UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BUTTE FALLS RESOURCE AREA

EA COVER SHEET

Project Name/Number: EAST EVANS WATERSHED PROJECTS, OR-110-97-07

Project Location: T.33S, R.3W, section 1
T.32S, R.2W, section 33
T.33S, R.2W, sections 5,7,8,17,27,29,31,35
T.34S, R.2W, sections 3,4,5,9,10,15,16
T. 34S, R.1W, section 5
Willamette Meridian, Jackson County, Oregon

Project Lead: Jim Welden, Forester
EA Preparation: Linda Hale, Wildlife Biologist

This environmental assessment (EA) for the proposed East Evans Watershed Projects was prepared utilizing a systematic interdisciplinary approach integrating the natural and social sciences and the environmental design arts with planning and decision making.

Jim Kuttas
for Lance E. Nimmo
Butte Falls Area Manager

1/22/97
Date

The environmental assessment and Finding of No Significant Impact (FONSI) were made available for public review on January 27, 1997.

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

DECISION RECORD
for the proposed

EAST EVANS WATERSHED PROJECTS

DECISION:

It is my decision to authorize the proposed action described in the East Evans Watershed Projects Environmental Assessment. The proposed action is described as Alternative 3 which includes the following projects:

1. Timber sales:

    a) Cleveland Railroad, occurring in T32S, R2W, section 33; T33S, R3W, section 1; T33S, R2W, sections 5,7,9,17,29.

    b) Musty Donut, occurring in T33S, R2W, sections 27,29,31,35 and T34S, R2W, sections 3,4,5,9,10

2. Selective thinning in selected riparian reserves in T32S, R2W, section 33 and T33S, R2W, sections 5 and 7.

3. Firewood sale of approximately 2700 cords of hardwoods in T 33S, R2W, section 9.

4. Replace three culverts in T33S, R2W, sections 8 and 17.

5. Repair of two pump chances in T33S, R2W, sections 17 and 29.

6. Use of controlled fire to improve wildlife habitat, T34S, R2W, section 15,16 and T32S, R1W, section 5.

Road renovation will occur on approximately 60 miles of road, with 1.85 miles of new road construction. Three and one third miles of roads will be decommissioned. No net gain of total road miles will occur in the watershed. Road reconstruction, to improve roads which are currently in poor condition and the source of large amounts of sediment to streams, will occur on 8.81 miles.

RATIONALE for DECISION:

My decision to authorize the proposed action is in compliance with the Record of Decision on the FSEIS (FSEIS ROD) and the Medford District Resource Management Plan ROD, dated April 14, 1995, and the Rogue River National Forest Resource Management Plan. The timber sale area is located within matrix lands which are available for timber production. Density management proposed in Riparian Reserves would be in conformance with the Aquatic Conservation Strategy (FSEIS ROD) . The proposed action complies with all applicable standards and guidelines. The action takes into consideration cumulative impacts of past harvesting and silviculture practices both on private and Federal lands.

Trees will be thinned to create a situation similar to the effects of a light underburn that would have historically killed smaller diameter trees. This will reduce competition and provide additional moisture and nutrients to remaining dominant and co-dominant trees. Individual tree mark will select trees to remove to reduce competition of light, moisture, and nutrients.

In some selected Riparian Reserves, thinning will enhance riparian stand growth and promote development of old growth conditions within the reserves.

The timber harvest will help meet the proposed timber harvest commitment for the Butte Falls Resource Area, and make approximately 2725 cords of wood available for sale to the public.

Approximately 4 miles of stream which are currently blocked by improperly functioning culverts will be opened to fish passage.

Reduced future fire potential and potential fire intensity will result from thinning in dense stands by removing smaller ladder fuels. The potential and probability of larger stand replacing fires will be reduced, and in the areas where the control burns occurs, fire suppression efforts will be enhanced through the reduction of heavy fuel loads. Road improvements in the southeast part of the watershed will improve road access for fire suppression activities if a wildfire should occur.

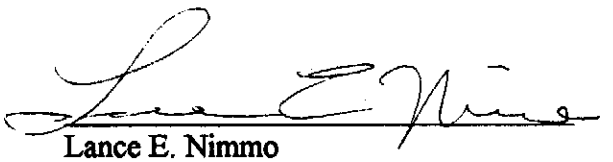
The two controlled burn projects will improve the quality and quantity of the grasses by removing dead plant material, and providing a flush of nutrients to new grass. The fire will kill some of the small conifer trees which are beginning to encroach on the meadows. White oak stand growth, regeneration, and acorn production will be improved. The area will develop more structural diversity.

Timing of the Decision

This decision record constitutes the decision document for the specific actions 3, 4, 5, an 6 described above (43 CFR 5003 Administrative Remedies). The decision document for specific action 1, 2, and 3 the timber sales, will be the timber sale notice which will be published at a later date. (43 CFR 5003.2).

Protest Period

Protests of this decision shall be filed within 15 days of the publication of this decision in accordance with 43 CFR 5003.3.



Lance E. Nimmo
Butte Falls Area Manager

3-21-97
Date

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

EA No. OR 110-97-07

FINDING OF NO SIGNIFICANT IMPACT

EAST EVANS WATERSHED PROJECTS

The proposed actions include the following projects within the East Evans Creek Watershed:

1. Harvest timber on Matrix lands in the East Evans watershed. The proposed units are located in:

   T33S, R3W, section 1
   T32S, R2W, section 33
   T33S, R2W, sections 5, 7, 9, 17, 27, 29, 31, 35
   T34S, R2W, sections 3, 4, 5, 9, 10

   Matrix lands are those federal lands outside of reserves and special management areas that will be available for timber harvest at varying levels. Stand densities in the watershed are high, resulting in competition between trees for moisture and nutrients. The proposed timber sale would thin trees, with the removal of smaller, understory trees to reduce competition for light, moisture, and nutrients.

2. Selectively thin within Riparian Reserves of some intermittent streams (T32S, R2W, section 33; T33S, R2W, sections 5, 7).

   Density management is proposed in Riparian Reserves where mid-seral, even-aged stand conditions exist to enhance riparian stand growth and promote the development of desired future condition of old growth riparian vegetation.

3. Sell excess hardwoods (T33S, R2W, section 5).

4. Replace three culverts which currently block fish passage (T33S, R2W, section 8, SWNE, 17, SWNE and NWNW).

5. Repair two pump chances (T33S, R2W, sections 17 and 29).

   One pump chance has a slump on the downhill side causing loss of water. The other is becoming filled with sediment and organic debris.

6. Use controlled fire to improve wildlife habitat (T34S, R2W, section 15, 16; T34S, R1W, section 5).

   The proposal is to use fire under controlled conditions to improve grasslands which are becoming overgrown with brush and to thin oak stands to improve vigor of the woodlands.

Cultural resources and threatened and endangered (T&E) plant surveys have been completed. Based on preliminary reports, known sites were buffered, and no known cultural site, T&E or proposed sensitive plant or animal sites are within the proposed units or proposed action area. If any cultural site, listed or federal candidate species is found, the site would be avoided or mitigation applied.

The proposed actions are described in more detail in the East Evans Watershed Projects Environmental Assessment (EA). The EA is in conformance with the Medford District Resource Management Plan (RMP), Record of Decision (ROD) dated June 1995. The EA is also consistent with the Record of Decision (ROD) on the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted OWL (FSEIS). This proposed action is also consistent with the East Evans Watershed Analysis.

Based on the analysis of potential environmental impacts contained in the EA, I have determined that the impacts of authorizing the proposal will not have significant effect on the human environment, and therefore and Environmental Impact Statement (EIS) is not required. An EIS is not required because the action is consistent with the standards and guidelines set forth in the FSEIS ROD and the Medford District RMP. No significant impact to the human or natural environment beyond those already described in those documents will occur.

This notice of **Finding of No Significant Impact (FONSI)** is provided through the BLM Medford Mail Tribune, Grants Pass Courier, Rogue River Press, and Upper Rogue Independent. Copies of the EA are available at the Medford District BLM office.

for Lance E. Nimmo
Butte Falls Area Manager

11/22/97
Date

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
BUTTE FALLS RESOURCE AREA

ENVIRONMENTAL ASSESSMENT
for
EAST EVANS WATERSHED PROJECTS

Timber Sale
Riparian Thinning
Public Firewood Cutting
Fuel Hazard Reduction
Culvert Replacement
Pump Chance Repair/Rebuild
Cold Springs/Antioch-Meadows School Wildlife Habitat Improvement

EAST EVANS WATERSHED PROJECTS
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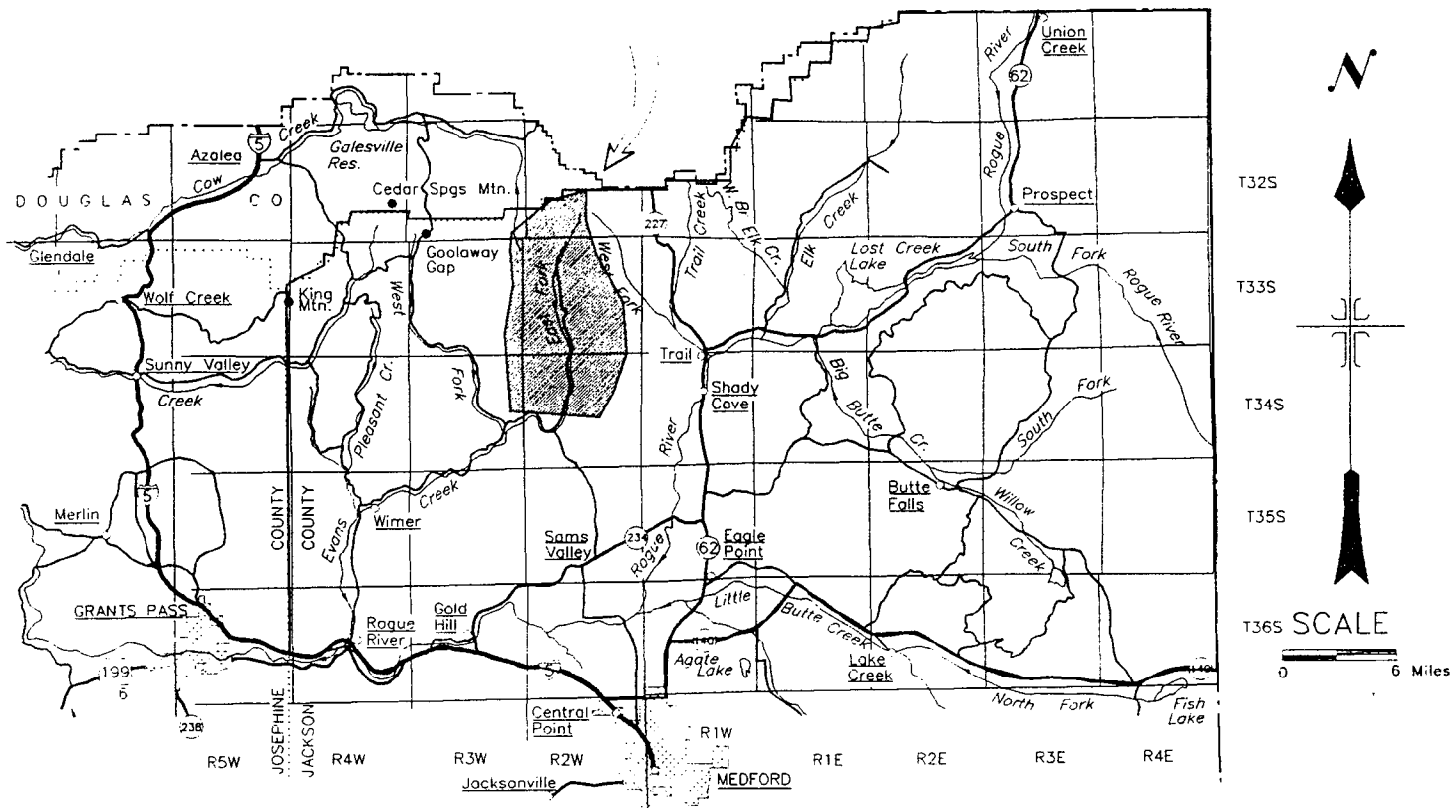
BUREAU OF LAND MANAGEMENT
Butte Falls Resource Area
East Evans Creek Watershed Project Area
General Location Map



Environmental Assessment
for
EAST EVANS WATERSHED PROJECTS

Timber Sale
Riparian Thinning
Public Firewood Cutting
Fuel Hazard Reduction
Culvert Replacement
Pump Chance Repair/Rebuild
Cold Springs/Antioch-Meadows School Wildlife Habitat Improvement

I. INTRODUCTION

The Butte Falls Resource Area (BFRA) has identified areas in the East Evans Creek watershed for timber harvest, fuels reduction, and fish and wildlife habitat improvement projects. The proposed projects would occur within Matrix lands and selected Riparian Reserves as designated in the Record of Decision for the Northwest Forest Plan Environmental Impact Statement (SEIS/ROD) p 7.

The proposed projects are located within the East Evans Creek Watershed of the Butte Falls Resource Area, Medford District, Bureau of Land Management (BLM) except the following: Cold Springs Meadow in T34S, R1W and T33W, R2W, section 9, which are in the Trail Creek watershed and T33S, R3W, section 1, which is in the Cow Creek Watershed in the Umpqua River Drainage. All projects are located on public lands administered by the BLM. (See map 1 for project location.)

A. Purpose Of And Need for Action

Many timber stands in the East Evans Creek watershed are in need of stand treatment to improve forest vigor. Stand densities are high, resulting in competition between trees for moisture and nutrients. Fire suppression has allowed a shift in species composition towards shade tolerant white fir and/or created conditions which are more susceptible to insect infestations, diseases, and severe wild fire.

The proposed timber sale would thin trees, creating a situation similar to the effects of a light under burn that would have historically killed smaller diameter trees. In thinning units, smaller tree removal would reduce competition and provide additional moisture and nutrients for the remaining dominant and co-dominant trees. In individual tree mark units (ITM), smaller and co-dominant trees would be selected for harvest to reduce competition for light, moisture, and nutrients. In T33S, R2W, section 5, some hardwoods would be girdled and left standing to reduce the competition with conifers

for light, moisture, and nutrients. This would occur in the areas which are not accessible to the road for firewood cutting. Leaving the trees standing would reduce the fire hazard. Other hardwoods in the stand would be left for species diversity.

Timber harvest associated with these proposals would help meet the proposed timber harvest commitment for the Butte Falls Resource Area.

Stand conditions similar to the uplands occur within the Riparian Reserves in the watershed. Density management (thinning) is proposed in headwater Riparian Reserves where mid-seral, even-aged stand conditions exist. The objective is to enhance riparian stand growth and promote the development of old growth conditions in the Riparian Reserves and achieve the Aquatic Conservation Strategy Objectives (ACS) ROD pp 11-17.

A firewood sale is proposed to reduce fire hazard and increase the rate of conversion from hardwoods (madrone and chinquapin) to conifers for future timber production. This project would make some of the excess hardwoods available for public use. The sale would occur in a stand which was converted from conifers to hardwoods by past wildfire.

To decrease future fire potential and intensity, the use of prescribed fire is needed. Fire would also be used to maintain and improve wildlife habitat in meadows and white oak stands in the watershed. Fire would allow new oaks to become established and increase the production of acorns for wildlife use. Manzanita and wedgeleaf ceanothus (buckbrush) are becoming dense and beginning to die, leaving areas with large amounts of dead and dying branches which are too dense to provide access for wildlife cover and tender shoots for forage. Fire hazard in the area is increasing as the amount of dead and dying plants increases.

Currently, fish passage is obstructed by three culverts located on Federal lands or Federally controlled roads.

High sediment levels are present in the streams, mostly from unsurfaced roads, road cutbanks, and fill slopes. This is particularly true in the southeast part of the watershed. Road improvement in the watershed is needed.

To function properly, two ponds (pump chances) in the watershed are in need of repair. One pump chance in the Musty Creek drainage has a slump on the downhill side which is causing loss of storage capacity and erosion of a stream channel below the impoundment. This impoundment could fail and large amounts of sediment could enter Evans Creek.

The second pump chance is becoming filled in with sediment and organic debris. The pump chances do not provide adequate water storage for use in the event of a wildfire.

Table 1. Project objectives

- Reduce competition for moisture and light to increase tree survival and growth for vigorous forests. (East Evans Watershed Analysis, p 54)
- Accelerate rate of growth in riparian vegetation to achieve future old growth characteristics and meet ACS objectives. (East Evans Watershed Analysis, p 61, SEIS/ROD pp B11-B17)
- Meet annual timber sale objectives. (East Evans Watershed Analysis, p 52)
- Improve rate of stand conversion from hardwoods to conifers. (East Evans Watershed Analysis, p 52)
- Provide firewood for public. (East Evans Watershed Analysis, p 52)
- Decrease future fire potential and future fire intensity. (East Evans Watershed Analysis, p 56)
- Reduce erosion from roads. (East Evans Watershed Analysis, p 58)
- Increase stream habitat available for fish. (East Evans Watershed Analysis, pp 57,59)
- Increase water storage and access in pump chances.
- Improve habitat and forage available for wildlife. (East Evans Watershed Analysis, p 57)
- Maintain or enhance white oak stands for wildlife, range, plants, and biological diversity. (Medford District Resource Management Plan Record of Decision p 46)

B. Conformance With Existing Land Use Plans

All the proposed actions are in conformance with the Record of Decision (ROD) for the Medford District Resource Management Plan (RMP/EIS), and the Record of Decision for the Northwest Forest Plan (ROD). All proposed actions except riparian thinning, pump chance repair, and culvert replacement would occur on Matrix lands. The ROD defines Matrix lands as those Federal lands outside reserves and special management areas that will be available for timber harvest at varying levels (ROD p 7). Riparian thinning, culvert replacement, and pump chance repair would occur within Riparian Reserves and would meet the Aquatic Conservation Strategy Objectives (ROD p B-11).

The actions are also in conformance with the East Evans Watershed Analysis (WA) landscape management objectives, completed in March, 1996. Section 1, T33S, R 3W, in the Cow Creek Watershed was analyzed

under East Evans Watershed Analysis. The Cold Springs wildlife habitat improvement project and proposed timber sale units in the eastern part of T33S, R2W, section 9 are in the Trail Creek Watershed where watershed analysis has not been completed. However, the projects would occur on Matrix lands and meet RMP and ROD requirements.

C. Relationship to Statutes, Regulations, and Other Plans

The proposed action and alternatives are in conformance with the direction given for the management of public lands in the Medford District by the Oregon and California Lands Act of 1937 (O&C Act) and the Federal Land Policy and Management Act of 1976 (FLPMA). The BLM is directed to manage the lands covered under the O&C Act for permanent forest production under the principles of sustained yield. BLM is also required to comply with other environmental and conservation laws, such as the Endangered Species Act of 1973 and the Water Pollution Prevention and Control Act, while implementing the mandates given by FLPMA and the O&C Act. The proposed action and alternatives are in conformance with these laws.

