C Comparison of Alternatives

This section presents the details of the alternatives so they can be compared These details are summarized in tables and narrative to provide the basis for review, judgment, and eventual selection of a preferred alternative

The information displayed in tables includes:

Table II-5	Average Annual Quantifiable Resource Outputs and Environmental Effects That Vary Significantly by Alternative
Table II-6	Comparison of Past, Present and Alternative Timber Outputs.
Table II-7	Timber Resource Management Information by Benchmark and Alternative.
Table II-8	Present Net Value and Discounted Benefits and Costs of Alternatives
Table II-9	Present Net Value and Discounted Benefits and Costs by Resource Groups.
Table II-10	Average Annual Cash Flows and Noncash Benefits in the First and Fifth Decades by Alternative.
Table II-11	Comparison of Issue and Concern Response by Alternative.
Table II-12	Indicators of Responsiveness of Alternatives to Planning Issues and National Concerns.

In addition to tables, there are narrative sections describing differences between the alternatives.

1. Resource Outputs, Environmental Effects, Activities, and Costs

This section of the chapter presents the resource outputs, the environmental effects, the activities, and the costs of all the alternatives Direct, indirect, and cumulative outputs and effects are presented by alternative In Table II-5, the alternatives are shown in order from the one with the most land suitable for timber production (Alternative NC) to the least land suitable for timber production (Alternative C-Modified). Many of the outputs and effects are derived from the analysis process described in Appendix B. Outputs are estimates and projections based on available inventory data and assumptions, subject to annual budgetary limitations A comparison of alternatives for the resource management programs on the Forest follows Table II-5.

TABLE II-5

QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES

(Alternatives are ranked in order from most to least land potentially suitable for timber production.)

(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change[1]	B Mod	A No Action	F	I Preferred	C Mod
TIMBER							
LAND TENTATIVELY SUITABLE FOR TIMBER PRODUCTION	Acres	1,146,238	1,039,868	1,039,868	1,039,868	1,039,868	1,039,868
LAND AVAILABLE FOR TIMBER PRODUCTION (in FORPLAN)	Acres	N/A	987,088	967,327	951,028	905,151	831,340
LAND SUITABLE FOR TIMBER PRODUCTION	Acres	1,116,577	956,783	898,424	919,748	835,970	770,387
LAND WITH HARVEST REDUCTION (Acres Providing Percent of Full Yield)[2]	Acres						
91-100		655,770	866,977	769,160	811,952	468,656	265,232
50-90		460,807	39,691	34,384	36,115	322,862	414,907
1-49		0	50,115	94,880	71,681	44,452	90,248
No Programmed Yield		29,661	83,085	141,444	120,120	203,898	269,481
TIMBER HARVEST PRESCRIPTION	Acres						
Clearcut		N/A	478,452	377,229	380,621	364,616	347,789
Shelterwood		N/A	388,525	391,930	431,331	247,862	220,515
Selection		N/A	89,806	129,265	107,796	223,492	202,083
TIMBER SALE PROGRAM QUANTITY[3]							
Decade 1	Million	N/A	265 9	232 7	246.6	211 0	154 0
Decade 2	Board Feet	N/A	N/A	N/A	N/A	N/A	N/A
Decade 5		N/A	N/A	N/A	N/A	N/A	N/A

1/*The timber management plan upon which the No Change Alternative is based was developed in 1979* The plan was not an integrated resource management plan, and consequently did not address all resource uses and outputs. The missing information in this table cannot be reasonably estimated, since the original plan was based on yield tables and resource relationships which do not reflect the latest scientific technique or *information, reflect the standards in the NFMA regulations, or are otherwise inappropriate* Unit plans developed during 1978 provided new standards and management objectives which are best represented in Alternative A - No Action (Current Direction). Some of these standards and management objectives were incorporated in the timber management plan, and adjustments made in timber potential estimates to reflect *them* Consequently, *the timber potential yield estimates may not be feasible to implement and some* Forest-wide information or data is unavailable

2/Programmed yield is derived in a yield simulator, less operational falldown, without further yield reductions for other resource considerations, available for harvest at 95-100 percent of culmination of *mean annual increment (CMAI)*

3/Annual Average Million Board Feet for comparison for 1980-1989 Timber cut, 187 7; Timber Sold, 228 3, Timber Management Plan potential yield, 269 7

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
TIMBER SALE PROGRAM QUANTITY (continued)							
Decade 1	Million	N/A	48.6	42 6	45 2	38 4	28.2
Decade 2	Cubic Feet	N/A	48.6	42 6	45.2	38 4	28.2
Decade 5		N/A	48 6	43 0	45 2	38 4	28.2
ALLOWABLE SALE QUANTITY[4/]							
Decade 1	Million	N/A	252 0	220 6	233 7	200 0	146.0
Decade 2	Board	N/A	N/A	N/A	N/A	N/A	N/A
Decade 5	Feet	N/A	N/A	N/A	N/A	N/A	N/A
Decade 1	Million	N/A	44 0	38 6	40 9	34 8	25.5
Decade 2	Cubic	N/A	44 0	38.6	40.9	34 8	25 5
Decade 5	Feet	N/A	44 0	39 0	40 9	34 8	25.5
LONG-TERM SUSTAINED YIELD CAPACITY[4A/]	Million Cubic Feet	N/A	50 61	45 33	47 03	40 73	27.95
TIMBER GROWTH IN YEAR 2030	Million Cubic Feet	N/A	39 68	33 10	35 47	32 71	29 25
REFORESTATION PLANTING							
Decade 1	1,000 Acres	N/A	5 8	6 1	6 1	5 5	4 6
Decade 2		N/A	3 9	4 2	4 3	3 6	2 1
Decade 5		N/A	6 9	6 7	6 9	5 5	2 2
TIMBER STAND IMPROVEMENT							
Decade 1	1,000 Acres	N/A	12 0	11 8	12.1	10 8	9.7
Decade 2		N/A	20 4	20 5	21 3	16.2	12 5
Decade 5		N/A	20 4	19 7	20.0	16 4	6 5

4/The conversion ratio from board feet to cubic feet for the 1979 Timber Management Plan is 6.71 board feet to 1 cubic foot. This is reflected in Alternative No Change Alternatives A through I board foot to cubic foot conversion ratios vary by harvest patterns over time, with decade 1 at approximately 5 72 board feet equal to 1 cubic foot (see Appendix B for an overview of to the analysis process) The great difference in board foot to cubic foot conversion ratios between the 1979 Timber Resource Plan (TRP) and alternatives in this Final EIS can be attributed to two major factors A more intensive stratification of timber components and higher utilization standards in the Forest Plan than in the 1979 TRP. The potential yield for Alternative NC in the first decade is 269 7 MMBF annually (40 2 MMCF) Potential yield is not directly comparable to Allowable Sale Quantity

4A/Based on all material being offered for sell

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
BIOMASS-OTHER WOOD FIBER[5/]							
Decade 1	Million	N/A	3 88	3 74	3.83	2 92	2 45
Decade 2	Cubic	N/A	3 51	3 68	3 74	2 76	2 38
Decade 4	Feet	N/A	2.83	2 86	2 80	2 37	2 25
FUEL TREATMENT							
Decade 1	Thousands	N/A	10 4	10 2	10 2	9 6	7 0
Decade 2	of Acres	N/A	10 7	10 1	10 2	10.3	6 7
Decade 5		N/A	15 6	14 5	14 6	12.6	7 7
RANGE							
LIVESTOCK GRAZING CAPACITY							
Decade 1	1,000 Animal	N/A[6/]	120	131	117	113	76
Decade 2	Unit Months	N/A	122	135	120	112	87
Decade 5		N/A	119	131	118	116	105
ACRES AVAILABLE FOR GRAZING Each Decade	Acres	N/A	1,351,275	1,351,275	1,351,275	1,351,275	1,351,275
SOCIO-ECONOMIC							
OPERATIONAL COSTS							
Decade 1	Millions of	N/A	9 3	8 7	8 9	8 4	7 1
Decade 2	Dollars	N/A	9 5	9 0	9 1	8 8	7 5
Decade 5		N/A	9 6	9 1	9 2	8 9	7.5
CAPITAL INVESTMENT COSTS							
Decade 1	Millions of	N/A	10 0	6.3	7.3	7.1	5 0
Decade 2	Dollars	N/A	7 8	6 5	6 7	6 4	4.5
Decade 5		N/A	7 3	5 9	6 3	6 3	4.5

5/Estimated volume of forest residue, above that needed to meet other resource objectives, that could be removed after normal timber harvest activities have been completed
6/Livestock grazing capacity for Alternative NC as derived from information in the Unit Plans is 126 mAUMs for the first decade.

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
TOTAL APPROPRIATED							
Decade 1	Millions of	N/A	19 3	15.1	16.4	15 9	12 4
Decade 2	Dollars	N/A	17.3	15.5	15.8	15.2	12.0
Decade 5		N/A	16 9	15.0	15.5	15 2	12 0
TOTAL NATIONAL FOREST SYSTEM ALLOCATED[7/]	Millions of Dollars						
Decade 1		N/A	0.4	0.4	0.4	0.4	0.4
Decade 2		N/A	0	0	0	0	0
Decade 5		N/A	0	0	0	0	0
RETURNS TO GOVERNMENT							
Decade 1	Millions of	N/A	29 6	25 3	27 2	23 6	17 5
Decade 2	Dollars	N/A	29.2	25 5	27 4	23 4	19 4
Decade 5		N/A	34.3	32.6	34 3	28 1	15 7
PAYMENTS TO COUNTIES							
Decade 1	Millions of	6 0	7 4	6.3	6 8	5 9	4 4
Decade 2	Dollars	N/A	7 3	6 4	6 9	5.9	4.9
Decade 5		N/A	8 6	8 2	8.6	7 0	3 9
CHANGE IN JOBS over 10 years (Historic level of jobs based on 1980-89 outputs = 1,729 jobs)	Jobs	N/A[8/]	+235	0	+96	-161	-573
CHANGES IN TOTAL INCOME (Average level of income in 1977 $; Based on 1980-89 outputs: $56.4 MM)	Millions of Dollars	N/A[8/]	+7 8	0	+3 2	-5 3	-18 9

7/This figure represents Bonneville Power Administration funding for anadromous fish habitat improvement projects These funds are not expected to continue past the first decade.
8/Changes in jobs (+515) and income (+$13 0 MM) for the No Change Alternative were projected assuming the potential yield (269 7 MMBF) displayed in the 1979 TRP would be harvested Jobs and income estimates were calculated in a comparable fashion to the other alternatives. The 1979 TRP projected an increase of 266 jobs and $5.9 million, these estimates were generated employing other economic assumptions and methodology, and are not directly comparable to the jobs and income estimates presented for all other alternatives. Also note that jobs and income estimates reflect changes in the economic sectors that currently exist For the Malheur National Forest zone of influence, this is related predominately to timber, livestock, and retail industries now in place. If changes outside of these established industries were to occur and make a significant contribution to the local economic setting, it would not be reflected here, thus making these estimates unreliable. Job change estimates are based on a 10 year time period

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
RECREATION							
DEVELOPED RECREATION USE CAPACITY	Thousands of Recreation Visitor Days						
Decade 1		N/A	186 7	149 4	149 4	159.1	149 4
Decade 2		N/A	220.1	176 1	176 1	187 7	176 1
Decade 5		N/A	267 2	213.8	213 8	228 0	213 8
NONWILDERNESS DISPERSED USE CAPACITY	Thousands of Recreation Visitor Days						
Semi-Primitive Non-Motorized							
Each Decade		41 1	10.1	45.3	38 7	62 0	77 8
Semi-Primitive Motorized							
Each Decade		0	0	0	32 4 9/	17 2	63 5
Roaded Natural							
Decade 1		N/A	2,095	2,295	2,130	1,960	2,232
Decade 2		N/A	1,267	1,667	1,337	1,330	1,542
Decade 5		N/A	437	1,038	543	692	850
Roaded Modified							
Decade 1		N/A	1,844	1,600	1,641	1,724	1,350
Decade 2		N/A	2,404	2,025	2,229	2,150	1,820
Decade 5		N/A	2,966	2,451	2,766	2,583	2,286
WILDERNESS USE CAPACITY	Thousands of Recreation Visitor Days						
Pristine							
Each Decade		N/A	2 5	2 5	2 5	2 5	2 5
Primitive							
Each Decade		N/A	0	26.8	26 8	37 2	30 9
Semi-Primitive							
Each Decade		N/A	56 6	15.9	15 9	0	13 8

