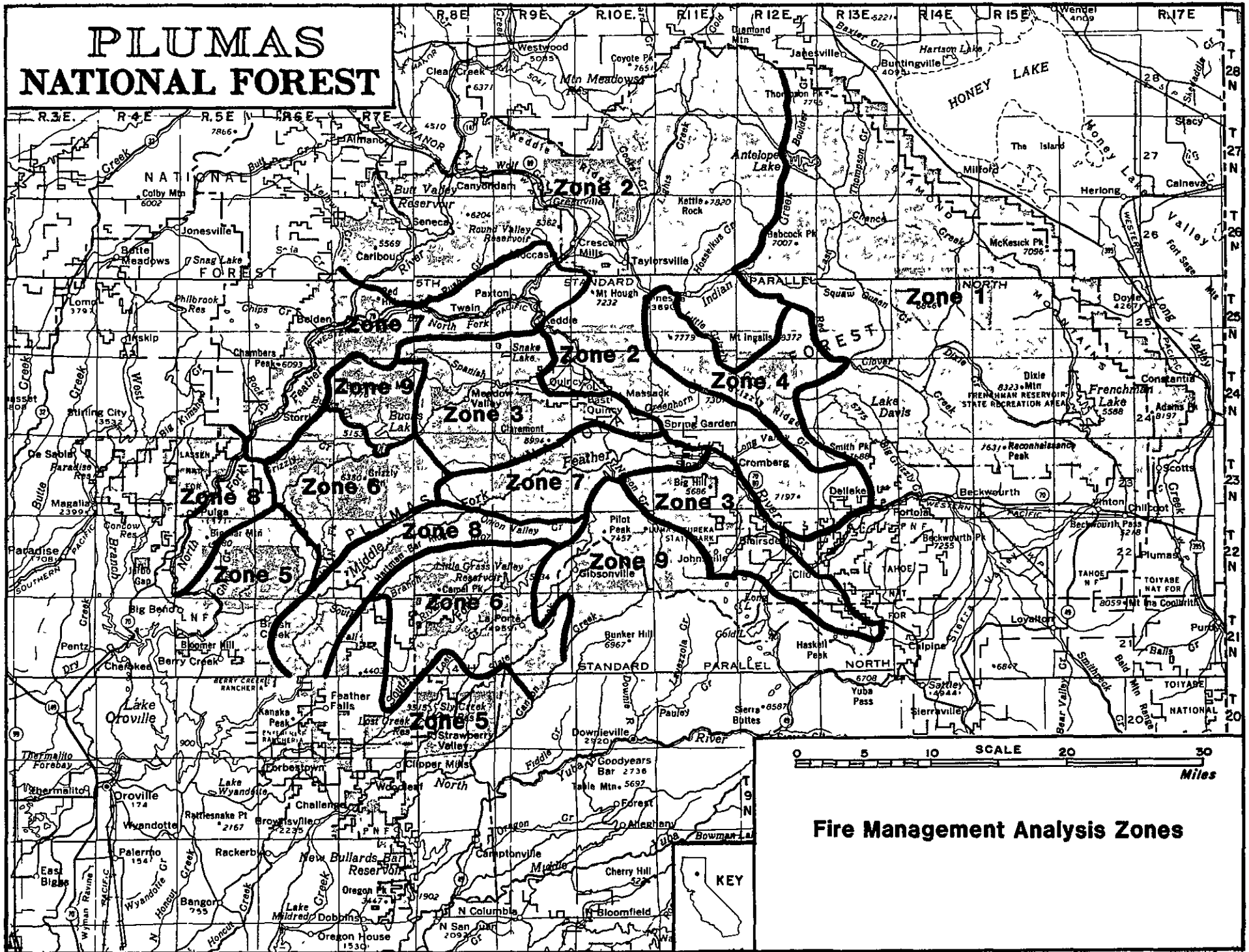
Table N-3
Fire Management Direction Summary

Fire Management Analysis Zone <u>1/</u>	Fire Intensity Level	Average Annual Acres Burned Per Year <u>2/</u>	Wildfire Suppression Strategy
1	1-5	1200	Control
2	1-4	421	Control
3	1-4	7	Control
4	1-2	3	Control
5	1-2	12	Control
6	1-5	26	Control
7	1-3	195	Control
8	1-5	3	Control
9	1-3	2	Control

1/ See Figure N-1.