This environmental assessment (EA) is being prepared to determine if the proposed action and any of the alternatives would have a significant effect on the human environment, thus requiring the preparation of an Environmental Impact Statement (EIS) as prescribed in the National Environmental Policy Act of 1969. It is also being used to inform interested parties of the anticipated impacts and provide them with an opportunity to comment on the various alternatives. Finally, the EA is being used to arrive at final project design to meet a variety of resource issues.

The EA is also being used to provide the decision maker, the BFRA manager, the most current information relating to these projects upon which to base the decision.

D. Decisions to be Made Based on the Analysis

The Butte Falls Resource Area Manager must decide if the impacts of implementing the proposed action or the alternatives would result in significant effects to the human environment, thus requiring that an environmental impact statement (EIS) be prepared before proceeding with the proposed action, as prescribed in the National Environmental Policy Act of 1969.

The area manager must decide if BLM should harvest trees in the East Evans watershed, which areas would be harvested, whether to rehabilitate two pump chances, replace culverts, allow the use of prescribed fire to improve wildlife habitat and reduce fire hazard, and sell firewood from the proposed areas.

If the decision maker should decide to select one of the action alternatives, the analysis in this EA will be used to help determine where harvesting could occur and what level of road reconstruction would occur. The area manager also has the option to approve one or more of the proposed projects while rejecting others.

E. Summary of Scoping Activities

Scoping letters were sent to landowners in the East Evans Creek area and to interested publics. The letter requested comments concerning issues that would be addressed in the Environmental Assessment. U.S. Forest Service and Oregon Dept. of Fish & Wildlife were also contacted. Responses are on file in the Butte Falls Resource area, Medford BLM. Five responses were received, three in support of the project and two with questions/concerns, which were addressed in the design of the projects.

F. Issues

1. Issues Considered But Not Analyzed in Detail

Many issues were discussed during the interdisciplinary team (IDT) meetings for these proposals. (See Chapter V for a list of preparers). After discussing the issues, the IDT determined that while these issues and concerns were real, many were outside the scope of the EA and others were not major issues for this proposal that would affect the human environment. For a more in depth discussion of these issues, see Appendices.

a) Cultural resources--surveys have been completed and known locations would be protected. (Appendix A)
b) Sensitive plants--surveys have been completed and known locations would be buffered. (Appendix B)
c) T&E Wildlife/Sensitive species--spotted owl activity centers would be not be entered. Seasonal restriction would be in place. Great gray owl surveys would be completed and any locations would be protected. (Appendix C)
d) Visual Resources Management (VRM)--meets RMP VRM standards (Appendix A)
e) Mining--no active mining claims in the area
f) Soil productivity & compaction--light underburn of short duration would protect soils. Seasonal restriction for hauling would be in effect. Helicopter yarding would be recommended for some units to avoid road building. Compaction reduced by ripping skid trails & decommissioning roads. (Appendix D)

2. Issues Identified Through The Scoping Process To Be Analyzed In This EA

See Table 2.

Table 2. ISSUES TO BE ANALYZED IN DETAIL

Issue 1:	Forest health--Upland and Riparian
Ž	Stand densities with stocking levels that are not biologically sustainable. Declining tree vigor due to high stand density. Stands more susceptible to insect, disease, fire hazard.
Ž	Riparian stand conditions with high stocking levels that are not biologically sustainable. Riparian Reserve areas lack late seral stand characteristics.
Ž	Competition between hardwoods and conifers is slowing conifer development.
Issue 2:	Fuels/Fire
Ž	High fuels buildup and increasing probability of large or stand replacement fires.
Ž	High fire potential in hardwood stands after harvest.
Ž	Loss of water storage due to failing impoundment in one pump chance and one pump chance filling with sediment.
Issue 3:	Fish/Aquatic Habitat
Ž	Highly erodible soils and high road density have contributed to high stream sediment levels, resulting in degraded fish habitat. Numerous streams located within the proposed project area currently have very high level of fine sediment (silt, sand, and organic matter) in riffles.
Ž	Fish passage is obstructed by culverts.
Ž	Potential for impoundment failure in Musty Creek pump chance which could contribute large amounts of sediment to streams.
Issue 4:	Wildlife Habitat
Ž	Loss of meadow and white oak woodland habitat by conversion of meadow to brush and conifers.
Ž	Wildlife hiding cover, forage quality declining.
Ž	Loss of large, fire resistant white oaks.

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. Introduction

The Butte Falls Resource Area has developed four alternatives to achieve the project objectives of ecosystem health and improved stand diversity in the East Evans area. After receiving comments from the public through the scoping process, the alternatives were developed by a team of resource specialists. The East Evans Creek WA provided information that was used in the analysis.

In this chapter you will find:

A description of Alternatives considered but eliminated;

A description of the No-Action Alternative;

A description of the features common to all action alternatives;

A description of each alternative;

A comparison of how each alternative effects the major issues listed in Chapter I.

B. Alternatives Considered But Eliminated

The following alternatives were eliminated due to the findings of the East Evans Watershed Analysis and site specific analysis.

1. ALTERNATIVE A-1: Harvest all proposed units with ROD Northern General Forest Management Area (GFMA) harvest guidelines, leaving 6 to 8 green trees per acre.

Eliminated from consideration due to cumulative impacts from activity on adjoining private timberlands and the high number of acres in an early seral stage in the watershed. Intensive harvest practices on private industrial lands will likely continue to shift these lands towards earlier successional conditions. The amount of late successional forests on private lands is expected to decrease from existing levels. Ownership patterns and differing management objectives, past and present, have and will continue to, dictate landscape patterns and conditions.

2. ALTERNATIVE A-2: Harvest all proposed units with conventional ground based logging systems.

Eliminated from consideration because some units were located in steep canyons which are inaccessible from existing roads, the presence of springs, intermittent draws, sensitive soils, high landslide potential, high road density in the watershed, water quality, and stream habitat issues.

3. ALTERNATIVE A-3: See appendix E for a list of specific units originally considered but eliminated from consideration due to silvicultural or stand characteristic, or access concerns.

See Table 3 for a summarized description of the selected alternatives.

TABLE 3: DESCRIPTION OF THE ALTERNATIVES				
Action	**Alternative 1 No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**
Timber Harvest:				
Total area treated	0 acres	1,244 acres	1,685 acres	1,685 acres
Total volume	0 mbf	10,405 mbf	14,808 mbf	14,808 mbf
Firewood available	0 cords	approx. 2725 cords	approx. 2725 cords	approx. 2725 cords
Roads:				
Miles renovated	0	56.07	60.49	60.49
Miles new construction	0	1.5	1.85	1.85
Miles decommissioned	0	2.98	3.33	3.33
Miles reconstructed	0	0	8.81	0
Miles minimum improvement	0	0	0	8.81
Approx. cost	$0	$400,000	$850,000	$500,000
Fire:				
Acres treated	0 acres	1,500 acres	1,500 acres	1,500 acres
Culvert replacement:				
Fish habitat opened to passage	0	. 4 miles	. 4 miles	. 4 miles
Pump chance repair:				
# repaired	0	2	2	2
Wildlife Habitat:				
Acres maintained and treated/burned	0	280 acres	280 acres	280 acres

C. Description of the No Action Alternative

1. ALTERNATIVE 1--NO ACTION

Analysis of this alternative provides a baseline against which the effects of the action alternatives can be compared. For this EA, the No Action Alternative is defined as not harvesting trees.

No controlled burns and fuels reduction projects would occur, allowing current trends of naturally increasing fuel loads to continue. Wildlife forage and cover would continue to decline. Stream habitat/riparian and culvert improvement projects would not occur. Pump chances would not be repaired. Public firewood cutting in the timber sale units would not occur. In Riparian Reserve areas, forest stand conditions and desired structural characteristics would develop at the current slower trend.

D. Description of the Action Alternatives

1. ALTERNATIVE 2: This alternative includes several projects described below:

a) **Timber Harvest** (See Appendix F for silvicultural prescription)

Conventional and helicopter combination logging systems T33S, R3W, section 1; T32S, R2W, section 33; T33S, R2W, sections 5,7,9,17,29,31; T34S, R2W, section 5. (See Appendix F, Silvicultural Prescription and Table I, harvest acres and system.)

No timber harvest would occur in T33S, R2W, section 27, 35; T34S, R2W, sections 3, 4, 9, 10.

The overall scope of this action alternative covers approximately 1244 acres of BLM managed lands designated as Matrix. This action would thin second growth stands and groups in order to redistribute growth to vigorous dominant and co-dominant trees. This action would thin from the intermediate and suppressed classes of second growth timber stands and would be designed to reduce the probability of mortality from wildfire and loss due to stress from competition.

The action would be the removal of intermediate and suppressed crown classes to shift the growth potential to fewer, larger trees while harvesting trees most prone to mortality. Healthy, vigorous, mature trees would be left to provide structural and genetic diversity and a potential natural seed source in the event of fire.

b) **Density Management Within Riparian Reserve Areas**--Riparian thinning

Density management (thinning) would occur in selected riparian areas by selectively thinning dense stands to enhance growth of remaining trees for desired future characteristics of late successional habitat. Riparian Reserve Areas were screened (see Appendix B) to identify Riparian Reserves which

would be appropriate for density management. Riparian Reserves identified for entry were those with vegetation in early-to-mid seral stage, composed of even age trees and size classes with little structural diversity, and with stand densities so high that stagnation of the tree growth is occurring.

Density management within Riparian Reserve areas would occur in the f

1. T32S, R02W, section 33 O.I. 895
2. T33S, R02W, section 05 O.I. 005 and 002
3. T33S, R02W, section all 7 units

Riparian Reserve density management prescription objectives would be tailored to achieve site specific objectives. The prescription varies by unit, but a 50' no-cut area from the edge of the stream would be maintained in all areas where density management would occur. Full Riparian Reserves boundaries would still be marked. Between the 50' no cut buffer and outer edge of the Riparian Reserve, 60% canopy would be maintained. All dominant conifers would be retained. No existing coarse woody material would be removed from the Riparian Reserve area.

c) **Public firewood cutting:** T33S, R2W, section 5

Firewood sale and girdling of hardwoods would occur. This would result in the release of existing young conifers and, with underplanting of conifers, would increase the rate of conversion from hardwoods to conifers. To provide for species diversity, three to five hardwoods, twelve inches in diameter or greater, per acre, would not be girdled.

d) **Fuels hazard reduction**: T33S, R2W, section 27,35; T34S, R2W, section 9,10

For a more complete description, see Appendix G.

Implementation of the proposal would reduce the potential for large fire occurrence by reducing fuel loading. If implemented, it would provide a defensible fuel break across approximately 4 miles at mid slope. (See Map 2). In the sections listed above, conifer reproduction (1-5" dbh) and precommercial conifers (6-7") would be thinned and slashed, and underburned if needed, to further reduce fuel loads. In most of the project area, fuel loadings are too high to safely treat in one operation. In those areas a combination of slashing, piling and burning, followed by a possible under burn would occur.

e) **Culvert replacement**: T33S, R2W, section 8; T33S, R2W, section 17.

For a more complete description, see Appendix H.

The purpose of the proposed action is to make these road crossings passable for fish under a variety of stream flow conditions. The Wolf Creek #2 site is proposed for complete removal and re-contouring of the bank to pre-disturbance conditions. The road is proposed for decommissioning.

The East Evans #1 and Wolf Creek #1 culverts are proposed for replacement with bottomless arch or bridge structures. A by-pass road may be needed while work is in progress.

f) **Pump Chance clean out**: Cleveland Ridge Road M.P. 1.3, T33S, R2W, section 17.

For a more complete description, see Appendix I.

The pump chance would be cleaned out to improve water storage capacity and access to stored water. A backhoe would be used to remove sediment. This would deepen the pond and increase water storage capacity. Vegetation blocking access to the pump chance would be removed.

g) **Musty Creek Pump Chance Rebuild**: T33S, R2W, section 29.

The failing pump chance embankment would be redesigned and repaired. It is currently cracking and beginning to slip down the hill. Water from the pond is causing a new channel to occur, causing erosion below the pond.

. h) **Cold Springs Meadow Habitat Improvement Burn**: T34S, R1W, section 5.

Prescribed fire would be used to burn approximately 80 acres of decadent wedgeleaf, white oak, manzanita, and grass to improve wildlife habitat by maintaining the white oak/grassland vegetative community and rejuvenating meadows. Some thinning of smaller diameter white oaks would occur to reduce density and allow growth of large, fire resistant white oaks. Foam and hand-dug fire line would be used to contain the fire within the proposed burn area.

i) **Antioch/Meadows School Wildlife Habitat Improvement/Fuels reduction**: T34S, R2W, section 15 & 16.

For a more complete description, see Appendix J.

A combination of selective thinning, brush crushing, and prescribed fire would be used to modify and reduce natural fuel loadings and improve wildlife habitat on 200 acres of Matrix land. The proposed project would follow existing fire lines and occur on units which have been previously scarified (i.e. bulldozed and burned). Old fire lines would be reconstructed.

2. ALTERNATIVE 3 -SAME AS ALTERNATIVE 2 EXCEPT:

TIMBER HARVEST WOULD ALSO OCCUR IN SOUTHEAST (T33S, R2W, sections 27, 35; T34S, R2W, sections 3,4,9,10), FULL ROAD ROCKING AND IMPROVEMENT ACROSS ALL LAND OWNERSHIPS IN THESE SECTIONS. Major haul roads will be to the north through section 26 and road # 34-2-21. Roads in the north and southwest would be treated the same as Alternative 2.

This would include all projects listed above in Alternative 2. In addition, 441 acres would be harvested in the southeast part of the watershed not included under Alternative 2, for a total of 1,685 acres. All major haul roads in the southeast would be reconstructed and/or rocked, or otherwise repaired to improve the road surface to reduce erosion and subsequent stream sedimentation and provide access for future management. Temporary spur roads would not be surfaced, but would be decommissioned after the action was completed.

Harvest prescription would be similar to that identified under Alternative 2.

3. ALTERNATIVE 4 - SAME AS ALTERNATIVE 3 EXCEPT:

IN T33S, R2W, sections 27, 35; T34S, R2W, sections 3, 4, 9, 10, (SOUTHEAST) TIMBER HARVEST WOULD OCCUR WITH MINIMAL ROAD IMPROVEMENTS. Roads in the North and Southwest would be treated the same as Alternative 2.

All of the proposed projects listed above would be included in alternative 4, with a total of 1685 acres entered for harvest activities. Prescriptions would be the same. The differences would occur with the road treatment. Only minimal road improvement would occur (primarily grading existing roads) in the southeast part of the watershed. Sediment check dams would be installed downstream of intersections of all unsurfaced roads and intermittent and perennial streams.

E. Management Actions Common to All Action Alternatives. (Project Design Features--PDF)

Timber Harvest:

1. On a per acre basis, three to five hardwoods, twelve inches in diameter or greater, would not be harvested or girdled, and left to provide species diversity.

2. No existing coarse woody debris would be removed from riparian areas.

3. Harvest corridors within Riparian Reserves would be located perpendicular to stream channels whenever possible.

   Maintain an average of 60% or greater canopy closure in riparian areas selected for thinning.

5. Protect all known sensitive plant sites with 100 feet minimum no disturbance buffers.

6. Lop and scatter, pile the slash, or underburn during spring, fall, or winter. All burning would comply with Oregon Smoke Management Plan.

7. Implement full Riparian Reserve widths to all streams based on a site potential tree index as defined in the ROD Standards and Guidelines (page C-30).

8. All instream work would be done **between** the time period June 15 and September 15 (both days inclusive) of any given year.

9. All new drainage structures would be designed to withstand a 1 in 100 year flood event.

10. All excess material resulting from road construction would be placed and stabilized in a manner that would not allow that material to enter the stream channel.

11. For roads which currently exist within the Riparian Reserve, no operation of equipment or additional road building outside of the existing road prism and existing landings, except when necessary to improve drainage or reconstruction is necessary to minimize erosion.

12. Minimize the total number of skid roads by designating skid roads with 150' spacing.

13. All exposed areas would be seeded with an approved grass seed mix.

14. All exposed areas would be mulched.

15. Within Riparian Reserves, all exposed areas, including ripped roads, would be planted with a mixture of conifer and hardwood trees.

16. All roads specified for decommissioning would be ripped to a depth of 18". Mulching with chipped slash, straw, or other approved mulching materials would be required to a depth of 3", and grass seeded.

17. Portions of roads which are within ten feet of a stream channel would not be ripped.

18. No net gain in new road construction that cannot be mitigated by decommissioning. Units requiring new road construction under these restrictions would be considered for helicopter logging.

19. Restrict tractor yarding operations to slopes generally less than 35%. In areas necessary to exceed 35%, utilize ridge tops only.

20. Rip all skid trails and landings to a depth of 18" utilizing subsoiler or winged-toothed ripper. Do not rip tractor units with Medco and McNull soils. (T34S, R2W, section 3, OI units #001, 007, and 009; section 10, OI units #001, 002, and 004)

21. Waterbar all skid trails using spacing for high erosion class soils (see Appendix D).

22. All road construction, renovation, reconstruction, and/or improvements shall be seasonally restricted between Oct. 15 - May 15 or when soil moisture exceeds 25%.

23. Tractor yarding operations (including tillage operations) would be seasonally restricted between Oct. 15- May 15 or when soil moisture exceeds 25%.

24. Block or barricade all unsurfaced or inadequately surfaced roads after use and before beginning of rainy season (generally Oct. 15).

25. Grass seed and hydromulch fillslopes and cutbanks of all new construction and reconstruction of roads which would not be decommissioned. Otherwise decommission.

26. Observe seasonal restriction between March 1- September 30 for activities within ¼ mile of known spotted owl sites.

27. Buffer meadows with 300 foot no cut buffer for great gray owls.

28. If peregrine falcons are found, set aside a core area ½ mile around nest sites. A seasonal restriction would be in effect between February 1- August 15.

29. Establish "no cut" buffer within 250 feet of Townsend's big eared bat sites.

30. Buffer red tree vole nest trees, according to current protocol.

31. Maintain snags at a minimum of 1.8 snags per acre.

32. Maintain coarse woody debris on Matrix lands at 120 linear feet (16' x 16") per acre.

33. Observe seasonal restriction for activities in Big Game Management Area from Nov 15- April 1.

Culvert Replacement

1. Minimize or eliminate operation of equipment within the stream

2. Temporary sediment catchment dams would be installed at approximately 25 foot intervals for a minimum of 100 feet below the replacement site

3. Sediment collected in the catchment dams would be removed with hand tools and placed and stabilized in a manner that will not allow that material to re-enter the stream channel.

F. Management Actions For Alternative 2--Fuels Treatment in T33S, R2W, sections 3,4,9,10 (Project Design Features)

1. Slash conifer reproduction where needed for density control in the 1-5" diameter breast height (dbh) range.

2. Precommercial thin conifers in the 6-7" dbh size classes favoring fire resistant species such as pines; buck to a 3" top and pile all tops and limbs.

