

REVISED
ENVIRONMENTAL ASSESSMENT
for the
North Murphy Forest Management Project
(OR110-97-20)

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
GRANTS PASS RESOURCE AREA

January 1998

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT**

EA COVER SHEET

RESOURCE AREA: Grants Pass EA # OR-110-97-20 (Revised)
ACTION/TITLE: North Murphy Forest Management Project

LOCATION: T37S, R4W, Sec 17, 18, 19, 20, 21, 29, 30, 31 and
T37S R5W, Sec 9, 10, 13, 14, 15, 22, 23, 24, 25, 26 Willamette Meridian

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**GRANTS PASS RESOURCE AREA
NORTH MURPHY PROJECT
REVISED
ENVIRONMENTAL ASSESSMENT**

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Chapter 1

Purpose of and Need for Action

A. Introduction

This Revised Environmental Assessment (EA) revises the earlier North Murphy EA dated July 10, 1997. The purpose of this revision is to address some of the public comments received from the initial EA, to more clearly describe the effects of the proposed actions, to introduce a specifically stated “no action” alternative, and to present and analyze a third alternative emphasizing wildlife connectivity retention.

The general purpose of an environmental assessment is to assist in the decision making process by assessing the environmental and human affects resulting from implementing the proposed project and/or alternatives. The EA will also assist in determining if an environmental impact statement (EIS) needs to be prepared or if a finding of no significant impact is appropriate.

This EA tiers to the following documents:

1. The Final EIS and Record of Decision dated June 1995 for the Medford District Resource Management Plan dated October 1994 (**RMP-ROD**);
2. The Final Supplemental EIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl dated February 1994; and
3. The Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and its Attachment A entitled the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, dated April 13, 1994 (**NFP-ROD**).

In addition to the documents cited and tiered to, planning the North Murphy project draws from the ideas, information, and requirements of the following documents:

1. Applegate Adaptive Management Area: Ecosystem Health Assessment. USDI/USDA. September 1994
2. Middle Applegate Watershed Assessment
3. USFWS Biological Opinion

B. Purpose and Need for the Proposal

The purpose of the proposed action is to implement the Medford District's Resource Management Plan (RMP). The proposed action is designed to meet a variety of resource and human (social/economic) needs and objectives outlined in the RMP. These include:

- contribution to the Medford District's timber harvest/forest products commitment, thus helping meet the demand for wood products both regionally and nationally and supporting local and regional economies;
- management of the forest land in a manner that will provide for and promote a wide a variety of noncommodity outputs and conditions including wildlife habitats, riparian

structure and function, sustainable forest conditions, and recreation opportunities.

C. Project Location

The general location of the proposed project is shown on Map 1.

Map 1: Project Location Map

North Murphy Forest Management Project

T.37S., R.4W. & R.5W.

Chapter 2 Proposed Action Alternatives

This chapter describes the issues and objectives that underlie the proposed treatment alternatives. It also describes the proposed alternatives that will be addressed in this EA.

A. Issues Relevant to the Project Proposal

A variety of issues and concerns were raised during the initial scoping of this project. These were raised by interested individuals or groups as well as by the planning team and ID team. The issues raised are listed below without regard to any order of importance. Many of these issues were used in the design of the proposed treatment alternatives. In some cases an issue was considered at the onset and then eliminated from further consideration because it was not within the scope of the project or proposed action. Those issues eliminated are summarized in Appendix A. Issues guiding the design of the proposed action are:

1. The project area is within a highly-populated area of the Applegate Adaptive Management Area (AMA). There is high community interest in the project.
2. The area has a high local demand for firewood, especially hardwoods.
3. Fire hazard is high in the project area.
4. There is an ongoing decline of meadows and pine forest habitats due to past fire suppression and the resultant conifer and shrub encroachment.
5. Vehicular access into the project area for fire management is currently limited.
6. Visual effects of the project located near a rural interface area.
7. Late successional forest habitat connectivity across the Murphy Watershed and into adjacent watersheds is poor.

B. Proposed Action Alternatives

1. Introduction

This section outlines the objectives that the proposed action/alternatives are designed to promote or achieve. The proposed action alternatives are then described.

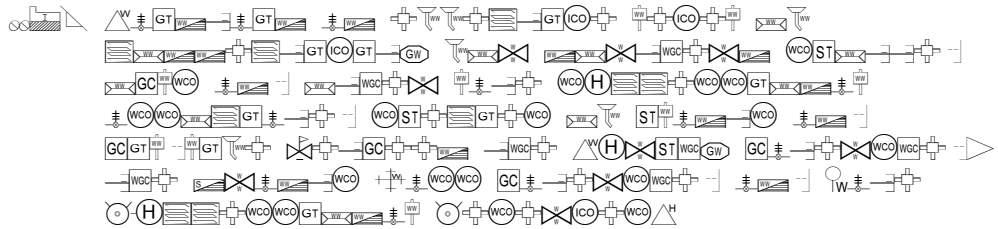
2. Objectives of the Proposed Treatment Alternatives
 - a. Land Allocation Objectives

The project area is within the Applegate Adaptive Management Area Land Use Allocation and the Southern Forest General Management Area. Specific objectives for this land use allocation are enumerated in the RMP-ROD (pp. 36-37).

b. Project Area Objectives

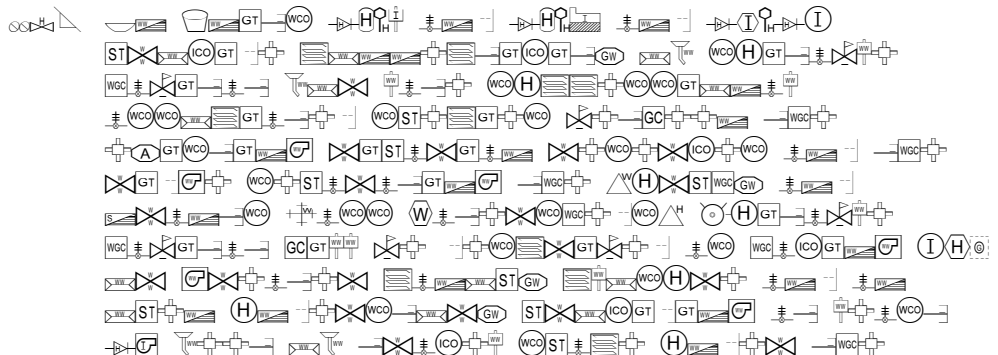
Based on the project planning team’s evaluation of the issues listed in Section A above, the following objectives were used in designing the project proposals:

- (1) Implement fuels hazard reduction treatments where hazard is high, especially when near private property.
- (2) Maintain/improve deer winter range.
- (3) Maintain connectivity in riparian areas for species dispersal.
- (4) Provide timber for the local forest industry short and long term.
- (5) Maintain and restore pine sites. Maintain and restore meadow sites.
- (8) Meet or exceed Visual Resource Management Class III objectives.



c. Silvicultural Harvest and Understory Thinning Objectives

- (1) Reduce the basal area to increase tree growth, quality and vigor of the remaining trees.
- (2) Create openings large enough for Douglas-fir and pine to become established.
- (3) Create diversified stand structure (height, age, and diameter classes) and old-growth stand characteristics.





3. Treatment Alternatives

a) Alternative 1 - No Action

The "no-action" alternative is defined as not implementing any aspect of the other proposed alternatives. Defined this way, the no action alternative also serves as a baseline or reference point for evaluating the environmental effects of the action alternatives. Inclusion of this alternative is done without regard to whether or not it is consistent with the Medford District RMP.

It should be pointed out that the no action alternative is not a "static" alternative. Implicit in it is a continuation of the current environmental trends within the project area. This would include trends such as vegetation succession and consequent wildlife habitat changes, road condition / deterioration, rates of erosion, continuation of current road densities, trends in fire hazard changes, OHV use, *etc.*

b) Alternative 2 and Alternative 3

(Note to readers: Alternative 2 in this EA is the same as the proposed action in the initial EA for this project (7/10/97) and is repeated herein. Alternative 3 is a new alternative introduced in this revision and emphasizes wildlife connectivity retention.)

Alternatives 2 and 3 are summarized in Tables 1 and 2. Where Alternative 3 differs from Alternative 2, Alternative 3 is shown in italics. The project design features noted in the next section apply to both alternatives.

Map 2 shows the locations of the proposed treatments of the these two alternatives.

a. Timber Harvest

Table 1 outlines the proposed timber harvest. As noted in Table 1, Alternative 3 is the same as Alternative 2 except with regard to the connectivity corridors in Units 13-8, 13-9 and 17-16. Where Alternative 3 differs from Alternative 2, Alternative 3 features are shown in italics.

b. Understory treatment

Table 1 also summarizes the proposed understory treatments.

c. Fuels Management Treatments

Table 1 also summarizes the fuel treatment proposals. Proposed treatments are grouped based on the following five general types of treatments:

1. Understory Thinning (UT): The fuels management objective is to reduce the amount of understory live fuel that contributes to ladder fuel conditions. Current ladder fuel conditions pose a threat of creating crown fire conditions in a wildfire. Understory conifers, hardwoods, and shrubs would be spaced and thinned out. Excess vegetation would be hand piled and burned. Some underburning would occur when leave vegetation is large enough to survive an underburn. These

areas would be adjacent to roads and away from private residential property.

2. *Fuel Modification Zones (FMZ)*: Fuel Modification Zones would encompass approximately 554 acres in the project area. FMZ's in timber harvest areas are 62 acres in Alternative 2, and 58 acres in Alternative 3. Majority of the FMZ's would be located in shrubfields or areas of no timber harvest. Treatments include selection of leave conifer and hardwood trees and shrubs, slashing of excess shrubs and small trees, pruning of residual trees, and snag felling. Spacing width between leave trees and shrubs will vary from 15 to 40 feet based on size and species of vegetation. FMZ widths will be 200 to 300 feet wide. FMZ's are typically created along ridgelines, between separate stand and vegetation types, or adjacent to private property.

3. *Wildlife Habitat Restoration Prescribed Burning Treatments*: These treatments include the use of prescribed burning (broadcast and hand pile burning) to setback and/or rejuvenate decadent shrubfields, and to re-establish grass meadows from conifer and shrub encroachment and/or rejuvenate grass growth. Another type of treatment would be oak/grassland maintenance. Treatments may include some slashing of shrubs and trees to create a fuelbed that optimizes available fuel such that burn operations can be conducted in the wetter season of the year. Slashing in meadow areas would target the encroaching trees and shrubs around the meadow edge and interior to insure the removal of seed sources and maintain the meadow in a grass and forb vegetation condition. Slashing in oak/grasslands would target encroaching shrubs and conifers. Thinning of oaks would promote growth and development of large full crowned oak trees.

4. *Rural Interface Area Hazard Reduction Treatments*: These treatments encompass approximately 212 acres and would be conducted in high hazard areas that have residential structures in close proximity to BLM property boundary lines. The objective would be to remove the fuel hazard on the BLM lands to reduce the effect of wildfire and risk of loss for both BLM resources and private property. Understory vegetation would be thinned and spaced. Hand piling and burning would be the slash disposal method. Opportunities for public or adjacent land owner use of the slashed vegetation for firewood or other uses would be explored on a case by case basis.

5. *Timber Harvest Units*: Timber harvest areas would have slash and fuel hazard reduction treatments where needed. Treatment of slash reduces the fuels build-up that creates risk of stand replacement wildfire or endangers other resource values, including private property. Treatments may include understory thinning, underburning or hand pile and burn. "No treatment" areas would only be those that remain in low hazard and risk following harvest and any understory thinning.

Map 2: Treatment Alternatives

(SEE LARGE INSERTED MAP)

TABLE 1: Summary Description of Alternative 2 and Alternative 3*

(Where Alternative 3 differs from Alternative 2, Alternative 3 is shown in *italics*)

T-R-SEC OF	Harvest Unit #	Land Alloc. (NFP)	TPCC	Unit Acres	Condition Class	Silv. / Harvest Prescription	Successional Stage	Logging Systems	Slash Treatment -- Understory Treatment	Unit Timber vol. (Est) (MBF / ac)	Harvest Volume (est) MBF			Refore- station Needed	Comments
											Harv./ Treat. Acres	Vol/ Ac	Total		
TIMBER HARVEST AND TREATMENT UNITS															
T37S, R5W															
Sec. 9	3	AMA	RTW	22	Shrub (50%) Hardwood (30%) Large Poles (20%)	--	White Oak	--	SLH; BCB	2	0	0	0	--	
Sec. 13	3	AMA	RTR	200	Large Poles (30%) Hardwood (30%) Mature (15%) Shrub (15%) Seedling (10%)	CT/GS	Mature	HE	UT (40-60%); Mosaic UB; HP/B; BCB Meadow	8	13	2	26	Nat.	Harvest 4 acres in Riparian Reserve.
			RTW	31											
	8	AMA	RTR	133	Mature (40%) Large Poles (30%) Hardwood (30%)	CT/GS	Mature	HE	UT (20-40%); HP/B	15	158 <i>(142)</i>	2	316 <i>(296)</i>	Nat.	Harvest 10 acres in Riparian Reserve. <i>(Alt. 3 - 16 ac Connectivity Reserve)</i>
	9	AMA	RTR	53	Large Poles (40%) Mature (20%) Hardwood (25%) Shrub (15%)	CT/GS	Mature	HE	UT (20-40%); HP/B	20	170 <i>(154)</i>	2	340 <i>(330)</i>	Nat.	Harvest 6 acres in Riparian Reserve. <i>(Alt. 3 - 16 ac. Connectivity Reserve)</i>
Sec 14	3	AMA Riparian	RTR/ RMR	72	Large Poles (90%) Mature (5%) Hardwood (5%)	CT/GS	Mature	HE/C/T	UT(30%-40%); UB; HP/B	15	38	4	152	Nat.	Understory treatment only in riparian reserve
Sec. 15	2	AMA	RTW	181	Hardwood (50%) Shrub (20%) Large Poles (20%) Poles (10%)	---	Mid	--	SLH; HP/B	2	0	0	0		Buffered Riparian Reserve
	3	AMA	RMR	41	Large Poles	CT/GS	Mature	HE	UT(10-20%);HP/B	25	39	3	117	Nat.	Buffered Reserve
Sec. 15	4	AMA	RMR	34	Large Poles(80%) Hardwood (20%)	CT/GS	Mid	HE	UT(20%-30%); HP/B	8	4	2	8	Nat.	Non-riparian