2/ From Level 2 Analysis (Initial Attack Assessment).

PLUMAS NATIONAL FOREST



N-5

Fire Management Analysis Zones

Figure N-1

Plumas National Forest
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Appendix O

PNF Trails by Allowable Use

Trail	Mgt. Area	Miles	Foot	Horse	Motorcycles Small	4-wheel ATV	Motor.
<u>La Porte District</u>							
Lewis Mine	10	1.5	X	X			
Feather Falls NRT	10	3.8	X	X			
Watson	10	2.4	X	X			
Jackson Ranch	10	1.5	X	X			
Fall River	10	3.8	X	X			
Hanson Bar	9	3.0	X	X			
Kennedy Bar	9	4.3	X	X			
Joe Taylor	9	3.5	X	X			
Obermeyer	13	2.6	X	X			
Stag Point	12	2.0	X	X	X		X
High Ridge	9	3.0	X	X			
Cleghorn Bar	14	1.5	X	X	X		X
Butte Bar	14	1.5	X	X			
Sawmill Tom	14	3.0	X	X			
Hartman Bar NRT	9	4.0	X	X			
Minerva Bar	14	3.0	X	X			
Blue Nose	18	1.0	X	X			
Lakeshore	15	5.0	X	X			
Mt. Filmore	16	4.0			X		X
Illinois	16	3.0	X	X			
Poker Flat	16	2.4			X		X
Hottentot	14	1.5	X	X			
Council Hill	17	1.0	X	X			
Wambo Bar	11	1.0	X	X			
Alabama Bar	11	2.0	X	X			
Cornflake	11	0.3	X	X			
Skinner	11	0.6	X	X			
Pacific Crest	14,15,16	25.0	X	X			

District Total		91.2					

PNF Trails by Allowable Use (continued)

Trail	Mgt. Area	Miles	Foot	Horse	Motorcycles Small ATV	4-wheel Motor.
<u>Oroville District</u>						
Marble Creek	7	5.0	X			
Mountain House	4	1.9	X			
Dome	8	2.3	X			
Big Bald Rock	4	0.5	X			
Mill Creek	5	8.5	X	X		
Kellogg Lake	5	0.5	X			
Little North Fork	7	1.5	X			
Little California	8	2.5	X	X		
Hartman Bar	8	4.4	X			
Hunter's Ravine	8	1.1	X			
Wildcat	2	4.0	X			
Skyhigh	7	1.5	X			
Three Lakes	5	1.8	X	X		
Grizzly Forebay	2	1.6	X			
Three Lakes - PCT tie	5	.3	X	X		
Hutchins	5	.3	X			
Pacific Crest	5	19.2	X	X		
District Total		56.9				
<u>Quincy District</u>						
Gold Lake	21	1.6	X	X		
Rock Lake	21	.5	X	X		
Oddie Bar	25	1.3	X	X		
McCarthy Bar	25	2.5	X	X		
Bachs Creek	25	2.3	X	X		
No Ear Bar	25	1.3	X	X		
Lost Cabin Springs	24,25	0.8	X	X		
Ben Lomond	19	4.8	X	X		
Chambers Creek	19	4.2	X	X		
Yellow Creek	19	2.0	X	X		
Deadman Springs	25		X	X	X	X
Indian Springs	19	3.5*	X	X		
Pacific Crest	19,25	20.5	X	X		
District Total		45.3	X	X		

* Plus 3.0 miles on the Lassen NF

PNF Trails by Allowable Use (continued)