3. Approximately 4-5 years following thinning and slashing, units will be evaluated for an underburn to further reduce fuel loadings to acceptable levels.

4. To mitigate wildlife concerns, 1/2 acre to 1 acre pockets would be left either untreated, or only thinned or slashed.

5. No burning of vegetation or construction of hand line within 25 feet of a stream channel.

III. AFFECTED ENVIRONMENT

A. Introduction

This chapter describes the present condition of the environment within the proposed project area that would be affected by the alternatives. The information in this chapter would serve as a general baseline for determining the effects of the alternatives. No attempt has been made to describe every detail of every resource within the proposed project area. The information is organized around the major issues identified by the ID team. Only enough detail has been given to determine if any of the alternatives would cause significant impacts to the human environment as defined in 40 CFR 1508.27. Surveys have been completed for cultural resources and Threatened and Endangered plants. Great gray owl surveys would be completed in suitable habitat before harvesting activities would occur.

B. General Description of the Proposed Project Area

A description of the land areas and resources in the Butte Falls Resource Area is presented in Chapter 3 of the Final Medford District Resource Management Plan\Environmental Impact Statement (RMP 1995).

For a detailed description of the East Evans Creek Watershed, see the East Evans Watershed Analysis, completed in March 1996, which is available at the Butte Falls Resource Area, Medford District BLM Office.

C. Forest Health--upland and riparian

Within the proposed East Evans Creek project areas, the vegetation in the northern portion, T33S, R2W, sections 5,7,17, and T33S, R3W, section 1, is primarily mixed conifer / madrone - deciduous brush / salal grouping with a primary overstory of Douglas - fir. Incense cedar and ponderosa pine are prevalent in some areas. Madrone and other hardwoods exist in the stands but are less abundant than in the Douglas - fir / tan oak - madrone grouping. Golden chinquapin occurs as both the shrub and tree form varieties. At higher elevations white fir is a stand component, while in some drainages western hemlock may make up a component of the stand.

The vegetation in the southeast portion of the proposed sale area T34S, R2W, sections 3,5,9,10,27,29,31,35, is primarily mixed conifer / interior valley / grass with grass, herbaceous vegetation, poison oak, and deerbrush which provide severe competition for conifers during the early - seral stage. Deciduous brush offers growth competition in early to mid - seral stages and may delay conifer establishment on hot south aspects. Conifer species of late and mature seral stages are Douglas - fir and ponderosa pine, with Douglas - fir being climax. Tree - form hardwoods are present. Manzanita is locally present and may form dense stands. The mixed conifer / interior valley / grass group "has limited areas which can be considered old growth. A high fire return frequency, coupled with the mortality patterns common to low elevation dry sites, acts to keep this plant grouping in younger age classes" (RMP pp 3 - 29).

Stand densities in the area are high with resulting demand and competition for limited amounts of moisture and nutrients. Moisture and nutrients are important limiting factors that dictate the health and resiliency of a forest ecosystem. Dense stands that exceed the "carrying capacity" of the site's resources are not ecologically sustainable. Declining vigor with greater susceptibility to insects, disease, and fire would be the expected result.

Stand characteristics within Riparian Reserves generally resemble stand conditions found in the upland. Most stands are rather homogenous in age and are characterized by mid-seral stage stand conditions of vigorous growth of dominant trees, crowded trees with signs of mortality from suppressed trees, single canopy and generally complete crown closure. The main difference within the Riparian Reserve is the understory riparian vegetation growing close to the stream channel. Occasional grand fir occurs in the overstory in the southern portion while western hemlock is found in the northern headwaters.

Coarse woody debris is generally lacking in these stands except for older, highly decomposed material (decay class 4's and 5's). Generally, no new coarse woody debris has been added since the stand replacement fire, which established these stands 80 years ago. Organic debris comprised of small and medium size woody debris inputs are high and increasing.

Canopy closure within the Riparian Reserve is generally 90% to 100% in most places, resulting in high levels of shade except for small openings and recent gaps. The number of canopy layers is generally one (but sometimes two) with a hardwood and suppressed conifer understory. A third

canopy layer of riparian hardwoods and brush species occurs occasionally along streams. For a more complete description, see Appendix B.

D. Fuels/fire

For a description of the current condition fuel models, see Appendix G, fuels report.

The majority of the current timber stands are overstocked with dense stands of 2-6 inch diameter breast high (dbh) conifers. A large percentage of the project area is susceptible to crown fire events because this dense conifer understory provides the ladder fuels necessary for crown fire events. Ground fuels in the area also have a high fuel rating.

Conditions in the southeastern portion of the watershed contribute to the high fire potential in the watershed for the following reasons:

1. Lack of road access - directly affects fire suppression capabilities, with longer initial attack times, higher suppression costs, limited escape routes and safety zones, and higher probability of stand replacement fires.
2. Aspect south to west - area is subject to prevailing winds and sudden dramatic changes in both live and dead fuel moisture.
3. Lower elevation - hot dry site subject to temperature inversions.
4. Large continuous blocks of dense fuels contribute to the potential for large crown fires.

E. Fisheries/Aquatic Ecosystem

For a more complete description see fisheries report, Appendix K.

The East Fork of Evans Creek is a tributary to Evans Creek which flows into the mainstem Rogue River. The West Fork of Trail Creek is a tributary to Trail Creek, which also flows into the mainstem Rogue River. Additionally, two small, unnamed tributaries flow into the Cow Creek watershed within the South Umpqua River drainage.

There are a variety of anadromous and resident fish which occur within the East Fork of Evans Creek, West Fork Trail Creek, and unnamed Cow Creek tributaries. Within the proposed project areas of the Cow Creek and West Fork Trail Creek watersheds, no anadromous fish-bearing reaches are found. Additionally, no fish-bearing reaches are located within the proposed project area of the West Fork Trail Creek watershed. Anadromous fish species that utilize the East Fork of Evans Creek and its tributaries are coho salmon, winter and summer steelhead trout, and, potentially, Pacific lamprey.

Overall, stream habitat conditions are considered in fair condition throughout most of the proposed project area. Extensive deposition of fine sediment in stream channels is one of the primary factors contributing to aquatic habitat degradation in the East Evans Creek watershed. Approximately 4 miles of potential fish habitat is currently blocked by impassible culverts.

E. Wildlife Habitat

For a more complete description, see wildlife report, Appendix C.

Wildlife habitat within the area is highly fragmented, with pockets of mature timber surrounded with early seral forests. Large areas of dominant madrone occur in the northern part of the watershed where wildfire has burned in the past. Land ownership patterns and past harvest regimes resulted in a fragmented landscape pattern. The project lies within this highly fragmented area. Connectivity of late seral forests is poor.

Eleven northern spotted owl sites are present within the provincial radius (1.3 miles) of the proposed action. Nine are on BLM administered lands, two on private lands. One hundred acre activity centers have been established for the sites on BLM lands.

Great gray owl habitat is present in the watershed. Preliminary surveys have not located any of these birds. Surveys of suitable habitat would be completed before any harvest would occur.

T34S, R2W, section 29 is a connectivity block (ROD pp C 42-43). Connectivity blocks would be managed in 150 year rotation and 25-30% of each block would be maintained in late successional condition.

Table 4. SUMMARY OF THE CONSEQUENCES

ISSUES	NO ACTION ALT 1	ALT. 2	ALT.3	ALT. 4
1) Forest Health <high stand density (Matrix lands)	Declining tree vigor due to high numbers of trees/acre. Stand susceptible to insect, disease, fire.	In treated stands, improved tree vigor. Stand less susceptible to insect, disease, fire. In untreated stands, declining tree vigor.	Improved tree vigor. Stand less susceptible to insect, disease, fire.	Same as Alt 3
<High stand density, mid/late seral stand characteristics lacking (riparian zone)	Would continue at current levels. Stand stagnation & slower growth in some stands. Little diversity.	Would achieve desired characteristics in selected stands faster. Increased long -term stand diversity.	Same as Alt 2	Same as Alt 2
<Competition between hardwood and conifer/ trees slowing conifer development	Would continue at current levels. Slower conifer stand development.	Would be reduced in selected stands. Increased conifer growth.	Same as Alt 2	Same as Alt 2
2) Fuels/Fire <High fuel buildup	Increased potential for stand replacement fires.	Reduced potential for stand replacement fires within treated stands.	Reduced potential for stand replacement fires.	Same as Alt 3
<Poor road access for firefighting activities in southeast part of watershed	Could result in longer initial attack time, higher suppression cost. Higher probability of large fires. Limited escape routes and safety zones pose safety hazard for attack forces.	Same as No Action Alternative	Improved access could result in shorter response time, lower suppression costs. Greater safety for firefighting personnel with improved road escape routes.	Improved access in the short-term. As roads deteriorate, access would again become a problem for firefighter access.
3) Fish habitat <Highly erodible soils/ unsurfaced roads/high sediment levels/ degraded habitat	Stream sediment would remain at current high levels	Would be maintained at current high levels in Southeast. Would be reduced in other areas.	Fine sediment in stream would be expected to increase in short-term, but decrease below current levels in long-term	High levels of fine sediment in stream would be expected to increase in the short and long-term.
<fish passage obstructed	. 4 mi. stream inaccessible	. 4 mi. stream usable	. 4 mi. stream usable	. 4 mi. stream usable
4) Pump chance <failing/becoming filled with sediment	Potential impoundment failure/loss of water storage	Reduced potential for sediment input. Increased water storage.	Same as Alt 2	Same as Alt 2
5) Wildlife habitat <Big game forage and hiding cover reduced	Declining forage/hiding cover will continue	280 acres improved forage and habitat	Same as Alt 2	Same as Alt 2

IV. ENVIRONMENTAL CONSEQUENCES

A. Introduction

This Chapter is organized by issue to describe the anticipated environmental impacts of the alternatives, including the Proposed Action, on the affected environment. It provides the basis for comparing the alternatives presented in Chapter II. The detail and depth of impact analysis is generally limited to that which is necessary to determine if significant environmental impacts are anticipated (Table 4).

Several resources were considered by the ID team, but were not analyzed in detail because they are either not found in the proposed project area or would not be expected to be impacted under any of the alternatives. These resources are: Wilderness values, Areas of Critical Environmental Concern, Air Quality, Prime or Unique Farmlands, Wild and Scenic rivers, Native American Religious Concerns, Solid or Hazardous Waste, and Wetlands and Flood Plains.

B. Effects From Implementing the No Action Alternative

1. Forest Health--Upland and Riparian

a) Direct and Indirect Effects

Stand densities would remain high, resulting in the continued demand and competition for limited amounts of moisture and nutrients. There are only so many trees that a site can sustain. Once this limit is reached, natural controls would come into effect. Epidemic levels of insects and disease and severe fire behavior are likely to occur.

In the absence of fire or density management, the shift in species composition would continue toward more shade tolerant white fir. With high densities, the white fir is much more susceptible to insect infestations and disease infections than more intolerant species such as ponderosa pine, sugar pine, Douglas-fir, and incense cedar. With this species shift, an important natural defense against prolonged drought or potential climatic change could be lost.

In T33S, R2W, section 5, firewood sales to reduce hardwood competition and enhance conifer regeneration and survival would not occur. Girdling of hardwoods also would not occur. Conifer growth would be impeded due to hardwood competition. Conifer regeneration would be limited and survival of conifer regeneration would be low. Hardwoods would continue to dominate the site.

No density management (thinning) within Riparian Reserves would occur. Riparian Reserve areas would generally continue to function with a continuous supply of a variety of smaller woody material to the system. Large coarse woody debris on the forest floor is lacking and a gap in time exists until the stand would be able to adequately provide coarse woody debris. Some riparian areas which were

harvested or had wildfire in the past, currently have vegetation in early-to-mid seral stages with even age trees and little structural diversity. Areas with high stand densities would continue to experience stagnant stand growth and development. Overall stand vigor would slow over time and stand health would decline. Old growth stand characteristics would develop more slowly.

b) Short-term Uses vs. Long-term Productivity

In the short-term, the no action alternative would result in the continuation of the existing forest conditions for a period of time. Eventually, due to dense stand conditions, the probability of insect infestations and disease infections would be greater which would likely result in a decrease in long-term production.

The areas where the firewood/girdling project is proposed would have similar results except the insect and disease problem would not be as great because hardwoods do not have the same susceptibility.

In the Riparian Reserves, organic debris would continue to accumulate at the current rate. Stand productivity would remain on the current trend. Overall stand vigor would slow over time and stand health would be expected to decline.

c. Irreversible/Irretrievable Commitments of Resources

None identified.

d) Cumulative Effects

A potential increase in insects, diseases, and higher fire risk due to high stand densities would be expected. With high stand densities, more shade tolerant species would prevail. These species are usually more susceptible to insects and diseases and less able to withstand fire events. Ultimately, the No Action alternative could result in a very different species composition upon the landscape.

Existing trend would continue in Riparian Reserves.

2. Fuels/Fire

a) Direct and Indirect Effects

The dense stands have high levels of live fuel loading and, if combined with heavy dead and down fuels, there exists a high potential for stand replacement type fires that would carry into the crowns of all conifers. If a fire occurs within the watershed, large blocks of dense stagnated conifer stands provide ladder fuels necessary for crown fires.

Road access is poor to the southeast section of the project area. The road access problem means initial attack times are increased, thereby decreasing probability of a successful initial attack by

ground forces. With the reduced success of ground forces, there would be a suppression cost increase if and when aerial support is required. Poor access also poses a safety hazard. Limited escape routes for firefighters increases the chance of entrapment or burnover of initial attack forces.

The pump chance impoundment on Musty Creek is expected to eventually fail. Complete failure would cause increased suppression costs and increased likelihood of a fire escaping initial attack. The pump chance on the Cleveland Ridge road is functioning at this time but would continue to fill with sediment and become inaccessible due to dense brush.

b) Short-term Uses vs. Long-term Productivity

In the short-term there would probably be little change in existing conditions. In the long-term, the probability of a stand replacement fire would increase. If this occurs, impacts to soils and vegetation may affect site productivity for a long period of time.

c) Irreversible/Irretrievable Commitments of Resources

None identified.

d) Cumulative Effects

A continuing buildup of fuels over time could increase the probability of a large landscape fire in the watershed.

3. Fish/Aquatic Resources

a) Direct and Indirect Effects

No measurable, direct, negative effects to aquatic resources within the proposed project area were identified. However, fish habitat in approximately 4 miles of stream would continue to be inaccessible due to culverts blocking passage. Indirectly, this alternative would allow the vegetation within the Riparian Reserve to continue to develop and provide the long-term necessary elements for healthy aquatic ecosystems. In areas where the Riparian Reserve is currently in an early-successional condition it would be expected to take decades or centuries to achieve late-successional characteristics under this alternative.

Additionally, this alternative would indirectly contribute to current high levels of stream sedimentation in the watershed by allowing the continued degradation of the transportation system and fire suppression pump chances. This would be expected to have an indirect negative impact on fisheries and aquatic resources.

b) Short-term Uses vs. Long-term Productivity

With the continued degradation of the road system, it is anticipated that current high levels of stream sedimentation would be maintained. This would be expected to negatively impact aquatic habitat and, subsequently, the productivity of fisheries and aquatic resources in the watershed over the long-term.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

With the continued degradation of the road system, current high levels of stream sedimentation would be expected to continue. The degraded condition of the roads might remedy itself over time as they revegetate and stabilize. However, this may take many decades to achieve. This is also dependent upon private activities and their use and maintenance of the transportation system in the watershed. Cumulatively, this would be expected to have a negative impact on fisheries and aquatic resources. Additionally, there should be a positive cumulative effect due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem as the Riparian Reserve vegetation develops and delivers this material to the streams. This positive cumulative effect would be expected to be seen throughout the East Fork of Evans Creek watershed.

e) Determination of Effects on Umpqua River Cutthroat Trout, Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Alternative: Likely to Adversely Affect

Because of the current degraded condition of much of the aquatic habitat within the East Fork of Evans Creek watershed, and the continued maintenance or further degradation of this condition from continued delivery of sediment to streams from the degradation of the transportation system, the No Action Alternative is likely to result in more than a negligible chance of "take[1]" of these species. As a result, the No Action Alternative is considered "likely to adversely affect" Umpqua River Cutthroat Trout (threatened) and Northern California/ Southern Oregon Coho Salmon (proposed threatened) and Klamath Mountains Province Steelhead Trout (proposed threatened). Formal consultation with National Marine Fisheries Service (NMFS) has been initiated for Umpqua River Cutthroat Trout and a Biological Opinion (BO) was issued on September 26, 1996. Formal Conferencing has been initiated for Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout.

[1] "Take" - The ESA (Section 3) defines take as "to harass, harm, pursue, hunt, shoot, wound, capture, collect or attempt to engage in such conduct". The U.S. Fish and Wildlife Service further defines "harm" as "significant habitat modification or degradation that results in death or injury to a listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering" and "harass" as "actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering". Additionally, take, as defined in the ESA clearly applies to the individual level. Thus actions that have more than a negligible potential to cause take of individual eggs and/or fish, are "likely to adversely affect" (NMFS 1995).

4. Wildlife Habitat

a) Direct and Indirect Effects

No action in the proposed timber sale units would not remove or alter wildlife habitat or disturb wildlife populations. Skid trails would not be built and current levels of habitat would remain to develop naturally. Coarse woody debris and snag numbers would remain at current levels.

Connectivity in the riparian zones and owl connectivity blocks would remain unchanged.

No action would occur in the proposed meadow burn and they would continue to develop naturally. Cover and forage would continue to decline. Conifer encroachment would continue at the edges of the meadows in the white oak stands. White oak regeneration would be stagnant until a wildfire or some other disturbance occurs.

b) Short-term Uses vs. Long-term Productivity

In the areas of dense and decadent wedgeleaf, plants would continue to die and available wildlife forage in the area would decrease over time. As the younger wedgeleaf becomes thicker and more impenetrable, a reduction in usable cover would occur. Open grasslands would not have the flush of nutrients which would occur as a result of prescribed burning. Conifers would continue to encroach into the white oak woodlands and these woodlands would be expected to decline.

c) Irreversible or Irretrievable Commitments of Resources

None identified.

d) Cumulative Impacts

Loss of wildlife habitat on adjoining private lands would continue to occur, but with the No Action Alternative, wildlife habitat on public lands would be maintained and continue to grow and develop.

C. Effects from Implementing Action Alternative 2

1. Forest Health

a) Direct and Indirect Effects

See silviculture prescription, Appendix F.

Implementation would reduce stand densities to promote growth of the residual trees. Reducing stand density would improve and increase tree vigor. Increased tree vigor would decrease stand susceptibility to insect infestation and disease infection. Harvesting the smaller trees would accelerate

the development of larger diameter and taller trees so that the characteristics of a mature stand are developed faster. Maintaining the larger trees with fuller crowns would provide sufficient tree canopies to reduce vegetative competition from brush and hardwoods. The larger trees and resulting canopies would also provide cover for a variety of wildlife species. Indirectly, harvesting the smaller trees would provide material for the economy.