9/Alternative F would provide 32 4 thousand Recreation Visitor Days (RVD's) of semiprimitive motorized recreation during the first decade and 13 9 thousand RVD's annually each decade thereafter

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
Recreation Improvements							
Trail Construction/ Reconstruction	Miles						
Decade 1		N/A	21/7	26/8	25/8	28/6	28/9
Decade 2		N/A	0/7	2/9	5/9	4/9	8/11
Decade 5		N/A	0/7	0/9	0/9	0/9	0/13
Developed Site Reconstruction	Persons at One Time (PAOT) Cap						
Decade 1		N/A	139	139	150	170	150
Decade 2		N/A	139	139	150	170	150
Decade 5		N/A	139	139	150	170	150
Developed Site Construction (Decade 1 only)	PAOT	N/A	N/A	N/A	N/A	260 10/	N/A
VISUAL QUALITY OBJECTIVES	Acres						
Preservation		8,320	81,320	81,320	81,320	81,320	86,740
Retention		N/A	62,748	108,901	91,276	118,584	151,379
Partial Retention		N/A	150,599	200,277	170,407	174,662	331,542
Modification & Maximum Mod.		N/A	1,164,755	1,068,924	1,116,419	1,084,856	889,761
TRANSPORTATION							
TIMBER PURCHASER ROAD BUILDING							
Local Road Construction and Reconstruction							
Construction	Miles/yr						
Decade 1		74	81	81	80	62	49
Decade 2		N/A	38	33	36	30	10
Decade 5		N/A	9	5	4	9	7
Reconstruction	Miles/yr						
Decade 1		212	159	157	156	132	108
Decade 2		N/A	137	141	142	120	100
Decade 5		N/A	120	121	121	117	99

10/One campground of 260 PAOT

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
ARTERIAL AND COLLECTOR ROAD CONSTRUCTION & RECONSTRUCTION							
Construction	Miles/Year						
Decade 1		N/A	0	0	0	0	0
Decade 2		N/A	0	0	0	0	0
Decade 5		N/A	0	0	0	0	0
Reconstruction	Miles/Year						
Decade 1		N/A	62	62	62	62	62
Decade 2		N/A	62	62	62	62	62
Decade 5		N/A	62	62	62	62	62
GENERAL PURPOSE ROAD BUILDING							
Construction	Miles/Year						
Decade 1		N/A	0 3	0 3	0 3	0 3	0 3
Decade 2		N/A	0	0	0	0	0
Decade 5		N/A	0	0	0	0	0
Reconstruction	Miles/Year						
Decade 1		N/A	24	24	26	21	21
Decade 2		N/A	29	30	32	25	27
Decade 5		N/A	40	42	42	35	40
ROADS SUITABLE FOR PASSENGER CAR USE	Miles	N/A	1,200	1,200	1,200	1,200	1,200
ROADS SUITABLE FOR HIGH-CLEARANCE VEHICLES ONLY (Mid-point of decade) 11/	Miles						
Decade 1		N/A	7,775	7,775	7,770	7,679	7,615
Decade 2		N/A	8,370	8,344	8,348	8,137	7,911
Decade 5		N/A	8,869	8,731	8,785	8,484	8,177
OPEN ROAD MILEAGE (end of decade)	Miles						
Decade 1		N/A	6,500	6,500	6,500	6,500	6,500
Decade 2		N/A	6,500	6,290	6,290	6,070	6,070
Decade 5		N/A	6,500	5,400	5,400	4,550	4,550

11/ Not all road mileages would be open for travel, due to road closure strategies

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
RIPARIAN AREA MANAGEMENT AND FISHERIES							
Sediment[12/]	Index						
Decade 1		N/A	855	853	852	807	495
Decade 2		N/A	809	806	811	772	399
Decade 5		N/A	625	597	628	600	287
WATER YIELD	Thousands of acre-feet						
Each Decade		N/A[13/]	620	620	620	620	620
Improved Watershed Conditions	Acres						
Each Decade		N/A	200	200	500	1000	1000
Anadromous Fish Use	Thousands of Wildlife & Fish User Days						
Decade 1		N/A	29.7	19 9	25.5	27 4	33 2
Decade 2		N/A	39 9	20 7	32.0	35 8	47 4
Decade 5		N/A	45 1	23.4	42 0	49 5	60 6
Anadromous Fish Habitat Improvements	Thousands of Pounds of Fish						
Decade 1		N/A	95 7	18 0	62 4	77 7	123 5
Decade 2		N/A	176 1	25 0	113.8	144 3	235 8
Decade 5		N/A	217.8	45 8	192 8	252 5	339 9
Anadromous Fish Commercial Harvest	Thousands of Pounds of Fish						
Decade 1		N/A	40 1	26.8	34.4	37 0	44 9
Decade 2		N/A	53 9	28 0	43 2	48 4	64 1
Decade 5		N/A	61 0	31.6	56.7	66 9	81.9
Steelhead Production	Thousands of Smolt						
Decade 1		N/A	195 5	130 7	167 8	180 5	218 7
Decade 2		N/A	262.6	136 5	210 6	236 0	312 4
Decade 5		N/A	297.3	153 9	276 5	326 3	399 2

12/ These numbers are an index for comparison. They have no absolute value

13/ The procedure used for calculating water yield in the Unit Plans (NC Alternative) was different than the methodology used in all the other alternatives, which utilized FORPLAN runs. Therefore, the results are not directly comparable. Refer to Appendix C (Derivations of coefficients for water) in the Unit Plans for additional information on NC methodology.

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
Chinook Salmon	Thousands of Smolt						
Decade 1		N/A	52 0	34.7	44 6	48 0	58 1
Decade 2		N/A	69 8	36 3	55 9	62 7	83 0
Decade 5		N/A	79.0	40 9	73 5	86 7	106 1
BIG-GAME HABITAT							
Wildlife Habitat Improvement							
Decade 1	Acres	N/A	500	230	500	500	1,300
Decade 2		N/A	350	210	500	500	1,250
Decade 5		N/A	325	210	500	500	1,200
Decade 1	Structures	N/A	100	230	325	325	180
Decade 2		N/A	65	215	325	325	180
Decade 5		N/A	65	215	315	315	160
Big-Game Use	Thousands of Wildlife &						
Decade 1	Fish User	N/A	121 7	117 9	119 8	121 7	115 3
Decade 2	Days	N/A	126.2	126 2	124 9	130 6	124 9
Decade 5		N/A	121 7	128 7	128 7	139 6	137 0
Habitat Effectiveness Index (HEI)							
Decade 1		N/A	56	.54	55	56	.53
Decade 2		N/A	58	.58	58	60	58
Decade 5		N/A	.56	59	59	64	63
Rocky Mountain Elk Potential Population[14/]	Thousands of Animals						
Summer							
Decade 1		N/A	13 4	13.0	13.2	13 4	12 7
Decade 2		N/A	13 9	13 9	13 9	14 4	13 9
Decade 5		N/A	13.4	14.2	14 2	15.4	15.1

14/Estimate of population potentials between alternatives is strictly a modeling approach used to estimate habitat capability to carry potential numbers of elk There is no link to current population numbers and is soley used to illustrate differences between alternatives.

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
Winter							
Decade 1		N/A	5 7	5 5	5 6	5.7	5 4
Decade 2		N/A	5 9	5 9	5 7	6.1	5 7
Decade 5		N/A	5.7	6.0	6 0	6 5	6 4
Primary Cavity Excavator Species	Percent of Potential Population	40	40	40	40	40	60
OLD GROWTH							
Old-Growth Indicator Species Pileated Woodpecker	Potential Pairs						
Each Decade		N/A	149	174	201	199	297
Old-Growth Indicator Species Pine Marten	Potential Pairs						
Each Decade		N/A	86	86	107	107	120
Three-Toed Woodpecker[15/]							
Decade 1		N/A	N/A	N/A	N/A	N/A	N/A
Decade 2		N/A	N/A	N/A	N/A	N/A	N/A
Decade 5		N/A	165	251	215	215	247
Acres of Old Growth Remaining After:	Acres						
Decade 1		228,352	247,320	248,976	252,384	251,583	267,189
Decade 2		N/A	181,758	185,952	192,216	191,577	226,591
Decade 5		N/A	90,509	104,661	121,042	121,042	178,761
UNDEVELOPED AREAS							
Unroaded Areas Assigned to Undeveloped Management	Acres	54,167	13,322	59,179	66,962	79,854	193,064

15/Due to a mountain pine beetle epidemic, very little lodgepole pine old growth will be available until the third decade.

TABLE II-5 (continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVES
(Alternatives are ranked in order from most to least land potentially suitable for timber production.)
(Average Annual Units Planned in First Decade, Projected in Subsequent Decades)

Average Annual Resource Output, Environmental Effect, Activity, or Cost	Unit of Measure	ALTERNATIVES NC No Change	B Mod	A No Action	F	I Preferred	C Mod
Unroaded Areas Assigned to Roaded Management Remaining Undeveloped After	Acres						
Decade 1		0	0	0	17,937	0	N/A[16/]
ACRES AVAILABLE FOR MINERAL EXPLORATION[17/]	Acres						
Each Decade		1,372,755	1,372,755	1,372,755	1,372,755	1,372,755	1,372,275
MINERAL OPERATING PLANS	Number Active/year						
Decade 1		92	92	92	92	92	83
Decade 2		105	105	105	105	105	94
Decade 5		130	130	130	130	130	116
ENERGY MINERALS PRODUCED	Billions of BTU's/Year						
Decade 1		187	187	185	184	184	177
Decade 2		928	940	928	923	923	892
Decade 5		1,875	1,900	1,875	1,866	1,866	1,802
NONENERGY MINERALS PRODUCED	Millions of Dollars						
Decade 1		13 0	13 0	13 0	13.0	13 0	12 8
Decade 2		39 6	39 6	39 6	39 6	39 6	38 0
Decade 5		86 5	86 5	86 5	86 5	86 5	83 4
FIRE MANAGEMENT EFFECTIVENESS INDEX	Dollars/ Thousand Protected						
Each Decade	Acres	1,344	1,344	1,344	1,344	1,344	1,344

16/Alt. C modified retains all presently unroaded areas in a roadless status
17/Includes land with mineral rights reserved by others

a. *Comparison of Past, Present, and Future Timber Outputs*

This section presents information for comparison of the No-Action Alternative (Alternative A) against timber management in the other alternatives and against historical timber management outputs represented in Alternative NC. The basis of the No Action Alternative is presented in the National Forest Management Act (NFMA) regulations (36 CFR 219 12(f)(7)) and is defined in the National Environmental Policy Act (NEPA) regulations (40 CFR 1502 14(d))

The No Action Alternative "shall reflect the current level of goods and services provided." For timber outputs, the current level is that identified as the potential yield in the 1979 Timber Resource Management Plan (TRMP). This alternative also shall reflect, "the most likely amount of goods and services expected to be provided in the future if current management continues " Current management comprises the land management direction in the South Fork, Silvies, and John Day Unit Plans and in the 1979 Timber Resource Management Plan. This direction is modified as a result of the 1984 Oregon Wilderness Act, the NFMA regulations, including compliance with Management Requirements (MRs) discussed earlier in this chapter, and the Omnibus Oregon Wild and Scenic Rivers Act of 1988 Within these modifications, the No Action Alternative was developed to maintain the current level of timber offered for sale

Recent levels of timber sold and harvested for the ten-year period 1980-1989 are shown in Table II-6 The potential yield of the 1979 Timber Resource Management Plan (Alternative NC, No Change) is modified only by the 1984 Oregon Wilderness Act in Table II-6. In addition, comparable information for each of the other alternatives is shown

As shown in Table II-6, the average amount of timber sold and harvested each year over the last decade is below both the potential yield and slightly below the programmed harvest of the 1979 Timber Resource Management Plan. During the early 1980's, the demand for timber locally was greatly reduced, due in part to high interest rates and a national recession Recent economic recovery of the timber industry has resulted in much higher average volumes harvested during the last two years of the decade Overall, the timber volume sold and harvested for the decade covered by the 1979 Timber Resource Management Plan will be below the potential yield projected in that plan In addition, Forest budget and staffing allocations have not been sufficient to prepare and offer timber sales at the levels called for in the 1979 Timber Resource Management Plan

The harvest level in recent years (1986 and 1988) has averaged 249.4 million board feet per year. This harvest level exceeds the programmed harvest but not the potential yield levels set in the 1979 Timber Resource Management Plan When the current inventory of sold volume under contract is depleted, the timber volume harvested is expected to equal timber volume sold

The differences between the current levels of timber cut, timber sold, potential yield, and future levels of production can be explained by looking at a number of different items Utilization standards will have changed between the 1979 Timber Resource Management Plan to the Forest Plan from 9-inch DBH with a 6-inch top to a 7-inch DBH with a 4-inch top for all managed stands This change in utilization standards has increased net wood fiber production computations by including more wood fiber on a per acre base.