TABLE 1: Summary Description of Alternative 2 and Alternative 3*

(Where Alternative 3 differs from Alternative 2, Alternative 3 is shown in *italics*)

T-R-SEC OF	Harvest Unit #	Land Alloc. (NFP)	TPCC	Unit Acres	Condition Class	Silv. / Harvest Prescription	Successional Stage	Logging Systems	Slash Treatment -- Understory Treatment	Unit Timber vol. (Est) (MBF / ac)	Harvest Volume (est) MBF			Refore- station Needed	Comments
											Harv./ Treat. Acres	Vol/ Ac	Total		
Sec. 23	1	AMA Riparian	RTR	132	Mature (40%) Large Poles (40%) Hardwood (15%) Sapling (5%)	CT/GS	Mature	HE	UT (30%); HP/B	8	21	3	63	Nat.	Understory treatment and harvesting (4 acres) in riparian reserve
	8	AMA	RTR	16	Large Poles (80%) Shrub (20%)	CT/GS	Mid	HE/C/T	UT (40-60%); UB	6	23	2	46	Nat.	Understory treatment and harvesting (4 acres) in riparian reserve.
	9	AMA	RTR	75	Mature (25%) Large Poles (25%) Hardwood (25%) Seedlings (25%)	CT/GS	Mature	HE/C	UT (30-60%); HP/B	8	17	3	51	Nat.	Understory treatment and harvest (4 acres) in riparian reserve.
	2	AMA	RTR	6	Poles (70%) Hardwood (30%)	CT/GS	Mid	HE/C	UT (40-60%)	11	6	3	18	Nat.	Understory treatment, formerly part of OI 23-1.
Sec. 24	1	AMA	RTR RMR	277	Hardwood (30%) Large Poles (25%) Seedling/Sap (15%) Mature (10%) Shrub (10%) Poles (10%)	---	Mature	HE	UT (30-50%); HP/B	9	0	0	0	Nat.	Buffered reserves. Some of this OI unit will be harvested with Unit 13-9.
Sec. 26/23	001/010	AMA	RTW	60/18 (78)	Shrub (40%) Hardwood (25%) Large Poles (30%) Mature (5%)	---	Mid	---	SLH; Mosaic UB; Spot HP/B-RIA	4	0	0	0	---	Understory treatment in riparian reserves.
Sec. 26	2	AMA	RMR	70	Mature (30%) Large Poles (35%) Hardwood (35%)	CT/GS	Mature	HE	UT (20-40%); HP/B	15	34	3	102	Nat.	Harvest 6 acres in riparian reserve.
	3	AMA	RTW	310	Hardwood (50%) Pole (30%) Large Pole (10%) Grass (10%)	---	Mid	---	HP/B	5	0	0	0	---	Fuel modification

TABLE 1: Summary Description of Alternative 2 and Alternative 3*

(Where Alternative 3 differs from Alternative 2, Alternative 3 is shown in italics)

T-R-SEC OF	Harvest Unit #	Land Alloc. (NFP)	TPCC	Unit Acres	Condition Class	Silv. / Harvest Prescription	Successional Stage	Logging Systems	Slash Treatment -- Understory Treatment	Unit Timber vol. (Est) (MBF / ac)	Harvest Volume (est) MBF			Reforestation Needed	Comments
											Harv./ Treat. Acres	Vol/ Ac	Total		
T37S, R4W															
Sec. 17	16	AMA	FGR RTR	41	Large Poles (70%) Hardwood (15%) Mature (15%)	CT/GS	Mature	HE/C	UT (5%); UB	16	104 (90)	4	416 (406)	Nat.	Harvest 10 acres in riparian reserve. <i>(Alt 3 Connectivity Reserve of 14 acres)</i>
	17	AMA	RTR	117	Large Poles (90%) Mature (10%)	CT/GS	Mature	HE	UT (5%)HP/B	25	10	4	40	Nat.	Harvest 4 acres in riparian reserve.
	18	AMA	NCW	37	Hardwood (100%)	--	White Oak	--	Oak thinning; UB	0	0	0	0	--	Non-riparian.
	23	AMA	RTR	14	Large Poles (40%) Hardwood (40%) Poles (20%)	CT/GS	Mature	HE/C	UT (40-60%); HP/B	8	7	3	21	Nat.	Buffered reserves
Sec. 18	2	AMA	RTR	104	Large Poles (35%) Hardwood (20%) Mature (10%) Poles (10%) Seedling (10%) Shrub (10%) Grass (5%)	CT/GS	Mid	HE	UT (60-80%); Spot UB; HP/B	12	4	3	12	Nat.	Non-riparian. Part of OI unit 18-7
	9	AMA	NB	44	Hardwood (90%) Shrub (10%)	--	White Oak	--	SLH; BCB	0	0	0	0	--	Non-riparian
	13	AMA	RTR FTR/ RMR	52	Large Poles (50%) Hardwood (25%) Shrub (15%) Seedling (5%) Mature (5%)	--	Mature	--	UT (60-80%); HP/B	10	0	0	0	--	Part of this unit will be harvested in Unit 13-9.
	15	AMA	RTR	32	Large Poles (60%) Mature (20%) Shrub (20%)	CT/GS	Mature	HE/C	UT (50-70%)	16	24	2	48	Nat.	Harvest 4 acres in riparian reserves. Unit 18-3
	16	AMA	FGR RTR	77	Large Poles (60%) Hardwood (15%) Poles (10%)	CT/GS	Mid	HE/C	UT (20-40%); Spot UB	5	70	2	140	Nat.	Harvest 8 acres in riparian reserves. Harvest Unit 18-1.

TABLE 1: Summary Description of Alternative 2 and Alternative 3*

(Where Alternative 3 differs from Alternative 2, Alternative 3 is shown in *italics*)

T-R-SEC OF	Harvest Unit #	Land Alloc. (NFP)	TPCC	Unit Acres	Condition Class	Silv. / Harvest Prescription	Successional Stage	Logging Systems	Slash Treatment -- Understory Treatment	Unit Timber vol. (Est) (MBF / ac)	Harvest Volume (est) MBF			Refore- station Needed	Comments
											Harv./ Treat. Acres	Vol/ Ac	Total		
					Seedlings (10%) Shrubs (5%)										
Sec. 18	19	AMA	LSW	19	Hardwoods (50%) Poles (50%)	--	White Oak	--	SLH; Spot UB	--	0	0	0	--	No harvest.
	20	AMA	RTR	27	Large Poles (25%) Mature (25%) Shrubs (25%) Hardwood (25%)	--	Mid	--	UT (50-70%)	5	0	0	0	--	
	22	AMA	RTR	28	Large Poles (70%) Poles (20%) Hardwood (10%)	CT/GS	Mature	HE	UT (20-40%)	7	0	0	0	--	Part of Unit 18-1
	28	AMA	RTR	40	Large Poles (50%) Shrubs (20%) Mature (10%) Seedlings (10%) Poles (10%)	--	Mid	--	UT (30-50%)	15	0	0	0	--	Non-riparian.
Sec. 19	1	AMA	LSW	226	Hardwood (50%) Poles (30%) Seedling (15%) Shrub (5%)	--	White Oak	--	Spot BCB, UB	0	0	0	0	--	No harvest.
	5	AMA	FMR RTW	14	Large Poles (70%) Poles (20%) Hardwood (5%) Seedlings (5%)	--	Old Growth	--	SLH; HP/B-RIA	0	0	0	0	--	
	6	AMA	NCW	44	Hardwood (60%) Poles (20%) Shrubs (20%)	--	White Oak	--	SLH; Mosaic UB/BCB	0	0	0	0	--	No harvest.
Sec. 19	12	AMA	FMR RTR	16	Large Poles (50%) Poles (20%) Hardwoods (30%)	--	Mid	--	UT (20-40%); HP/B	7	0	0	0	--	No harvest.
	13	AMA	RTR	29	Large Poles (50%)	--	Mature	--	UT (20-40%); HP/B	12	0	0	0	--	No harvest.

TABLE 1: Summary Description of Alternative 2 and Alternative 3*

(Where Alternative 3 differs from Alternative 2, Alternative 3 is shown in italics)

T-R-SEC OF	Harvest Unit #	Land Alloc. (NFP)	TPCC	Unit Acres	Condition Class	Silv. / Harvest Prescription	Successional Stage	Logging Systems	Slash Treatment -- Understory Treatment	Unit Timber vol. (Est) (MBF / ac)	Harvest Volume (est) MBF			Refore- station Needed	Comments
											Harv./ Treat. Acres	Vol/ Ac	Total		
					Hardwood (25%) Seedling (15%) Shrub (5%) Mature (5%)										
Sec. 20	4	AMA	RMR	12	Large Poles (80%) Hardwood (10%) Poles (10%)	CT/GS	Mature	HE	UT (40-60%); HP/B	20	11	4	44	Nat.	Buffered reserves.
	5	AMA	RTR	15	Poles (40%) Large Poles (30%) Hardwood (30%)	--	Mature	--	UT (60-80%); HP/B	5	0	0	0	--	
	6	AMA	FMR RTR	32	Poles (40%) Hardwood (30%) Large Poles (15%) Shrub (10%) Seedling (5%)	--	Mid	--	UT (60-80%); Spot UB; HP/B	1	0	0	0	--	
Sec. 21	7	AMA	FMR RTR	55	Hardwoods (40%) Seedlings (30%) Large Poles (20%) Poles (10%)	--	Mid	--	UT (100%); Spot UB; HP/B	5	0	0	0	--	
Sec. 29	1	AMA	RMR	61	Large Poles (50%) Hardwood (30%) Seedling (15%) Mature (5%)	--	Mid	--	UT (60-80%);HP/B	4	0	0	0	--	No Harvest. Rare plants buffered.
	2	AMA	RMR	32	Large Poles (60%) Poles (20%) Hardwood (10%) Seedlings (10%)	--	Mid	--	UT (60-80%); HP/B	12	0	0	0	Nat.	Non-riparian.
	3	AMA	RMR	70	Large Poles (80%) Mature (5%) Hardwood (5%) Poles (5%) Seedling (5%)	CT/GS	Mature	HE	UT (10-20%); HP/B	40	46	4	184	Nat.	Buffered Reserve.

TABLE 1: Summary Description of Alternative 2 and Alternative 3*

(Where Alternative 3 differs from Alternative 2, Alternative 3 is shown in italics)

T-R-SEC OF	Harvest Unit #	Land Alloc. (NFP)	TPCC	Unit Acres	Condition Class	Silv. / Harvest Prescription	Successional Stage	Logging Systems	Slash Treatment -- Understory Treatment	Unit Timber vol. (Est) (MBF / ac)	Harvest Volume (est) MBF			Refore- station Needed	Comments
											Harv./ Treat. Acres	Vol/ Ac	Total		
Sec. 31	1	AMA	FMR RMR	38	Large Poles (30%) Hardwood (30%) Seedlings (20%) Poles (20%)	--	Mid	--	UT (60-80%); HP/B	8	0	0	0	--	

*Alternative 1 is the No Action Alternative. With Alternative 1, no timber harvest or treatment will occur on any of the units.

SLH - Slash sprung and damaged conifers and hardwoods 1"-6" DBH. UB - Understory Burn. BCB - Broadcast Burn. HP/B - Hand pile slash 1"-6" x 2', cover, and burn piles.

UT - Understory thin conifers to approximately a sixteen (16) foot by sixteen (16) foot spacing, plus or minus 20%. Thinned clumps of hardwoods (largest three stems) will be spaced approximately twenty (20) feet apart. CT - Commercial thin. GS - Group Selection.

T - Tractor. C - Cable. HE - Helicopter.

RIA - Rural Interface Area

1) TPCC (Timber Productivity Capability Classification): RTR-regeneration restricted due to hot temperatures and low soil moisture; RMR-regeneration restricted due to low soil moisture; RTW-sites will not meet or exceed minimum stocking levels within 1-5 years of harvest; NG-Non commercial forest land due to slope gradient; FGR-Fragile due to slope gradient; NCW-Non commercial forest land (species); NB-Non commercial but capable of producing 10% commercial forest; FTR-Fragile due to temperature and low soil moisture; LSW-Low site-sites that produce less than 20 cubic feet per year of commercial forest species.

2) Condition Class: Characterized by existing dominant vegetation type and size class; Mature: 21" dbh+; Large Pole: 11"-21" dbh; Poles: 5"-11" dbh; Seedling/sapling: 0-4.9" dbh; Hardwoods: commercial land dominated with hardwoods; Shrubs: usually natural shrub fields; Grass: Grass, forbs and herbaceous vegetation.

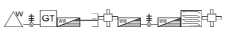








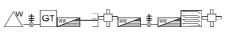



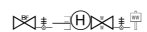





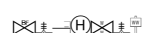


3) Harvest acres vs. Unit acres: The difference in these acreages is attributable to large variability within the unit, unit inclusions of riparian reserves, non-forest, etc.

4) All acres are included in treatment column for purposes of impact analysis. In general, only portions of these units will be treated.