The action would commercially thin from below in second growth stands and harvest individually marked trees from mature groups of trees in order to redistribute growth to vigorous dominate and co-dominant trees. Removal of trees from the less vigorous crown classes, normally intermediate and suppressed trees, would not reduce volume growth per acre but should greatly reduce the probability of mortality due wildfire and stress from competition.

In the southeast area, T33S, R2W, sections 27, 35, and T34S, R2W, sections 3,4,9,10 would not be entered for commercial harvest. However, precommercial thin and associated fuels treatments would reduce the competition somewhat. See fuels/fire discussion.

Firewood sale and girdling of hardwoods in section 5, T33S, R2W, would result in the release of existing conifer regeneration (seedlings, saplings, poles) and, through planting, convert the stand from hardwoods to conifers.

Density management within Riparian Reserves would result in the loss of biomass to the system. Recruitment of small and medium woody material would be reduced. Canopy closure would be lowered from approximately 90% to 60%. Microclimate components, such as light and daytime temperatures, would be expected to increase and humidity decrease. The existing riparian vegetation would be expected to respond by an increase in the rate of growth of established species and result in the development of old growth stand characteristics more quickly. Refer to Screen for Determining When Active Management is Needed in Riparian Reserves, Riparian Report (App

b) Short-term Uses vs. Long-term Productivity

In the short-term, the vigor of the stands would be increased. The long-term productivity would be expected to increase due to increased stand vigor, species diversity being maintained or increased, and an increased size of the residual stand.

The firewood/girdling projects would result in a short-term reduction in productivity due to the harvest and girdling of hardwoods and lack of conifers to occupy the areas. In the long-term the productivity of the areas would be increased due to the vigor of the planted trees and the diversity of species upon the site.

Within Riparian Reserves, short-term biological productivity would be reduced by thinning. However, long-term productivity would be increased with the faster development of old growth characteristics. Larger size trees which support old growth dependent plant and animal species would develop more quickly.

Unavoidable short-term effects to the Riparian Reserves would be lower canopy closure (60%) which may increase riparian microclimate daytime temperatures in density management units in the short-term.

c) Irreversible/Irretrievable Commitments of Resources

None anticipated**.**

d) Cumulative Effects

Treatment under this alternative would result in a more species-diverse, vigorous, healthy landscape. The southeast untreated area would have similar results as the no action alternative.

There will be negligible effects to the riparian ecosystem other than a slight improvement in functioning condition over the long-term with the development of large

2. Fuels/fire

a) Direct and Indirect Effects

The direct effect would be an increase in fuel loadings and fire potential from initial harvest activities. This would be reduced by logging slash treatments and, if needed, thinning activities which would reduce the potential for stand replacement fires. In the southeast part of the watershed, 451 acres of additional fuels treatment would occur. This would be a combination of precommercial thin with piling and/or underburning of sub-merchantable material.

In the Antioch/Meadows School and Cold Springs project areas, treatment by underburning would reduce the brush component of the live fuels. By reducing the brush component there would be a reduction in fire intensities if a wildfire would occur. Although wildfire spread rates would remain high, fires would be easier to control.

Pump chance renovation would result in direct access to stored water for fire suppression.

Road access would continue to be a problem in the southeast area, decreasing the success of initial attack and increasing the fire suppression costs.

b) Short-term Uses vs. Long-term Productivity

Under this alternative there would be a reduction in the potential for large scale fires over the project area for a period of 15 -20 years. After that time fuels accumulations would begin to return to a level of concern.

c) Irreversible/Irretrievable Commitments of Resources

None identified**.**

d) Cumulative Effects

A decrease in fuels would occur and fires would be easier to contain.

3. Fish/Aquatic Resources

a) Direct and Indirect Effects

No direct impacts are anticipated to occur from the proposed timber harvest. Indirectly, fish and aquatic resources could be negatively impacted from short-term increases to high stream sediment levels as a result of new road construction, maintenance, renovation, and decommissioning. Additionally, this alternative would allow the vegetation within the Riparian Reserve to continue to develop and provide the long-term elements necessary for healthy aquatic ecosystems.

Not improving the roads in the Southeast would have the same impacts in that area as the Alternative 1, No Action.

No direct impacts are anticipated to occur from pump chance repair. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in baseline stream sediment levels. Conversely, the proposed action would be expected to indirectly benefit fisheries and aquatic resources by reducing the risk of this pump chance failing and delivering large amounts of sediment to the stream and, overall, reducing the amount of fine sediment currently being delivered to the stream.

No direct impacts are anticipated to occur from the prescribed meadow burns. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in baseline stream sediment levels.

Direct negative impacts to fish could occur from the culvert replacement due to machinery operating in extremely close proximity to, or within, the stream channel, or from falling debris. This could potentially injure or crush individual fish. Culvert replacement would allow fish unobstructed and undelayed passage to 4 miles of stream habitat which was inaccessible or partially inaccessible previously. This could directly benefit fishery resources by increased fish production from the watershed. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in baseline stream sediment levels downstream of the proposed project area.

No direct impacts are anticipated to occur from road decommissioning. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in stream sediment levels, but would be expected to be positively impacted due to a long-term reduction in stream sediment levels.

Implementation of the appropriate PDF's would be expected to minimize the anticipated negative direct and indirect effects of the proposed actions to negligible levels.

b) Short-term Uses vs. Long-term Productivity

It is anticipated that short-term increases to baseline stream sediment levels could occur from new road construction, maintenance, renovation, and decommissioning under the proposed timber sale. However, it is anticipated that an overall reduction to baseline stream sediment levels would occur and subsequently maintain or increase the current productivity of fisheries and aquatic resources in the watershed over the long-term.

It is anticipated that short-term increases to baseline stream sediment levels could occur from implementation of the proposed meadow burn. However, with implementation of the appropriate PDF increases in baseline stream sediment levels should be negligible. Subsequently, the current productivity of fisheries and aquatic resources in the watershed should be maintained over the long-term.

It is anticipated that short-term increases to baseline stream sediment levels could occur from implementation of the proposed culvert replacement. However, with implementation of the appropriate PDF's increases in baseline stream sediment levels should be minimal. Subsequently, baseline habitat conditions downstream of the proposed project area should be maintained over the long-term. Additionally, with increased aquatic habitat availability it would be expected that some amount of increase to the long-term productivity of fisheries and aquatic resources in the watershed should result.

Implementation of the appropriate PDF's would be expected to maintain or increase the long-term productivity of fisheries and aquatic resources.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

The proposed timber harvest would be expected to have a negative impact on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment from new road construction, maintenance, renovation, and decommissioning. However, it would be expected that a long-term, positive, cumulative effect on fish and aquatic resources should result from a reduction in total miles of road in the watershed.

With the continued degradation of the transportation system in portions of the watershed, current high levels of stream sedimentation would be expected to be maintained. The degraded condition of the roads might reverse over time as they revegetate and stabilize. However, this may take many decades to achieve and is dependent upon private activities and their use and maintenance of the

transportation system in the watershed. It is unlikely that non-point sedimentation from the majority of roads within the watershed will be reduced, which is likely to result in a neutralization of the anticipated beneficial impacts from the proposed project.

Additionally, as the Riparian Reserve vegetation develops and delivers material to the streams there should be a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem. This positive cumulative effect should be seen throughout the East Fork of Evans Creek watershed.

A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the pump chance repair as a result of short-term increases to baseline stream sediment levels. However, the proposed action would be expected to cumulatively benefit fisheries and aquatic resources by reducing the risk of this impoundment failing and delivering large amounts of sediment to the stream and reducing the amount of fine sediment currently being delivered to the stream. This should lead to a reduction in baseline stream sediment levels in the long-term.

A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the proposed meadow burns as a result of short-term increases to baseline stream sediment levels.

A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the proposed culvert replacement as a result of short-term increases to baseline stream sediment levels. However, the proposed action would be expected to cumulatively benefit fish and aquatic resources by allowing, unobstructed and undelayed passage to stream habitat which was inaccessible or partially inaccessible previously. This would be expected to directly benefit fishery resources by increased fish production from the watershed.

A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the proposed road decommissioning from short-term increases to baseline stream sediment levels. However, implementation of the proposed action would be expected to cumulatively benefit fisheries by adding to the current amount of available habitat.

Implementation of the appropriate PDF's would be expected to minimize the anticipated negative cumulative effects of the proposed actions to negligible levels.

e) Determination of Effects on Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Actions: Likely to Adversely Affect

Because the proposed actions are likely to contribute some amount of sediment to the stream channel in the short-term, which may result in more than a negligible chance of "take" of these species, the proposed alternative is considered to "likely to adversely affect" Umpqua River Cutthroat Trout (threatened) and Northern California/ Southern Oregon Coho Salmon (proposed threatened) and Klamath Mountains Province Steelhead Trout (proposed threatened). It is anticipated the level of

take should be extremely low in the short-term, and should provide long-term benefits to these species. Formal consultation with National Marine Fisheries Service (NMFS) has been initiated for Umpqua River Cutthroat Trout and a Biological Opinion (BO) was issued on September 26, 1996. Formal Conferencing has been initiated for Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout.

5. Wildlife Habitat

a) Direct and Indirect Effects

The proposed meadow burn areas in the Cold Springs and off Antioch road would have a loss of some forage after the initial burn. This would continue until green up would occur. Wedgeleaf patches would be burned and would not provide forage immediately after the burn. Burning grasses in the oak woodland would expose acorns under the trees and make them available to wildlife. Some oak trees could be killed in the fire, reducing the density of smaller oaks. The objective is to reduce the density in the oak stands to improve health of oak stands and to encourage sprouting of new, more vigorous trees that would increase stand age diversity.

b) Short-term Uses vs. Long-term Productivity

Loss of habitat would occur as a result of the timber harvest. This would reduce the suitability of the area for wildlife which depend on the high canopy, older forests. Riparian areas which are proposed to be thinned currently do not provide old growth habitat conditions. The proposed project would be expected to have a short-term disturbance to the wildlife which would use the riparian areas, and reduction of canopy cover. The long-term objective is to enhance the old growth characteristics in the riparian areas and make them more desirable to animals which need old growth habitat. This also would improve old growth corridors to provide connectivity across the land along the riparian areas.

Forage in the meadows would be reduced in the short-term until the fall green up would occur. Wedgeleaf and other shrubs would begin to produce sprouts as soon as growth resumes. In the long-term, forage would be improved as more vigorous growth occurs in the proposed burn areas.

c) Irreversible/irretrievable commitment of resources

None identified.

d) Cumulative Effects

With ongoing timber harvest on private lands, habitat for wildlife in the watershed would be increasing in the early seral stages, with decreasing late seral and old growth habitat. Thinning and density management on BLM lands would be designed to maintain a higher canopy closure and increase the rate of growth in remaining trees. Density management in the riparian areas would accelerate the rate of growth in Riparian Reserves which currently do not provide old growth habitat.

Meadows on surrounding private lands are becoming overgrown with brush and white oak stands are declining as conifers become established. Burning would open up the areas and maintain better quality habitat on BLM lands.

D. Effects From Implementing Action Alternative 3

1. Forest Health--Upland and Riparian

Effects would be the same as Alternative 2 except an additional 451 acres of Matrix lands would be treated. Timber sale volume would be approximately 14,808 mbf . This is approximately 4,403 mbf more than would be produced with Alternative 2. No additional density management within Riparian Reserves are proposed.

2. Fuels/Fire

Same as Alternative 2 except roads would be improved in the southeast part of the watershed. Access for firefighters would be improved, creating better access and safer conditions for firefighters in the event of a wildfire for suppression efforts. Initial attack time would be shortened and safety of firefighters would be improved.

3. Fish /Aquatic Resources

a) Direct and Indirect Effects

Same as Alternative 2.

b) Short-term Uses vs. Long-term Productivity

It is anticipated that short-term increases to baseline stream sediment levels could occur from new road construction, maintenance, renovation, decommissioning and upgrade under the proposed timber sale. However, it is anticipated that an overall reduction to baseline stream sediment levels would occur over the long-term and subsequently would be expected to maintain or increase the current productivity of fisheries and aquatic resources in the watershed over the long-term. Due to the upgrade of known problem roads, it is anticipated that more of an increase in the productivity of fisheries and aquatic resources should result.

Same as Alternative 2 for all other proposed projects.

c) Irreversible or Irretrievable Commitments of Resources

Same as Alternative 2.

d) Cumulative Effects

The proposed timber harvest would be expected to have a negative cumulative impact on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment from new road construction, maintenance, renovation, and decommissioning.

However, it would be expected that a long-term positive cumulative effect on fish and aquatic resources should result from a reduction in total miles of road in the watershed and a reduction in non-point sedimentation from known road sources. This would aid in improving the current condition and should result in a positive cumulative effect. However, the non-point sedimentation would be expected to continue at a high level, though some level of stream sediment reduction should be achieved.

As the Riparian Reserve vegetation develops and delivers material to the streams there should be a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem. This positive cumulative effect should be seen throughout the watershed.

Same as Alternative 2 for all other proposed projects.

e) **Determination of Effects on Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Actions:** Likely to Adversely Affect

See Fish/Aquatic Habitat Determination of Effects, Alternative 2.

4. Wildlife Habitat

Same as Alternative 2.

E. Effects From Implementing Action Alternative 4

1. Forest Health--Upland and Riparian

Same as alternative 3.

2. Fuels/Fire

a) Direct and Indirect Effects

Access for firefighting would initially improve with road grading and minor improvement. Initial attack time would be shortened and safety of firefighters would be improved.

b) Short-term Uses vs. Long-term Productivity

The improved road access would be expected to remain for 2 to 3 years, until erosion and natural processes return existing conditions. When this occurs, safety for firefighters and initial attack times would again become the same as discussed under Alternative 2.

c) Irreversible or Irretrievable Commitments of Resources

None identified.

d) Cumulative Effects

None identified.

3. Fish/Aquatic Resources

a) Direct and Indirect Effects

Same as Alternative 3 for direct and indirect effects.

b) Short-term Uses vs. Long-term Productivity

It is anticipated that short-term and long-term increases to baseline stream sediment levels could occur from implementation of the proposed timber sale. Because of the anticipated long-term increases in baseline stream sediment levels, the long-term productivity of fisheries and aquatic resources could be severely compromised. This could lead to a long-term decrease in the productivity of fisheries and aquatic resources within the watershed to below current levels.

c) Irreversible or Irretrievable Commitments of Resources

None identified.

d) Cumulative Effects

The proposed timber sale action would be expected to have a negative impact on fisheries and aquatic resources by adding to current high levels of stream sediment from new road construction,

maintenance, renovation and decommissioning and maintaining this condition over the long-term. Because it is unlikely that non-point sedimentation from the majority of roads within the watershed would be reduced, implementation of the proposed action could have severe adverse cumulative impacts on fisheries and aquatic resources within the watershed.

Additionally, as the Riparian Reserve vegetation develops and delivers material to the streams there should be a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem. This positive cumulative effect should be seen throughout the watershed.

e) Determination of Effects on Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Actions: Likely to Adversely Affect

Because the proposed actions are likely to contribute some amount of sediment to the stream channel in the short-term and long-term, which may result in more than a negligible chance of "take" of these species, the proposed alternative is considered to "likely to adversely affect" Umpqua River Cutthroat Trout (threatened) and Northern California/ Southern Oregon Coho Salmon (proposed threatened) and Klamath Mountains Province Steelhead Trout (proposed threatened). It is anticipated the level of take, as a result of habitat degradation could be moderate to high from implementation of the proposed alternative. Formal consultation with National Marine Fisheries Service (NMFS) has been initiated for Umpqua River Cutthroat Trout and Formal Conferencing has been initiated for Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout.

4. Wildlife Habitat

Same as Alternative 2.

V. List of Preparers

INTERDISCIPLINARY PREPARERS	TITLE	RESOURCE VALUE ASSIGNED	INITIAL/ DATE
Linda Hale	Wildlife Biologist	Environmental Assessment Preparation/Wildlife	LH 1-14-97
Jim Welden	Lead Silviculture	Silviculture	JW 1-16-97
Jon Raby	Fishery Biologist	Fisheries/Aquatic Ecosystem	JR 1-21-97
John Dinwiddie	Fuels Mgt. Specialist	Fuels/fire/air	JD 1/15/97
Robert Smith	Log/roads Engineer	Engineering/road design	RS 1-15-97
Ken Van Etten	Soil Scientist	Soils/Water/Wetlands/Floodplains	KVE 1-[illegible]97
Doug Kendig	Riparian Coordinator	Riparian Issues/T&E Plants	DK 1-21-[illegible]6
Emily Hale	Park Ranger	Recreation/Cultural/Historical/VRM	EAH 1/16/97
John Bergin	Forester	Planning/maps	CJB 1/16/97
Aaron Thayer	Forester	Planning/layout	AT 1/16/97
Jean Williams	Environmental Coordinator		JW 1/21/97

Appendices

APPENDIX A

To: East Evans I.D. Team

From: Emily Hale

Date: November 18, 1996

Subject: Cultural, VRM, Rec write-ups

Cultural

Cultural surveys were done of the proposed timber sale area in compliance with the SHPO guidelines and according to the National Historic Preservation Act. Two prehistoric sites were found during the course of this survey. The first is in an area which has previously been disturbed. This site was found in an area originally included in the proposed project, and later dropped. There will be no impacts on this site from the proposed action. Artifacts discovered here suggest that use was transitory in nature. The second discovery was the site of a rock quarry used by Native Americans. This site is larger than the first, although the extent of it is not known, the survey located it but did not do a comprhensive evaluation on it. Such an evaluation will occur in the future. This sitewas located outsdide of, but in the vicinity of a proposed helicopter sale unit; there are no anticipated effects if the area were to be harvested by helicopter. If this alternative is chosen, no harvesting will be done in the immediate area if it is found to be detrimental to the site. This will be determined when the site evaluation has been completed. Road construction in alternatives considered but dropped may have impacted the site depending upon the size of the cultural site. This unit will only be helicopter logged if logged at all.

VRM-

Visual Resource management is used by the BLM as a way to manage the visual values of the land. The system's ratings take into account scenic quality, sensitivity, and distance zones. Acceptable levels of change vary based upon the class a section of land is.

The majority of the sale area is in VRM class IV, two smaller portions of class III are located in the South East corner of the watershed (see map). Class III is located where we have rural interface concerns.

The Medford District RMP allows for "major modification of the existing character of the landscapes." (RMP p.70) in class IV. Moderate levels of change may occur in class IV and activities may dominate the view and be the major focus. In class III areas, the objective is "partially retain the existing character of the landscapes." Moderate levels of change which may attract attention are acceptable, but should not dominate the view of the casual observer.

The proposed action and alternatives would not violate the VRM management directives given for land classes in the sale area.

Recreation

The East Evans Creek Watershed has only dispersed recreation, predominantly by hunters and Off Road Vehicle (ORV) users. Based upon the existing character of the area and because recreation use is dispersed and transient in nature, any timber harvest should not detract from the recreational experience in the area. Short term effects such as increased truck traffic on the roads may be experienced. No negative, long term effects on the recreation values are anticipated.