The most important changes from the past plan have come in two areas, a new Forest timber inventory and re-evaluation of the forested land base A new Forest timber inventory was conducted in 1979-1980 and was based on an inplace mapping system which placed timbered stands into different categories based on broad species compositions (working groups) and by structural composition (management needs). The earlier inventory was based on a plot expansion system with fewer management needs identified The new system is considered to be more representative of actual forest land conditions. Significant changes have occurred because of the re-evaluation of the timbered land base. There has been a reduction of approximately 106,370 acres of tentatively suitable forested

lands for timber production under the current direction Categories in which there were significant changes were non-forest lands (juniper types from forested to non-forested), lands unsuitable for timber production (regeneration difficulty), and road and stream acres removed from the forested land base

There were also changes in the yield tables used to develop the allowable sale quantity New yield tables were developed using state-of-the-art methods and many different management scenarios specifically developed for the Malheur National Forest. Similar types of timber yield tables developed for the Forest Plan produced about the same harvest level as ones in the Timber Resource Management Plan The major change in yield table development for the Forest Plan was the development of a broader range of management scenarios for each timber stratification in the Forest Plan as compared to the limited number used in the Timber Resource Management Plan

There have been changes in Management Requirements since the release of the Unit Plans and the Timber Resource Management Plan These changes have not had a great effect on the No Action Alternative This is due to the fact that the Malheur's Unit Plans and Timber Resource Management Plan were developed in the late 1970's and they had already incorporated items such as water quality protection, riparian habitat requirements (SMU concept), old-growth needs of specific animals, harvest unit diversity, and visual quality objectives

Of all the changes discussed, the one that has had the greatest effect on the current and future allowable sale quantity and timber sale program quantity is the change in the tentatively suitable land base This change has reduced the forested land base on which timber can be produced In general, actual timber sale program quantity levels have not met the projected level in the Timber Resource Management Plan or the No Action Alternative for the Forest Plan The actual cut (harvest) level has been controlled by market conditions which have resulted in less material being demanded in five of the last ten years than the potential yield level established in the Timber Resource Management Plan The actual timber volume sold for the past ten years has been controlled by Forest Service budget allocations for timber production and has not met the potential yield level, but it has exceeded the timber sale program quantity for the first decade of the preferred alternative in fiscal years 1984, 1986, 1987, 1988, and 1989

TABLE II-6: Comparison - Past, Present, and Alternative Timber Outputs (Million Board Feet)

	1980-89 Average Annual Timber		NC (No Change)1/	
	Sold	Cut	Potential2/ Yield	Programmed Harvest
I Allowable Sale Quantity (ASQ)4/				
A Green	210 8	169 0	264 9	225 2
B Salvage	8 2	5 3	4 8	5 1
Total Allowable Sale Quantity	219 0	174 3	269 7	230 3
II Other Sawtimbers5/				
A Sawtimber from lands designated unsuitable for timber production6/				
1 Green	0	0	0	0
2 Salvage	0	0	0	0
Total Sawtimber Volume from Unsuitable Lands	0	0	0	0
B Dead sawtimber7/	0	0	0	0
Total Other Sawtimber	0	0	0	0
III Submerchantable Volumes From all Lands8/				
A Fuelwood	5 2	5 2	0	0
B Other (including cull)	4 1	9 2	0	0
Total Submerchantable Volume	9 3	13 4	0	0
Total Net Merchantable Sawtimber (I + II)	219 0	174 3	269 7	230 3
Total Nonchargeable (II + III)	9 3	13 4	0	0
IV Timber Sale Program Quantity (I + II + III B)	228 3	187 7	N/A	N/A

1/Conversion ratio used in the 1979 Timber Resource Management Plan was 6 713 board feet/cubic feet for sawtimber, and 5 board feet/cubic feet all other wood products, not comparable to other alternatives

2/The assumptions used in the existing Timber Management Plan to calculate potential yield differ from those used to calculate allowable sale quantity While potential yield represented a level that could be produced, allowable sale quantity represents a timber objective and program for achievement of planned levels However, potential yield and allowable sale quantity represent a ceiling on amount of chargeable timber volume that could be sold for a given decade In this context, the two terms are comparable

3/Conversion ratios used for planning alternatives were 5 72 board feet/cubic feet for sawtimber, 3 board feet/cubic feet all other wood products for first decade outputs All Alternatives have conversion ratios that vary over time, dependent upon size of harvestable material and utilization standards

4/The allowable sale quantity is composed of those volumes resulting from the yield projections of FORPLAN Allowable sale quantity is obtained from lands designated as suitable for timber production under NFMA standards, and meets utilization standards in the Regional Guide When sold, the volume is called "chargeable", and is used to determine achievement of planned allowable sale quantity goals

ALTERNATIVES				
A3/ (No Action)	B-Mod	C-Mod	F	I (Preferred)
220 6	252 0	146 0	233 7	200 0
0	0	0	0	0
220 6	252 0	146 0	233 7	200 0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
5 4	6 2	1 3	6 2	4 3
5 4	6 2	1 3	6 2	4 3
3 1	3 1	3 1	3 1	3 1
3 6	3 6	3 6	3 6	3 6
6 7	6 7	6 7	6 7	6 7
226 0	258 2	147 3	239 9	204 3
12 1	13 9	6 7	6 7	6 7
232 7	265 9	154 0	246 6	211 0

5/ Meets utilization standards in Regional Guide but is not considered "chargeable" against allowable sale quantity goals

6/ Volume is estimated from incidental volume of timber that will be sold from lands not designated for timber production

7/ Dead sawtimber from lands designated suitable for timber production but which were not included in yield tables

8/ Estimated timber volume that does not meet utilization standards in the Regional Guide but could be utilized for products other than sawtimber It is not considered "chargeable" against planned allowable sale quantity goals

9/ Timber sale program quantity includes allowable sale quantity for the first decade and estimated additional volume planned for sale during the first decade Timber sale program quantity includes personal use firewood here

Management of the timber resource differs in each alternative On lands suitable for timber production, the volume sold, the long-term growth potential, and the silvicultural activities vary by alternative. The amount of land suitable for timber production also varies substantially by alternative

Lands suitable for timber production are the base from which the allowable sale quantity (ASQ) is calculated. Timber resource inventory and management data are presented in Table II-7 The table and the accompanying narrative provide an understanding of how and why differences in timber related data occur and the interaction of timber management with other resource management as overall management goals vary from alternative to alternative

Suitable acres are displayed in column 1 of Table II-7. This information reflects the difference in land management between alternatives With the exception of acres which are not cost-efficient for timber production, the total suitable acres are a function of acres assigned to wilderness, roadless recreation, and old-growth stands. As old growth, roadless recreation, and/or wilderness acres increase, the number of suitable acres decreases Consequently, the alternative having the fewest acres in these categories will have the most suitable acres. Alternative B-Modified has the fewest acres assigned to management strategies precluding timber management, and thus the most suitable acres, with the exception of Alternative NC which uses the pre-1978 base for the determination of commercial forest (suitable) lands This trend is generally followed throughout all alternatives Alternative C-Modified has the most acres assigned to management strategies precluding timber management and, therefore, the fewest suitable acres

An exception to this trend occurs in Alternatives A and F where the combination of acres assigned to non-timber management strategies combined with acres of tentatively suitable land that is not cost-efficient have caused these two alternatives to change position in the ranking, with Alternative F having more suitable acres Most tentatively suitable acres that are not cost-efficient for timber production occur in visual management areas and low site potential lands in all alternatives . Alternative B-Modified has the least, where only 30,305 acres are cost-inefficient, they occur both in the Visual and in the General Forest management areas These cost-inefficient acres occur in the visual management areas due to the high extraction cost and the low value of tree species being harvested; i.e., low value species such as mixed conifer and lodgepole pine located on steep ground, with its high logging cost. How many acres become cost-inefficient (i e , managed under minimum level management) is dependent on the overall theme of the alternative and the total number of acres found in visual management areas Certain management constraints on outputs, such as cover for elk habitat, also may drive the assignment of cost-inefficient acres Alternative B-Modified, a high commodity alternative, has relatively few cost-inefficient visual management acres because there are relatively few visual management acres in the alternative, where Alternative C-Modified, an amenity alternative with a large number of timbered visual acres, has the most acres of tentatively suitable land which is not cost-efficient for timber production purposes. Alternative B-Modified also approximates the Resource Planning Act Alternative and minimum timber harvest levels are set each decade to meet Resource Planning Act goals The FORPLAN model uses all but 30,305 acres of the tentatively suitable land base to reach these goals This is the primary reason why there are so few tentatively suitable acres managed under minimum level management in the alternative

TABLE II-7

Timber Resource Management Information by Benchmark

Benchmark or Alternative1/	Suitable Lands M Ac	Inventory Vol/Ac Begin 1980 MMCF	Inventory Vol/Ac 1980 CF	Inventory Vol/Ac End 2130 MMCF	First Decade Average Annual ASQ MMCF	% of Col (2)	First Decade Average Annual ASQ MMBF	LTSYC MMCF	% of Col (4)	Decade Met	Average Annual Net Growth Cu Ft /acre Present	2030	MMCF 2030	% of Col(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(13 1)
Benchmarks														
Max Tbr BM 1	1044 86	1879 35	1798 66	2153 16	54 82	2 9	313 57	63 95	3 0	15	21 09	55 96	58 47	91 4
Max PNV BM 3	1041 55	1874 41	1799 64	2038 13	53 26	2 8	304 64	59 39	3 0	10	21 09	41 57	43 27	72 9
Max PNV with MR's BM7	996 08	1771 74	1787 69	2062 95	47 72	2 7	272 95	57 23	2 8	13	21 09	47 68	47 49	83 0