Trail	Mgt. Area	Miles	Foot	Horse	Motorcycles	
					Small ATV	4-wheel Motor.
Beckwourth District						
Lily Lake	35	0.7	X	X		
Gold Lake Lodge- Round Lake	35	1.7	X	X		
Rock Lake	35	1.2	X	X		
Jamison Creek	35	3.0	X	X		
Jamison Lake	35	0.8	X	X		
Mud Lake	35	1.2	X	X		
Long Lake Connect	35	0.2	X	X		
Mohawk-Elwell Park	35	4.4	X	X		
Intake-Graeagle Lodge	35	1.6	X	X		
Lt. Jamison Ck-Smith Lk	35	0.9	X	X		
Graeagle-Smith Lake	35	0.8	X	X		
Upper Graeagle Crk.	35	1.3	X	X		
Long Lk-Graeagle Ck	35	1.4	X	X		
Grassy Lk- Graeagle Ck	35	0.8	X	X		
East Long Lake Spur	35	0.3	X	X		
Silver Lake	35	3.4	X	X		
Bear Lake	35	1.3	X	X		
Mt. Washington	35	3.9	X	X		
Bear/Gold Lks Lodge	35	0.7	X	X		
Silver/Round Lake Connect	35	0.9	X	X		
Round Lk/Tahoe NF	35	0.7	X	X		
Wades Lake/Jamison Connect	35	1.2	X	X		
Red Fir Nature	39	0.4	X			
Frazier Falls	39	0.5	X			
Fern Falls	35	0.1	X			
Jackson Creek	32	0.4	X			
Smith Creek	35	2.4	X	X		
Graeagle	35	0.5	X	X		
Jamison Creek	35	0.8	X	X		
Little Jamison	35	1.0	X	X		
Long Valley	32	3.5	X	X	X	
Nelson Creek	33	3.1	X	X	X	
Summit Lake	35	0.3	X			
Pacific Crest	33	1.0	X	X		
District Total		46.4				
FOREST TOTAL						242.8 miles

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Appendix P

Suppression Difficulty Index (SDI)

The SDI is applied to activity fuels to determine fuel treatment needs for hazard reduction purposes. The SDI does not prescribe a fuel treatment method. This system is to be applied three years after the activity.

Instructions. Follow the SDI process outlined in FHS 5109.19 - Fire Management Analysis and Planning Handbook (FSH 2/87 R-5 SUp.1), reference pages 52.3--6 through 52.3--8, and Exhibits 4, 5, 6, and 7.

If the resultant SDI is greater than the prescribed threshold index in the Forest-wide Standards and Guidelines for the activity that generated the fuel, then fuel treatment for hazard reduction purposes is necessary. Examination of the rating values for each element can suggest appropriate treatment methods.

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Appendix Q
Water Quality Management-
Best Management Practices and Process

Introduction

The Forest Service water quality maintenance and improvement measures called Best Management Practices (BMP's) were developed in compliance with Section 208 of the Federal Clean Water Act, PL92-500, as amended. After a lengthy development and public review process from 1977 to 1979, the practices developed by the Forest Service were certified by the State Water Resources Control Board and approved by EPA. The signing of a 1981 Management Agency Agreement (MAA) resulted in the formal designation of the Forest Service as the water quality management agency for the public domain lands it administers. The BMP's are the measures both the State and Federal water quality regulatory agencies expect the Forest Service to implement to meet water quality objectives and to maintain and improve water quality. There are currently 98 practices documented, 96 of which are certified and approved as BMP's. The two remaining practices are still being improved before referral to the State and EPA for certification and approval. In a like manner, work continues on developing new management practices and evaluating the effectiveness of the existing BMP. Due to the dynamic nature of management practice development and refinement, the original Forest Service publication documenting BMP's is continually being updated. The current publication reference is; WATER QUALITY MANAGEMENT FOR NATIONAL FOREST SYSTEM LANDS IN CALIFORNIA, U.S. Forest Service, Pacific Southwest Region publication, 1979. This publication is hereby incorporated by reference into this document. Work is underway to republish the updated version of this text as a Soil and Water Conservation Handbook.