APPENDIX B

To: Linda Hale
From: Douglas kendig
Subject: Sensitive Plants and Riparian Reserve Issues
Date: November 27, 1997

CLEVELAND RAILROAD T.S. AND MUSTY DONUT T.S.

AFFECTED ENVIRONMENT

SPECIAL STATUS PLANT

Special Status Plant surveys have been conducted on all units where harvesting activities would occur. Four special status plant species were discovered at 11 different sites. All known sensitive plant species populations would be protected by project design features (see Appendix XXX for additional information)..

Project Design Features

A. Sensitive Plants
   1. Protect all Allotropa virgata sites, all Cypripedium montanum sites, and all Cypripedium fasciculatum site with 100 feet minimum no disturbance buffers or an area large enough to maintain current interior habitat conditions.

B. RIPARIAN
   1. No road construction or equipment operation would occur within riparian reserve areas except on existing and approved roads.
   2. Harvest corridors in density management units within riparian reserve would be located perpendicular to stream channels whenever possible.
   3. No harvesting of down coarse woody debris within riparian reserve areas would occur.
   4. A new stream crossing is located in section T33S, R02W, Sec 5 with the following features:

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION (Summarizes Environmental Consequences)

NO ACTION

Density Management Within Riparian Reserve Areas

No density management within riparian reserves would occur. Riparian reserve area would generally continue to function properly with a continuous supply of a variety of woody material to the system except coarse wood. There is a lack of new coarse woody debris on the forest

floor and a gap in time until the stand will be able to adequately provide coarse woody debris would be maintained. Overall stand vigor would slow over time and stand health would decline.

ALT. 2

Density Management Within Riparian Reserve Areas

No timber harvesting or density management would occur in riparian reserves except for those units identified below which met the screening criteria outlined in appendix (XXX). No density mangaement is proposed within riparian reserves of fish-bearing streams. Density management within riparian reserve areas would occur in the following units:

1. T32S, R02W, Section 33O.I. 895
2. T33S, R02W, SectionO.5. 005 and 002
3. T33S, R02W, Sectionall7 units
4. T33S, R02W, Sectionall7 units

Riparian reserve density management prescription objectives are tailored to achieve site specific objectives outlined below: 1. Meet the Aquatic Conservation Strategy. 2: All streams would continue to function properly , biologically and physiologically. 3: Maintain an average of 60% or greater canopy closure. 4: Maintain and Improve the health of the stand and shorten the time frame for coarse woody inputs to the system. 5: No coarse woody material would be removed.

ALT. 3

No change from alternative 2.

Alt. 4

No change from alternative 2.

III. AFFECTED ENVIRONMENT

(Baseline Environment)

Density Management Within Riparian Reserve Areas

The type of forest stands targeted for density management are described in detail in the prescription. Stand characteristics within riparian reserves generally resemble stand conditions found in the upland. Most stands are rather homogenous in age and are characterized by mid seral stage stand conditions of vigorous growth of dominant trees, crowded trees with signs of mortality from suppressed trees, single copy and generally complete crown closure. The main difference within the riparian reserve is the understory riparian vegetation growing close to the stream channel and occasional grand fir in the overstory in the southern portion and western hemlock appearing as a riparian tree species in cool, moist, riparian areas in the northern headwaters.

Coarse woody debris is generally lacking in these stands except for decay class 4's and 5's. Generally no new coarse woody debris has been added since the stand replacement fire which established these stands 80 years ago. Organic debris comprised of small and medium size woody debris inputs are high and increasing. Wind storms last winter blew over scattered trees in some areas.

Canopy closure within the riparian reserve is generally 90% to 100% in most places resulting in high levels of shade except for small openings and recent gaps. The number of canopy layers is generally one but sometimes two with hardwood and suppressed conifer understory. A third canopy layer of riparian hardwoods and brush species occurs occasionally along streams.

Riparian Microclimate generally is adequate, especially during hot summer days. Higher humidities and cooler temperatures are maintained by multiple canopy layers, high canopy levels and coverage, generally few areas where edge effect influences microclimate.

Stream channel down-cutting is aggravated by high run-off from road systems. Channel down-cutting is occurring on some streams, especially on the southeast portion of the project area (T34S, R2W, SEC 9,

IV. Environmental Consequences
(Analytical Basis for Comparison)
Effects of Alternative
No Action

Density Management Within Riparian Reserve Areas

No density management of riparian reserves would occur. Riparian reserve area would generally continue to function properly with a continuous supply of a variety of sixes of woody material to the system except coarse wood.. Canopy closure would remain high and current riparian micro-climate conditions would be maintained.

Unavoidable Adverse Effects

None forseen.

Relationship of Short-term Uses and Long-Term Productivity

Organic debris would continue to accumulate at the current rate. Stand productivity would remain on the same trend. There is a lack of new coarse woody debris on the forest floor and the time-gap which currently exists would be prolonged until the stand matures. Overall stand vigor would slow over time and stand health would decline. No human utilization of excess wood products would occur.

Irreversible and Irretrievable Commitment of Resources

None expected.

Cumulative Effects

Existing trend would continue.

Any other Disclosures

None

Alternative 2
Density Management Within Riparian Reserve Areas

Density management of riparian reserves would occur within selected areas. Riparian reserve areas would generally continue to function properly with a continuous supply of a variety of sizes of woody material to the system except coarse wood.. Canopy closure would remain above 60 % and current riparian micro-climate conditions would be maintained.

Unavoidable Adverse Effects

Canopy openings after density management would increase riparian microclimate temperatures in density management units in the short term, or approximately 5 years. A negligible amount of ground disturbance would occur.

Relationship of Shorterm Uses and Long-Term Impacts
The rate of growth of the stand after density management would be sustained over a longer period of time and shorten the time to when coarse woody debris inputs begin to contribute noticeable to the riparian ecosystem. Other desirable stand characteristics which enhance riparian ecosystems would develop more rapidly.

Irreversible and Irretrievable Commitment of Resources
None anticipated.

Cumulative Effects
Very negligible effects to the riparian eco-system other than a slight improvement in functioning condition over the long term in the proposed riparian areas with the de

Any other Disclosures
None known.

ALT. 3 and 4
Same as alternative 2.

OTHER PROJECTS (I DON'T KNOW WHERE IN THE HELL THIS GOES)

1. Cold springs Meadow Wildlife Habitat Improvement Burn

Existing Condition
Shallow, seasonal springs with overland flow occur throughout the area and are generally distinguished by shallow soils, bedrock close to the surface, and vegetation comprised of mosses, grasses, forbs and some brush species on higher ground forming lush meadows in the spring and late into the summer. These meadows provide extended grazing and foraging grounds for a wide variety of Cascade Mountain animal and birdlife from early spring to late summer. They are unique plant communities for a succession of seasonal wetland and upland plant species which interact on shallow bedrock soils as the season

Natural fires occurred on these shallow basalt benches periodically in the past during dry summer periods at varying intervals as demonstrated by existing charcoal evidence in the area. Generally, fires on meadows would have a beneficial effect.

Unavoidable Adverse Effects
Adverse effects to prescribed burning of meadows include high losses of nitrogen from the site through volatilization and leaching. Loss of topsoil through erosion from fall and winter rains

are high after the loss of vegetation and organic debris. Rainwater infiltration rates into the ground are lower and may produce overland runoff during heavy storm events. Sedimentation would be expected to rise in the short-term in drainage directly co

Relationship of Shorterm Uses and Long-Term Impacts

Meadow fires would be expected to be low intensity and move quickly across the meadow while accomplishing the following objectives: reduce the layer of thatch build-up from bunch grasses; maintain the vigor of the existing native grass community; create a new seed bed; reduce brush and hardwood species invasion such as whitethorn, black oak and madrone. Nitrogen release is elevated one to three years following a fire producing a flush of lush, vigorous growth and increasing forage values. Generally, this plant community recovers very quickly from disturbance. The amount of erosion and sedimentation normally de

Irreversible and Irretrievable Commitment of Resources

None anticipated

Cumulative Effects

Very minimal but notable to erosion and sedimentation. Notable also to the maintenance of meadow/chaparral/oak grassland vegetative communities.

Any other Disclosures

1. Sensitive plant surveys have not been completed. Surveys would be completed before any ground disturbing activities are initiated. If any sensitive plant species are discovered within the project area a species management plan would be developed.

.

2. Antioch Meadows School Burn

Existing Condition

Shallow, seasonal springs with overland flow occur throughout the area and are generally distinguished by shallow soils, bedrock close to the surface, and vegetation comprised of mixed grasses, forbs and some brush, hardwood and conifer species forming lush meadows in the spring and early summer. These meadows provide extended grazing and foraging grounds for a wide variety of Cascade Mountain animal and birdlife from early spring to late summer. They are unique plant communities for a succession of seasonal wetland and upland plant species which interact on shallow bedrock soils as the seasonal springs dry

Natural fires occurred on lowland meadows and mixed conifer forests periodically in the past during dry summer periods at varying intervals as demonstrated by existing charcoal evidence in the area. Generally, under-burning fires on meadows and low elevation forests would have a beneficial effect.

Unavoidable Adverse Effects

Adverse effects to prescribed burning of meadows and forest communities include high losses of nitrogen from the site through volatilization and leaching. Loss of topsoil through erosion from fall and winter rains are high after the loss of vegetation and organic debris. Rainwater infiltration rates into the ground are lower and may produce overland runoff during heavy storm events. Sedimentation would be expected to rise in the short-term in drainage directly connected with the site. Some areas may burn hotter than desired and small pockets of hardwoods and conifers may be killed.

Relationship of Shorterm Uses and Long-Term Impacts

Prescribed meadow and mixed conifer fires would be expected to be low intensity and move quickly across the meadow and understory while accomplishing the following objectives: reduce the layer of thatch build-up from bunch grasses; maintain the vigor of the existing native grass and forb community; create a new seed bed; reduce brush and hardwood species invasion such as whitethorn, black oak and madrone. Nitrogen release is elevated one to three years following a fire producing a flush of lush, vigorous growth and increasing forage values. Generally, this plant community recovers very quickly from disturbance. The amount of erosion and sedimentation normally declines rapidly also.

Irreversible and Irretrievable Commitment of Resources

None anticipated

Cumulative Effects

Very minimal but notable to erosion and sedimentation. Notable also to the maintenance and vigor of meadow/chaparral/oak grassland vegetative communities.

Any other Disclosures

3. Culvert Replacement
   PDF - Rehab with riparian vegetation and conifers.

4. Pump Chance Clean out

5. Firewood Sale in T33,2W, Section 9
   PDF's 1. No hardwoods would be treated or harvested in riparian

6. Musty Creek Pump Chance Reconstruction
   I don t know what the proposal is for this exactly. I need more information or a complete project description.

RIPARIAN OVERVIEW

The riparian reserve land allocation acts as an important biological network across the landscape which is particularly

important through matrix lands and intermixed with private ownership, such as East Evans cr.. The riparian reserve area established under the Northwest Forest plan ROD is intended to protect a variety of terrestrial and aquatic species, endemic to wetland habitat and those which are associated with the riparian zone. Generally, the minimum protection for any intermittent or perennial non-fishbearing stream is one site tree distance and two site tree distances for fishbearing streams (see ROD, Page C-30 and 31).

RIPARIAN VEGETATION

The riparian vegetation is an indicator of the physical environment modified by soil type, temperature and moisture variation. The physical environment is additionally modified by landform features expressed across the landscape by changes in slope, aspect and elevation. The riparian vegetation in East Evans Creek watershed has a broad diversity because the variability of factors which influence the structure and composition of the riparian pla

The riparian vegetative community in the East Evans Watershed is dominated by Doug-fir with some Incense Cedar in the upper canopy component at lower elevations and on southern and western aspects. The understory canopy layer is comprised of Madrone, suppressed Incense Cedar, alder, willows, bigleaf maple, oceanspray and other species. Generally, distinct ecotone characterizes the riparian zone species with the arid upland species which is narrow in the southern half of the watershed especially on lower elevations and southerly and westerly aspects and

Riparian zone canopy openings in the vegetation are the result of land management activities or natural disturbances. Openings recover rapidly with fast growing hardwood invaders and are later overtopped with taller conifers. Cottonwood become established in small patches or single trees. White alders become the most dominant and abundant after a disturbance where the forest canopy opens during mid seral stage years. Willow, dogwood, oregon ash, vine maple and oregon grape and other species are commonly dispersed along the riparian zone.

The north portion of the headwaters tributaries replace Incense Cedar with Western Hemlock and Grand Fir. Often they comprise the dominant species in the emerging second story canopy layer. Northern aspects at lower elevations include Doug-fir and Grand fir in the overstory, Big-leaf maple, white alder, oregon ash, madrone in the hardwood understory and in previous openings, and ninebark, oceanspray, dogwood, a variety of ferns, mosses, lichen and liverworts in understory vegetative levels.

2. Screen for Determining When Active Management is Needed in Riparian Reserves

Desired Condition for Riparian Reserves

The desired condition for Riparian Reserves is to restore or maintain a vegetative species composition, age and size class diversity which resembles the historic stand condition and landscape pattern to attain Aquatic Conservation Strategy Objectives.

Rational for Active Management in Riparian Reserves

Active management, using silvicultural techniques, may be necessary to achieve the desired condition for the target stand within the Riparian Reserve.

Purpose and Need

To meet Aquatic Conservation Strategy (ACS) and wildlife objectives.

Assumptions

Active management techniques will result in desired stand conditions and achieve ACS and wildlife objectives.

Prescriptions and management techniques are likely to be different than

Criteria apply only for early and mid seral stage stands.

Criteria apply to all vegetative species.

Section I.

Key to Determining Candidate Stands Within the Riparian Reserve for Active Management

1A) Has the stand been severely altered as a result of harvest activity'
Y = Go to 2 N = Go to 4

1B) Has the stand been severely altered as a result of catastrophic na
Y = Go to 2 N = Go to 4

2) Is the vegetation in an early to mid seral stage condition, composed of even ages and size classes with little or no structural diversity?
Y = Go to 3 N = Go to 4

3) Is tree density so high that stagnation of tree grow is occurring?
Y = Go to 5 N = Go to 4

4) Stand has characteristics which will allow it to develop naturally and achieve the desired condition without active management. Stand does not appear to need active management at this point in time and does not need further consideration.

5) Stand meets candidate criteria and allows for further consideration of active management. Go to Section II and screen for site specific criteria.

6) Is the vegetation in an early to mid seral stage condition, composed of even ages and size classes with little or no structural diversity?
Y = Go to 7 N = Go to 4

7) Is tree density so high that stagnation of tree grow is occurring?
Y = Go to 8 N = Go to 4

8) Is this a part of the historic landscape pattern in the watershed?

Y = Go to 4 N = Go to 5

Section II.

Site Specific Considerations Before Management in Riparian Reserves
These need to be expanded and refined. May need to be applied to specific logging systems - helicopter, cable, cat.

1) Soil type
2) Slope %
3) Aspect and microclimate considerations
4) Proximity to roads and streams
5) Number and total area of seeps and springs
6) T&E plant and animal species
7) Does management fit into the context of the current landscape? Is it appropriate at this time? (i.e. are adjacent lands intensively managed or clear-cut)
8) Will the action produce a clear benefit to achieving ACS objectives.

2. SPECIAL STATUS PLANT

The Medford District is one of the most botanically diverse areas in the United States. Usually, locations of special status plants are discovered during clearances for ground disturbing activities, mainly timber sales and more recently plantation maintenance work. 27 Special Status Plant Species are known in the Butte Falls R.A. on 189 sites.

Over 2800 acres were surveyed during the 1996 field season in the East Evans Creek watershed. Special Status Plant surveys have been conducted on all units where harvesting activities would occur. All of the stands surveyed were considered as candidates for density management timber harvesting in the BFRA. 4 special status species were discovered at 11 different sites, one of which was just inside private land ownership.

The cypripedium species are dependant upon conditions associated with mid to later seral stage forest communities. Partial to full canopy closure with a moderate accumulation of organic debris are generally necessary. There appears to be a microrhizza association als

Allotropa virgata is a saprophyte generally found in mid and later seral stage stands. Habitat conditions vary from relatively open rock outcrops with shallow soils and moderate organic debris to more closed canopy sites with better soils.

The following table outlines the species, status, location and number of

SPECIES	STATUS	LOCATION	NO. OF SITES	
Allotropa virgata	Survey and Manage Species cat. 2	T33S.,R.4W., Sec	135	
Perideridia howellii	Medford Watch Species	T33S.,R.4W., Sec	135	
Allotropa virgata	Survey and Manage Species cat. 2	T34S.,R.2W., Sec	35	
Cypripedium fasciculatum	Federal Candidate Survey and Manage Species cat. 2	T34S.,R.2W., Sec	15	Discovered on private property
Allotropa virgata	Survey and Manage Species cat. 2	T33S.,R.2W., Sec	217	
Allotropa virgata	Survey and Manage Species cat. 2	T33S.,R.2W., Sec	229	
Cypripedium montanum	Federal Candidate Survey and Manage Species cat. 2	T33S.,R.2W., Sec	119	

Perideridia howellii was found in 33-2-35 along the western section boundary. It generally occurs in wet environments, usually perennial and itermittant streams. Riparian reserves normally protect this species sufficiently.

Cypripedium montanum site was discovered on an east aspect of so 33-2-19.017 along the northern section line. An additional plant was discovered on the ridge approximately 200 feet south. The overstory is a mixed stand of douglas-fir and madrone and oregon grape and sword fern dominating the ground floor vegetation.

Various Allotropa virgata sites were discovered.

One site in 33-2-29.006 will not be disturbed as a result of the unit being dropped. The other site in O.I. unit 29.004 is located on the ridge line between the 30.2 road and 29.1 road. The

pages c-4 to c-6. Aquatic Conservation Strategy Objectives, pages B-11 to B-17. Standards and Guidelines pages C-30 to C-38.

3. BLM Riparian-Wetland Initiative for the 1990's, USDI, Sept. 1991.

4. Forest Ecosystem Management: An Ecological, Economic, Social Assessment, 1993, Chapter V, Aquatic Ecosystem Assessment.

5. Medford District RMP and Resource Management Plan, June 1995. Appendix C. Special Status Species, Species to be Protected Through Survey and Manage Guidelines and protection Buffer Species, pages 135-147. Riparian Reserves, pages 26 to 32.

6. Attach "Riparian Management in the East Evans Timber Sale" memo, July 22, 19

APPENDIX C

October 25, 1996

TO: E.A. File

FROM: Linda Hale, wildlife biologist

SUBJECT: Wildlife Report

See sensitive species checklist, East Evans Watershed Analysis.

DESCRIPTION OF THE EXISTING ENVIRONMENT:

The north and southwest proposed project units are predominantly Douglas fir with intermixed pockets of ponderosa and sugar pine and white fir understory. Units in section 5 which burned in the Angel Camp fire have a dominant madrone overstory with a Douglas fir understory. Larger pockets of hardwoods (madrone, black oak, and chinquapin) are also present, predominantly in the areas where past wildfires burned through the area and the conifer has not yet regained dominance.