5) Successional Stage: The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax stage. **Mature:** Stand of trees for which the annual net rate of growth has peaked. Stands are generally greater than 80-100 years old and less than 180-200 years old. Stand age, diameter of dominant trees and stand structure at maturity vary by forest cover types and local site conditions. Mature stands generally contain trees with a small average diameter, less age class variation and less structural complexity than old growth stands of the same forest type. **Mid:** Trees have achieved at least a small pole size (>4" dbh). Stands can be dominated by either hardwoods or conifers or can be a hardwood/conifer mix. Stands are generally dense and single-layered but could be beginning to self thin and differentiate. Upper end tree diameters could range to 16-18" dbh. Stand age would generally be less than 80 years. Larger, scattered overstory trees may be present but will generally number less than 8 trees / acre.

d. Road Treatment

Table 2 lists the roads that would be used, constructed, improved, renovated, and/or closed as a part of alternatives 2 and 3. Construction, improvement, and renovation work would be primarily a part of the timber harvest actions.

TABLE 2: Road Use, Construction, Improvement, Renovation, and Closures Alternatives 2 and 3					
Road #	Seg	Length (miles)	Existing Surface Type	Proposed Maintenance, Construction, Renovation, Improvement, Closures	Road Control
37-4-4.1	A	1.18	Aggregate Surface Coarse	Maintenance	BLM
37-4-4.1	B	1.06	Aggregate Surface Coarse		
	C	1.17	Aggregate Surface Coarse	Maintenance	BLM
37-4-4.1	D	1.13	Aggregate Surface Coarse	Maintenance	BLM
37-4-4.1	E	0.26	Aggregate Surface Coarse	Maintenance	BLM
37-4-17.2		0.87	Natural Surface	Maintenance	BLM
37-4-17.3	A	1.47	Natural Surface	Maintenance	BLM
37-4-17.3	B	0.72	Natural Surface	Maintenance	BLM
37-5-1	A	0.7	Aggregate Surface Coarse	Maintenance	BLM
37-5-1	B1	0.62	Aggregate Surface Coarse	Maintenance	BLM
37-5-1	B2	0.8	Pit Run Rock		
	C	1.28	Pit Run Rock	Maintenance	BLM
37-5-1	D	0.28	Natural Surface	Maintenance	
	E	0.13	Natural Surface	Maintenance	Boise Cascade
37-5-1	F	1.06	Natural Surface	Maintenance	BLM
37-5-1	G	0.95	Natural Surface		BLM
37-5-1	H	0.65	Aggregate Surface Coarse		
			 		
			 		BLM
37-5-14	A	0.44	Pit Run Rock	Maintenance	BLM

**TABLE 2: Road Use, Construction, Improvement, Renovation, and Closures
Alternatives 2 and 3**

Road #	Seg	Length (miles)	Existing Surface Type	Proposed Maintenance, Construction, Renovation, Improvement, Closures	Road Control
37-5-14	B	0.55	Pit Run Rock	Maintenance	Boise Cascade
37-5-14	C	1.11	Pit Run Rock	Maintenance	BLM
37-4-18.2		0.17	Natural Surface	Construct spur road to junction 37-4-17.3B with 37-4-18.2. Construct at minimum BLM standards. Fully decommission after timber sale use.	BLM
37-5-25	B	1.57	Natural Surface	Reconstruct road for timber use. Spot rock, add culverts. Gate at north junction with 17.3. Maintenance.	BLM

Maintenance consists of surface blading, roadside brushing for safety, spot rocking and maintaining existing drainage structures. Maintenance of natural surface roads also includes correcting drainage and erosion problems (*e.g.*, improving or installing water dips, installing other drainage structures where needed, eliminating outside road edge berms or other features that are obstructing drainage where they exist).

Decommissioning consists of subsoil ripping of the roadbed to promote the establishment of vegetation and promote drainage consistent with the surrounding undisturbed areas. Existing culverts would be removed during decommissioning.

e. Riparian Reserve Treatment

Proposed riparian reserve treatments are the same for Alternative 2 and 3. Overstory treatments include harvest treatments as listed in Table 1. Understory treatments would include the slash and understory treatments also as noted in Table 1.

There are areas in the riparian reserves where the existing stand conditions are such that active management and treatment of the stands are recommended in order to maintain and/or enhance the existing quality of the riparian reserve areas relative to their late successional forest connectivity role and relative to long-term water quality and aquatic habitat maintenance.

The following outlines the Riparian Reserve treatment objectives:

- a) Create, maintain, and/or enhance late successional habitat, where possible, based on vegetation type and soil/slope stability conditions.

- (1) Encourage and expedite the growth and development of larger trees.

- (2) Encourage the development of an understory of trees where they are currently absent.
- b) Retain the ROD specified reserve widths, differentiating the treatments within them from those in the adjacent AMA lands.
- c) Meeting the Aquatic Conservation Strategy objectives is first priority for any riparian reserve treatment.

To implement these objectives, the following treatments / prescription within Riparian Reserves are proposed:

a) Treatment / No treatment zones:

- (1) No harvesting or treatment within riparian reserves along Class 1, 2, or 3 streams;
- (2) No harvesting or treatment within riparian reserve old-growth seral stage stands along Class 4 streams;
- (3) No treatment within:
 - 20 feet of the stream bank (either side),
 - OR
 - where side slopes are >60%, 50' of the stream bank, or to a significant topographic break, whichever is less but no closer than 20 feet,
 - OR
 - 150 feet of unstable areas or headwalls.
- (4) No overstory treatment where the existing canopy closure (all canopy layers) is less than 60% at the localized site (understory treatment may occur).
- (5) Treat all land within the riparian reserves which does not meet any of the above conditions. The general treatment prescription is a thinning from below, reserving no less than a specified basal area. (See silvicultural prescription)

b) Coarse woody material (CWM):

- retain all existing down CWM
- retain all existing snags as a future CWM recruitment pool
- retain green cull trees and trees infected with *Fomes pini* as pool for future CWM

f. Star Thistle Treatment

Star Thistle (*Centaurea solstitialis*) is a noxious weed common in the Applegate watershed. The

potential for this species to occur in or to invade the project area is highest on southern exposures such as those found in the project area. Three populations have been identified in the project area and will be included in an interagency control program.

4. Project Design Features

Project design features (PDFs) are included for the purpose of reducing anticipated adverse environmental impacts which might stem from the implementation of the alternatives. Project design features noted here would apply to both Alternatives 2 and 3.

a. Logging Systems

1) Tractor Logging

To reduce the extent of ground disturbance and soil compaction, tractor logging would be limited to areas where slopes are less than 35%. This would include Unit 14-3 adjacent to the helicopter landing (3 acres), the ridge top fuel modification zone in Unit 23-8, and the FMZ that is west of the 37-5-23 road (5 acres).

Tractors would be limited to the smallest size necessary to do the overall job, and would be equipped with integral arches to obtain one end log suspension during skidding of the logs. Tractors would be restricted to approved skid trails. Tractor yarding would not be authorized when soil moisture content, at a six-inch depth, exceeds 25% by weight as determined by a Speedy Moisture Meter. Skid roads would be water barred in a manner appropriate to the slope and soil type. Main tractor skid trails would be blocked where they intersect haul roads. Collector tractor skid roads would be ripped, seeded, and mulched after yarding is completed.

2) Cable Yarding

Cable yarding would be permitted in portions of Units 14-3, 17-16, 17-23, 18-1, 18-3, 23-2, 23-8, and 23-9 (total of approximately 84 acres). Cable yarding would be limited to yarding distances of 500 feet (for visuals), to one set-up per landing and 150 foot distances between corridors, where possible corridor widths of no more than 10 feet. Cable yarding would utilize one-end suspension and lateral yarding of the log. In cable yarding units, step landings would be permitted only if all other options are exhausted, and then only with the prior approval of the Area Manager. Cable yarding corridors would be water barred when needed and at a spacing appropriate for the slope and soil type.

3) Helicopter Logging

Helicopter landings will be sized the minimum needed to accomplish objectives. With the exception of the landing in Section 18, all natural surface landings constructed during the logging operation would be ripped/subsoiled, seeded and planted. The Section 18 landing would be retained for fire suppression activities. Slash would be used to cover fill slopes for erosion protection.

Helicopter operations would be permitted between 7 a.m. and 7 p.m., Monday through Saturday,

only. Sunday work will be prohibited. Chainsaw operations located within 1/4 mile of residences located on Missouri Flat Road would operate with the same hour and day limitations as helicopters.

While access for logging and log landings is available and provided for on BLM administered land, the purchaser may chose to negotiate with private landowners to obtain alternative access for landing construction and log hauling.

4) All systems

All harvested trees would be limbed in the units prior to yarding to reduce the extent of damage to the residual stand and to reduce soil disturbance.

Permissible log lengths: Where tractor and cable yarding is used, log lengths would be restricted to 35 feet or less in length. Tree length yarding will be permitted when yarding is done with helicopters unless unacceptable damage occurs to residual trees in which case log lengths will be restricted to 35 feet or less.

b. Seasonal Operation Restrictions

The following seasonal operating restrictions would apply:

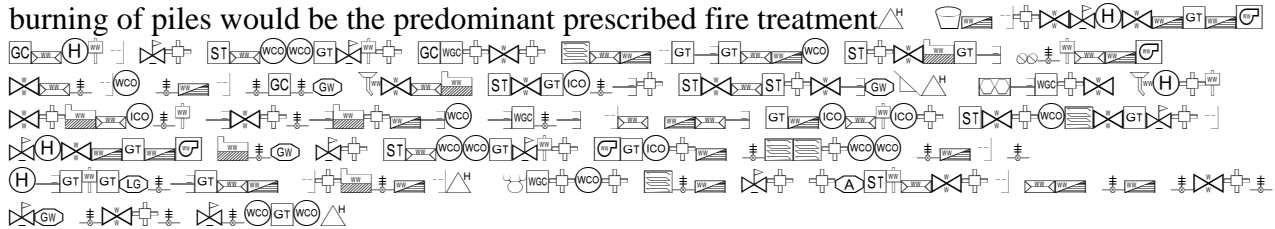
Table 3: Seasonal Operating Restrictions			
Location	Restricted Activities	Restricted Dates (specified activities not permitted during:)	Reasons / Comments
Entire project area	All logging and log hauling operations	October 15 to May 15 of following year	Erosion Control. Some variations of the dates depending on weather and soil moisture conditions.
37-5-24 and 37-4-19, 29: 1/4 mile radius around a known spotted owl nest site. Any other discovered spotted owl nest sites	All timber harvest activities (felling and yarding), chainsaw operation and prescribed burning	March 1 to June 15	Dates and restriction dependent on nesting status. (Rogue River/South Coast Biological Assessment, Aug. 1996)
37-4-19: 1/4 mile radius around a known red tailed hawk nest site.	All timber harvest activities (felling and yarding), chainsaw operation and prescribed fire.	March 1 to July 15	Red Tailed hawk nest site. Dates and restriction dependent on nesting status (BLM Instruction Memo OR-96-78).
Within 1/4 to 1/2 mile radius around any raptor nest	All timber harvest activities (felling and yarding) and chainsaw operation.	Variable depending on the species	(BLM Instruction Memo OR-96-78)
All harvest units and road construction ROWs.	Various activities depending on the species	Variable depending on the species	Restrictions only if special status species are located. (BLM Instruct. Memo OR-96-78).

c. Fuels Management and Prescribed Burning

1) *Understory Thinning (UT)*: This treatment reduces the density of live vegetation by thinning and spacing leave vegetation. Slashing of excess conifers, hardwoods, and shrubs less than 6" DBH would occur on a spacing of 15 to 25 feet depending on size and species of vegetation. Spacing of 20 to 25 feet would be used in areas dominated by larger trees (4-6" DBH) and shrubs (greater than 10 feet tall). The healthiest and most vigorous trees and shrubs would be selected for leaving. Species composition for leaving would reflect current species diversity. Areas of no thinning would be left in each unit to retain diversity in density. Amount of area retained with no thinning would average 10 to 25% of the area acres.

2) *Fuel Modification Zones (FMZ)*: Treatment in the FMZ's would focus on understory vegetation thinning and spacing; and thinning and spacing of shrubs.

Vegetation selected for leaving would include a mixture of all species (conifers, hardwoods, shrubs) currently on site. Treatment would include slashing vegetation less than 6" DBH; girdling some trees less than 12" DBH, and pruning lower limbs of leave trees. Spacing of residual conifers, hardwoods and shrubs would be dependent on current size and species. Wider spacing would be used when leave vegetation is larger sized or includes species such as pine or oak which thrive at their healthiest state in less dense conditions. Hand piling of material up to 6" in diameter, and burning of piles would be the predominant prescribed fire treatment.



Additionally, groups and clumps of vegetation may be reserved from treatment to maintain areas of dense cover to meet wildlife habitat objectives. These reserve areas may range in size from 1/10 acre to 1/2 acre. At a minimum, one reserve area per four acres of FMZ would be maintained. Another area reserved from treatment will be those portions of FMZ where ridgeline meets with road in saddles. In order to prevent motorized vehicle access up ridgelines from the road, untreated buffers will be left to prevent vehicle access.

In order to meet wildlife objectives it has been determined that up to 1-2 snags per acre should be retained or created within the FMZ area and located in the center of the FMZ rather than the edges. Preference is for newer "hard" snags rather than older "soft" snags. Existing CWM greater than 6" in diameter would be retained. In areas of underburning, it is expected that up to 10% of the CWM greater than 6" diameter would be consumed.

Alternative 3 would have wildlife connectivity areas crossing into and thru the FMZ in three areas. These areas would have understory treatments consisting of thinning and spacing of trees less than 6" DBH and shrubs less than 10 feet tall. No girdling of trees would occur. All existing snags would be retained. Pruning of trees up to 12 feet in height would occur.

3) *Wildlife Habitat Restoration Prescribed Burning Treatments*: Treatments may include slashing some trees less than 6" in diameter and shrubs. This slashing would cut portions of the shrubfield to

create a pattern of dead and down fuel that would facilitate achieving a mosaic burn pattern within the shrubfield. Slashing in meadow areas would target the encroaching trees and shrubs around the meadow edge and interior to insure the removal of seed sources and maintain the meadow in a grass and forb vegetation condition. Slashing in oak/grasslands would target conifers and shrubs that are encroaching. Thinning of oaks would promote growth and development of large, full crowned oak trees. Thinning would leave the larger, fuller crowned trees.