Water quality management is administered on National Forest lands through the continued implementation of BMP's and through the guidance of a 1981 Management Agency Agreement with the State of California Water Resources Control Board.

Implementation Process

Forest Plans are broad level planning documents that encompass the entire Forest and a multitude of different management activities. Because of the physical-biological diversity of any given National Forest (different soils, vegetation, slopes, presence of surface water, etc.) and the mixture of activities that can occur on various portions of the Forest, site-specific methods and techniques for implementing the

BMP's are not identified at the Forest planning level. For each individual project that is initiated to implement the Forest Plan, a separate site-specific environmental analysis is conducted. The appropriate BMP's necessary to protect or improve water quality and the methods and techniques of implementing the BMP's are identified at the time of this onsite, project-specific analysis. In this manner the methods and techniques can be tailored to fit the specific physical-biological environment as well as the proposed project activities.

Many methods available for implementing a BMP, and not all are applicable to every site. An example is BMP 2.7 Control of Road Drainage. This BMP dictates that roads will be correctly drained to disperse water runoff to minimize the erosive effects of concentrated water. There are many ways to drain a road correctly; e.g., outslope the road surface, install water bars, install French drains, inslope the road surface, and install culverts, etc. It is during the onsite environmental analysis of a specific road construction project proposal that the appropriate method or combination of methods to correctly drain the road are identified.

After the methods and techniques of implementing the appropriate BMP's are identified, they are discussed by the project interdisciplinary team. As a result of discussions, the appropriate mix of implementation methods and techniques are selected and incorporated into the environmental document as required mitigation measures. These mitigation measures are then carried forward into project plans and implementation documents; (e.g., contract language, design specifications, etc.) to assure they are part of the project work accomplished. Implementation on the ground is assured by the Forest Service official responsible for on-site administration of the project. Supervisory quality control of BMP implementation is attained through review of environmental documents and contracts, field reviews of projects, and monitoring the quality of the water in the project area when warranted.

The Best Management Practices

There are 98 practices identified in eight different resource categories. They are as follows:

TIMBER

- 1.1 - Timber Sale Planning Process
- 1.2 - Timber Harvest Unit Design
- 1.3 - Use of Erosion Hazard Rating for Timber Harvest Unit Design
- 1.4 - Use of Sale Area Maps for Designating Water Quality Protection Needs
- 1.5 - Limiting Operating Period of Timber Sale Activities
- 1.6 - Protection of Unstable Areas
- 1.7 - Prescribing the Size and Shape of Clearcuts
- 1.8 - Streamside Management Zone Designation

TIMBER (continued)

- 1.9 - Determining Tractor Loggable Ground
- 1.10 - Tractor Skidding Design
- 1.11 - Suspended Log Yarding in Timber Harvesting
- 1.12 - Log Landing Location
- 1.13 - Erosion Prevention and Control Measures During Timber Sale Operations
- 1.14 - Special Erosion Prevention Measures on Disturbed Land
- 1.15 - Revegetation of Areas Disturbed by Harvest Activities
- 1.16 - Log Landing Erosion Prevention and Control
- 1.17 - Erosion Control on Skid Trails
- 1.18 - Meadow Protection During Timber Harvesting
- 1.19 - Streamcourse Protection
- 1.20 - Erosion Control Structure Maintenance
- 1.21 - Acceptance of Timber Sale Erosion Control Measures Before Sale Closure
- 1.22 - Slash Treatment in Sensitive Areas
- 1.23 - Five-Year Reforestation Requirement
- 1.24 - Non-recurring "C" Provision That Can Be Used For Water Quality Protection
- 1.25 - Modification of the Timber Sale Contract