The southeastern portion of the watershed has Douglas fir, with a hardwood understory of oak, madrone, and chinquapin. Many small openings with grass, wedgeleaf and white oak are present in the lower southeastern part of the watershed where the soils are shallow and rocky substrate occurs. Scattered large cliffs are present in the southeast part of the

Wildlife habitat within the area is highly fragmented, with pockets of mature timber surrounded with early seral forests. Large areas of dominant madrone occur in the northern part of the watershed where wildfire has burned in the past. Land ownership patterns and past harvest regimes resulted in a fragmented landscape pattern. The project lies within this highly fragmented area. Connectivity of late seral forests is poor. For a more complete description of the existing environment, see the East Evans Watershed Analysis repo

Section 29 (T34S. R02W) is a Record of Decision (ROD) connectivity blo

T&E SPECIES

NORTHERN SPOTTED OWL

Eleven northern spotted owl sites are present within the provincial radius (1.3 miles) of the proposed action, nine on BLM administered lands and two on private timber land. The area was surveyed to U.S. Fish and Wildlife Service protocol (six times in two years) in 1993 and 1994. Only three sites are known to have produced young in the past 5 years.. Low

and productivity of the sites is the reflection of the lack of high quality spotted owl habitat within the watershed, mostly a result of lack of large blocks of suitable habitat in the watershed. Many of the riparian areas currently do not provide suitable owl habitat, due to past logging practices with small or nonexistent riparian buffers. These should improve over time, with the establishment and maintenance or riparian reserves.

Late successional reserves (LSR) have been designated and mapped around the known owl sites. On BLM lands, these LSRs are 100 acres of the best habitat near the center of activity of each pair or resident single site which was known on January 1, 1994. These activity centers would preserve an intensively used portion of the breeding season home range

Section 29, T33S, R02W is a RMP/ROD designated connectivity. ROD recommendations are 25 - 30% of the connectivity block be maintained in late successional stages. Approximately 300 acres of the section (46%) currently provides late successional habitat. One hundred twenty four acres of these acres are proposed to be harvested, leaving 176 acres (27%) to provide late successional habitat in the section.

Aerial photo interpretation inventory has delineated 925 acres of habitat suitable for nesting, roosting, foraging, for northern spotted owls (4% of total watershed acres) designated spotted owl habitat suitable for nesting, roosting, foraging) and 1959 acres (9%) designated dispersal habitat (roosting, foraging). This is 13% of the total watershed acres and 37% of the BLM administered lands. See attached owl habitat table for acres of suitable and dispersal habitat within the provincial radius (1.3 miles) of known owl sites within the WAU boundaries. The proposed project action area provides connectivity between Elk Creek LSR #0224 and the South Douglas/Galesville LSR #0223.

This timber sale will occur within matrix lands and meets the requirements outlined in the Final Supplemental Environmental Impact Statement (FSEIS) which was consulted with the U.S. Fish and Wildlife Service (USFW). One hundred acre activity centers will be designated late successional reserve (LSR), and will not be entered. These activity centers and the riparian reserves were designed to mitigate timber harvest effects by providing for well distributed patches of late-successional forest that serve for dispersal of mobile species such as the northern spotted owl.

Because the action is within the 1.3 mile provincial radius of 11 owl pairs and will reduce suitable habitat within the provincial radius of each site (already below 40% suitable habitat), the action "may adversely affect" the northern spotted owl. The action will occur entirely within matrix lands and dispersal habitat will be maintained by LSR activity centers. A seasonal restriction from March 1 through September 30 will be in affect for all activities within ¼ mile of known sites, or until the sites have been surveyed and non-nesting has been determined. Formal consultation with (USFW) has been completed.

The proposed timber sale would occur on "matrix" lands, and spotted owl activity centers are designed to provide 100 acres of late successional habitat which will provide connectivity across the matrix lands between the large late successional reserves. Late successional connectivity across the

landscape will also be provided by riparian reserves and connectivity blocks.

BALD EAGLES

Bald eagles may occasionally forage along East Evans Creek during the winter months, but there are no known sitings within the proposed project boundary.

PEREGRINE FALCONS

Cliffs present in the lower southeastern part of the watershed could provide habitat for peregrine falcons. Peregrine have not been reported in the area. Surveys would be done in 1997. If any falcons are located, then RMP guidelines would be followed to protect the populations. This would include minimizing human disturbance within one mile of active nests between January 1 and July 15. There would be no scheduled timber harvest and no new road construction unless the activity would not adversely effect the integrity of the site (RMP pp 2-30) within ½ mile of any nesting pair.

SENSITIVE SPECIES (USFW CANDIDATE & STATE SENSITIVE)

See special status species checklist, East Evans Watershed Analysis.

Goshawk surveys were done in 1996 with negative results. Some surveys would be repeated next summer. If a goshawk nest were located, it would be protected with a ¼ mile protection zone.

RECORD OF DECISION (ROD) SURVEY AND MANAGE SPECIES

Four bat species on the ROD "Survey and Manage in 1997" list have been found within the watershed. Long eared myotis and silver haired bat were captured in a mist net at a small headwaters pond in T32S, R02W, section 33, outside the proposed action area. An adult pallid bat was captured in the Cleveland Ridge area. Townsend's big eared bats were located in two abandoned mine adits in a timber sale unit. These and all other sites which are found to contain bats would be protected with a 250 foot no-cut buffer.

Red tree voles have been found in the proposed timber sale area in section 33, 31, and 5. Limited surveys have been done. Nest trees have been marked and would have a no-cut buffer established. New regulations will be followed as they become available.

Surveys of suitable habitat were done in 1996. No great gray owls have been located to date in the proposed project area. Current protocol is 6 visits per year for 2 years for sales offered after June 30,
with less than two field seasons of survey. The Cleveland Railroad sale area would be sold in spring of 1997. In the southern sale, two full years of survey in suitable habitat will be completed prior to sale.

Flammulated owls have been reported along East Evans Creek. One survey was completed in

1994 along the East Evans Creek road through the middle of the WAU,

The area is outside the expected range of white-headed woodpeckers and pygmy nuthatch, but black-backed woodpeckers could be present in the area. No records exist showing any black-backed woodpeckers in the WAU, but only limited surveys have been do

The WAU is outside the range of Del Norte and Siskiyou salamanders a

OTHER WILDLIFE SPECIES

Northwestern salamanders have been found in ponds in the northern section of the proposed project area. These are breeding populations. Egg masses and larva have been found in the ponds. This is the extreme southern range of these salamanders, and they have not been found elsewhere in the Butte Falls Resource Area. These salamanders spend one full year as larvae before metamorphosis into terrestrial forms. Habitat for terrestrial adults is rotting logs, rodent burrows, and moist crevices.

Western Pond Turtles are present in Evans Creek, and most of the suitable habitat is located in the lower elevations along private lands. All ponds and pump chances were surveyed in 1994, and no turtles were observed.

CAVITY NESTERS

Little inventory data is available on snag and cavity nester populations. More information is needed. Among the species on the USFW and Oregon State Sensitive Species list which could be present, 16 are cavity dependent or make use of available cavities. No inventory has been done to determine snag and down/woody material in the watershed.

GAME ANIMALS

Deer, elk, bear, and cougar are present in the area. A radiotelemetry study to monitor demographics of the blacktail deer populations was begun by Oregon Dept. Of Fish & Wildlife (ODFW) in 1994 and includes the East Evans Creek area.

Approximately 1705 acres of land designated "Big Game Winter Range and Elk Management Area" (RMP, 1994) is present in the southwest part of the area. RMP guidelines in designated winter range call for maintaining at least 20% of the area in thermal cover and observing a seasonal restriction to avoid disturbance from November 15 to April 1. This includes closing all roads except major collectors and arterials during the seasonal restriction and minimizing new road construction. The ODFW Cooperative Travel Management Area includes all of the designated winter range in the WAU, and the road closure is in effect from November 15

Wild turkey are present in the southern portion of the watershed. One large population roosts and forages in the fields near East Evans Creek, near the southern part of the project area.

Maintaining oak - savannah woodlands and large roost trees near the meadows will help these populations maintain healthy numbers. Quail and grouse are common i

NEOTROPICAL BIRDS

Neotropical migrants are present in the area during spring, summer, and fall. Species type, population number, and habitat use are not well documented.

SPECIAL OR UNIQUE HABITATS

Fields and meadows occur in the southeastern portion of the proposed project area. On private farmlands, large pastures are present along East Evans Creek below intersection of Evans Creek County road and BLM road #33 - 2 - 33. These special habitats provide forage habitat for a variety of species, including elk, deer, turkeys, raptors, small mammals,

Proposed meadow burn areas in the Cold Springs and off Antioch road contain white oak woodlands. Inclusions of white oak stands are present in some lower elevation units in the area.

ENVIRONMENTAL CONSEQUENCES

EFFECTS OF ALTERNATIVE 1--NO ACTION

Threatened and Endangered Species

This alternative would have "No affect" on the northern spotted owl, and habitat acres would remain at current levels. Associated noise and disturbance would not occur.

Other Wildlife

No action in the proposed timber sale units would result in no activity which would remove or alter wildlife habitat or disturb wildlife populations. Skid trails would not be built and current levels of habitat would remain to develop naturally. Coarse woody debris and snag numbers would remain at current levels.

Riparian areas would function at current levels. Absence of thinning in the selected riparian zones could result in slower development of old growth characteristics.

Connectivity in the riparian zones and owl connectivity blocks would remain unchanged.

No action would occur in the proposed burn of the meadows, and they would continue to develop naturally. In the areas of dense, decadent wedgeleaf, plants would continue to die and available wildlife forage in the area could decrease over time. As the younger wedgeleaf becomes thicker and more impenetrable, a reduction in usable cover would occur. Open grasslands would not have the flush of nutrients which would occur as a result of. Conifers would continue to encroach into the oak

woodlands, and white oak woodlands would be expected to decline.

ALTERNATIVE 2 - NO ACTION IN SOUTHEAST T33S, 2W, Section 27, 35; T34S, 2W, Sections 2, 3, 4, 9, 10).CONVENTIONAL AND HELICOPTER LOGGING METHODS IN THE NORTH AND SOUTHWEST, NO ACTION IN SOUTHEAST, COLD SPRINGS MEADOW WILDLIFE HABITAT IMPROVEMENT/FUELS REDUCTION BURN, ANTIOCH/MEADOWS SCHOOL FUELS REDUCTION/WILDLIFE HABITAT IMPROVEMENT BURN, RIPARIAN THINNING, CULVERT REPLACEMENT, PUMP CHANCE CLEAN OUT, FIREWOOD SALE, MUSTY CREEK PUMP CHANCE REBUILD, AND FUELS REDUCTION.

T&E SPECIES

Spotted owl dispersal habitat (roosting, foraging) would be reduced by 486 acres. No spotted owl activity centers would be entered. ROD standards would be met. Impacts to the spotted owl are expected to be medium to high, but are within the ROD standards.

Two additional spotted owl sites would be within the provincial radius with this proposed alternative.

No other known T&E species would be impacted by the action.

SPECIAL STATUS AND SURVEY & MANAGE SPECIES

Two adits with Townsend's big eared bats would be buffered with a 250 foot no cut buffer. This buffer would protect the microhabitat around the mine, and impacts to the bat populations are anticipated to be low.

No red tree voles have been located in the southeast part of the watershed. The impacts would be the same as addressed in alternative 1. Red tree vole habitat would be reduced as trees would be harvested in habitat. Individual trees with nests, when located, would be not be marked for harvest, and the mammals could repopulate the stand from these nests. Canopy levels would be reduced. At present, little information exists on the stand structure requirements for red tree vole, and it is uncertain what the impacts of timber harvest would be on the population. Since the primary harvest activity in the watershed would be thinning with higher canopy retained, it is expected that the population would be able to re-establish from the intact nests left in the stands.

No great gray owls have been located. Surveys would continue in 1997 for sales which would occur after June 30. The area affected by this alternative does not provide good great gray owl habitat. Impacts of the action would be expected to be low to none .

ROD minimum snag densities of 1.8 snags per acre would be met. Impacts to cavity dependent species would be within guidelines set by ROD and RMP and are expect

The pump chance repair would have no effect on any of the T&E or Survey & Manage species.

OTHER WILDLIFE SPECIES

Northwestern salamander sites would be protected with full riparian buffers in the northern part of the proposed sale area. Other projects would have no impact on the salamanders as they are outside the known range of the species.

Western Pond Turtles present in Evans Creek are located outside the proposed units. The proposed action would not be expected to impact the turtles, as none have been found in the pump chances.

ROD minimum snag densities of 1.8 snags per acre would be met. Impacts to cavity dependent species would be within guidelines set by ROD and RMP and are expect

GAME ANIMALS

Deer, elk, bear, and cougar would be temporarily displaced by the proposed action. This alternative would not remove any large timber habitat in the southeast "Big Game Winter Range and Elk Management Area". Acres would remain at current levels. Impacts to these species would be low to none.

NEOTROPICAL BIRDS

Neotropical migrants could be affected during timber harvest activities. Nests could be destroyed during felling activities. Birds could move out of the area during the action, but would be able to return to forage and roost. Nesting birds could loose the brood for the year. Impacts are expected to be low to moderate.

Burning the meadows and oak woodlands would occur in the fall and would not expect to impact the neotropical populations except to move birds into areas adjoining the action units. The action would occur outside nesting season, and in the late fall, most birds would have migrated from the area.

Pump chance repair should have no impact on neotropical bird populati

SPECIAL OR UNIQUE HABITATS

Proposed meadow burn areas in the Cold Springs and off Antioch road would have a loss of some forage after the initial burn. This would continue until spring green up would occur. Wedgeleaf patches would be burned and would not provide forage immediately after the burn. Burning grasses in the oak woodland could expose acorns under the trees and make them available to wildlife. Some oak trees could be killed in the fire, reducing the density of smaller oaks. The objective is to reduce the density in the oak stands to improve health of existing trees and encourage growth of new, more vigorous trees.

Short term Uses vs Long Term Productivity

Loss of habitat would occur as a result of the timber harvest. This would reduce the suitability of the area for wildlife which depend on the high canopy, older forests. Riparian areas which are proposed to be thinned currently do not provide old growth habitat conditions. The proposed project would be expected to have a short term disturbance to the wildlife which would use the riparian areas, some reduction of canopy cover. The long term objective is to enhance the old growth characteristics in the riparian areas and make them more desirable to animals which need old growth habitat. This also would improve old growth corridors to provide connectivity across the land along the riparian zones.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified

CUMULATIVE EFFECTS

Loss of spotted owl habitat and habitat for other old growth dependent species would continue to occur across the landscape. Adjoining private timberlands are also being harvested, and total acres of suitable and dispersal habitat would be declining for many years. The harvest would occur within matrix lands, and the harvest meets ROD standards and guidelines for timber harvest on federal lands. Owl activity centers would be expected to function to provide dispersal habitat, small islands of old growth habitat in the landscape. Riparian buffers would take provide the future old growth connectivity between the watersheds.

ALTERNATIVE 3 - SOUTHEAST (T33S, 2W, Section 27, 35; T34S, 2W, Sections 2, 3, 4, 9, 10), **FULL ROAD ROCKING AND IMPROVEMENT ACROSS ALL LAND OWNERSHIPS. Major haul roads will be to the north through section 26 and the "Thunderbird" road, 34-2-21.**

T&E SPECIES

Suitable spotted owl habitat (nesting, roosting, foraging) would be reduced by 187 acres. Dispersal habitat (roosting, foraging would be reduced by 813 acres. No spotted owl activity centers would be entered. ROD standards would be met. Impacts to the spotted owl are expected to be medium to high, but are within the ROD standards.

Peregrine falcon surveys would be done prior to the beginning of the proposed action, and if any were discovered, the populations would be protected.

No other known T&E species would be impacted by the action.

SPECIAL STATUS AND SURVEY & MANAGE SPECIES

Townsend's big eared bats--same as alternative 2.

Red tree voles have not been found in the southeast part of the proposed sale area. The effects of Alternative 3 would be the same as Alternative 2.

No great gray owls have been located to date. The "Cleveland Railroad" sale would only need one year of survey as it is scheduled to be sold prior to June 30, 1997. A great gray owl has been reported near the proposed units in the southeast part of the watershed, but follow up visits and regular surveys have not located any great gray owls. Surveys would continue in 1997 for the part of the watershed proposed to be harvested after June 30, 1997. The northern part of the watershed does not provide good great gray owl habitat. The southern part has scattered open grassy clearings which could provide good forage. These would be buffered with a 300 foot protection buffer. Impacts of the action would be expected to be low to none .

ROD minimum snag densities of 1.8 snags per acre would be met. Impacts to cavity dependent species would be within guidelines set by ROD and RMP and are expect

The pump chance repair would have no effect on any of the T&E or Survey & Manage species.

OTHER WILDLIFE SPECIES

Northwestern salamander--same as Alternative 2.

Western Pond Turtles--same as Alternative 2.

ROD minimum snag densities of 1.8 snags per acre would be met. Impacts to cavity dependent species would be within guidelines set by ROD and RMP and are expect

GAME ANIMALS

This alternative would include acres within RMP designated "Big Game Winter Range and Elk Management Area" and reduce thermal cover in 15 acres within the boundary of the specially designated area. Currently 3% of the watershed provides thermal cover (70% canopy cover, trees 40 feet tall). Impacts to these species would mostly be as a result of improved roads within the watershed. Currently roads are impassable during winter months. Improving some of the access into the area could also increase the potential for poaching and harassment during the winter months. No new roads would be built and spur roads would be closed after the action is completed. Impacts to big game populations would be moderate.

NEOTROPICAL BIRDS

Same as Alternative 2.

SPECIAL OR UNIQUE HABITATS

Same as Alternative 2.

Short term Uses vs Long Term Productivity

Loss of habitat would occur as a result of the timber harvest. This would reduce the suitability of the area for wildlife which depend on the high canopy, older forests. Riparian areas which are proposed to be thinned currently do not provide old growth habitat conditions. The proposed project would be expected to have a short term disturbance to the wildlife which would use the riparian areas, some reduction of canopy cover. The long term objective is to enhance the old growth characteristics in the riparian areas and make them more desirable to animals which need old growth habitat. This also would improve old growth corridors to provide connectivity across the land along the riparian zones.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified

CUMULATIVE EFFECTS

Loss of spotted owl habitat and habitat for other old growth dependent species would continue to occur across the landscape. Two additional owl sites would be impacted with the action including the southeast part of the watershed in a timbers sale action. Adjoining private timberlands are also being harvested, and total acres of suitable and dispersal habitat would be declining for many years. The harvest would occur within matrix lands and designated riparian , and the harvest meets ROD standards and guidelines for timber harvest on federal lands. Owl activity centers would be expected to function to provide dispersal habitat, small islands of old growth habitat in the landscape. Riparian buffers would take provide the future old growth connectivity between the watersheds.