Timber Resource Management Information by Alternative

Benchmark or Alternative1/	Suitable Lands M Ac	Inventory Vol/Ac Begin 1980 MMCF	Inventory Vol/Ac 1980 CF	Inventory Vol/Ac End 2130 MMCF	First Decade Average Annual ASQ MMCF	% of Col (2)	First Decade Average Annual ASQ MMBF	LTSYC MMCF	% of Col (4)	Decade Met	Average Annual Net Growth Cu Ft /acre Present	2040	MMCF 2035	% of Col(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(13 1)
Alternatives														
NC (No Change)	1116 58	2497 13	2236 41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 91	N/A	N/A	N/A
B-Modified	956 78	1815 49	1897 46	2009 83	44 00	2 4	252 00	50 61	2 3	13	21 09	41 47	39 68	78 4
F	919 75	1747 27	1899 83	1912 31	40 90	2 3	233 70	47 03	2 3	12	21 09	38 57	35 47	75 4
A (No Action)	898 42	1711 55	1905 11	1882 83	38 60	2 2	220 60	45 33	2 3	12	21 09	36 84	33 10	73 0
I (Preferred)	835 97	1541 88	1844 35	1504 33	34 80	2 2	200 00	40 73	2 4	12	21 09	39 13	32 71	80 3
C-Modified	770 39	1392 66	1807 71	1610 41	25 50	1 8	146 00	27 95	1 3	14	21 09	37 97	29 25	104 6

1/ Tentatively suitable lands for all alternatives except NC are 1,039,868 acres

Timber Resource Management Information by Benchmark and Alternative

Benchmark or Alternative	Area and Percent of Suitable Land by Yield Level: Full Yield M Ac	Full Yield % of Col (1)	50-90% Yield M Ac	50-90% Yield % of Col (1)	Under 50% Yield M Ac	Under 50% Yield % of Col (1)	Harvest Methods: Comm Thin M Ac	Clearcut M Ac	OSR Existing Stands M Ac	Shelterwood Seed Tree M Ac	2/ Selection M Ac	Harvest Total % of Col (1)	Regen Hvst Total % of 3/ Col (1)
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(21 5)	(22)	(23)	(23 5)	(24)
Benchmark													
Max Tbr BM 1	1,044 8	100 0	0	0	0	0	0	52 8	295 6	25 7	21 2	37 8	8 0
Max PNV BM 3	1,041 6	100 0	0	0	0	0	0	1 9	341 6	49 0	12 1	38 8	5 2
Max PNV with MR's BM7	949 1	95 3	47 0	4 7	0	0	0	30 1	222 8	51 4	24 3	33 0	9 2
Alternatives													
NC (No Change)	655 8	58 7	460 8	41 3	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A
B-Modified	867 0	90 6	39 7	4 1	50 1	5 2	103 0	43 2	104 5	71 6	40 5	37 9	10 1
F	811 9	88 3	36 1	3 9	71 7	7 8	81 4	27 5	96 0	92 0	57 8	38 6	9 2
A (No Action)	769 1	85 6	34 4	3 8	94 9	10 6	75 0	27 5	85 6	89 3	57 4	37 3	8 8
I (Preferred)	468 7	55 9	322 9	38 6	44 5	5 3	67 8	33 3	63 0	50 8	64 2	33 4	9 5
C-Modified	265 2	34 4	414 9	53 8	90 2	11 7	38 4	21 9	58 2	37 4	50 1	26 7	8 1

2/ One forth of these acres are considered regeneration in the first decade

3/ Combines clearcut, shelterwood regeneration, and 25% of selection harvest acres

Inventory information (columns 2, 3, and 4) vary by the number of suitable acres available, the species present, and in the case of the ending inventory values (column 4), the management intensities being followed The beginning inventories are the direct result of the amount of suitable acres and tree species present, i e., those alternatives that have a higher proportion of their acre base in mixed conifer species, with its higher volume per acre, will have a higher starting inventory then those alternatives that have a higher proportion of ponderosa pine, with a low volume per acre, in its acre base.

This same principle also applies to per-acre-cubic-foot volume of any given alternative. The ending inventory volumes are dependent on (1) suitable acres, (2) the ending age-class distribution, i e , a lot of acres in large old-growth ponderosa pine as in Alternative C-Modified results in higher ending inventory, (3) the species mix, i e., more acres of ponderosa pine as in Alternatives C-Modified, and I, and (4) the management options prescribed, i e., intensive timber management to produce wood fiber as in Alternatives B-Modified, F, and I; or prescriptions to produce large diameter ponderosa pine on available acres as in Alternative C-Modified

Most alternatives produced an ending inventory volume in the year 2130 that is larger than their beginning inventory in 1980, and all are higher than in 1990. Any lower ending inventory would be related to timber growth and harvest patterns that are tied to timber management intensities Alternative C-Modified has relatively lower ending inventories because of the change from mixed conifer species on many acres to ponderosa pine, but relatively higher volumes per acre than other alternatives because the volumes remaining in the residual trees are grown to produce larger diameter ponderosa pine Beginning inventory and cubic volumes per acre for Alternative NC were developed using a different suitable land base and the 1970 Forest inventory information Since then there have been adjustments in forested land acres and sampling methods used to determine standing volume and species present Alternative A gives an accurate picture of these inventory changes, with the updates for forested acres and species present made. Because of the differences in these items, Alternative NC has the highest values for any alternative or benchmark. For this alternative, inventory information was based on the 1970 Forest timber inventory and is not considered as reliable as contemporary inventory information

First decade allowable sale quantity (displayed in columns 5, 6, and 7) reflects the management intensity chosen and the number of suitable acres available Timber management in the first decade (1990-1999) includes a full range of timber prescriptions to produce the desired timber products Those alternatives that do not produce a specialty product (e g., large diameter ponderosa pine in Alternative C-Modified, or uneven-aged management regimes in Alternative I) rely on timber prescriptions that remove the existing overstory and then manage the majority of stand understories to produce future harvestable volume. Most timber harvests occurring over the forest in the past 10 years were similar to this management scenario

Alternative B-Modified has predetermined first decade minimum allowable sale quantity levels based on the Forest's Resource Planning Act timber goal for the first decade Alternative A had a budget constraint applied proportionally to the timber management program in the first decade to reflect current budget levels This budget constraint causes the first decade allowable sale quantity to be lower than expected in Alternative A. The management goals of Alternatives C-Modified, and I reduce the first decade allowable sale quantity. Here the theme of the alternative provides for growing more ponderosa pine and/or large diameter ponderosa pine on as many acres as possible or meeting other resource objectives. This, combined with the nondeclining flow constraint, keeps the harvest volume down in the first decade Alternative F has a first decade allowable sale quantity level that represents the volume that could be produced while meeting the objectives of growing the species that has the greatest fiber growth potential Alternative NC produces the highest allowable sale quantity (Potential Yield in MMBF) of all the alternatives Again, this alternative is based on a different suitable land base, timber yield tables, and computer model

Long-term sustained yield capacity (columns 8-10) is determined by suitable acres and timber management intensities in each alternative Alternatives B-Modified, F, and A with a large number of suitable acres and a large number of acres assigned to full-yield prescriptions (see columns 14 and 15), have the higher levels of long-term sustained yield capacity The lower long-term sustained yield capacities are found in those alternatives which have fewer acres assigned to full yield timber prescription, Alternatives C-Modified, and I Alternative C-Modified has more acres assigned to ponderosa pine production and is designed to produce 26-inch diameter or larger ponderosa pine trees over a longer rotation. Ponderosa pine stands do not have the potential to produce fiber volume as quickly as mixed conifer species on a per acre basis Although this will result in stands that are more resistant to insects and diseases, this causes a reduction in growth potential. Alternative C-Modified also has the lowest number of suitable timbered acres. This combination gives this alternative the lowest long-term sustained yield capacity of all the alternatives

The allowable sale quantity in all alternatives equals the alternative long-term sustained yield capacity volume between the 12th and 14th decades, with the majority (Alternatives A, F, and I) reaching this level by the 12th decade Management of existing understories has the effect of postponing future regenerated stand management for at least three decades, thus delaying the point when the allowable sale quantity equals the long-term sustained yield capacity of the alternative until the 12th decade Management of the majority of the existing understories does produce a higher first decade allowable sale quantity in these alternatives The theme of Alternative B-Modified has the same effect, but the allowable sale quantity equals long-term sustained yield capacity one decade later The point where allowable sale quantity and long-term sustained yield capacity are equal in Alternative C-Modified, does not occur until the 14th decade This alternative is designed to produce large diameter ponderosa pine trees Because of this, the overall conversion to future managed stands takes longer and more volume is maintained in standing inventory Alternative NC did not have a long-term sustained yield capacity when it was developed in 1979 The long-term sustained yield capacity for Alternative A would be representative of NC if the land base and computer modeling assumptions were the same for Alternative NC

There has been an upward trend in growth since the first Forest inventory was taken in 1956-1958 At that time the annual board foot/acre/year growth was 89 3 board feet (18 6 cubic foot/acre/year) in sawtimber The most recent Forest inventory (1979) showed an increase in average growth rate to 130 1 board feet/acre/year (20 8 cubic foot/acre/year) in sawtimber material The growth rate (columns 11-13 1) of all the computer simulation runs for benchmarks and alternatives continue this upward trend By the 5th decade, growth is anticipated to have increased over current levels The highest growth levels occur in those alternatives (A, B-Modified, and F) that have the largest number of acres assigned to full-yield timber intensities and a high number of mixed conifer acres The lower growth rates occur in those alternatives that have fewer acres sent to full-yield timber intensities and produce large-diameter ponderosa pine (Alternative C-Modified) and/or ponderosa pine on mixed conifer acres (Alternative I) All alternatives, by the 5th decade, produce net growth which is at least 80 percent of the long-term sustained yield capacity and in Alternative C-Modified it exceeds long-term sustained yield capacity by about 15 percent Growth meets or exceeds long-term sustained yield capacity in Alternatives A, B-Modified, F, and I in the 9th, 10th, or 11th decades Growth meets or exceeds long-term sustained yield capacity in Alternative C-Modified in the 5th decade No information is available on Alternative NC for growth or long-term sustained yield capacity A more current estimate of when growth equals long-term sustained yield capacity could be derived from Alternative A if the current land base and modeling system were the same

When growth equals long-term sustained yield capacity is a result of the timber management activities that have occurred (i e , full yield timber intensities, amount of mixed conifer or ponderosa pine acres present, acres of suitable land) up to that point and what

the long-term sustained yield capacity of the alternative is The alternative that has the lowest long-term sustained yield capacity (Alternative C-Modified) has growth equaling long-term sustained yield capacity the earliest. Alternative I, with higher long-term sustained yield capacity and ponderosa pine emphasis management goals, takes longer for the management prescription to produce growth that is equal to long-term sustained yield capacity In all of the alternatives except Alternative B-Modified, growth usually fluctuates at or below that level in at least one or more of the remaining decades once long-term sustained yield is met The main reasons for this fluctuation are: (1) the objective of the alternative, and (2) how the FORPLAN model selects and schedules timber management prescription (full-yield vs. less-than-full yield) to meet the objectives of the alternative This selection/scheduling has the effect of determining what the growth will be at any given time

The area of suitable acres by different levels of timber yields can be found in columns 14-19. Those alternatives that have high numbers of acres going to full-yield prescriptions (Alternatives B-Modified, F, and A) produce a higher first decade allowable sale quantity, higher long-term sustained yield capacity, and higher growth Those alternatives that have the majority of their acres assigned to less than full-yield prescriptions (Alternatives C-Modified, and I) have a lower first decade allowable sale quantity and long-term sustained yield capacity This is clear when allowable sale quantity and long-term sustained yield capacity are compared with acres sent to full-yield prescriptions Alternative NC uses a ranking system based on the 1979 Timber Resource Plan of standard (full yield), special, and marginal (50–90 percent of full yield), in addition to using a different land base and computer model to determine volumes. A close representation of what this alternative would produce if updated to current standards can be found in Alternative A