ROAD AND BUILDING SITE CONSTRUCTION

- 2.1 - General Guidelines for the Location and Design of Roads
- 2.2 - Erosion Control Plan
- 2.3 - Timing of Construction Activities
- 2.4 - Road Slope Stabilization (Prevention Practice)
- 2.5 - Road Slope Stabilization (Administrative Practice)
- 2.6 - Dispersion of Subsurface Drainage from Cut and Fill Slopes
- 2.7 - Control of Road Drainage
- 2.8 - Constraints Related to Pioneer Road Construction
- 2.9 - Timely Erosion Control Measures on Incomplete Road and Streamcrossing Projects
- 2.10 - Construction of Stable Embankments
- 2.11 - Minimization of Sidecast Material
- 2.12 - Servicing and Refueling Equipment
- 2.13 - Control of Construction in Streamside Management Zones
- 2.14 - Controlling In-channel Excavation
- 2.15 - Diversion of Flows Around Construction Sites
- 2.16 - Streamcrossings on Temporary Roads
- 2.17 - Bridge and Culvert Installation
- 2.18 - Regulation of Streamside Gravel Borrow Areas
- 2.19 - Disposal of Right-Of-Way and Roadside Debris
- 2.20 - Specifying Riprap Composition
- 2.21 - Water Source Development Consistent with Water Quality Protection
- 2.22 - Maintenance of Roads
- 2.23 - Road Surface Treatment to Prevent Loss of Materials

ROAD AND BUILDING SITE CONSTRUCTION (continued)

- 2.24 - Traffic Control During Wet Periods
- 2.25 - Snow Removal Controls to Avoid Resource Damage
- 2.26 - Obliteration of Temporary Roads
- 2.27 - Restoration of Borrow Pits and Quarries
- 2.28 - Surface Erosion Control at Facility Sites

MINING

- 3.1* - Administering Terms of the U.S. Mining Laws (Act of May 10, 1872) for Mineral Exploration and Extraction on National Forest System Lands (PRACTICE NEEDS IMPROVEMENT)
- 3.2 - Administering Terms of BLM Issued Permits or Leases for Mineral Exploration and Extraction on National Forest System Lands
- 3.3 - Administering Common Variety Mineral Removal Permits

RECREATION

- 4.1 - Sampling and Surveillance of Designated Swimming Sites
- 4.2 - On-site Multidisciplinary Sanitary Surveys Will Be Conducted to Augment the Sampling of Swimming Waters
- 4.3 - Provide Safe Drinking Water Supplies
- 4.4 - Documentation of Water Quality Data
- 4.5 - Control of Sanitation Facilities
- 4.6 - Control of Refuse Disposal
- 4.7 - Assuring that Organizational Camps Have Proper Sanitation and Water Supply Facilities
- 4.8 - Water Quality Monitoring Off-Road Vehicle Use According to a Developed Plan
- 4.9 - Sanitation at Hydrants and Faucets Within Developed Recreation Sites
- 4.10 - Protection of Water Quality Within Developed and Dispersed Recreation Areas
- 4.11 - Location of Pack and Riding Stock Facilities in Wilderness, Primitive, and Wilderness Study Areas

VEGETATIVE MANIPULATION

- 5.1 - Seed Drilling on the Contour
- 5.2 - Slope Limitations for Tractor Operation
- 5.3 - Tractor Operation Excluded from Wetlands and Meadows
- 5.4* - Revegetation of Surface Disturbed Areas
- 5.5 - Tractor Windrowing on the Contour (PRACTICE NEEDS IMPROVEMENT)
- 5.6 - Soil Moisture Limitations for Tractor Operation

* These are the two practices that currently have not been recommended for certification and approval as BMP's.

VEGETATIVE MANIPULATION (continued)

- 5.7 - Contour Disking
- 5.8 - Pesticide Use Planning Process
- 5.9 - Apply Pesticide According to Label and EPA Registration Directions
- 5.10 - Pesticide Application Monitoring and Evaluation
- 5.11 - Pesticide Spill Contingency Planning
- 5.12 - Cleaning and Disposal of Pesticide Containers and Equipment
- 5.13 - Untreated Buffer Strips for Riparian Area and Streamside Management Zone (SMZ) Protection During Pesticide Spraying
- 5.14 - Controlling Pesticide Drift During Spray Application