PROJECT DESIGN FEATURES

- Seasonal restriction March 1- September 30 within ¼ mile of known spotted owl sites
- Buffer meadows with 300 foot no cut buffer for great gray habitat.
- If peregrine falcons are found, set aside a core area ½ mile around nest sites. Avoid disturbance February 1- August 15.
- No cut buffer within 250 feet of Townsend's big eared bat sites
- Complete great gray owl surveys in southern sale. Protect any nest sites if located
- Close skid roads after action is completed.
- Seasonal Restriction in designated Big Game Winter Range from November 15 to April 1.
- Meet ROD requirements for CWD (120 linear ft 16' X 16" min) and snags (1.8 snags/acre).

APPENDIX D

To: East Evans Creek E.A. File
From:Ken Van Etten 11/18/96
Subject: Soil Input for East Evans Creek E.A.

Soil Resources--Project Design Features for action alternatives 2 and 3

1. Restrict tractor yarding operations to slopes generally less than 35%. In areas necessary to exceed 35%, utilize rigde tops only.
2. Rip all skid trials and landings to a depth of 18" utilizing subsoiler or winged-toothed ripper. Do not rip tractor units with Medco and McNull soils. (units ?)
3. Waterber all skid trials using spacing for high erosion class soils:

Gradient (%)	Waterbar spacing (in feet)
3-5	200
6-10	150
11-15	100
16-20	75
21-35+	50

4. All road construction, renovation, reconstruction and improvements shall be seasonally restricted from Oct. 15 - May 15 or when soil moisture exceeds 25% or as determined by the administrative officer.
5. Tractor yarding operations (including tillage operations) shall be seasonally restricted from Oct. 15- May 15 or when soil moisture exceeds 25% or as determined by the administrative officer.
6. All roads specified for decommissioning will be ripped to a depth of 18". Mulching with chipped slash, straw, or other approved mulching materials would be required to a depth of 3" prior to ripping and grass seeding.
7. Block or barricade all unsurfaced or inadequately surfaced spur roads after use and before beginning of rainy season (Oct. 15)
8. Utilize ROD Standards and Guidelines (p.?) requirements for down woody materials to help maintain long term soil productivity.
9. Grass seed and hydromulch (paper mulch or tackifier w/ fiber mulch) fillslopes and cutbanks of all new construction and reconstruction of roads needed for access in the near future. Otherwise decommission.

Project Design Features for Alternative 4:

1. All PDFs for alternative 2 and 3 .
2. Install sediment check dams downstream of intersections with all unsurfaced roads and intermittent and perennial stream. Number of check dams and spacing distances shall be determined by contracting officer. Check dam construction standards shall meet district prototypes.

For APPENDIX only

Soils - - - Affected Environment

The dominant soil types on the forested lands within this watershed unit have formed predominantly in altered volcanic parent materials (decomposed schists). The most extensive of these soils are the Musty and Goolway soil series. Both soils are silt loams, moderately deep (20 - 40"), well drained, and have water erosion hazard. The Musty soil is skeletal (>35% rock fragements) in the subsoil) over fractured bedrock. The Goolaway soil has a silt loam subsoil and is underlain by weathered bedrock. These soil types are prone to slumping and sliding particularly on the steeper sideslopes (>60%) and under saturated conditions.

In the southeast portion of the watershed the dominant soils have formed in weathered pyroclastic parent materials. These soil types are the Medco and NcNull soil series. Both soils have a clay or clay loam subsoil with slow or very slow infitration rates. These soil types are easily compacted and produce very fine sediment which can be carried in suspension for long distances. Roads constructed in these types of soil require surfacing because they have very low shear strength when wet which causes the road to rut and the subgrade to yield . There is evidence of extensive deposition of sediments throughout the stream channels where these roads are actively eroding. Presently, none of the roads in this area have road surfacing or adequate drainage. This has resulted in numberous roads that have washed out and have deep gullies. These roads are currently producing much of the sediment found in the local stream channels.

Soils - - Cumulative Existing Condition

The major impact on the soil resources within this watershed are cumulative in nature. They come from compaction (12% of the total acres) as a result of road consruction, skid trails and landings from timber harvest activities. These areas are subject to rapid runoff, channelization of flows, and subsequent soil erosion and sedimentation of stream char

On the steep uplands, the removal of conifer trees has contributed to a greater potential for rain on snow pack which often leads to flooding or peak flows that can destablize stream channels. Removal of large conifer trees along sideslopes adjacent to stream channels has also increased the risk of slumping and landslides particularly where the decomposed schist soils are deeply weathered..

On the valley floor which is dominanted by farmland and residential property, the major risk to the soil resource is removal of riparian vegetaion along the East Fork of Evans Creek for agricultural purposes. The removal of this vegetation destabilizes the streambanks and puts them a risk for under cutting resulting in a loss of soil.

Environmental Consequences:

No Action Alternative

Direct and Indirect Impacts

There would be no direct impacts from implementation of the no action alternative. Indirectly, there would continue to be erosion from the unsurfaced and inadequately drained roads particularly within the southeast portion of the project area. The sedimentation from this erosion would add to the existing sediments found in the stream channels.

Cumulative Impacts

There would be no increase in the cumulative impacts as described in the effected environment from implementation of the no action alternative.

Short Term Uses vs Long Term Productivity

None anticipated

Irreversible and Irretrieveable Commitment of Resources

None anticipated

Alternative 2

Direct and Indirect Impacts

Soil erosion is expected to increase in areas where road construction, road renovation, tractor yarding, landing construction, and burning activities occur. This is anticipated to be a short term (< 5 years) direct impact. Indirectly this would increase sedimentation in nearby stream channels. Roads in the southeast portion of the project area would not be surfaced and would continue to eroode and produce sediments.

Cumulative Impacts

Road construction, reconstruction, renovation and timber harvest activites would contribute to the existing cumulative impacts of erosion and subsequent sedimentation . The roads that would be decommissioned and the skid trials that would be ripped under this proposal would be subject to erosion in the short term (<5 years) but are expected to revegetate and stabilize within 5 years. Decommissioning roads and ripping skid trials under this proposal would help reduce overall road densities and soil compaction in the watershed and is in keeping with the watershed objectives. (See East Evans Watershed Analysis page 34)

Transient snow zone openings would be minimal due to maintaining high canopy cover in harvest units. (East Evans W.A. page 7)

Implementation of riparian buffers as required in the ROD Standards an

(p.C-30) are not expected to increase instability of stream channels in
Private timber companies are also planning to harvest in the southeast portion of the project area within the next year or two. The extent of road and timber harvest activities are not specific at this time. However, it is anticipated that these activities would contribute to the cumulative impacts from soil erosion and subsequent sedimentation of local stream channels both in the long term (>5 years) and short term.

Short Term Uses vs Long Term Productivity

Although there currently is no site specific data available, impacts are expected to be minimal on the availablility of coarse woody material and subsequent long term soil productivity with the implementation of ROD Standards and Guidelines (?).
The meadow burn project is expected to have low fire intensities with short durations which are anticipated to have minimal impact on soil nurtient regimes and long te

Irreversible or Irretrieveable Commitment of the Soil Resource

Construction of road 33-3-5.4 is intended to be a permanent road to provide access for future management avtiivites. This would be an irreversible commitment of approximately 0.63 miles (4 acres) of the soil resource.

Alternative 3

Direct and Indirect Impacts

Same as Alternative 2 except road related erosion and subsequent sedimentation would expected to decrease in the long term (5 years) with the surfacing of approximately 10 miles of existing roads in the southeast portion of the project area.

Cumulative Impacts

Same as Altermative 2

Short Term Uses vs Long Term Soil Productivity

Same as Alternative 2

Irreversible or Irretriveable Commitment of the Soil Resource

Same as Alternative 2

Alternative 4

Direct and Indirect Impacts

Direct impacts from not surfacing the roads in the southeast portion of the project area would come from road related erosion. Based on the erodable soil types, the high amount of unsurfaced roads, the lack of cross drain culverts, and several segments of steep road grades, it is expected that continual winter (wet season) traffic would create large amounts of sediments from improper drainage (rutting) and subsequent deposition in the stream channels. This high level of risk for erosion would expect to continue in the short term (>5 years) and decrease to

existing levels in the long term. (see Affected Environment.)

Cumulative Impacts

Same as Alternative 2

Sort Term Uses vs Long Term Soil Productivity

Same as Alternative 2

Irreversible or Irretrieveable Commitment of the Soil Resource

Same as Alternative 2

APPENDIX E

SPECIFIC UNITS CONSIDERED BUT ELIMINATED

T32S, 2W, Section 33 OI 004 -- (13 acres) was considered but eliminated due to proximity to T&E wildlife.
T33S, 3W, Section 01 OI 012, 013 --(61 acres) considered but eliminated due to cumulative impacts and fish issues. Section is in Cow Creek drainage which has Umpqua cutthroat trout, trees are growing well.
T33S, 2W, Section 05 OI 002 --parts of unit were considered but eliminated due to low volume conifer/large hardwood component and the need for new road construction.
T33S, 2W, Section 19 --(372 acres) all proposed units in section considered but eliminated because of high hardwood/low conifer numbers. Conifer in the stands are young with good growth rates.
T33S, 2W, Section 27 OI 005 --(5 acres)considered but eliminated due to proximity to T&E wildlife.
T33S, 2W, Section 29, OI 006 --(19 acres) considered but eliminated due to low volume.
T33S, 2W, Section 31, OI 003 --(22 acres) considered but eliminated due to small amount of acreage in unit after Riparian Reserves removed.
T34S, 2W, Section 05, OI 003, 004, 005 --(133 acres) considered but eliminated due to highly dissected terrain requiring riparian buffers and T&E wildlife.
Construction of a road into the northern part of T34S, 2W, Section 5 across private timber company lands--considered but eliminated due to existing high road density in the watershed.

APPENDIX F - - SILVICULTURE PRESCRIPTION

SILVICULTURAL PRESCRIPTION
CLEVELAND RAILROAD AND SOUTH HALF EAST EVANS TIMBER SALE

I. MANAGEMENT DIRECTION AND OBJECTIVES

The management direction for this proposal is to promote forest health and enhance the development of old growth forest characteristics in compliance with the objectives for matrix lands, riparian reserves, owl core areas, LSRS and c/d blocks as stated in both the Record of Decision (ROD, Medford District approved Resources Management Plan (RMP), and the Record of Decision for the Northwest Forest Plan. Direction is also complying with the concerns rendered in the East Evans Watershed Analysis.

All of the stands within this proposed treatment area will be placed on a direction to develop multi-canopy, multi-species, and multi-age class conditions. Assuming no major site disturbances during the development of these stands, the proposed treatments will lead to development of the desired conditions.

Overall silvicultural objectives considered for this prescription as follows:

A. In the connectivity/diversity block, Section 29, T. 33 S., R. 2 W, management of vegetation will be directed to the development of older forest characteristics over 25-30% of the area.

B. Establish conifers on specific sites where extensive hardwood shrub communities have developed, thereby eliminating conifer establishment. Upon the sites with the hardwood communities, five to ten percent of the stocking would be composed of hardwoods to maintain species diversity within the landscape.

C. Favor developing and maintaining species mixtures containing shade intolerant species such as the pine species, Douglas-fir, incense cedar and hardwood species such as madrone and black oak.

D. Reduce densities in overstocked second growth stands to maintain tree vigor and redistribute growth to the healthier trees.

E. Initiate actions to maintain and plan for coarse woody debris and snag requirements for long term site and wildlife productivity.

F. In areas of extensive tree disease, harvest trees and establish new regeneration with less susceptible tree species.

G. Harvest mature and over mature trees that show signs of imminent

mortality and are in excess of those required to meet snag and coarse woody debris requirements.

H. In individual tree harvest areas, maintain representation from existing diameter and species classes as much as possible to maintain and enhance diversity within the harvested area.

I. Commercial and pre-commercial thinning treatments will be utilized in specific riparian reserve locations, to enhance riparian vegetation conditions to meet aquatic conservation strategy objectives.

II. SITE/STAND DESCRIPTION

A. General Description of the Site

1. Legal Description

The proposed treatment area is located in portions of Section 33, T32S., R2W., Section 1, T33S., R3W., Section 5,7,9,17,19,29,31,35 T33S., R2W., and Sections 3,4,5,9,10 T34S., R2W. All sections are within Jackson County. The proposed sale area begins approximately 20 miles northwest of Medford.

2. Drainage/Watershed

The proposed treatment area is located primarily within the East Evans Watershed which drains into the Rogue drainage system. Section 1, T33s., R3W., (Angel Camp) drains into the Umpqua drainage system. The major drainages within the East Evans watershed are East Evans Creek, Morrison Creek, Wold Creek, and Musty Creek.

B. Abiotic Conditions

1. Soil Type

The dominant soil types within the treatment area are formed predominately in altered parent materials (decomposed schists). The most extensive of the soils are the Musty and Goolway soil series. Both soils are silt loams, moderately deep (20"-40"), well drained, and have water erosion hazard. The Musty soil is skeletal (>35%) rock fragments in the subsoil over fractured bedrock. The Goolway Soil has a silt loam subsoil and is underlain by weathered bedrock. These soil types are prone to slumping and sliding, particularly on the steeper side slopes (>60%) and under saturated conditions. Soils in the southeast portion of the area are made up of the MCNull-Medco Soils. The McNull Soil is moderately deep, well drained, with slow permeability. The Medco Soil is moderately deep, moderately well drained with very slow permeability. The soils are susceptible to erosion, compaction, plant competition and seedling mortality.

2. Site Index

Douglas-fir site index for the treatment area averages about 76 based on Hann-Scrivani site index equations. This sited index value equates to a site class rating of IV. Ponderosa Pine site index for the treatment area averages about 64 based on Hann-Scrivani site index equations. This site index value equates to a site class rating of II.

3. Existing Site Problems

Extensive shrub/hardwood developemnt is a potentially serious problem to conifer regeration as stands are opened up following harvest and/or fire activities.

4. Topography/Precipitation

The elevation over the treatment area ranges from 4600' (Sec. 23, T32S., R2W., Forest Service lookout) to 1675' along East Evans Creek. Slopes over the entire area can be classed as gentle to steep with ranges from 10%-80%. Side slopes at both higher and lower elevations are relatively uniform with some dissection along lateral ridges.

Precipitation occurs in the form of rain or a mixture of rain and snow in the transient snow zone (elevation level between 3500 and 5000 feet). The amount averages from 35-50 inches annually. The average dry season precipitation (May-September) averages 5 inches in the south portion of the area and 6 inches in the north portion.

C. Biotic Condition

1. Plant Grouping

Within the Cleveland Railroad sale area, the area is represented by the mixed conifer/madrone-deciduous brush/salal group. Snow brush ceanothus, deerbrush ceanothus, ocean spray are the major brush species occurring within the sale area. Hardwoods within the sale area are madrone, golden chinquapin, and black oak. While the area is represented by the White fir series, Douglas-fir, incense cedar, sugar pine, and ponderosa pine are components of the series. At elevations above 3500 feet, western hemlock may make up a component of the conifer stand.

In the southern portion of the sale area, the vegetative community is represented by the mixed conifer/interior valley/grass group. Brush species are represented by deerbrush ceanothus, manzanita, poison oak, and more grasses/herbaceous vegetation. Hardwoods are present in the form of madrone, some black oak, and white oak. Conifers are represented by Douglas-fir, ponderosa pine, incense cedar, with Douglas fir being the

climax species. The hotter, drier aspects contain a greater amount of ponderosa pine.

2. Stand History

Fire has played a major role in the existing stand conditions within the treatment areas. Within some sections, fire resulted in large acreages of madrone with golden chinquapin and conifer patches upon the acreage. Additionally, dense stands of second growth conifers occur as the result of fires occurring 40 to 100 years ago. To some extent and varing intensities fires have occurred throughout all the treatment areas. The other major disturbance affecting stand history is past logging activities. While some of the treatment areas have had some harvest activities within them, the majority of the harvest areas are second growth stands that are being commercially thinned from below. Within the individual tree mark units harvesting consisted of individual tree/group selection. The selection criteria was based upon tree size, quality and species. Comparatively recent harvest units adjacent tp treatment areas have been clear cut.

3. Structure Description

Stand structure varies considerable across the proposed treatment area. Some of the stands have a two story stand condition. Large old growth trees are generally scattered or in clumps make up the upper canopy. The second canopy consists of mature to pole size trees. Brush maybe heavy in opening within the stand but generally brush densities are light as is the occurance of conifer regeneration. Within units that have been individual tree/group selecton harvested, brush and advance conifer regeneration is more dense depending upon the stand opening from the previous harvest. The remaining stands have mainly a single story canopy. The single story stands consist of dominant and co-dominant trees in varying degrees of stocking. Very little brush or natural regeneration is present under these stands.

4. Forest Health, Insect and Disease

Low moisture regimes and drought conditions coupled with dense stands has created stress conditions over much of the sales area. Insect problem areas are few and widely scattered. Mistletow in the fir species is present in a few of the old growth stands and is not a major problem over the whole treatment area. Stem rots are present in all tree species, but not to the extent to be a real concern for total stand health.

5. Coarse Woody Debris (CWD)

ROD Standards amd Guidelines for coarse woody debris specifies that on a per acre basis there should be 120 linear feet of

downed wood in pieces that are at least 16 feet long and at least 16 inches in diameter at the small end, and of a decay class of 1 or 2. Decay class 1 or 2 means that the piece of wood has the bark intact and the wood is intact and hard. Both conifer and hardwood species qualify as down woody material. At present, the majority of the proposed treatment units do not meet this requirement. Many units have scattered large logs left from previous logging activities, but have deteriorated beyond class 1 or 2. The quantity of downed material is present, but the quality is not. Current down wood material will not be removed from the units and trees will be reserved in harvest units to preserve the future coarse woody material requirements.

6. Snags

ROD Standards and Guidelines require that over time, 1-2 snags be present per acre, to meet the requirement for cavity nesting birds at 40% of potential population levels. As with the coarse woody debris, the snags must be decay class 1 or 2. Many of the proposed harvest units do not meet this required number of snags. Over the entire sale area, snags are at a minimum level. They are mostly scattered and not necessarily stage 1 or 2. During harvest operation existing snags will be reserved from felling where practical, "not a safety hazard". and additional green trees will be reserved to meet the target levels.

7. Connectivity/Diversity Blocks

Standards for connectivity/diversity blocks is to maintain 25-30% of the area in late successional forest conditions. Late successional forest conditions are those that equate to the mature or old growth seral stages. Mature seral stage is that point in forest development where the forest is approximately 100-200 years old. Structural diversity is increasing. Larger trees are increasing significaltly in size and understory development is significant in response to openings in the canopy. In the old growth seral stage, the forest age is generally 200 years plus. At this point, stand replacement and secondary succession occurs. Several age classes, large trees living and dead standing and down are present. At the present time, approximately 25% of this connectivity block meets the definition of a late successional forest condition.