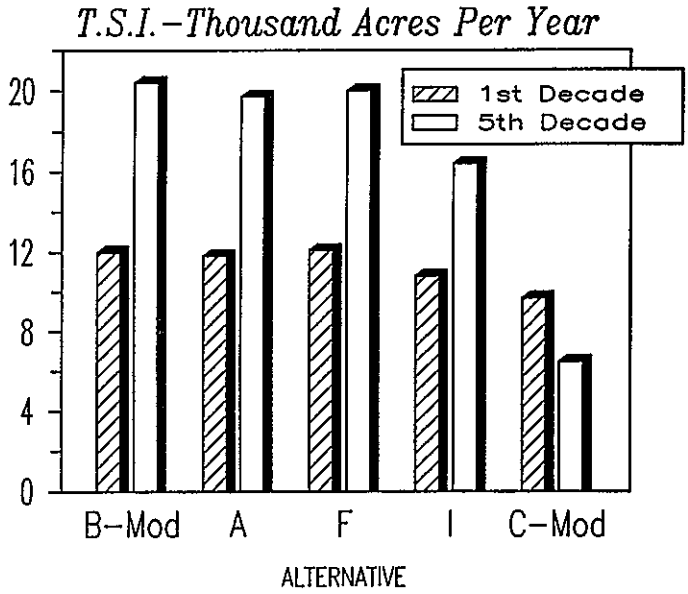
Acres by harvest methods can be found in columns 20–23 Those alternatives that have higher harvest levels (Alternatives A, B-Modified, and F) have more flexibility in developing a harvest schedule to produce a base sale schedule (BSS) from the more productive lands first using full-yield timber intensities (columns 14–19). Those alternatives that have higher levels of wilderness and roadless management and/or more special resource objectives (i e , visual, riparian management, large diameter ponderosa pine, and as many acres of ponderosa pine as possible) usually have a reduced flexibility in meeting a base sale schedule (Alternatives C-Modified and I) They also harvest less productive sites and/or use less-intensive timber prescriptions to meet harvest levels Based upon area harvested, it would take from 29 to 37 years to cut over the Forest's suitable land base at the rates established by the first decade harvest level The majority of the alternatives (A, B-Modified, F, and I) would require 29 to 32 years, depending upon actual volumes realized during timber harvest implementation The actual transition of the Forest from existing stands to managed stands would require 100 to 130 years based on FORPLAN runs The majority of the alternatives (B-Modified, F, and I) require 100 to 110 years Alternative NC does not supply this information, but a close approximation would be Alternative A if the NC Alternative was updated to current standards

A pattern as to how fast the suitable land base in a given alternative is entered is determined by the amount of overstory removals occurring in existing stands and the regeneration harvest level The more overstory removals in an alternative, the quicker the suitable land base is cut over (column 20 5) Conversely, the more regeneration harvest and less overstory removal acres in an alternative, the slower the suitable land base is cut over Regeneration harvest levels tend to have the effect of reducing the rapidity of harvest entries on the suitable land base of the Malheur National Forest.

Timber stand improvement consists primarily of precommercial thinning. For the first three decades, most of the thinning occurs immediately following an overstory removal (estimated at 60 percent of the stands) or initiation of uneven-aged management Starting in the fourth decade, thinning occurs primarily in newly regenerated stands This

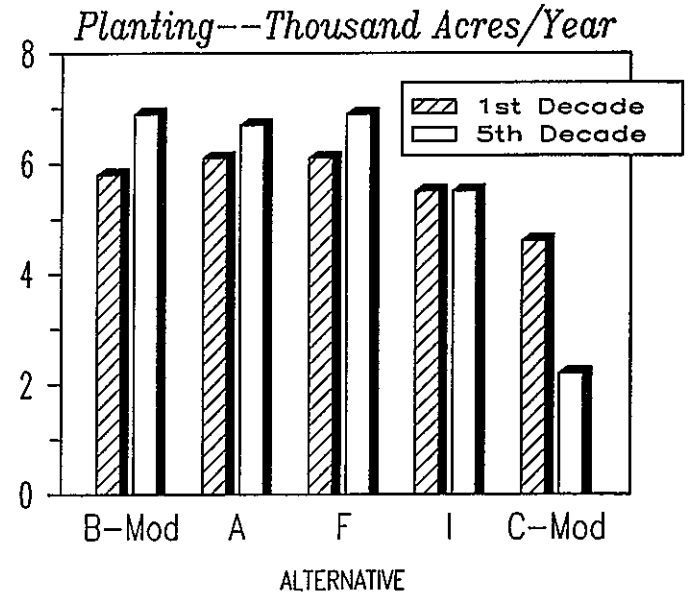
variation over time is shown in Figure II-34, as is the variation between alternatives. Information for the fifth decade for Alternative NC is not available.

FIGURE II-34: Timber Stand Improvement Acres by Alternative



Tree planting is expected to occur as a result of clearcutting mixed conifer stands and also shelterwood harvesting on slopes over 35 percent Figure II-35 displays the acres of reforestation planting by alternative Information for Alternative NC is not available

FIGURE II-35: Reforestation Planting by Alternative



Fuelwood (biomass) supply potential will vary with changes in harvest methods over the first five decades in all alternatives and will vary with changes in emphasis for leaving woody material on the site Regeneration harvest methods generally provide more fuelwood potential than partial-cut harvest methods

The species mix and size of material being provided will not remain constant over time in any of the alternatives. This material will include moderate and small diameters as harvests progress across the forest. Potential ponderosa pine harvest volume available will differ slightly by alternative, but will average slightly less than 50 percent for the first decade, decreasing to about 30 to 35 percent by the end of the third decade After the second decade the size of material provided will decrease, and the species mix will shift to approximately 65 percent mixed conifer species This change coincides with an increased emphasis on regeneration harvests used to manage released understories In Alternative C-Modified, a variety of sizes of harvestable material will be provided as the forest is managed to produce large diameter ponderosa pine. Species mix will vary between 25 and 50 percent ponderosa pine for the first few decades. In the third decade, ponderosa pine volume is expected to be reduced to 25 percent in this alternative In all alternatives, access to firewood will be available on the acres accessed for timber management activities

Firewood supplies are expected to increase over the first two decades in all alternatives Large diameter trees will become less available by the end of the second to the middle of the third decade in most alternatives due to a combination of timber management activities and wildlife snag requirement levels Timber management activities will have removed many large diameter trees or the remaining trees will be left to meet snag requirements During the third decade material will be smaller and woodcutters will become more dependent on logging slash as a source of firewood. Lodgepole pine is expected to cease to be a major firewood source by the end of the first decade due to the recent recovery efforts following heavy mortality as a result of the mountain pine beetle infestation

The supply of fuelwood for domestic use will vary in a fashion similar to that for industrial use, except that domestic users will not be limited to harvest units as potential fuelwood sources

Woodcutters will find some restrictions due to snag protection and, in specific instances, decreased access to certain roads for resource management objectives They will have to travel greater distances to find plentiful sources of firewood, but overall accessibility should remain good due to the existing density of roads throughout the forest.

Higher quality fuelwood will be provided in Alternative C-Modified because the forest will be managed to produce large diameter ponderosa pine trees. This will cause existing and future stands to be managed using longer rotations, resulting in larger trees. Woodcutters will be less dependent on logging slash than in other alternatives Access to wood will not be as good as in other alternatives as fewer roads will be maintained for timber hauling due to lower harvest levels Woodcutters will have to travel greater distances to find sources of firewood

Management for higher wildlife snag levels may result in increased restrictions on woodcutting in Alternative C-Modified.

No estimate for fuelwood (biomass) or personal use firewood supply potential for Alternative NC is available due to the lack of information about this alternative.

b. *Range - Alternative Comparisons*

Livestock grazing capacity is the number of animal-unit-months that are permitted to graze on the Forest while maintaining plant vigor and growth and providing for other resources such as watershed stability, enhanced water quality, wildlife habitat, etc Most of the livestock grazing capacity on the Forest is provided on non-forested lands Variations in livestock grazing capacity are related to the amount of transitory range provided through timber harvest and the method of management used to provide for improvement of riparian areas in less than satisfactory forage condition.

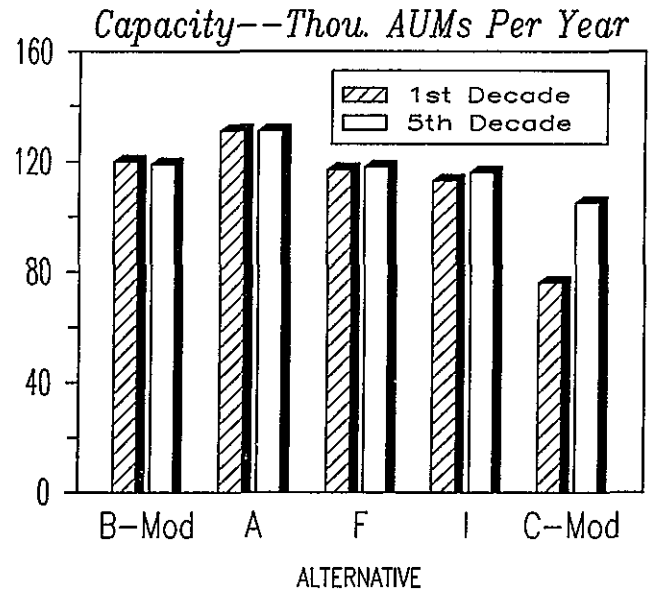
At this time local ranching operations receive over 50 percent of their cattle operations' feed supply from rangelands. Actual use of National Forest forage by livestock is currently 109 thousand animal unit months (fiscal year 1985 actual use), permitted use for that same year was 117 thousand animal unit months

Nationally, the demand for red meat has decreased for several years However, Forest demand for grazing land for cattle exceeds the current resource supply despite the fact that some permittees have recently elected to take nonuse rather than utilize the available forage (This source of forage, when made available to other permittees, was applied for immediately) Demand for grazing land is expected to remain constant or possibly increase because. 1) range forage is priced below concentrates, hay and privately owned rangeland, and 2) the appraised fair market rental value of grazing on public rangelands is below the overall private land lease rate Constant or increased demand for forage on the Forest is further evidenced by the fact that each year a number of requests for grazing permits are received, but permits are rarely available

Alternative A has the highest level of first decade capability for livestock grazing among the alternatives, followed by Alternatives NC, B-Modified, F, I, and C-Modified (see Figure II-41) Therefore, since Alternative A has the highest capacity for livestock grazing, it also has the highest capability to meet potential increased future demand Alternatives A and NC result in an increase above currently permitted levels and will provide increased capacity for potential increased livestock grazing demand Grazing capacity in the fifth decade is not available for Alternative NC The remaining alternatives would require a slight reduction in permitted levels over the planning period, as displayed in Figure II-41, except for Alternative C-Modified, which requires a large reduction

All alternatives, except for Alternative NC provide 1,351,275 acres available for livestock grazing within allotments The acres which are not suitable for livestock grazing occur in the Strawberry Mountain Wilderness Acres for Alternative NC are not available.