4) *Rural Interface Area Hazard Reduction Treatments:* Vegetation selected for leaving would include a mixture of all species (conifers, hardwoods, shrubs) currently on site. Treatment would include slashing vegetation less than 6" DBH; girdling some trees less than 12" DBH, and pruning lower limbs of leave trees. Spacing of residual conifers, hardwoods and shrubs would be between 15 and 25 feet depending on size and species. The wider spacing would only be used when larger shrubs or mature trees are present. Hand piling and burning would be the prescribed fire treatment. Other fuel removal treatments that do not involve prescribed burning may be possible given access and a utilization demand. These can be explored on an area by area basis.

5) *Timber Harvest Units:* Fuels treatments would consist of understory thinning, hand piling and burning or underburning. Some areas will need no understory thinning, and prescribed burning may not be needed in all areas. Post harvest review would occur prior to finalizing all fuel treatments to determine the most appropriate treatment.

6) *Prescribed Burning:* Prescribed burning would be managed in a manner consistent with the requirements of the Department of Forestry's Smoke Management Plan and the Department of Environmental Quality's Air Quality and Visibility Protection Program. Smoke would be managed to preclude intrusion into air quality maintenance areas when air stagnation conditions exist. These conditions are usually described as "yellow" or "red" wood stove advisory days. Additional measures to reduce the potential level of smoke emissions would include: mop-up to be completed as soon as practical after the fire, burning with lower fuel moisture in the smaller fuels to facilitate their quick and complete combustion, burning with higher fuel moisture in the larger fuels to minimize consumption and burn out time of those fuels, and covering hand piles to permit burning during the rainy season where there is a stronger possibility of atmospheric mixing and/or scrubbing.

Prescribed underburning would be designed to be a low intensity burn over the majority of the burn area. It would create a mosaic burn effect which would result in up to 20-30% of the total burn treatment area with minimal to no fuel consumption. This is to reduce the loss of large woody debris, organic mater , and any conifer regeneration present. Burning would occur at any time of the year in which fuel moisture and weather conditions enable this type of burning. Characteristically, this would be in the spring.

All areas planned for prescribed fire treatment that contain sensitive plant species would be burned in the fall season to minimize impacts on plant during active growth. Burning in these areas would be done under conditions that would result in a cool burn to minimize potential damage. No burning would be done within the *Cypripedium* buffers.

7) *Post Harvest Evaluation:* All harvest units would be re-evaluated following logging to insure that the slash/fuel treatments are appropriate for the post harvest condition. The fuel treatments noted in Table 1 reflect the current best estimate of slash treatment needs. Treatments may be

changed if it appears that something different would better accomplish fuel treatment and/or site preparation needs while reducing the potential adverse impacts on air quality and site productivity.

A fuels treatment plan was prepared and is available upon request.

d. Roads - Construction, Improvement, Decommissioning, Closures

All new road construction, including operator spurs, will be designed to the minimum BLM road standards (BLM Manual 9113) allowing safe passage of the largest vehicle anticipated to be using the road/spur. Proposed road closures and decommissioning are intended to reduce the potential for erosion and to reduce the impacts on wildlife. Roads proposed for decommissioning that are needed to support the prescribed burning/fuel reductions would have the decommissioning scheduled after burning is complete.

All new culvert installations will be designed to handle a 100-year flood.

A mixture of native perennial grasses, annual grasses, and legumes will be used where erosion control is needed.

Drainage ditches shall be cleaned of debris by hand allowing an unobstructed flow and avoiding disturbance of vegetation (grasses) that are helping to stabilize ditch lines.

All roadside brushing would be performed mechanically with self-powered, self-propelled equipment designed to cut brush and / or manually with hand tools, including chain saws.

In order to minimize sedimentation on natural surface haul roads, rock would be stockpiled and used for spot rocking for protection. Also, these roads would be watered to minimize dry grinding.

To minimize erosion caused by Off Highway Vehicle (OHV) use on decommissioned roads, the entry areas would be camouflaged, deep ripped, covered with brush or slash, in addition to blocking. Any combination of the above methods or other methods can be used as deemed necessary on an individual site basis by BLM to discourage OHV access.

e. Proposed Dust Abatement

Dust created from log trucks on BLM roads would be abated in order to reduce driving hazards and protect the fine surfacing materials which bind the road surface. Dust abatement would be in the form of water, and/or dust palliatives.

f. Stream and Riparian Habitat Protection

Riparian reserve widths will conform with the Standards and Guidelines in the Northwest Forest Plan (p. C-30). Riparian reserves will be at least 150 feet or one site-potential tree length, whichever is greater (NFP page C-31). It has been determined that a site-potential tree in the proposed project area is approximately 150 feet. As a result, riparian reserve widths will be 150 feet on all Class 3 (perennial) streams and on Class 4 (intermittent) streams in riparian areas

vegetated with old-growth forest. Stream channels with stream banks less than 60% slope will be provided with 20 foot no-harvest buffer, and those streams with 60% slope and greater stream banks will be provided with a 50 foot no-harvest buffer or a buffer to a significant topographic break, whichever is less. The project would treat approximately 76 acres of Class 4 stream riparian habitat.

Rural interface hazard reduction areas overlapping riparian reserves will be managed with Aquatic Conservation Strategy (ACS) objectives being first priority. A treatment that meets the objectives of rural interface hazard reduction areas and ACS objectives would be thinning or brushing for fire hazard reduction in an area which will also increase growth rates resulting in larger trees, thus enhancing the riparian reserves. Fire hazard reduction may also be desirable where fire risk of ignition is particularly high within the riparian reserve (*i.e.*, there is a very high risk that all vegetation will be lost to fire). Decisions will be made on a site-by-site basis.

g. Wildlife Trees and Dead and Down Material

Except for areas within the FMZ (See fuels treatments PDF discussion), all snags greater than 10" DBH would be reserved from cutting and removal in all units unless they pose a safety hazard. Should it be necessary to fell a snag due to worker safety concerns, the snag would be left in the unit. If after harvest is completed it is determined that the District snag target standards are not met, the contract administrator will designate replacement trees of comparable size for the purchaser to remove the tops by blasting. (Blasting starts decay in the heart of the tree and removes the tops so the tree is more windfirm.)

All preexisting down woody material would be retained on the sale area.

In the area underburned by the Savage Creek Fire, little coarse woody debris exists due to the fire. All snags will be reserved standing (hazard trees excepted) to provide a future source of down woody material. In this area the current levels of mortality and snag formation and the anticipated post logging slash should result over the next 2-5 years in levels of CWM (especially decay classes 1 and 2) within the range necessary to restore natural levels for this type of stand (based on the Siskiyou National Forest's "Large Woody Material, Green Tree Retention, Wildlife Reserve Tree Retention Guidelines for Harvest Prescriptions" for Douglas-fir plant series - November 14, 1996). Given the green trees being reserved the long term CWM recruitment pool would be sufficient to maintain this amount of CWM over the long term. Other upland areas appear to have, or would have after logging, sufficient coarse wood to also meet ROD requirements.

In those portions of the riparian reserves where there are currently fewer than 2 snags / acre, retain 3 live large trees / acre that are approaching mortality to provide for long term CWM source.

h. Botanical Resource Protection

If any Survey-and-Manage species are found (*e.g.*, *Cypripedium fasciculatum*, *C. montanum*, or *Allotropa virgata*) in any units, a no-harvest, no-ground disturbance protection buffer would be implemented for a minimum of a 100-foot radius around each population. On *Cypripedium* sites no slashing or burning would take place.

If federal or state listed, candidate species or Bureau sensitive species are found, a minimum 100-foot radius no-harvest, no-ground disturbance buffer will be required. For other special status species, a protection buffer would be retained based on the site and the species' habitat requirements.

For all protection buffers, trees would be directionally felled away from buffer edges.

Chapter 3 Environmental Consequences

A. Introduction

Only substantive site specific environmental changes that would result from implementing the proposed alternatives are discussed in this chapter. If an ecological component is not discussed, it should be assumed that the resource specialists have considered affects to that component and found the proposed alternatives would have minimal or no affects. Similarly, unless addressed specifically, the following were found not to be affected by the proposed alternatives: air quality; areas of critical environmental concern (ACEC); cultural or historical resources; Native American religious concerns; prime or unique farmlands; floodplains; endangered, threatened or sensitive plant, animal or fish species; water quality (drinking/ground); wetlands/riparian zones; wild and scenic rivers; and wilderness. In addition, hazardous waste or materials are not directly involved in the proposed action or alternatives.

General or "typical" affects from projects similar in nature to the proposed action or alternatives are also described in the EISs and plans to which this EA is tiered.

This project is not located within the Oregon State Coastal Management Zone (CMZ). The proposed action will not have any direct affects on the resources within the management zone. Further, the project has not been identified by the State of Oregon's LCDC as one needing a consistency review by virtue of its type or geographic location even though it is outside of the CMZ.

Some understanding of the scale of the proposed actions relative to the project area and the larger watershed will assist in understanding of the effects and the significance of the effects of the proposed alternatives. The following table provides this perspective:

BLM Ownership in Murphy Watershed		
	Acres	% of total BLM acreage in the watershed
BLM <i>forest</i> land in the watershed	14,876	86%
BLM <i>non forest</i> land in Matrix/AMA LUA	1,458	8%
BLM <i>non-forest</i> land in a Reserve LUA	1,044	6%
Total BLM land in watershed	17,378	
North Murphy Forest Management Project Proposals		
Non-timber harvest treatments (understory thin, fuels treatment)	7,459	43%
Alternative 2 Treatments involving Timber harvesting	834	5%
Total Project Area	8,000*	46%

*Proposed treatments and timber harvesting acres do not add up to total project area because some acres will receive both treatments.

B. Site Specific Beneficial or Adverse Effects of the No Action and Proposed Treatment Alternatives

1. Resource: Soil/Water

a. Affected environment

The project is located in the Lower Applegate Watershed portion of the Applegate Sub-basin. Average annual precipitation is approximately 32 - 42". Precipitation is generally in the form of rain with some minor snow at high elevations. Elevation at the highest points on the ridgelines is slightly less than 4,000 feet. Ridgelines are rolling with steep midslopes. There are six stream drainage areas: Board Shanty Creek, Oscar Creek, Miller Creek, Rocky Creek, Miners Creek and Caris Creek. These are small stream systems that are predominately intermittent. Soils are predominately Vannoy, Manita, Voorhies on moderately sloping base and footslopes with Beekman, Vermisa, and Colestine on steep and very steep uplands (SCS, Soil Survey of Josephine County). Vannoy, Manita, and Voorhies are deep and moderately deep, well drained silt loam, loam, and very gravelly loam. Beekman, Vermisa, and Colestine are moderately deep and shallow, well drained and somewhat excessively drained, extremely gravelly loam and gravelly loam. These soils have low to moderate forest productivity.

b. Environmental effects

1) Short term

a) Alternative 1 (No Action)

The existing roads will continue to erode where ruts/channels have developed. This especially applies to roads in sections 18 and 19. Otherwise erosion and sedimentation will remain at low levels as disturbance levels will remain the same.

b) Alternatives 2 and 3

As helicopter logging will be the predominant method and the only new road to be constructed will be fully decommissioned after hauling, the short term effects will be negligible at the overall project scale and minor on a localized, site specific level. Very little soil will be disturbed by the helicopter logging. During the operation while the newly constructed spur road (Sec 18) and the reconstructed road (Sec 18/19) are being used, a late spring or summer storm may result in local erosion. Most sediment from this type of event would not reach stream channels. As these roads are decommissioned, rates of erosion will diminish to negligible. Seasonal hauling will limit sediment production from natural surface haul roads. However, log trucks hauling from helicopter landings will loosen and grind surface fines that become vulnerable to erosion. PDF's that call for spot rocking and watering of the road will minimize this effect.

A slight increase in annual stream yield may occur due to the reduction in vegetation resulting from this project. During the 5 years or less post-treatment period, root zones increase and fill in where

vegetation has been removed and stream yields would return to current levels.

2) Long term

a) Alternative 1 (No Action)

Alternative 1 would result in the vegetation continuing to increase in density. Individual tree growth and vigor would decline. The potential for large scale hot wildfire would continue to increase. Such fires destroy the organic matter on and in the soil which results in erosion/sedimentation and a substantial reduction in soil productivity. Also associated with such fires are spot fires and areas of low intensity burning which creates small localized areas where soil productivity would increase due to increased moisture levels and sun light due to fire induced vegetation changes.

b) Alternative 2 and 3

Short logging corridors where cable logging is practiced from existing roads may cause local effects of erosion. With the PDF requiring narrow width of corridors and waterbars constructed where needed, such erosion should be minimal. Otherwise, there would be negligible, if any, adverse long term effects. This is due to little surface disturbance, quick recovery from any short term effects, and increased litter/duff production to cover any exposed surface. Other long term effects would include:

- a) Increased soil productivity due to improved moisture availability, an increase in light to remaining vegetation, and an increase in duff thickness as litter decomposes.
- b) Reduction in fire hazard that would make a hot stand replacement fire less likely than it is now. Hot fires destroy soil organic matter that serves to provide nutrients to the soil and protects the soil mineral surface from erosion.
- c) Increased coarse wood recruitment in the Riparian Reserve (including stream habitat) and on upland sites.

3) Cumulative Effects

a) Alternative 1 (No Action)

There would be no added direct cumulative effects. However, the indirect strong probability of a hot wildfire would, in itself, create high levels of early seral stage vegetation, additional roads (caused by fire fighting) increasing road density, and some addition of soil compaction. This would add to existing levels of cumulative effects.

b) Alternative 2 and 3

Added cumulative effects attributable to this project are negligible. There is no proposed increase in road density, compaction, early seral stage, or open areas in the Transient Snow Zone. These are all indicators of cumulative hydrological effects.