FIRE SUPPRESSION AND FUELS MANAGEMENT

- 6.1 - Fire and Fuel Management Activities
- 6.2 - Consideration of Water Quality in Formulating Fire Prescriptions
- 6.3 - Protection of Water Quality from Prescribed Burning Effects
- 6.4 - Minimizing Watershed Damage from Fire Suppression Efforts
- 6.5 - Repair or Stabilization of Fire Suppression Related Watershed Damage
- 6.6 - Emergency Rehabilitation of Watersheds Following Wildfires

WATERSHED MANAGEMENT

- 7.1 - Watershed Restoration
- 7.2 - Conduct Floodplain Hazard Analysis and Evaluation
- 7.3 - Protection of Wetlands
- 7.4 - Oil and Hazardous Substance Spill Contingency Plan
- 7.5 - Control of Activities Under Special Use Permit
- 7.6 - Management by Closure to Use (Seasonal, Temporary, and Permanent)

GRAZING

- 8.1 - Range Analysis, Allotment Management Plan, Grazing Permit System, and Permittee Operating Plan
- 8.2 - Controlling Livestock Numbers and Season of Use
- 8.3 - Controlling Livestock Distribution Within Allotments
- 8.4 - Rangeland Improvements

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Appendix R
Recreation Opportunity Spectrum (ROS)*

Recreation Opportunity Spectrum is a system used to divide the Forest into recreational opportunity areas based on area size, distance from roads, and degree of development. Existing and potential recreation activities are identified within each to guide future management. Categories range from "primitive" to "urban".

1. Primitive ROS Class - an essentially unmodified natural environment of 5,000 acres or more that is at least three miles from all motorized use, and that provides significant opportunity for isolation from the sights and sounds of man and a feeling of vastness of scale. Visitors have an opportunity to be part of the natural environment, encounter a high degree of challenge and risk, and use a maximum of outdoor skills.
2. Semi-Primitive Non-motorized ROS Class - a predominately unmodified natural environment of a size and location that provides a good to moderate opportunity for isolation from sights and sounds of man. The area is typically 2,500 acres or more and at least 1/2 mile from motorized use. It presents opportunity for interaction with the natural environment, moderate challenge and risk, and use of a high degree of outdoor skills.
3. Semi-Primitive Motorized ROS Class - a predominantly unmodified natural environment in a location that provides good to moderate isolation from sights and sounds of man, except for facilities/travel routes for primitive motorized recreation travel. Visitor can experience at least a moderate challenge and risk, and a high degree of skill testing. The area is generally 2,500 acres or larger and not closer than 1/2 mile from better-than-primitive roads.
4. Roaded Natural ROS Class - a predominately natural environment where resource modification and utilization practices are evident. Evidence of the sights and sounds of man is moderate and in harmony with the natural environment. Opportunities exist for both social interaction and moderate isolation from sights and sounds of man.

* See THE ROS USER'S GUIDE, USDA, Forest Service in the LMP Files.

The Roaded Natural class as described in the ROS User's Guide has been divided into two sub-classes, Roaded Natural (RN) and Roaded Modified (RM):

- a. Roaded Natural (RN) is defined as those original Roaded Natural areas that are also coded as Foreground and Sensitivity Level I. These lands lie along the major travel ways and viewsheds. Nearly all developed sites are in this class. Paved roads and hardened sites are common. User interaction is moderate to high at developed sites.
 - b. Roaded Modified (RM) is defined as those Roaded Natural areas that are also coded as Middleground, Background or Unseen, and Sensitivity Level II or III. This is the general resource management area of the Forest, typified by pick-up trucks and many miles of dirt and gravel roads. Other than trails and trailheads, virtually no improvements are present. Users experience low interaction.
5. Rural ROS Class a substantially modified natural environment. Sights and sounds of man are evident. Renewable resource modification and utilization practices enhance specific recreation activities or provide the protection of vegetative soil cover.
 6. Urban ROS Class a substantially urbanized environment. Sights and sounds of man predominate.

Urban Class areas on the PNF will be managed according to the Rural Class.