FIGURE II-36: Grazing Capacity by Alternative



c. *Wildlife - Alternative Comparisons*

Habitat for big-game provided by the Forest is determined by cover quality, size, and spacing, forage quantity and quality and by the amount of road traffic. As can be seen in Figure II-37, winter ranges can provide habitat for only a fraction of the summer elk populations Big-game populations are reduced each year by hunters (shown as wildlife user-days in Figure II-38), predation, and other natural causes Game animals are managed by the Oregon Department of Fish and Wildlife

FIGURE II-37: Potential Rocky Mountain Elk Populations

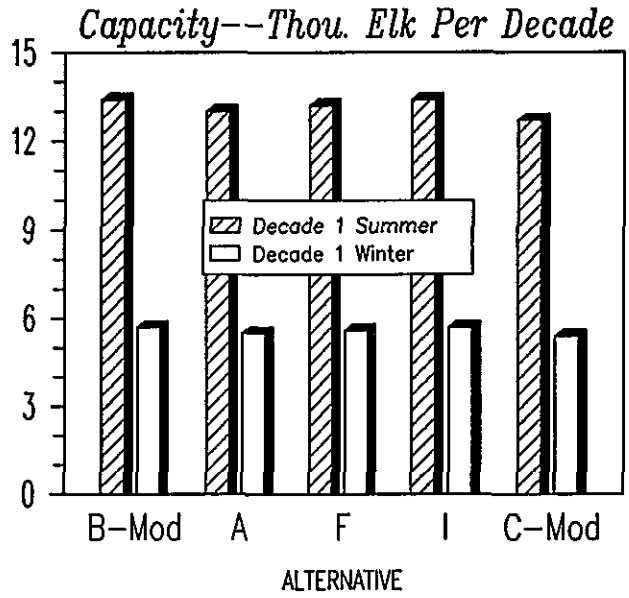
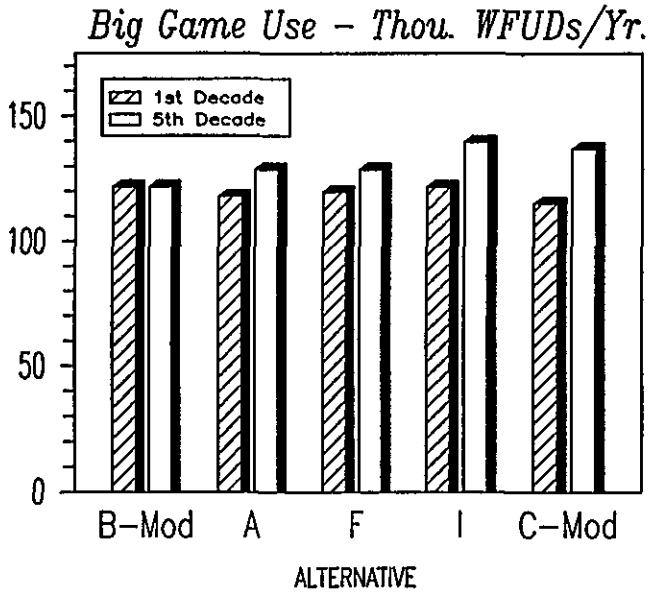


FIGURE II-38: Big-Game Use (Wildlife User-Days) By Alternative



Old growth is monitored through the use of indicator species that are dependent on the habitat for survival The capacity for potential pairs of two indicator species, pine marten and pileated woodpecker, are shown in Figure II-39 Data for Alternative NC are not available. Alternative C-Modified maintains more old growth than any other alternative, as shown in Figure II-40. All alternatives are expected to retain sufficient old growth to maintain viable populations of old-growth dependent species The amount of old growth remaining over time by alternative is shown in Figure II-41

FIGURE II-39: Potential Pairs of Indicator Species for Old Growth by Alternative

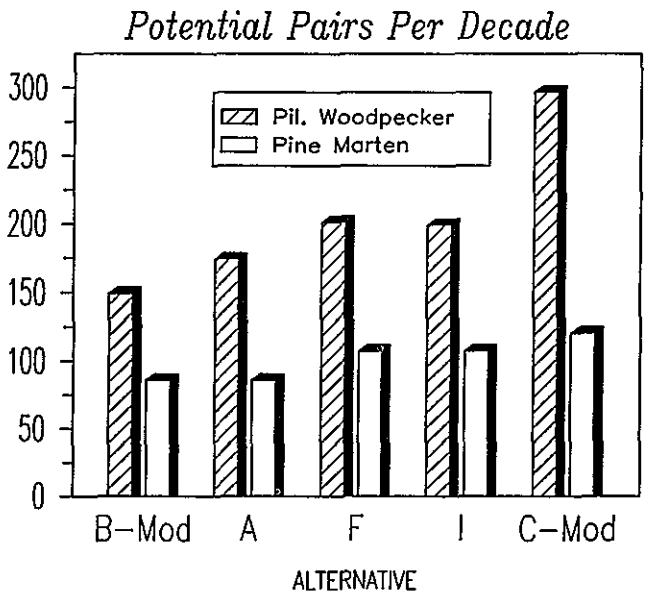


FIGURE II-40: Total Acres of Old Growth by Alternative

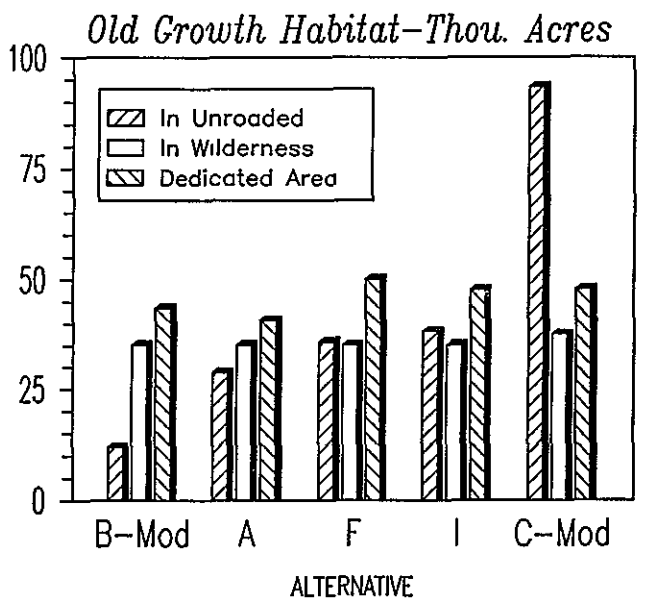
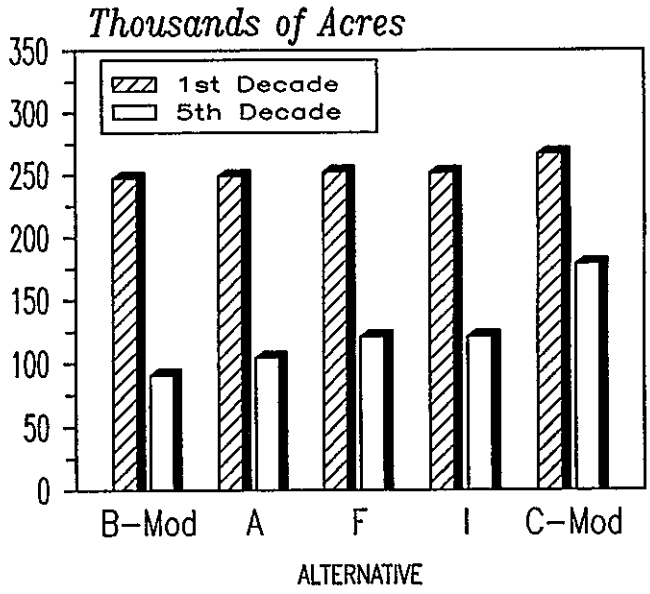


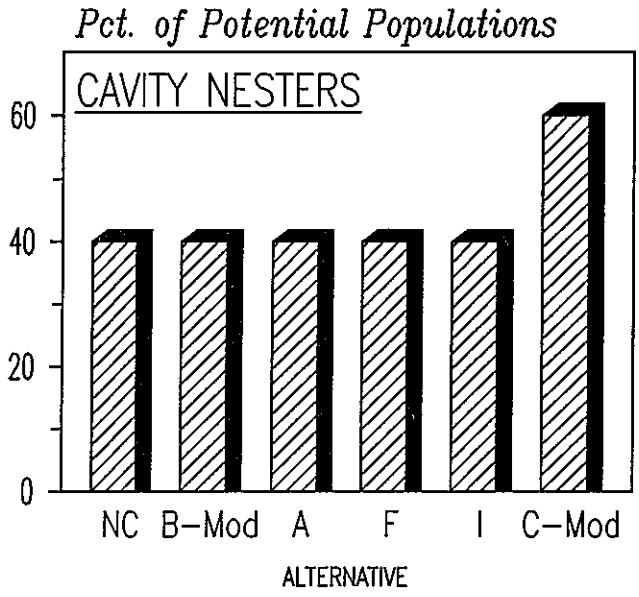
FIGURE II-41: Acres of Old Growth Remaining Over Time by Alternative



Primary cavity-nesting species population capacities will be managed consistent with the theme of each alternative, with minimum thresholds established by management requirement and regional objective As shown in Figure II-42, Alternatives B-Modified and F provide the lowest capacity at 40 percent of potential populations The Management Requirement (MR) level established 20 percent of potential populations for these species However, Forest Service Manual 2630 3 requires that this minimum standard for all alternatives be raised to 40 percent. Alternative C-Modified provides for the greatest potential populations across the Forest at 60 percent of potential. Alternative I provides for 40 percent of potential populations in most scheduled timber lands and 60 percent within riparian zones, thus providing for slightly above 40 percent population Forest-wide Alternatives A and NC provide snags to support 60 percent of the potential population in wildlife emphasis areas and 20 percent in all other areas of the Forest (40 percent in Alternative A), to meet an overall objective of 40 percent of potential populations Forest-wide Alternatives B-Modified, C-Modified, and F support 80 percent of potential populations in riparian areas and 50 percent within 600 feet of riparian areas.

Changes in habitat for non-anadromous fish management indicator species (bull trout, cutthroat trout and rainbow/redband trout) have not been modeled quantitatively Habitat condition would be closely related to changes in riparian vegetation condition Additional habitat improvement would be achieved with fish habitat improvement projects, especially in alternatives C-modified and I Thus, the improvement in habitat condition for these species would be greatest in Alternative C-modified , followed by alternatives I, F, B-modified and A

FIGURE II-42: Potential Populations of Cavity-Nesting Species by Alternative



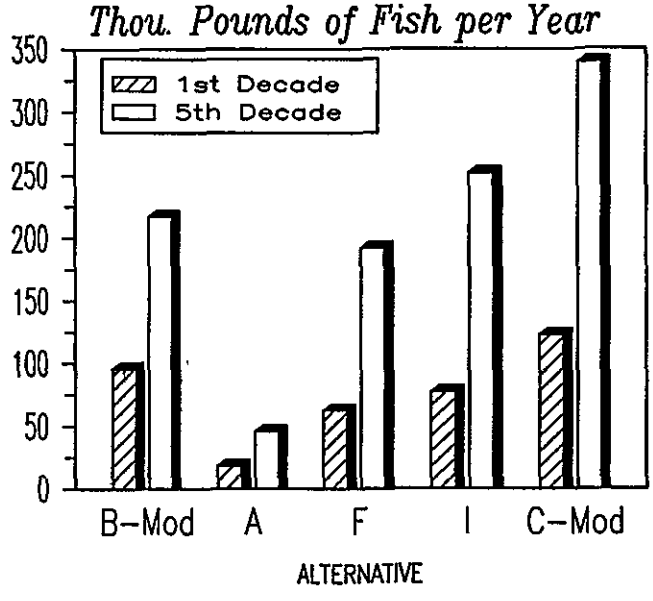
d *Fish - Alternative Comparisons*

Anadromous fish (spring Chinook salmon and summer steelhead trout) habitat capability was calculated outside FORPLAN The process for estimating anadromous fish outputs was revised between the Draft and the Final Environmental Impact Statement. In the Draft, including the Benchmark analyses, estimates were based on actual spawning ground counts of steelhead and Chinook in the John Day River and tributaries In response to Regional direction, other agency and organization comments on the Draft EIS, and to provide for more consistency among other National Forests, estimates for the Final Environmental Impact Statement were based on U S vs Oregon coefficients for rearing capacity The estimated Forest totals for current habitat capability, expressed as smolt habitat capability index (SHCI) are 30,470 Chinook and 115,700 steelhead

Changes from the existing condition were calculated for each alternative, based on expected changes in riparian vegetation condition and channel morphology, due to changes in livestock management and timber harvest prescriptions in riparian areas, and on the level of investment for structural watershed and fish habitat improvement The process paper showing this determination (Gritz 1990) is included in the Forest planning documents and is summarized in Appendix B

Increases in habitat capability due to riparian recovery and structural treatment are considered to be additive Changes in riparian condition due to riparian area management account for the largest part of the estimated increases in habitat capability, especially in those alternatives with higher anadromous fish outputs in the later decades

FIGURE II-43 Anadromous Fish Habitat Improvement by Alternative



Potential production of Chinook salmon and steelhead by alternative are displayed in Figures II-44 and II-45, respectively.