2. Resource: Forest Vegetation

a. Affected Environment

Low moisture regimes and drought conditions coupled with dense stands have created stress conditions over most of the project area. The largest concentration of insect killed trees in the Grants Pass Resource Area is within the project area. The recent lack of frequent natural disturbance as well as fire suppression has enabled many conifer stands to reach high stocking levels that cause suppression, mortality, or loss of tree vigor (reduced radial growth and live crown ratios). The ability of trees to respond to release is diminished and susceptibility to insect attack is thus increased. Old growth Douglas-fir, Sugar pine, and Ponderosa pine trees have been dying because of competition for water with dense understory vegetation. Many of the forest stands have a dense overstory with ladder fuels present in portions of the stand, thereby creating conditions for crown fires to occur that could result in large stand replacement fires. Douglas-fir is regenerating in pine sites or shading out Ponderosa pine on sites where pine is better adapted physiologically. Manzanita and ceanothus have encroached on oak woodlands and grasslands.

In approximately one third of Sections 18 and in Section 17, the 1987 Savage Creek fire burned through the ground vegetative layer and mid-canopy layers in all of the proposed North Murphy harvest units, simplifying the stand structure to single or to an irregular pattern in two canopy layers.

15% late successional forest standard and guide: Inventory of the Murphy watershed, wherein the North Murphy project is located, allowed for computation of the current status of the watershed relative to the 15% S&G. The watershed currently has 38% of the federal forest land in a late successional condition (see RMP and NFP for appropriate definition of *late successional forest*), exceeding the requisite 15%. There are 6,587 acres of late successional forest in the watershed. The harvest of 834 acres would reduce the overall BLM late successional forest in the watershed to 33%.

b. Environmental Effects

1) Alternative 1 (No Action):

The current trend in vegetative changes noted above would continue.

2) Alternative 2

The proposed harvest and understory reduction treatments in the upland and riparian areas will cause the disturbance necessary to provide growing space for additional canopy layers to form. Crown ratios throughout the stand will be increased over time. Late seral tree species, old-growth Douglas-fir, pine and oak will be favored for retention under the present treatment proposal. Selected hardwoods will be maintained in the stands.

Reducing stand densities from the current ≥ 0.6 relative density to less than 0.4 will reduce competition between existing trees. (A relative density of 0.35 is considered an optimal thinning objective for maximizing residual tree growth.) As a result, growth rates which are currently slowing will increase. Tree vigor and resiliency to insect and disease attack is enhanced as competition is decreased. Dominant and co-dominant trees will not have to wait until the intermediate and suppressed trees die from competition for an increase in available nutrients, light and water. Larger trees will develop quicker. The proposed treatment will produce a variety of

stand densities ranging from “free to grow” conditions to conditions favorable for formation of snags and CWM formation. Existing stands in mature and mid-seral stages will be modified by a reduction in canopy closure to slightly less than 40% in harvest areas, but will otherwise remain in the same seral stage classification and may reach the next successional stage quicker. Overall canopy closures will return to their current levels (greater than 60%) within fifteen years. While this alternative will modify a variety of components that describe successional stages, the most substantial being canopy closure, there should not be a significant change in forest acreage categorized as late successional forest. There will be an increased productivity of these treated lands for future harvest in both the understory and overstory. The next harvest will likely be a commercial thin within the next thirty years.

This alternative will harvest approximately 2.7mmbf from 834 acres. Where harvesting will occur, approximately 23% of the commercial size trees will be harvested under the proposed action. Harvested conifers will range from 6" dbh to 36" dbh. Distributed throughout the project area will be unharvested stands located in areas unavailable for harvest, not currently economical to harvest, or are specifically left unharvested to grow for future harvest.

c) Alternative 3

The current trend of vegetation change will continue in the connectivity corridors (Units 13-8, and 13-9 and 17-16). In section 17, there will be more snag formation in 8"-16" diameter class and down woody material from competition mortality.

3. Botanical Resources - Special Status Plants

a. Affected Environment

The project area contains a large number of populations of *Cypripedium* species which are located in the following units:

In Unit 003, 37S, 5W, Section 13, one population of *Cypripedium fasciculatum* (Clustered Lady'slipper) has been located. Another population exists in the fuel modification zone. Two more are located directly north of Unit 003 within 1/8 mile of the unit.

In Unit 009, 37S, 5W, Section 23, two populations of *Cypripedium fasciculatum* are located.

In Unit 003, 37S, 5W, Section 26, one population of *Cypripedium fasciculatum* is located.

In Unit 015, 37S, 4W, Section 18, one population of *Cypripedium fasciculatum* is located.

In Unit 001, 37S, 4W, Section 19, two populations of the species are located. Two more populations are located in Unit 013.

In Unit 004, 37S, 4W, Section 20, another population is located.

In Units 002 and 001, 37S, 4W, Section 29, five populations including both *Cypripedium fasciculatum* and *C. montanum* totaling over 150 plants are located.

Cypripedium montanum (CYMO) and *Cypripedium fasciculatum* (CYFA) habitat occurs primarily on moist northerly aspects (anywhere from west to north to east slopes) in older forests with greater than 60% canopy closure. This orchid species is very long-lived, can take up to 15 years to emerge above ground and requires specific mycorrhiza for germination and establishment. CYFA occupies a range from central Washington to northern California with some scattered populations in the Rocky Mountains. The species sparsely covers this range, is currently considered threatened or sensitive in most states, and is listed in Utah. It is a Bureau Sensitive species and a Species of Concern under the US Fish and Wildlife Service, besides being a Northwest Forest Plan Survey and Manage species (Strategy 1 and 2).

Much of the N. Murphy project area occurs on southern aspects with dry site characteristics. The locations of CYFA known so far occur on northwestern and northeastern aspects in the Douglas-fir vegetation series. Within the project area potential habitat for this species exists in late successional stage northern aspects where the microsite characteristics are moist with a high percentage of canopy closure. This kind of habitat does not occur often since the topography supports a drier habitat over much of the project area. Hence, the late successional habitat required by these orchids is naturally small and fragmented.

In or adjacent to Unit 001, 37S, 5W, Section 23, one population of *Pellea mucranata* ssp. *mucranata* was located. An unknown species of *Pellea* was also found in Unit 009, 37S, 4W, Section 18. The plant is currently being identified by an authority on the species.

Pellea mucranata ssp. *mucranata* is a fern whose population range is primarily in California. The population found on this sale is the first site known in Oregon. Until other populations are found, it should be considered extremely rare. The species has Bureau Assessment protection status.

Star thistle, a particularly noxious weed in the area, is found in three locations in the project area (37S, 5W, Sect. 25, 9 and 26).

b. Environmental Effects

While short term, direct effects may be mitigated by the protection buffers established through the PDFs, long term, indirect effects could include a reduction in population size and productivity of CYFA within the protection buffers established by the PDF's. There is no definitive information regarding the adequacy of 100' radius buffers for protecting the plants within the buffered areas in the long term. Disruption of mycorrhizal connections and the reduction in microsite characteristics adjacent to the buffered areas as a result of the proposed alternatives could be detrimental to the productivity of the buffered populations over the long term.

Indirect impacts would occur from harvesting in areas of late successional forest habitat. The proposed commercial thinning would disturb the ground surface in this habitat which is detrimental to any orchid populations that may be present and /or dormant as well as to the establishment of new populations from intact habitat. The thinning will also open the canopy to a point that could be a detriment to survival of potential populations. Appendix J-2 (NFP's Final EIS) states that canopy closure at the population sites should be maintained at greater than 60%. It discusses the importance of maintaining ecosystem structure and function for these species, besides maintaining immediate

canopy closure. It further notes that size and quality of habitat are important factors for the survival of *CYFA* and points out that the species can be associated with old growth Douglas-fir in southwest Oregon.

A related negative effect of this project could be the spread of noxious weeds due to the presence of star thistle within the area.

1) Alternative 1 (No Action)

The effects of the No Action alternative on special status species would be both positive and negative. Canopy closures and the limited moist microsites would be maintained as well as mycorrhizal connections in areas. This would allow for the continued ecosystem structure/function and higher quality habitat required for the survival of the *Cypripedium* species. Also, it allows for the dormancy time required in these species since currently potential habitat areas are open to harvest even though plants simple may not have emerged in a survey year.

The negative effects of the No Action alternative on special status species would be the increased risk of wildfire. Rural interface areas would not be cleared, increasing the risk of fire ignition in these areas. These wildfires would be difficult to contain without fuel modification zones. Without these hazard fuel reduction projects, the risk of high intensity fire increases and would threaten *Cypripedium* populations which have been shown to not survive high intensity fires (Appendix J-2).

2) Alternative 2

Alternative 2 would reduce the old growth stand densities in moist sites to 30 foot canopy separation. This could cause a substantial change in potential habitat moisture and could destroy mycorrhizal connections between the old growth tree and surrounding vegetation. This could essentially eliminate what little moist late successional forest habitat currently exists on the project area.

3) Alternative 3

Alternative 3 would provide beneficial effects for special status plants through its proposed connectivity corridors, especially in the Section 13 corridor, where multiple populations of *Cypripedium fasciculatum* exist on both ends of the corridor in Unit 003. By leaving unharvested areas with 60% or greater canopy cover, the opportunities for increasing and expanding populations is much greater than in Alternative 2.

Proposed Mitigating Measure #1: In late successional forest stands (mature and old growth) shown in Table 1, retain 60% canopy closure over as much of the northern, moist aspects as possible. Minimize clearing around old growth trees to avoid disturbing mycorrhizal connections.

c. Cumulative Effects

The North Murphy project area and surrounding private land has been extensively cut for timber production. No official habitat assessment has been done in southwestern Oregon for *Cypripedium*

fasciculatum, but of the known population sites on BLM land many are being affected by timber harvesting projects and the consequent canopy thinning, ground disturbance and habitat fragmentation. Of the known populations, the majority are being protected through buffers that have not yet been proven to ensure viability for the specific population within them. The Late Successional Reserve land allocation may not provide enclaves or refugia for CYFA over the long term because the majority of known populations and potential habitat exists in the mixed evergreen vegetation of the Matrix/AMA land allocation. (This apparent distribution may be partly reflective of the fact that more extensive survey work that has been in the Matrix / AMA than in the LSRs.)

The reasonably foreseeable future actions that will take place in the Matrix and on county and private land include continued timber harvest, understory treatments and clearing of forest land for development. The long term effect is a decrease in the ability of populations to maintain or to expand from these small islands of undisturbed ground into surrounding altered habitat. Local populations could experience a decrease in viability, but overall, the viability of the *Cypripedium* species should not be affected by this project due to the large range of the species.

Management recommendations have been based on Appendix J-2, Northwest Forest Plan, ROD Northwest Forest Plan, Medford District Resource Management Plan, BLM Manual 6840, Medford District botanist advisement and professional knowledge.

Additional Reference: Wells, T.C.E. The Biological Aspects of Rare Plant Conservation - Population Ecology of Terrestrial Orchids. Wiley and Sons Ltd. 1981.

4. Resource: Wildlife / Wildlife Habitat

a. Affected Environment

1) Habitats at the Watershed Scale

The North Murphy forest project area is located in the Lower Applegate fifth field watershed. The Lower Applegate Watershed is split into two subwatersheds (Murphy and Cheney-Slate) for watershed analysis purposes. Watershed analysis has been completed for the Cheney - Slate watershed and will be conducted for the Murphy watersheds at a later date. The biological evaluation for the North Murphy project will be conducted at the Murphy watershed (2 sixth field watersheds) scale.

The Murphy watershed totals approximately 40,960 acres with approximately 16,766 acres managed by the BLM. The watershed is primarily low elevation, less than 4,000 feet, and has a high percentage of the following plant associations: Oregon White Oak-Douglas-fir/Poison Oak, Oregon White Oak/Hedgehog Dog tail, Ponderosa Pine-California Black Oak and Ponderosa Pine-Douglas-fir, Douglas-fir-California Black Oak/Poison Oak (Atzet *et. al.* 1996). The White Oak and Ponderosa Pine plant associations comprise the majority of the habitat acres in the Murphy Watershed. These habitats have been identified as habitats in decline by the Oregon/Washington Partners in Flight working group. Oak and pine habitats are important to many species of wildlife including black-tailed deer, black bear, wild turkeys, neotropical migratory birds, white headed woodpeckers and flamulated owls. White headed woodpecker and flamulated owls are protection buffer species (NFP-ROD, page C-46).

The Ponderosa pine-Douglas-fir and Douglas-fir plant associations are capable of producing old growth habitat structure in terms of canopy closure, large trees, snags, canopy layers and down logs (page IV28, Forest Ecosystem Management Assessment Team {FEMAT}) important for old growth/mature forest associated wildlife species. Examples of species associated with these types of old growth/mature forest include the northern spotted owl, northern goshawk, red tree vole, brown creeper and hermit warbler. The Murphy watershed contains approximately 2,480 acres of old growth/mature habitat as described above.¹ (See also Appendix C) Old growth/mature forest habitat acreage represents approximately 15% of the land managed by the BLM in the Murphy Watershed.

The old growth/mature forest habitat is not well distributed within the Murphy watershed. The area north of the Applegate River contains old growth/mature habitat along the riparian zones and along the ridge that separate the Grants Pass and Murphy watersheds. One additional area of old growth/mature forest habitat is located in T.37S., R.4W., section 29 and is approximately 84 acres. This area is the north facing aspect of Caris creek which allows the Douglas-fir-California Black Oak/Poison Oak plant association to survive. Old growth/mature habitat occupies about 815 acres or 10% of the BLM lands in the Murphy Watershed north of the Applegate River. The area of the Murphy watershed south of the Applegate River contains a majority of the Douglas-fir plant associations. This area currently contains approximately 1,665 acres of old growth/mature forest habitat and it is much better distributed. The portion of the Murphy watershed south of the Applegate River managed by the BLM contains approximately 19% old growth/mature forest habitat.

2) Habitats at the Project Area Scale

The North Murphy project area, located in the north half of the Murphy watershed, encompasses approximately one half of the BLM managed acres in the Murphy watershed and ranges in elevation from 1,200 feet near the Applegate River to 3,800 feet at the top of the Rogue/Applegate divide. The proposed project scoping area incorporates approximately 8,000 acres. As proposed, timber harvest would be conducted on about 700 acres, understory treatments, thinning and wildlife habitat restoration with prescribed fire would be applied to approximately 2,400 acres. The remaining acres in the project area were evaluated and found not be in need of treatment at this time.

The project area is predominantly a south exposure that includes many smaller east, west and some north-east aspects along the smaller drainages. Vegetation varies depending on the aspect, elevation and soils. The lower elevation sites are dominated by the White Oak, and Ponderosa Pine plant associations mentioned previously. These plant association occupy over 5,000 acres of the

¹ Acres of old growth/mature habitat used herein are based on the spotted owl McKelvy habitat ratings assigned to units in the project area in 1992. This classification is not the same as that used to determine the extent of late successional forest needed to meet the 15% late successional forest standard and guideline (NFP-ROD, page C44). Consequently the figures may vary.

proposed project area. The upper elevations are forested by Douglas-fir and ponderosa pine plant associations. Results of topography, soils, past fire history and logging have combined to create a diverse and highly fragmented habitat. Areas of old growth habitat larger than 20 acres are limited to section 13, 24, 26 and 29 and total approximately 271 acres. Mature habitat blocks larger than 20 acres are limited to sections 14, 15, 17, 24 and 29 and total approximately 379 acres. There are an additional 165 acres of old growth/mature habitat located within this project area. However, they are small scattered patches mostly smaller than 10 acres in size.

Riparian areas have survived the historical fires that have maintained much of the upland in the above seral condition. As a result the riparian areas, especially those of perennial streams, are largely old growth/mature habitat. Intermittent stream riparian zones have been effected in many areas by past fires and are now young, or in some cases mature forest with single storied stands with little understory structure. Approximately 115 acres of the perennial and intermittent riparian vegetation reserves are in old growth/mature forest habitat. Total old growth/mature forest habitat in this project area occupies approximately 815 acres.

Old growth/mature forest habitats located within the North Murphy project area comprise only 10% of the land base. As a result the connectivity corridor/refugia they provide are extremely important for northern spotted owls, northern goshawks, red tree voles, brown creepers, hermit warblers, blue grey tail dropper mollusk and many other species. Existing corridors currently provide pathways for genetic flow from the Murphy Watershed/Williams LSR to the Grants Pass and Middle Applegate Watersheds and eventually on to other watersheds and LSRs.

a. Environmental Effects

1) Alternative 1: No Action

The no action alternative would be both beneficial and potentially detrimental to wildlife species. The current stands of old growth/mature forest habitat would continue to provide habitat and dispersal corridors for northern spotted owls, northern goshawks, red tree voles, brown creepers, hermit warblers and blue grey tail dropper plus other mollusks. The three pairs of northern spotted owls in the project area would most likely continue, not only to reside in the project area, but to produce offspring. The forest maturation process would continue. As trees die they would create more snags and down logs. Development of larger trees and canopy layers might be somewhat slowed but recruitment of down logs and snags would occur unaltered. Increased snags and down logs would provide habitat for red back voles, long eared myotis, Vaux's swift, woodpeckers, salamanders, mollusks and arthropods. These additional habitat components would improve overall habitat conditions in the area, resulting in improved refugia and connectivity for the above mentioned species. Red backed voles are a primary food source of northern spotted owls, any increase in their population could lead to increased productivity of the three pairs of northern spotted owls present in the project area.

Current successional trends in pine oak and meadow habitats would continue with a decline of their extent and vitality due to the invasion and encroachment by other species. Current trends in habitat change of these plant associations adversely affect wildlife species like the flammulated owl, white headed woodpecker (Protection Buffer Species, ROD, page C47), western blue bird, violet green swallow and Williamson's sapsucker. These bird species prefer the white oak and ponderosa pine

plant associations for nesting and foraging and have been experiencing population declines in the past 10 years (Andelman and Stock, 1994). These plant associations will continue to decline in habitat quality, resulting in continued decline of the above wildlife species. Under a worst case scenario where natural disturbances did not occur some of the above species could be lost from the Murphy watershed.

Current vegetation conditions in this area have created a high risk and high fire hazard. Existing fire conditions in understory and surrounding vegetation will continue to put the existing old growth and mature habitat at risk. Fire can be beneficial to existing late successional stands depending on its severity. The Birdsye Creek fire of the summer of 1997 under burned late successional stands in sections 17 and 18, removing much of the understory vegetation that had accumulated over the past 30 years. Removal of the fuels including small conifers and hardwoods thinned the stand. Fire also created snags which will in the future provide down logs. This fire, a backing fire in this stand, actually improved the old growth/mature forest habitat in sections 17 and 18.

Stand replacement type fires also have the potential to destroy large areas of old growth/mature forest habitat. The Birdsye Creek fire demonstrated this on the Rogue River side of the ridge where it started at the bottom of stands and burned through the crowns spreading rapidly removing the habitat in the upper Birdsye Creek drainage. Habitat removal of this type is complete and would eliminate any old growth/ mature forest associated wildlife species from living in the burned area for decades were it to occur in the North Murphy project area..

(3) Alternative 2

(a) Three northern spotted owl sites would be affected: Caris Creek located in 1997, Millers Island located in July 1994 and Shilows Rock Mine located in July 1994. These sites do not have reserved core areas as they were located after April 1994 (NFP-ROD). All three sites are marginal as they currently have low acreage of suitable habitat within their 1.3 mile home range. Caris Creek has approximately 84 acres, Millers Island approximately 163 acres and Shilows Rock Mine has approximately 161 acres. The Millers Creek pair and the Shilows Rock Mine pair share an additional 73 acres that is within 1.3 miles of both pairs. Even with marginal habitat acreage, both Millers Island and Shilows Rock Mine owls were able to fledge juveniles at least once at each site since they were located. After completion of harvest the Caris Creek pair will have 7 acres of suitable habitat remaining, Millers Creek will have 37 acres suitable habitat remaining and Shilows Rock Mine will have 43 acres of suitable habitat. It is highly probable that all three pairs of northern spotted owls will be displaced as a result of insufficient suitable habitat and all three sites eliminated from further production.

(b) Consultation with the US Fish and Wildlife Service (USFWS) required under the Endangered Species Act has been completed for the North Murphy project. The USFWS has issued a Biological Opinion (#1-7-96-F-392) which authorized a taking due to "harm" to the habitat. The USFWS considers any action that reduces or further reduces suitable owl habitat below 1,340 acres within the 1.3 mile home range as causing "harm" to those owls. Alternative 2 would "harm" the three pairs of northern spotted owls by reducing the amount of suitable habitat at the three sites from 481 acres to 87 acres.

The USFWS is responsible for tracking northern spotted owl populations at the provincial and

regional levels. Consultation with this agency is conducted to insure that local projects do not jeopardize the continued existence of the northern spotted owl as a species. Their biological opinion concluded that the North Murphy project would not.

(c) Connectivity across the Murphy Watershed is poor under natural conditions. Old growth/mature forest habitat occurs only on higher elevations, the north and east slopes and along riparian areas. Alternative 2 will alter the larger blocks of old growth and mature forest in the project area by reducing the current 60+% canopy closure to near 40% after treatment. Canopy closure of existing stands after harvest will depend on the harvest system and the amount of damage that these harvest systems create to leave trees in the stands. Based on recently completed projects of a similar nature, post-treatment canopy closure will be greater than 40%.

Northern spotted owl dispersal habitat is classified as habitat that has between 40% and 60% canopy closure. The best habitat for spotted owls to disperse through is habitat that provides the greatest amount of protection from predators, such as great horned owls. The more open the stand is, which relates directly to canopy closure, the greater advantage the great horned owl has over their prey, in this case spotted owls. Forty percent canopy closure is the minimum level used to determine northern spotted owl dispersal habitat. Spotted owl dispersal habitat quality is directly proportional to stand density/canopy closure as is juvenile spotted owls survival rate.

Post harvest stands where canopy closure is less than 60% will not provide habitat conditions suitable for connectivity or refugia for red tree voles, mollusks, and salamanders. This reduction in connectivity between the Murphy watershed and the Grants Pass watershed to the north and the Middle Applegate Watershed to the east would greatly restrict the genetic flow between these watersheds. Species which would be most likely effected by this type of isolation would be the low mobility species such as red tree voles or mollusks such as the blue grey tail dropper. The North Murphy project has not been surveyed for mollusk but the blue grey tail droper was located incidentally to other surveys in the project area. As a result of these species' low mobility, limiting genetic flow in and out of this watershed is highly probable as a result of this alternative. Isolated populations may inbreed leading to reduced productivity, reduced genetic diversity and the loss of these low mobility species in the Millers, Miners and Caris Creek drainage. These species would most likely continue to exist in southern portion of the Murphy Watershed.

(d) Large snags would be reduced by approximately 50%. Monitoring of recent timber harvest projects indicates that even though the BLM reserves all snags, most will not survive. Operators have the right under the Occupational Health and Safety (OSHA) standards to remove any snag they perceive as a hazardous to their employees. This concern usually eliminates 50% of the existing snags. Strict enforcement of the OSHA standard has the potential to eliminate all snags within the work area. Loss of snags reduces habitat for salamanders, red backed voles, primary and secondary cavity nesting birds, bats and countless invertebrates and mollusk.

(e) Old growth and mature habitat along the class three streams, about 115 acres, would be reserved from harvest during this project. In areas where harvest units adjoin the riparian reserves there would be a shift of the existing microclimatic conditions which currently exist in the riparian reserves. Shift in microclimates have the potential to reduce habitat effectiveness for birds, mammals, mollusks and invertebrates. Changing of these conditions can lead to displacement of sensitive species such as invertebrates and mollusks. Riparian reserves would function as dispersal

corridors and refugia for spotted owls, neotropical birds and small mammals. The indirect effects to the riparian microclimatic conditions resulting from removal of trees adjacent to the riparian reserves is not known.

Existing old growth and mature forest along the major divide between the Murphy Watershed the Grants Pass and middle Applegate Watershed would be harvested reducing the canopy closure to near 40%. Harvested areas might provide a minimum level of dispersal habitat for northern spotted owls. It would require at least 10 years before these stands would provide dispersal habitat of moderate quality for northern spotted owls, and approximately 20 years before they would again function as dispersal/refugia for other old growth/mature forest associated wildlife species like red tree voles and mollusk. Other species associated with old growth/ mature forest that have low dispersal capabilities, such as terrestrial invertebrates, salamanders and mollusk would be isolated to riparian reserves in Caris, Miller and Miners creeks for a period of 20 years. This isolation would restrict genetic flow to and from adjoining watersheds there by contributing to a loss of species diversity and to population declines.

Old growth/mature forest habitat would be reduced in the north half of the Murphy Watershed and there is a possibility that some low mobility species may be lost in that area. At the 5th field watershed level the acreage of late successional forest will still be sufficient to meet the 15% late successional forest retention standard and guide requirement (NFP-ROD page C44) for the watershed.

(f) *Beneficial Effects Of Alternative 2:* The white oak and ponderosa pine plant associations currently occupy approximately 50% of the Murphy watershed. Most of these habitat acres are in poor condition due to past fire suppression. These plant associations have been identified by the Oregon/Washington Partners in Flight working group as a habitat in decline. The habitat is threatened by: encroaching species such as Douglas-fir, which compete for resources within the oak plant association; and dense Douglas-fir ingrowth which changes the structure of the habitat and increases the potential for catastrophic fire. This habitat supports several species: California mountain king snake, Common king snake fence lizard, western blue bird, Vaux's swift, violet green swallow. It also provides habitat for White headed woodpecker and the flamulated owl (Protection buffer species Northwest Forest Plan). This habitat also provides primary winter forage areas for black tailed deer and introduced wild turkeys. Treatments proposed in this action would maintain and, in some cases, improve this habitat by reducing competition from invading species. Reintroducing fire back into these habitats would restore their proper structure and protect them from catastrophic fire. This proposed alternative would help to reverse the decline in habitat of some species of pine and pine oak dependant species and, in the case of deer and turkeys, could result in an increase in local populations.

(3) Alternative 3

The effects of this Alternative are the same as those described for Alternative 2 except with the regard to the effects of retaining the three connectivity corridors located in sections 13 and 17. The two corridors in section 13 consist of two 300 foot wide corridors covering approximately 30 acres and would be reserved from harvest. The corridor in section 17 is experimental in design and would have a modified silvicultural prescription that would result in one half acre openings totaling approximately 20% of the stand's total acres. Theoretically this should leave the stand with 80% of

the canopy intact thus to provide refugia and dispersal for old growth/mature forest wildlife species. These connectivity corridors would maintain genetic flow between the Grants Pass and Murphy Watershed. Low mobility old growth /mature associated species such as red tree voles and blue grey tail dropper would receive the greatest benefit from these connectivity corridors.

b. Cumulative Effects

1) Alternative 1: No Action

No harvesting in the project area would leave the current levels of old growth/mature habitat in the Murphy watershed. Increased fire hazard and risk would continue with their current trends. Increased risk and hazard put the existing old growth/ mature habitat at risk of being eliminated by stand replacing wildfire. Wildfire can be both detrimental and beneficial and for wildlife habitat (see effects wildlife of alternative 2 above). Old growth/mature habitat burned by wildfire could be completely eliminated then taking decades to centuries to regrow. Old growth/ mature habitat species would be eliminated from the burned area.