FIGURE II-44: Potential Chinook Salmon Production by Alternative

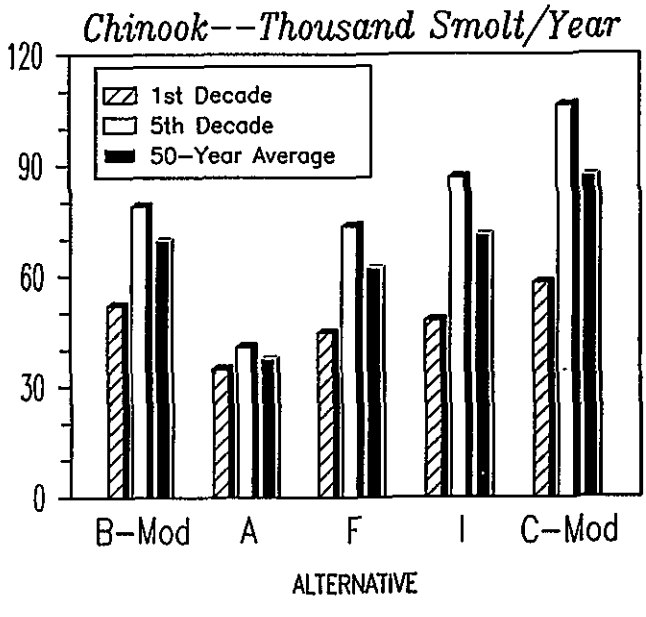
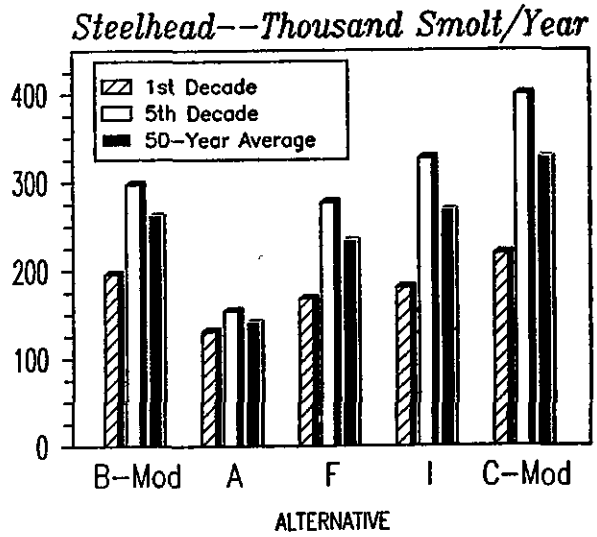


FIGURE II-45: Potential Steelhead Production by Alternative
(Thousand Smolt)

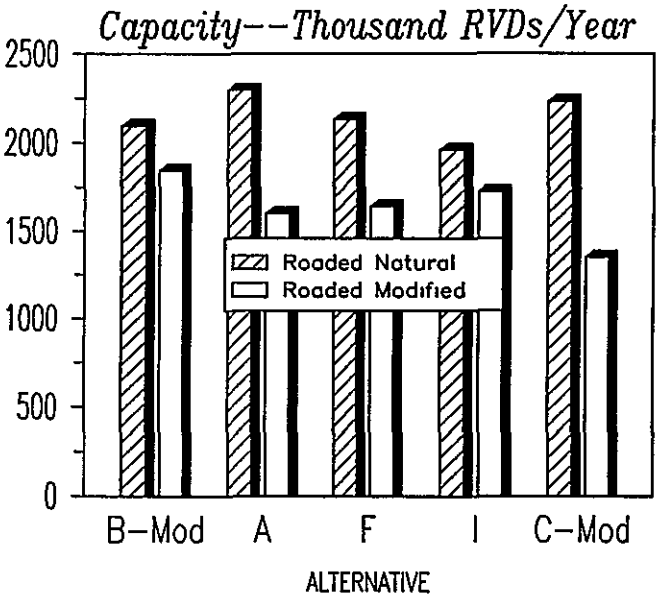


e *Recreation - Alternative Comparisons*

Alternative NC would provide for managing all 25 of the existing developed sites as developed sites. Alternative I proposes to manage 20 of the existing sites as developed sites, providing a range of services, while managing the remaining sites as dispersed sites This alternative would also add an additional 40 unit campground which would focus on the needs of recreational vehicle users and bicyclists by providing hookups and showers. This facility is not proposed to meet an overall increase in recreation demand, but to meet a particular need that is already in existence on the Forest The remaining alternatives would manage 11 of the existing sites as developed facilities and 14 sites as dispersed camp facilities

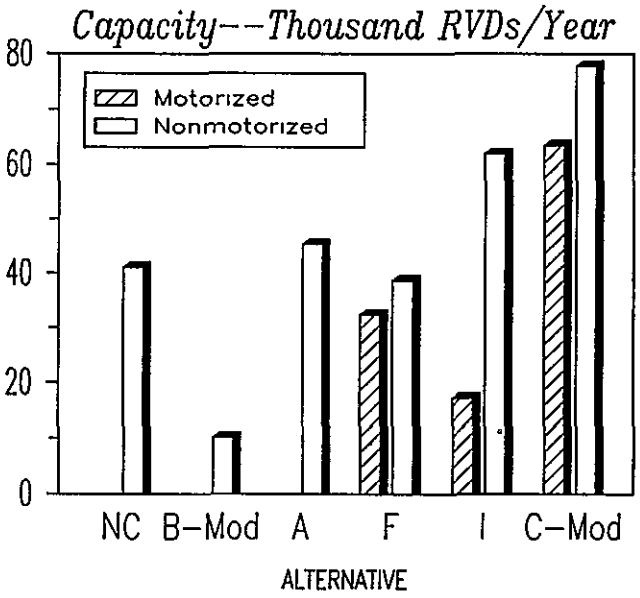
Nonwilderness dispersed recreation use capacity varies with the timber management emphasis and land management strategies of each alternative The alternatives which access and harvest the most timber will provide the most roaded recreation opportunity (See Figure II-46)

FIGURE II-46: First Decade Roaded Recreation Opportunity by Alternative



The amount of semiprimitive recreation provided by each alternative varies according to the theme of each alternative Generally, commodity-oriented alternatives provide fewer acres of semiprimitive recreation opportunity. The only alternative with more acres remaining undeveloped is Alternative C-Modified, which retains all of the inventoried unroaded acres. The recreation visitor day (RVD) capacity of each alternative (displayed in Figure II-47) is a function of these roadless area acreages A data set for Alternative NC is not available

FIGURE II-47: First Decade Semi-Primitive Recreation Opportunity



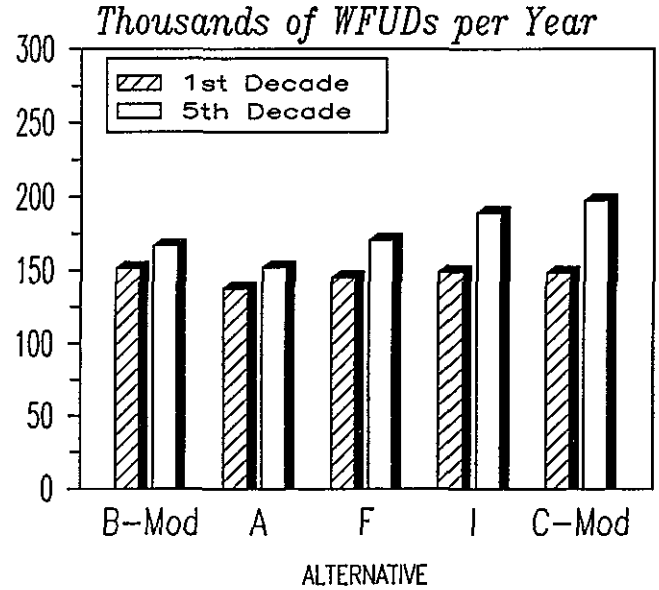
f *Wildlife-Related Recreation - Alternative Comparisons*

Hunting and fishing opportunities are managed through game species and fish habitat management, which includes regulation of these activities by permit and by controlling access The amount and quality of habitat affects potential populations of game and fish When populations are higher, opportunities for hunting and fishing are greater The amount of habitat varies by alternative, thus, opportunities for fishing and hunting will vary

Fluctuations in Wildlife-Fish-User-Days (WFUDs) are influenced by the acres of timber harvested per decade under the various alternatives The spacing and quality of adequate cover, along with the density of roads related to timber harvesting, will also affect the habitat requirements for big game This results in a difference in number of hunter days (WFUDs) attributable to big-game hunting (Refer to discussion of Habitat Effectiveness Index in Appendix B) Because no set of data is available for the number of WFUDs attributable to nonconsumptive use of wildlife on the Malheur, nonconsumptive WFUDs are estimated to be equal to the number generated by hunting This assumed relationship may not be correct, in a given alternative, WFUDs attributable to nonconsumptive use may fluctuate disproportionately to those generated by hunting Also, the number of big-game animals available for harvest may not directly correlate to the number of days hunters spend in the field

In relation to the present situation, all alternatives are expected to show a less than 10 percent change in WFUDs capacity per decade during the first 50 years of the planning period (Figure II-48) Increases in WFUDs are projected between the first and fifth decades for Alternatives C-Modified and I, primarily due to a greater emphasis being placed on access management which will affect open road densities Additionally, Alternative C-Modified is expected to create slightly more WFUDs due to higher quality wildlife habitat and greater potential for adequate spacing of cover, both marginal and satisfactory

FIGURE II-48: Average Annual Wildlife-and-Fish-User-Day Capacity

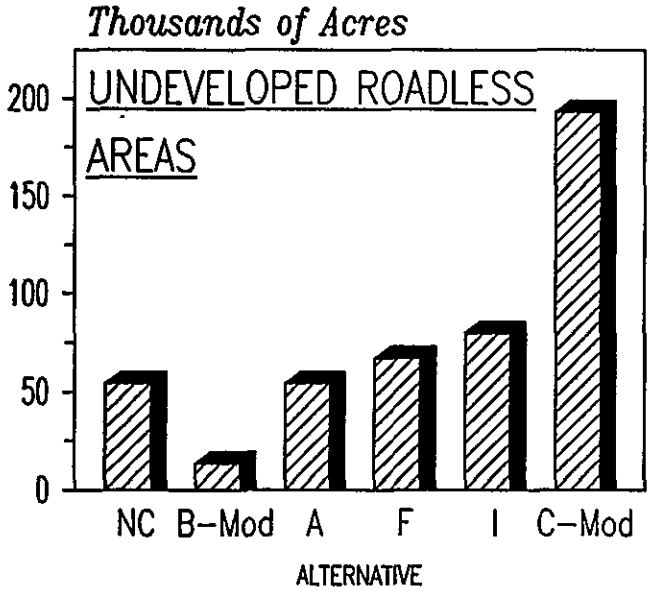


As stated above, in order to meet herd management objectives, most of the game management units on the Forest are regulated by permit. Therefore, even though the capacity may exceed demand for the first two decades, demand for big-game WFUDs may not be met in order to meet other management objectives through regulation by permit. In addition, due to population growth anticipated for the state of Oregon, demand is expected to exceed WFUD capacity by the fifth decade in all alternatives

g. *Roadless Areas - Alternative Comparisons*

The number of acres retained under a nondevelopment management strategy by alternative is shown in Figure II-49. Alternative C-Modified retains 100 percent of the currently available unroaded acres. Alternative I, 44 percent; Alternative F, 37 percent; Alternative A, 33 percent; and Alternative B-Modified, 7 percent

FIGURE II-49: Non-Wilderness Acres Retained Under a Nondevelopment Management Strategy by Alternative



h *Wilderness - Alternative Comparisons*

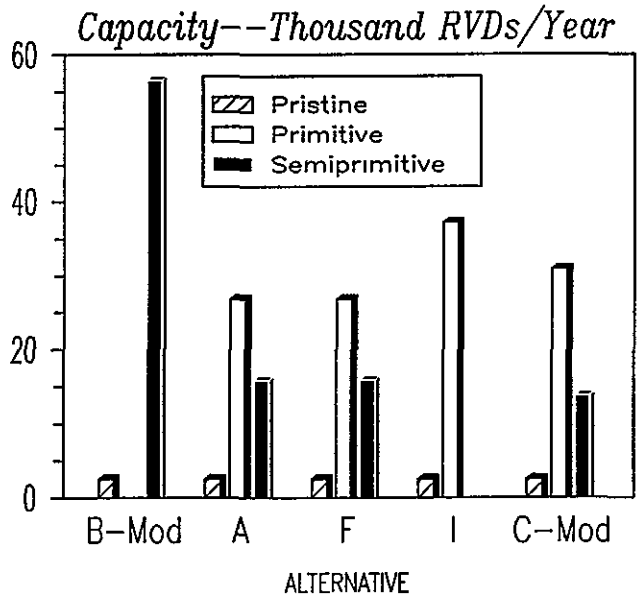
Wilderness will be managed to preserve and protect the wilderness values in accordance with the Wilderness Act of 1964 and acts establishing the individual wildernesses Wilderness use capacity is described by three management categories (pristine, primitive, and semiprimitive) which are defined primarily on a person-per-area basis. The primitive trailless category requires the most acres-per-recreation-visitor-day and semiprimitive requires the least acres among the three categories. The acreage of classified "pristine" wilderness remains the same under all alternative management proposals, but the amount of area managed as "primitive" and "semiprimitive," according to ROS Standards, varies by alternative, as shown in Figure II-50. Alternative C-Modified is the only alternative that increases the number of wilderness acres by recommending designation of Pine Creek Further Planning Area. Information for Alternative NC is not available.