Other projects that may occur in the Murphy and adjacent watersheds (*e.g.*, Scattered Apples, Wild Wonder, Apple Seed) would most likely be completed with similar silvicultural prescriptions. These projects could alter some old growth/mature forest habitat with an effect on connectivity and refugia for associated species. The extent of these effects cannot be determined at this time as the other projects are still in the primary planning phase.

2) Alternatives 2&3

The following discussion assumes a Worst Case Situation.

The North Murphy project and the proposed Scattered Apples and Wild Wonder projects could potentially harvest approximately 900 acres (34%) of the existing 2,480 acres of old growth/mature forest habitat in the watershed. This would reduce both habitat diversity and connectivity in the watershed. Connectivity between the Murphy and Grants Pass watersheds would be limited for approximately 10 years for northern spotted owls. Species which require greater canopy closure (*e.g.*, salamanders) could be restricted for a period of approximately 20 years. The potential effect of 20 years of isolation on salamander and mollusk populations is unknown. In this worst case situation such species could be eliminated from Caris, Miners, Millers, Panther, and the Pennington Ridge areas. The component of habitat diversity in the Applegate watershed currently being provided by existing old growth and mature conifer stands, would be limited for the next 20 years until canopy closure and stand structure returns to current levels.

These three projects have the potential to modify 34% of the old growth and mature forest habitat in the Murphy watershed. This habitat is located at lower elevations along the Applegate river and on the south side of the watershed and is restricted to BLM administered lands. The modification of this habitat has the potential to create a 3-5 mile wide barrier to the dispersal of low mobility species. This isolation will restrict genetic flow across the Murphy Watershed thereby contributing to loss of species diversity and to population declines. The existing scattered patches of refugia and dispersal habitat are very important to maintaining the habitat connectivity and consequent species flows between LSRs and throughout the ecoregion.

6. Resource: Special Forest Products

a. Affected Environment / Environmental effects (Alternatives 2 and 3):

Units 37-5-11(019) and 37-5-14 (001) include areas of good marketable poles and for which there is a demand. The Savage Green project EA identified these areas for pole cutting areas. The North Murphy project proposes to treat portions of these areas as part of a fuel modification zone. The market value of the poles could be lost.

The fuel modification zone in 37-5-25 contains a large amount of madrone suitable for fuelwood. The proposed alternatives would result in the loss of the market value of this forest product.

Proposed Mitigation Measure # 2: Capture the pole and fuelwood product value by completing the pole and hardwood cutting and removal in the above areas before the fuel modification work begins.

7. Resource: Fire and Fuels

a. Affected Environment

Hazard is defined as the existence of a fuel complex that constitutes a threat of wildfire ignition, unacceptable fire behavior and severity, or suppression difficulty. *Risk* is the source of ignition be it human or lightning.

A fuel hazard and wildfire occurrence risk rating analysis was completed for the Murphy Watershed, which included the lands in the North Murphy proposed project area. This is a 7,489 acre analysis area of BLM administered lands. Private lands with the analysis area total approximately 6,207 acres. For the purposes of this fire and fuel affects assessment the project area includes all BLM acres in T. 37S., R. 5 W., Sections 3 (195 ac.), 5 (78 ac.), 8 (80 ac.), 9 (520 ac.), 10 (198 ac.), 11 (262 ac.), 13 (510 ac.) 14 (275 ac.), 15 (640 ac.), 17 (360 ac.), 22 (232 ac.), 23 (640 ac.), 24 (360 ac.), 25 (130 ac.), 26 (440 ac.), 27 (80 ac.); and T. 37 S., R. 4 W., Sections 17 (409 ac.), 18 (620 ac.), 19 (529 ac.), 20 (200 ac.), 21 (195 ac.), 29 (257 ac.), 30 (13 ac.), 31 (261 ac.), and 32 (5 ac.).

Wildfire occurrence *risk* for the North Murphy analysis area is rated as high overall. The fire risk for all BLM acres is 53% HIGH (3,993 ac.), 38% MODERATE (2,856 ac.), and 9% LOW (640 ac.). Private lands received a HIGH rating on 94% (7,020 ac.), MODERATE on 4% (312 ac.), and LOW on 2% (157 ac.). The BLM areas within the high risk level are primarily located adjacent to the private property residential areas and major travel roads. Current risk is primarily due to human presence. Risk is difficult to change or influence through land management activity as it is a function of weather events (lightning) and human behavior. Reducing public access can reduce human caused fire and affect risk, but reducing access for fire suppression forces can increase fire size and effects. For the purpose of this analysis, risk is not affected by any activity in this project proposal and is thus considered unchanged for the 20 year analysis period.

Fuel includes dead and down woody debris and live vegetation. The fuel *hazard* it creates is

dynamic and changes over time and can be altered through land management activities. The natural process of wildfire occurrence prior to settlement in the 1800's prevented large scale fuels build-up.

This fire regime was one of frequent, low-intensity surface fires which prevented excessive understory vegetation development and the build-up of large amounts of dead and down woody debris. With human settlement and the suppression of wildfire, fuels have been allowed to accumulate and dense vegetation has grown unchecked. Fuel hazard will increase over time in the absence of disturbance or land management activities which remove or reduce fuels. Without disturbance, fuel hazard conditions become more uniform and continuous. This increases the potential for large, high severity fire occurrence. Dense, overstocked stands are a contributing factor to large stand replacement fire occurrence due to the closed canopy and ladder fuel presence.

Fire exclusion has produced a decrease in the acreage of meadow and oak woodland. These areas historically were fire dependent and maintained. Encroachment by conifers and shrub species have replaced and altered these habitat areas.

Table E-2 - Hazard Rating by Acres and Percent for BLM Lands Considered in North Murphy Project Area EA			
CONDITION	HIGH HAZARD	MODERATE HAZARD	LOW HAZARD
CURRENT CONDITION	70 % 5,212 acres	27 % 2,016 acres	3 % 261 acres
NO ACTION 5-10 YEARS	84 % 6,291 acres	13% 977 acres	3 % 221 acres
	10-20 YEARS 94 % 7,020 acres	4 % 312 acres	2 % 157 acres
ALTERNATIVES 2 and 3 5-10 YEARS	58 % 4,329 acres	19 % 1,442 acres	23 % 1,718 acres
	10-20 YEARS 67 % 5,048 acres	28 % 2,069 acres	5 % 373 acres

Table E-2 shows the current fuel hazard condition rating by acres and percent for all acres of BLM land within assessment area. It projects the change in hazard over time, short term (5-10 years, and long term (10-20 years) for the current management regime, and the alternatives. Projections on future hazard are based on current vegetation conditions and known trends of vegetation development in the plant associations. The trend for the next 20 year period is for increasing vegetation density and/or increasing dead and down fuel accumulation. Future management activity is unknown at this time, but it would affect the hazard so this assessment assumes no future activity. Current Condition is the existing situation at the present (April 1997).

b. Environmental Effects

The following assumptions were used in the assessment of effects of treatments on hazard. The time period maximum of 20 years is considered the longest time interval before further management activity would be prescribed. Treatments which harvest timber and/or cut vegetation without treating the slash increase the hazard rating to HIGH. Hand piling and burning reduced the hazard rating by one factor (e.g., HIGH to MODERATE, MODERATE to LOW). Broadcast burning and underburning reduce the hazard rating to a LOW category. Understory treatments in conjunction with prescribed burning are considered beneficial in both the short and long term as the effect of ladder fuel reduction and stocking reduction creates a fuel profile that is less susceptible to fire reaching the tree crowns. Stands that are not or will not be at or near mature conditions within the 20 year time frame are still susceptible to stand replacement from wildfire events due to conditions such as thin bark, high crown ratios, presence or ability to reestablish ladder fuels, and continued stand mortality. The trend in these stands is for treated and untreated areas to increase in hazard as vegetation in the understory increases, crown closure occurs, and dead and down fuels accumulate. For those stands that were underburned and are at or will reach mature conditions within the 20 year time frame, it was assumed that these stands would remain in the LOW hazard rating. Stands that are currently younger and in mid serial stage conditions, and would not have as much down fuel removed (hand pile burn units) increase in hazard by the long term period and return to the HIGH and MODERATE rating categories.

The above table includes treatments in Alternatives 2 and 3. These include commercial thinning, understory treatment, and prescribed fire use within approximately 1,583 acres; understory thinning and prescribed fire use within 256 acres; prescribed fire use for wildlife habitat, oak woodland, and meadow restoration on 479 acres; and commercial thinning and understory treatment with no prescribed fire use on 101 acres. Actual use of prescribed fire is anticipated to occur on no more than 60 to 70% of the 2,419 treatment acres. Additional hazard reduction treatments include approximately 554 acres of Fuel Modification Zone (FMZ) on ridgetop locations, and 212 acres of hazard reduction treatment areas identified as Rural Interface Area (RIA). FMZ will include areas both within the commercial and understory thinning and outside. Both FMZ and RIA will treat the understory vegetation and dead and down fuel loading and will include prescribed fire use.

1) Alternative 1 (No Action)

The No Action Alternative would continue the current trend of increasing the fuel hazard over time. This alternative does nothing to reverse the trend of increasing fuel hazard. With the absence of natural, low-intensity, frequent fire occurrence, dead and down fuels and live fuels will increase over time. The fuels buildup creates conditions that lead to high-intensity, stand replacement fire. The current condition has 70% of the area in a high hazard condition. This increases to 84% within the short time period due to the large percentage of younger to mid-aged stands and the vegetation trend. High hazard conditions dominate in the 10 to 20 year long-term time frame.

It should also be noted that there have been / are fuel hazard reduction efforts on some private parcels adjacent to the North Murphy project area. The no action alternative could render these private efforts only minimally successful.

2) Alternatives 2 and 3

Alternatives 2 and 3 include treatments which reduce and remove fuels. The hazard reduction

treatments have a positive benefit and shift those acres into lower hazard conditions. The acres for timber harvest differ between Alternative 2 and 3 but the effect of the understory thinning and hazard reduction treatments creates the same reduction in hazard for both Alternatives. Both Alternative 2 and 3 would have a short term (5-10 years) affect of reducing the amount of high and moderate hazard from the current combined 97% to a combined 77%. The amount of lands in the low hazard goes from the current 3% level to 23% for short term. The hazard rating would return to near the current level 10 to 20 years after treatment. (Periodic retreatment would be necessary to maintain the hazard rating at the lower levels.)

Table E-3 shows the hazard rating for private lands within the project area. Change in hazard conditions over time are also projected. Assumptions used are the same for BLM lands (e.g., no hazard reduction, or land use activity change). This is included solely to show the total landscape picture. Table E-3 also shows the combination of both BLM and private lands and displays the hazard condition with no treatments. This is included to illustrate future trend if no actions are taken to alter vegetation and fuel conditions.

Table E-3: Hazard Rating by Acres and Percent for Private Lands Considered in North Murphy Project Area EA			
CONDITION	HIGH HAZARD	MODERATE HAZARD	LOW HAZARD
CURRENT CONDITION PRIVATE LANDS 6,207 ACRES	30 % 1,857 acres	36 % 2,265 acres	34 % 2,085 acres
NO ACTION 5-10 YEARS	36 % 2,237 acres	30% 1,885 acres	34 % 2,085 acres
	42 % 2,607 acres	24 % 1,515 acres	34 % 2,085 acres
10-20 YEARS			
CURRENT CONDITION COMBINED BLM & PRIVATE LANDS 13,696 ACRES	52 % 7,069 acres	31 % 4,281 acres	17 % 2,346 acres
ALTERNATIVES 2 and 3 5-10 YEARS	62 % 8,528 acres	21 % 2,862 acres	17 % 2,306 acres
	70 % 9,627 acres	14 % 1,827 acres	16 % 2,242 acres
10-20 YEARS			

The effects of hazard reduction treatment in the Alternatives 2 and 3 are beneficial in reducing hazard conditions in both the long and short term. A wildfire occurrence within the treated areas would result in less severe effects due to the reduction in fuel amounts. The removal of dead and down fuel and ladder fuel from the forest areas reduces the amount of fuel available to burn when wildfire occurs in those areas. Wildfire will burn with less intensity, duration, and flame length. The proposed treatments would create areas of lower intensity burning which enable suppression

forces opportunities to contain the fire spread. They also provide less fuel to "feed" a large fire and add to its energy. This increases the ability of fire suppression forces to protect forest resources, homes and structures and to limit the size of wildfire. The Fuel Modification Zone would create a potential area to confine a wildfire. This area could provide a location for suppression forces to initiate holding actions and prevent a wildfire from spreading from one drainage into another. Reducing the size and effects from a wildfire would be beneficial in maintaining the forest and visual resources within the watershed, as well as reducing effects on stream and water quality.

The RIA treatment areas are designed to provide a buffer area for wildfire spread from BLM lands onto private lands and vice versa. The fuel hazard reduction treatments within these areas will create an area of reduced fire behavior within the forest, woodland, or shrub vegetation type. Because of the reduced fire behavior these areas can potentially be used as locations to stop the spread of a wildfire. Locations were chosen based on proximity to known residential or agricultural structures. It should also be noted that there have been / are fuel hazard reduction efforts on some private parcels adjacent to the North Murphy project area. The Alternatives 2 and 3 would work in coordination with and compliment these efforts.

c. Cumulative Effects

1) Alternatives 2 and 3

The proposed hazard reduction treatments of these alternatives would substantially reduce fuel hazard within the project area and at the sub-watershed scale. Hazard reduction treatments are needed throughout the Murphy Watershed to have a significant effect on the watershed as a system. Within the proposed project area the benefit of the proposed alternatives is lost in the long term. Further hazard reduction treatments, retreatments and maintenance treatments will be needed to prevent the increase in hazard over time.

When wildfire occurs the potential effects would include a mosaic of fire intensities. A wildfire of 100 acres or larger would exhibit areas of total stand replacement, areas of low intensity underburn with little overstory mortality, and areas with a mixture of both extremes side by side. Location of the extreme fire effect areas would be a function of the presence of steep slopes, hot aspects, amount of fuel present, fuel continuity, presence of ladder fuels, and weather conditions at the time of fire occurrence.

Based on current vegetation conditions, and topography of the assessment area it is estimated that 50 to 70% of the acreage in a large fire potentially could experience extreme fire effects during extreme fire weather conditions. A result of the treatments in Alternatives 2 or 3, this extreme effects percentage has the potential to be much lower, and confined mainly to the younger aged stands. This reduction is further complimented by the adjacent private land activities already completed or currently underway.

8. Resource: Fisheries

a. Affected Environment

Water quality in the perennial streams is in fair to good condition. Miller Creek and lower Caris

Creek exceed the amount of sediment for adequate spawning gravels as they are greater than 30% embedded exceeding the ODFW benchmark of 15% sand/silt. Miller Creek has 40% sand in the stream bed. BLM stream surveys of Miller Creek did not locate any fish although it is large enough to support fish. Local residents report having seen fish in Miller Creek. Much of the sediment in Miller Creek is from six foot stream banks with an incised channel. Cutthroat trout are found in Rocky Creek. No fish were found in Caris Creek, probably due to high sediment levels and low water conditions. Steelhead and cutthroat trout are found in Board Shanty Creek. There are no coho salmon in the streams in the project area. Decay Class 1 and 2 coarse woody debris, an important nutrient source for the aquatic system, is limited in the Riparian Reserves.

Local residents have reported that some of the intermittent streams in the area were perennial 25 years ago. Such declines of instream flows and consequent fisheries declines could, in part, be attributable to increasing densities of vegetation (and thus overall transpiration levels) in the subwatersheds during this time frame.

b. Environmental Effects

1) Alternative 1 (No Action)

a) Short term, long term and cumulative impacts.

The no action alternative would not change the existing fisheries environment unless there were to be a large wildfire, of which there is a high probability (see Fuels / Fire section). Such a fire could substantially increase sedimentation, alter stream quality and change the resident fisheries depending on its intensity and location. Erosion from roads will continue to produce a minimal amount of sediment to streams. Absent a disturbance such as fire, there could be a continue decline in the resident fisheries as in stream flows continue to diminish due to water uptake of the increasing vegetation densities in the drainages.

2) Alternative 2

a) Short term and long term adverse impacts

Impacts from both of these categories are the same. Erosion from roads will continue to produce a minimal amount of sediment to streams. There will be minimal impacts to water quality and fish habitat from the helicopter and high lead cable yarding actions.

b) Short term and long term beneficial and cumulative impacts

Impacts from both of these categories are the same. This alternative will maintain or improve natural surface and surfaced roads. It proposes to reduce or maintain sediment levels entering streams. The proposed riparian widths are adequate for protection of fish habitat. This alternative proposes to maintain the riparian and stream habitats which at a minimum fulfill the objectives of the Aquatic Conservation Strategy objectives.

Increases in instream flows could be anticipated as a consequence of reducing vegetation densities (and thus transpiration levels) in the drainages. This would positively benefit the resident fisheries

during the summer periods. Proposed fuel treatments and fuel hazard reduction would reduce the potential for the occurrence of extensive, high intensive wildfire and the consequent adverse effects on fisheries noted above.

3) Alternative 3

a) Short term and long term adverse impacts

These impacts are the same as alternative two.

b) Short term long term beneficial and cumulative impacts

Impacts from both of these categories are the same. In addition to the effects described for Alternative 2, the connectivity corridors would help prevent sediment deposition in the streams and will maintain water temperatures for downstream fisheries. The lack of disturbance to the corridors will help prevent sediment or warm air from influencing streams.

9. Resource: Timber Harvest Volume

Estimated timber harvest volumes of Alternatives 2 and 3 are shown in Table 1. The estimated harvest volume differences between these two alternatives are summarized in the following table.

Acre and volume differences of Alternative 3 as compared to Alternative 2			
	Unit 13-8	Unit 13-9	Unit 17-16
Acres	16 less	16 less	14 less
Volume	20 MBF less	10 MBF less	10 MBF less

10. Resource: Timber Sale Harvest System Costs

a. Affected Environment

The North Murphy Forest Management Project Area has limitations with regard to existing road development and accessibility, creating longer yarding distances for much of the timber sale, and is therefore the primary reason for helicopter yarding. Further characteristic of the project area, are timber stands with highly variable stand densities, species composition, and continuity. As helicopter yarding can be a very specialized, expensive logging system, maximizing helicopter payloads and locating landings to lessen yarding (flight) distances become key factors towards providing an economically viable sale. Accessibility and topography preclude the option to create more landings therefore, the opportunity to harvest in stands adjacent to existing landings, combined with the maximization of payloads in higher volume per acre stands becomes necessary to maintain lower average yarding costs on lower volume per acre sites needing treatment.

b. Environmental Effects (Alternatives 2 & 3)

Total harvest volume and overall average harvest volumes per acre are not greatly different between alternatives. The distribution of the volume in relation to helicopter landings, however, is different resulting in differences in yarding / flight distances and thus costs. Alternative 3 reduces the volume near landings with a consequent greater flight times and greater overall yarding costs as compared to Alternative 2.

Alternative 3 would implement three connectivity areas of no timber harvest or limited timber harvest in currently dense, single-canopied Douglas-fir and Ponderosa Pine stands. These connectivity areas would be in addition to the preexisting no harvest connectivity areas provided by the class three and four draw buffers, and the dispersal habitat that would exist at the conclusion of timber harvest.

In section 13, connectivity corridors are proposed in units 13-8 and 13-9. The dimensions of these corridors are approximately 300-feet wide by 2,300-feet long and also extend from riparian reserves northward to provide access to the Rogue River drainage. Each of these 16 acre reserves is located in a dense timber stand with the reserve in unit 13-8 located adjacent to an existing helicopter landing. Timber harvest volume reduction from these 2 reserves is estimated at 30 mbf. A Helipace analysis of the yarding costs for Unit 13-8 indicate that a loss of 20 mbf from 16 reserve acres would translate into a yarding cost increase of \$9.00 to \$23.00/mbf to helicopter yard the remaining 142 acres and 296 mbf (see table below).

Unit	# of Landings	Acres (by Alt.)		Total Unit Volume (by Alt.)		Volume/Landing Analyzed in MBF (by Alt.)		Flight Path (Ft.)		Yarding Costs/MBF (by Alt.)	
		2	3	2	3	2	3	2	3	2	3
13-8	1	158	142	316	296	316	296	2518	2858	\$276-\$679	\$285-\$702
13-9	1	170	154	340	330	340	330	3618	3923	\$306-\$754	\$315-\$775

In section 17, a 300-foot wide by 2,000-foot long corridor is proposed extending northward from the riparian buffer on Caris Creek through harvest unit 17-16 and to the ridge top. This fourteen-acre connectivity reserve area is located directly adjacent to an existing helicopter landing. While the anticipated volume will be the same for this unit under both alternatives, Alternative 2 utilizes group selection harvest in the connectivity reserve area and does not uniformly thin the residual stands, thereby providing continuous helicopter turns across the unit. The average of the distance that the helicopters will need to fly for payloads will increase by a few hundred feet and will translate into higher yarding costs.

c. Long-Term Effects

Alternative 3 defers 32 acres from harvest and reduces the harvest volume on the 14 acre connectivity reserve in section 17. Due their location relative to each other and other potential harvest areas, the economic viability of harvesting in these stands in the next 20 years is doubtful.

11. Resource: Cultural

a. Affected Environment

The archeological/cultural clearance for the North Murphy Timber Sale was completed in the fall of 1997. The clearance consisted of reviewing a sample of the BLM lands within the proposed treatment areas to determine if archeological resources were present and to determine the significance of these resources where present. The survey located nine historical sites. There was also one prehistoric site located.

b. Environmental Effects

None of the nine historical sites would be disturbed as a result of the timber sale activities. All of the sites are outside the harvest areas or within riparian reserves where no harvesting would occur.

At the location of the prehistoric site no logging would occur. Shaded fuel breaks would be created at this location. This would involve the cutting, piling, and burning of hardwood slash. No physical ground disturbing activities would occur. No impact to the integrity of the prehistoric site would occur.

12. Resource: Roads

a. Affected Environment / Effects of the Alternatives

Timber harvesting provides the vehicle for funding and/or accomplishing work needed on the existing road system. Without the timber harvest (*i.e.*, no action alternative), the roads would remain on the normal BLM maintenance schedule with maintenance every 1-5 years depending on road use. This maintenance only addresses the minimum level needed for access and environmental concerns.

Chapter 4 Agencies and Persons Consulted

A. Public Involvement

All public input was considered by the planning and ID teams in developing the alternatives and in preparing this revised EA. Changes in the preliminary plan, as well as the proposed project design features, may be based, in part, on information received from the public.

Public scoping was done through letters sent out to interested parties. Along with the letters, The Rogue Institute was hired to do public scoping to capture comments from those living in the area. Kevin Priester contacted residents in the community to identify the range of issues which concerned them about the project and to identify communication opportunities in planning the project. A total of 63 people were contacted from the period of February 7 through March 13, 1997. Of those 63, 33 people wanted to be on the mailing list for additional information. A letter with maps and Table 1 was sent to those 33 people at the end of May.

Two presentations were given to the Applegate Partnership meetings. The first presentation was given on December 5, 1996 at the Applegate School. The presentation covered the project area and preliminary project designs. The second presentation was conducted on February 7, 1997 and covered the proposed project design features in greater detail. Included were the proposed prescription for the project area, hazard reduction projects, including fuel modifications zones and residential hazard reduction areas.

This revised EA was written and letters sent out to the public regarding the revision and the opportunity for additional public comments.

B. Availability of Document and Comment Procedures

Copies of the revised EA document will be available for formal public review in the BLM Medford District Office. Written comments concerning the revised EA will be accepted for 21 days after the announcement of the revised EA availability appears in the newspaper.

Appendix A
Issues outside the scope of North Murphy Forest Management Project

The following issues were raised by the public in the scoping phase of the project and were considered outside the scope of the project:

1. Lack of knowledge (by the public) of location of BLM lands in the area.
2. Availability of permits for hazard tree removal on BLM next to private land.

Source: North Murphy Report: Preliminary Community Issues Related to a Proposed BLM Project; The Rogue Institute for Ecology and Economy (Priester); March 1997

Appendix B

Alternatives Considered but Eliminated During the Interdisciplinary (ID) Team Process

1. The issue and potential consequences of limited vehicular access (Issue #5) in the project area as it affects fire management activities was considered in the preparation of the treatment alternatives. However, new permanent road creation was considered undesirable due to potentially deleterious impacts on wildlife and soils/water, as well as for economic reasons. The environmental and economic costs of increasing road access was judged to be greater than the potential benefits.

The impact of maintaining the current limited level of vehicle access is one of increasing the potential for large acreages to be burned in the event of wildfire as well as increasing the cost of hazardous fuel reduction treatments. The fuel reduction treatments in Alternatives 2 and 3 would reduce the burn intensity and effects that would result from a wildfire although the treatments would not necessarily reduce the size of that wildfire. Overall the reduction in potential resource loss from wildfire that would result from the fuel reduction treatments in Alternative 2 and 3 were judged to offset the lack of access.

The consideration of these trade offs resulted in the proposed alternatives not changing current access conditions: no new permanent roads would be created and no existing roads would be permanently closed.

Appendix C

Wildlife Habitat definitions

The following definitions relate to the EA's wildlife effects discussion:

Late-Successional Habitat

(These definitions are taken from the Medford District RMP and "Distinctive Features and Definitions of Young, Mature and Old-Growth Douglas-fir/Hardwood Forest" Bingham, Bruce B. and Sawyer, John O. Jr. in Wildlife and Vegetation of Unmanaged Douglas-Fir Forests. 1991. USDA, Forest Service, General Technical Report PNW-GTR-285.)

Mature habitat: Stand growth has slowed and beginning to develop structural characteristics, approximately 101-200 years of age. Larger trees 45-90 cm. (18-35 inches) DBH. Stand diversity gradually increasing. Big game hiding and thermal cover and some forage are present. Insect damage increasing and understory development is significant in response to canopy gaps created by disease, insect, and windthrow. Vertical diversity increasing and larger snags forming.

Old-Growth habitat: A minimum of two-tiered canopy has developed, which begins to appear at 175-250 years of age in unmanaged forests. Canopy is patchy with trees of several age classes, larger trees (conifers) are greater than 90 cm. (35 inches). Hardwoods attain a height roughly half the height of the dominant Douglas-fir, and the prevalence of conifer and hardwoods shifts from place to place. Large snags, greater than 40 cm. (16 inches) and down wood greater than 44 cm. (17 inches) occurs.

Appendix D Potential Monitoring

Several topics or areas of potential monitoring were identified during the preparation of the alternatives. These areas of potential monitoring, if pursued, would be in addition the project implementation monitoring or long term effectiveness monitoring outlined in the RMP (Appendix L). While included here, they are not intended as part of the alternatives for this project.

1. Botanical Resource: Initiate a long term (10+ years) monitoring program addressing the effectiveness, in terms of local population abundance and vigor, of the 100' buffers around populations of survey and management plant species in timber harvesting project areas. Monitor 20% of the located populations of survey and manage plants in the project area to evaluate the effectiveness of the 100' buffers as a method for maintaining the abundance and vigor of the species in the project area. This monitoring would be in addition to RMP monitoring requirements. In 30-foot canopy separation prescription areas, minimize clearing around old growth trees on northerly, moist aspects to avoid disturbing mycorrhizal connections and reduce changes to microhabitat in potential *Cypripedium* species habitat.