Demand projections indicate that all alternatives except Alternative B-Modified will be able to meet anticipated needs for primitive recreation experiences Capacity is increased in Alternatives I and C-Modified by building trails in currently trailless areas It is anticipated that the demand for pristine, wilderness recreation will be met for all alternatives for the planning period, as shown in Figure II-50 It is also expected that the existing wilderness capacity can further accommodate the expected increase in primitive use.

Though capacity for pristine and primitive recreational experiences is expected to meet demand on an entire wilderness basis, use patterns indicate that for certain areas and

periods of time, demand may exceed capacity An example of this is the concentrated recreational use within the Strawberry Lakes basin during peak cross country ski season and on popular weekends during the summer months (Sullivan 1988).

FIGURE II-50: Wilderness Use Capacity by Alternative

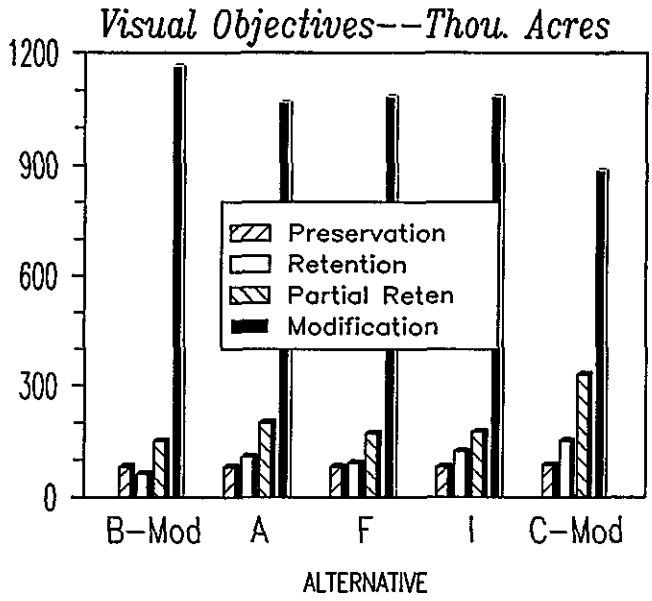


i. *Scenic Character - Alternative Comparisons*

Human activities will be apparent over most of the Forest in Alternative B-Modified The Alternative overall scenic character of the Forest will appear moderately altered in Alternatives A, F, and I, and only slightly altered in Alternative C-Modified.

Visual quality objectives are assigned to every acre on the Forest. The most restrictive objectives are applied to visually sensitive areas such as campgrounds, certain roads and trail corridors, and the roadless management areas. The visual quality objective of preservation preserves the visual character of the landscape without evidence of human modifications. This category is applied to wildernesses The visual quality objectives of retention and partial retention retain the character of the landscape with some evidence of human modification, retention is the more restrictive category of the two

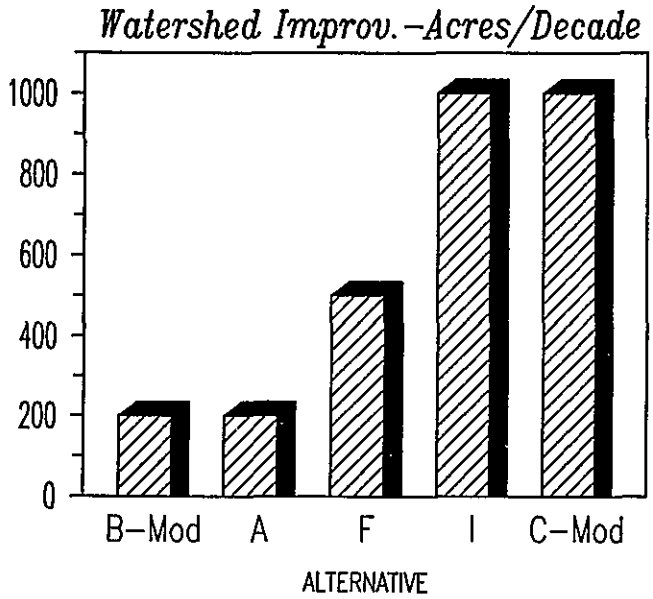
FIGURE II-51: Visual Management Acres by Alternative



3. *Watershed - Alternative Comparisons*

Watershed improvement activities occur in areas that are in less than satisfactory condition These areas have been identified on the Forest (Watershed Improvement Needs Inventory) and prioritized for improvement projects Figure II-52 displays the potential acres of watershed improvements based on the overall theme of the alternatives A set of data for Alternative NC is not available

FIGURE II-52: Acres of Watershed Improvement by Alternative

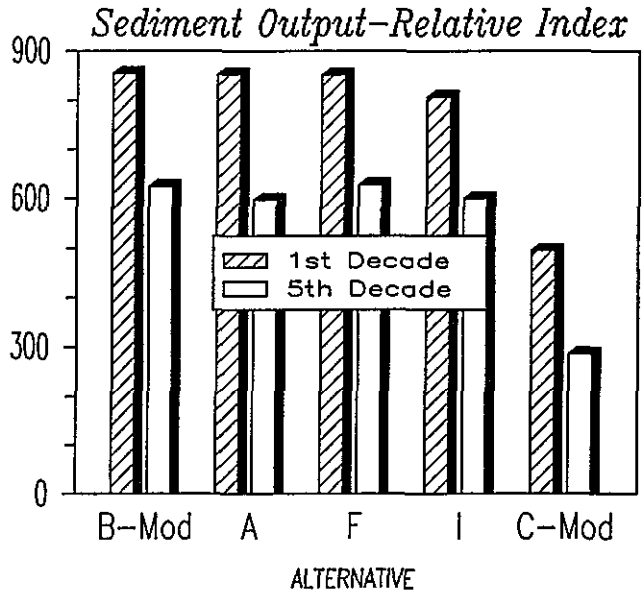


The potential impact to water quality is related to the amount of timber harvest, roads built, and livestock use While these activities do vary by alternative, there will not be a significant difference in water quality between alternatives Measures implemented to maintain or enhance water quality remain the same for all alternatives These practices are accomplished through the Forest-wide Standards and Best Management Practices Water quality will meet Oregon State water quality standards for all decades

Water yields from Eastern Oregon have been shown to be highly variable from year-to-year (State of Oregon 1986) There is no practical difference in projected water yields between alternatives

The sediment index provides a relative display of the effects of the management activities in each alternative The numbers in Figure II-53 have no absolute value, only a relative value as an index Information is not available for Alternative NC

FIGURE II-53: Index of Relative Sediment Effects of Alternatives



k *Minerals - Alternative Comparisons*

The land available for mineral exploration is the same for all alternatives (1,372,755 acres) The 1872 Mining Laws and the Federal Land Policy and Management Act of 1976 provide for mineral exploration anywhere on the Forest except for areas specifically withdrawn such as Wildernesses, most campgrounds, and administrative sites The potential for mineral exploration, however, is directly related to the acres of land managed without vehicle access, that is, the roadless management areas While exploration can involve means of travel which don't require roads, the potential for mineral exploration is diminished as access becomes more difficult or expensive The acres of roadless area management by alternative were displayed in Figure II-49

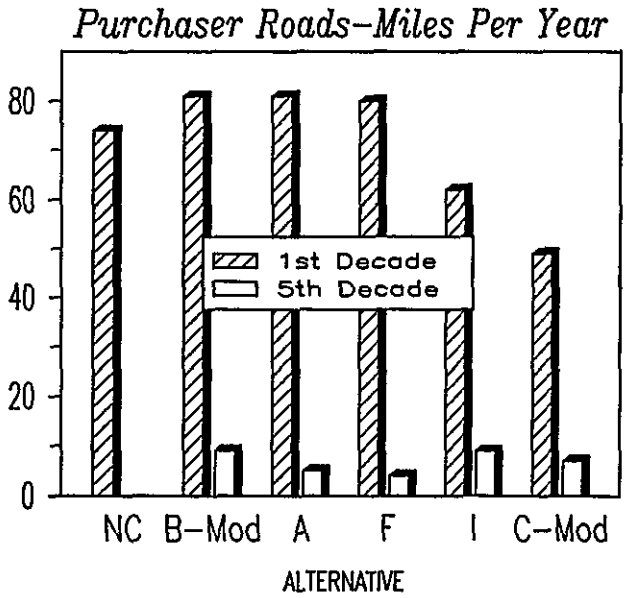
Alternatives NC, A, B-Modified, F, and I are the most favorable for mineral production in that the maximum amount of land with identified mineral potential is available, with the least restrictive management strategies Alternative C-Modified is the least favorable in that it has the highest amount of land with identified mineral potential under restrictive management strategies A detailed comparison of energy and nonenergy mineral production by alternative is displayed in Table II-5

l *Transportation - Alternative Comparisons*

The total amount of road construction displayed in Figure II-54 is directly related to the amount of timber harvested New road construction is higher in the first decade than in later decades because the number of areas which are not adequately roaded decreases over time. By the fifth decade, construction of new roads is considerably reduced The miles of road reconstruction, not shown in Figure II-54, does not vary as drastically over time and is very similar among alternatives Data for Alternative NC for the fifth decade are not available.

The road closure strategy for all alternatives is considerably different from that described in the draft EIS. Lands not classified as either wilderness or Wild and Scenic River will be managed to a specified Elk Habitat Effectiveness Index (HEI) This management specification is expected to increase road closure mileage in the first decade by approximately 30 per cent of the existing mileage (approximately 2700 miles of closed roads). Specific roads to be closed will be identified during a complete review of the existing road system and by incorporating road management as an issue during project level environmental analysis for all projects involving either new road construction or reconstruction. Currently, 564 miles or 6 6 per cent of the existing system miles are closed year round

FIGURE II-54: Miles of Timber Purchaser Road Construction by Alternative



m. *Utility Corridors - Alternative Comparisons*

Since there are no unoccupied and only two occupied utility corridor on the Forest, all alternatives would have minimal effects on utility corridors. None of the alternatives identify windows. Only Alternative C-Modified would recommend additional wilderness (Pine Creek Further Planning Area) which would be an additional 5,420 acre exclusion area.

Each alternative would make it clear where utility corridors would be excluded (exclusion areas) and where allocations would make it difficult or impossible to mitigate the negative environmental impacts of corridor designation (exclusion areas)