III. ANALYSIS

Two main types of treatment are proposed for this sale area. These are: density management/commercial thin (north portion 776 acres, south portion 762 acres), and individual tree mark (ITM)(207 acres). Acreages are treatment acres since 30% of the operation inventory (OI) unit acres were deducted for reparian buffers from the total acres in

the OI. Individual OI units are grouped under one of these categories based on the proposed treatment.

The target stand describes the present conditions expected immediately after treatment and sets the implementation time for future stand management activities by year and treatment.

A. Target Stand - Density Management/Commercial Thinning

The following OI units are proposed for this treatment:
I - 2W-33-002, 003, 895, I-5-002, 003, 004, 005, 006, 013, 017, I-2W-7-001,003,005,013, I-2W-9-001, 010, 011, 012, 013, 015, 017, I-2W-17-003, 005, 008, 010, I-3W-1-006, 009, 011.

II-2W-27-001, II-2W-29-002, 004, 005, II-2w-35-002, 003, 005, II-34-2W-03-001, 007, 009, II-34-2W-05-001, 001, 002, 006, 009, II-34-2W-09-002, 003, 004.

Units preceded by I = Category I Stands
Units preceded by II = Category II Stands

1. Present Condition

These stands fall into one of two condition classes. Category I stands can be described as relatively large blocks ten to one hundred thirty acres in size of contiguous dense coniferous stocking. Species composition of these stands is a mixture of primarily Douglas-fir and white fir. Minor species are incense cedar, ponderosa pine and sugar pine. Hardwood species of madrone, golden chinquapin,and black oak are usually well scattered in these units or form a dense overstory such as in section 5-002,003,004,005,013,017, section 7-005, section 9-013,015, section 17-005,and section 35-003. The stand structure of this category is primarily "single story" with a uniform canopy of dominant/co-dominant trees with intermediate size classes interspersed. Overall, average DBH is less than 24". Larger treees greater than 28" are generally lacking due to closed canopy conditions. Coarse woody debris (CWD) and snags are present, but overall do not meet existing requirements.

The second condition category, II, can be described as relatively extensive areas that have a complex of varying stand structures. A distinct overstory of both healthy and decadent mature to overmature timber exists as scattered trees and also in clumps. A mid story of scattered pole to mature timber is present where overstory trees have been removed. There is naturral regeneration and advanced shurb development where logging activities created openings. The species mixture is primarily white fir,Douglas-fir,and incense cedar with occasional sugar pine or ponderosa pine. Hardwoods of madrone and black oak are generally scattered and in the south half of the sale

area white oak becomes present within the stand. With the presence of the old growth component, snags are present in larger numbers and recuritment is not a factor. Coarse woody debris (CWD) is present in adequate amounts, but most will not qualify as category 1 or 2 decay classes.

In each of these categories the main concern is the overstocked tree conditions. The pole to mature timber is 45-100 years of age and the mature to old growth is 100-200+ years of age. Regardless of age, tree condition is deteriorating with reduced crown vigor and demands for site moisture, nutrients and sunlight.

2. Future Conditions

Harvesting of these units will be targeted toward reducing the stocking levlels within those areas where overstocked conditions of pole, mature and old growth timber exists. Following harvest, density levels will be reduced by removing the suppressed crown class trees and increasing the spacing of the intermediate and dominant/co-dominant crown classes. Remaining trees will have crown ratios greater than 35% and will be the better formed trees. Douglas-fir, ponderosa pine,sugar pine and incense cedar make up the preferred leave species. The reduced crown closure of these dense stands will range within 40-76%. Basal area ranges from 100-170 square feet. Scattered conifer trees greater than 28" DBH will be reserved for future large stand growth component. If clumps of conifer trees(3-5 trees) 28"or greater occur, then the trees with poor crowns or vigor should be removed to reflect the spacing in the marking guide (32'x32'). Large healthy ponderosa pine and sugar pine >28" DBH will be released from adjacent competition by removing all tree vegetation from the bole of the tree out to a distance of ten feet beyond the leave tree's drip line. Stage 1 and 2 snags >20" DBH at 1-2 per acre will remain for wildlife. Unentered patches of up to 4 acres will be scattered in most of these units to create diversity and wildlife habitat. These stands will be accelerated towards late successional conditions. Hardwoods are proposed to be harvested from conventional harvest units that have hardwood representation of more than 2-3 trees per acre. While larger diametered hardwoods will be harvested, 2-3 large diametered hardwoods per acre will be left for stand diversity.

Stand I-2W-33-895

The stream below the road is a fish bearing stream that requires a 2 site tree buffer. Above the main road extend the buffer for the 2 site tree distance. Between the road and the buffer boundary, maintain 60% canopy, leave some clumps of smaller trees to provide hiding cover for wildlife. On small stream along the western edge of unit maintain a 50 ft. no cut buffer to protect the sides of small drainage.

Stand I-2W-5-002,013

Leave full riparian reserve along channels in NE 1/4 of section to

protect soils. No cut.

Stand I-2W-5-002,005

Leave a 10 ft. no cut buffer along stream channel.

Stand I-2W-5-003

Maintain full buffer along riparian. Red tree Vole site flagged out. Leave adjacent trees (50 ft.) to vole tree. Maintain 60% canopy closure for 100 ft. around vole tree.

Stand I-3W-1-006,009,011

Maintain full riparian buffer. No cut in the buffer.

Stand I-2W-7-003,005

Maintain full riparian buffer on main channel. On side channels maintain 50 ft. no cut from stream or geographical break. From stream to edge of riparian reserve maintain 60% canopy closure.

Stand I-2W-17-008

Full buffer of springs. No cut within the buffer.

Stand I-2W-17-010

Full riparian buffer along road 33-2-33 when road is in riparian along creek-No cut. Full riparian buffer on other streams in section-No cut.

3. Proposed Harvest Method and Post Harvest Treatments:

DENSITY MANAGEMENT/COMMERCIAL THINNING

YEAR	TREATMENT
0	Harvest- Thin from below and main canopy to reduce densities and remove excess decadent overstory. Utilize realative density of .35, range of basal area 100-170 square feet, crown closure of 40-76%. Favored leave species are Douglas-fir, ponderosa pine, incense cedar, and white fir. Reserve and thin around ponderosa pine and sugar pine >20 inches DBH for future stand diversity. Use existing and widely spaced skid trails and directional falling to reduce impacts to the site and residual stands. Two-three large hardwoods per acre are to be unharvested. Excess hardwoods will be girdled,or removed where excess damage will not occur to the residual stand. Lop and scatter heavy slash concentrations.

Rip skid trails in Category I and Category II units if not needed for future harvests.

Broadcast burn to reduce fuel loading and reduce excess natural regeneration in selected category I and II stands, following harvest treatment.

35&45/
80 Commercial thinning-Thin stands to RD 35 to promote tree vigor and species diversity. Assess the health of the stands for excess tree mortality, and condition of large sugar and ponderosa pine to assure presences in stands.

100+ If current objectives remain unchanged, and a multi-canopy,multi-species stand is still the desired future condition, assess stand condition for possible additional harvest treatment such as mortality salvage, density management and regeneration.

B. Target Stand- Individual Tree Mark (ITM)

The following O.I. units are proposed for this treatment: 29-010,31-001,007,35-010, S05-007,008,10-001,002,004.

1. Present Condition

Except for unit 10-001,002,004 these stands have been previously harvested and consist of generally more than one tree canopy level. Conditions are extremely varied as to densities, size and vigor of trees,brush, and hardwoods from stand to stand. Species composition of these stands consists of white fir, Douglas-fir, sugar pine, ponderosa pine,and incense cedar. Every stand has an old growth component of both healthy and decadent trees. Numbers of old growth vary from scattered to clumpy within each stand. Some stands have large numbers of decadent trees, more than necessary to meet future snag and coarse woody debris requirements. The mid canopy tree condition are also highly variable. Pole size to mature trees are generally scattered and present in most stands. Clumpiness and overstocking has created competition among the different size classes causing reductioins in growth and vigor. Natural regeneration in these stands is quite variable as to coverage, stage of development, and species composition. Most of the units have adequate natural regeneration of desirable tree species and size, so that artifical regeneration is not necessary. Hardwood species such as madrone,chinquapin, and black oak are present. In the lower elevation units, white oak also occurs. Hardwood harvest is proposed to be implemented under this sale.

Brush competition, primarily deerbrush ceanothus, is present but not a major problem on the units.

Snags are present in all units to some degree, but generally lacking in required numbers. Coarse woody debris is also present in most units, but again most does not qualify as stage 1 or 2 decay classes.

2. Future Condition

Following harvest entry these stands have maintained a high degree of their existing condition and species diversity. Species composition will be dominated by Douglas-fir with smaller components of white fir, sugar pine, incense cedar and ponderosa pine. Hardwood species such as madrone, chinkapin, and oaks (black and white) will be left except where madrone is dominating the site. Large healthy sugar pine and ponderosa pine will be released to promote longevity in the stands. Where clumps or pockets of mature sugar pine, Dourglas-fir, and white fir exist, trees will be spaced out to reduce competition. Overall, the stands will contain the most vigorous of trees of all size classes. Occasional dense pockets of conifers with a 70% crown closure of 1 acre in size (1 per 40 acres) will be left to promote big game thermal cover. Healthy dwarf mistletoe infected trees will be removed, except if located in riparian areas. A minimum of 120 linear feet per acre of coarse woody debris decay class 1 or 2 and at least 16" x 16' is well distributed throught the stand. A minimum of 1-2 snags stage 1 or 2 >20" will be left per acre. Where feasible poor vigor trees can be left in addition to the unit leave trees to insure both required snags and coarse woody debris conditions have been met for the near term. Areas where overstory trees are widely spaced and natural regeneration is adequate, a minimum of 6-8 green trees >20" need to be left to fulfill green tree retention requirements.

3. Proposed Harvest Method and Post Harvest Treatments:

INDIVIDUAL TREE MARK (ITM)

YEAR	TREATMENT
0	Harvest - Leave 2-3 hardwoods per acre 12" DBH or greater. Harvest the residual hardwoods unless extensive damage will occur to the conifer stand. If unacceptable damage will occur then, the surplus hardwoods should be girdled. Mark high risk conifers from all diameter classes and thin dense conifer pockets to the relative density 35% table found in the marking guide based on the average leave tree diameter. Leave 1 acre area for every 40 acres with a 70% canopy closure when feasible. Leave a minimum of 6-8 green conifer trees per acre >20" DBH where adequate natural regeneration occurs and residual trees are widely spaced. As possible use widely spaced skid trails and/or yarding corridors and directional falling to reduce impacts to advanced regeneration and the site. If present harvest mistletoe infected trees as a first priority. Lop and scatter heavy slash concentrations. Rip all skid trails.
0-1	Post harvest survey to determine spot planting opportunities if needed. Plant with appropriate conifer species such as Douglas-fir, sugar pine, and incense cedar, at a rate of approximately

300 trees per acre to promote species diversity.

10-20 Conduct stand exams to assess conditions for possible future management treatments.

IV. MONITORING

The BLM planning regulations call for monitoring and evaluation of approved resource management plans (RMP) at appropriate intervals. Monitoring of the proposed actions concerning the Cleveland Railroad and South half East Evans Creek sale area will follow the outline in the Medford District RMP/EIS, Volume II, appendices 147-163. Pre-action site information has been collected and synthesized using a BLM stand exam program. This program provides information on vegetation characteristics as well as snag and coarse woody debris conditions. Post harvest exams will be conducted and results compared to the projected "future" conditions as noted in the "target stand" descriptions under the analysis section of the silvicultural prescription.

V. ADDITONAL PROPOSED SILVICULTURAL TREATMENTS WITHIN THE SALE AREA.

1. Within the connectivity/diversity block section 29.

Besides tree harvesting over approximtely 167 acres to promote tree growth, other silvicultural practices including pre-commercial thinning and hardwood control can be utilized to begin LSR development in the early stages of stand development. Vegetation conditions from plantations (159 acres) could be treated to promote stand development. Treatment of conifer species includes white fir, Douglas-fir, ponderosa pine and sugar pine. Hardwood species include madrone and black oak. The conifers will be thinned to densities which will promote species diversity and growth. Hardwoods and brush will be thinned out also to reduce their densities and remove excess competition around conifer trees. Hardwoods will be maintained as a necessary component of the future stands. The largest hardwoods and black oaks will be reserved from treatment. Treatment will be accomplished through cutting individual stems or girdling to reduce slash accumulations. Thinning of hardwood clumps, leaving 2-3 of the best sprouts will promote hardwood development. All activities centered on plantations will be accomplished within the next 2-8 years.

2. Areas outside of the connectivity/diversity block.

Throughout the proposed sale area, there are clear cut harvested units fully stocked that will need forest development work in the next 2-10 years. Some of the units (approximately 500 acres) have already been maintenance brushed. Those units will need to be monitored to determine the need for release brushing in the 2-10 year time span. Other units will need to be brushed for release (approximately 500 acres). All existing need to be surveyed for precommercial thinning opportunities during the proposed 2-10 year time period (approximately 1,000-2,000 acres). Completing the proposed work will accelerate the development of later seral conditions. Developing the later seral conditions will move the entire East Evans Watershed towards the desired future conditions developed in the area's watershed analysis.

CLEVELAND RAILROAD / S.EAST. EVANS TIMBER SALE MARKING CRITERIA

RECOM HARV.	LOCATION 32-2-33	LV.BA SQ.FT	HARV. BA.SQ FT.	DIA. CLASS /HARV DBH.	ADDITONAL DIA. CLASS HARV.	HWD.TPA.LV /AC.	CON. TPA/LV/AC.	TOTAL VOL./ AC.CONIFER &HWD.
CT/BELOW	UNIT 002	130	150	8,10, 12 ALL TPA	67% 14-16 15TPA	6	55	9500 BD/FT
CT/BELOW	UNIT 003 (1)	130	144	8,10, 12,14 ALL TPA	4% 14-16 1TPA	6	58	7800 BD/FT
DROP OWL AREA	UNIT 004							
CT/BELOW	UNIT 895 (2)	150	200	8,10, 12 ALL TPA	22% 12-14 26TPA	3	117	11032 BD/FT
	33-2-05							
CT/BELOW	UNIT 002 (3)	140	193	8,10, 12 ALL TPA	NONE	47	24	3534 BD/FT
CT/BELOW	UNIT 003	140	138	8,10, 12 ALL TPA	34% 12-14 10 TPA	14	58	4067 BD/FT
CT/BELOW	UNIT 004	140	173	8,10, 12,14	78% 14-16	4	47	24000 BD/FT

CT/BELOW	UNIT 006 (5)	160	150	8,10, 12,14 A.TPA	100% 14-16 15TPA	34	34	9236 BD/FT
CT/BELOW	UNIT 013	130	130	8,10, 12 ALL TPA	9% 12-14 4 TPA	23	55	5631 BD/FT
CT/BELOW	UNIT 017	140	142	8,10, 12 ALL TPA	76% 12-14 20 TPA	57	14	5492 BD/FT
	33-2-7							
CT/BELOW	UNIT 001	130	380	8,10 ALL TPA	77% 10-12 71 TPA	3	81	8573 BD/FT
CT/BELOW	UNIT 003	150	232	8,10, 12,14 16 ALL TPA	64% 16-18 7 TPA	3	44	14075 BD/FT
CT/BELOW	UNIT 005	160	272	8,10, 12,14 ALL TPA	52% 14-16 13 TPA	6	50	21104 BD/FT
CT/BELOW	UNIT 013	140	210	8,10, 12,14 16 ALL TPA	82% 16-18 13 TPA	5	51	12807 BD/FT
	33-2-9							
CT/BELOW	UNIT 001	140	104	8,10 12,14	37% 14-16	3	47	10219 BD/FT

CT/BELOW	UNIT 011	140	127	8,10, 12,14 16 ALL TPA	80% 16-18 14 TPA	11	37	11752 BD/FT
CT/BELOW	UNIT 012	170	100	8,10, 12,14 16,18 20,22 ALL TPA	43% 22-24 2 TPA	4	27	11162 BD/FT
CT/BELOW	UNIT 013	140	248	8,10, 12,14 ALL TPA	NONE	3	51	19664 BD/FT
CT/BELOW	UNIT 015	150	204	8,10, 12 ALL TPA	34% 12-14 12 TPA	8	72	11426 BD/FT
CT/BELOW	UNIT 017	130	207	8,10 ALL TPA	75% 10-12 44 TPA	3	87	6738 BD/FT
	33-2-17							
CT/BELOW	UNIT 003	140	277	8,10, 12 ALL TPA	68% 12-14 30 TPA	12	60	7092 BD/FT
CT/BELOW	UNIT 005	170	232	8,10, ALL TPA	8% 10-12 3 TPA	18	58	8401 BD/FT
CT/BELOW	UNIT	160	260	8,10,	25%	12	49	14094

CT/BELOW	UNIT 006	160	213	8,10 12,14 16 ALL TPA	NONE	3	30	10219 BD/FT
CT/BELOW	UNIT 009	160	269	8,10, 12,14 16 ALL TPA	28% 16-18 12 TPA	3	64	23215 BD/FT
CT/BELOW	UNIT 011	160	157	8,10, 12,14 16,18 ALL TPA	23% 18-20 5 TPA	3	40	16118 BD/FT
DROP	UNIT 012							
DROP	UNIT 013							
	SOUTH	HALF	EAST	EVANS	CREEK	TIM.	SALE	
	33-2-27							
CT/BELOW	UNIT 001	130	331	8,10, 12 ALL TPA	49% 12-14 35 TPA	25	69	15676 BD/FT
DROP	UNIT 005							
	33-2-29							

CT/BELOW	UNIT 005	150	127	8,10, 12 ALL TPA	80% 12-14 20 TPA	15	33	4776 BD/FT
DROP	UNIT 006							
ITM	UNIT 010	160	51	(6)				8956 BD/FT
	33-2-31							
ITM	UNIT 001	108	104	(6)				13316 BD/FT
DROP	UNIT 003							
ITM	UNIT 007	84	160	(6)				19006 BD/FT
	33-2-35							
CT/BELOW	UNIT 002	140	254	8,10, 12 ALL TPA	16% 12-14 11 TPA	10	74	12408 BD/FT
CT/BELOW	UNIT 003	150	255	8,10, 12,14 16 ALL TPA	NONE	3	44	14589 BD/FT
CT/BELOW	UNIT 005	120	205	8,10 ALL TPA	75% 10-12 69 TPA	39	57	10784 BD/FT
ITM	UNIT 010	100	90	(6)				8655 BD/FT

CT/BELOW	UNIT 007	160	217	8,10, 12,14 16 ALL TPA	72% 16-18 17 TPA	12	38	8255 BD/BT
CT/BELOW	UNIT 009	140	186	8,10, 12,14 16,18 ALL TPA	52% 18-20 10 TPA	3	50	17074 BD/FT
	34-2-4							
ITM	001	140	100	(6)				5000 BD/FT
	34-2-5							
CT/BELOW	UNIT 001 (5)	150	160	8,10, 12 ALL TPA	55% 12-14 14 TPA	5	39	4648 BD/FT
CT/BELOW	UNIT 002 (5)	160	190	8,10, 12,14 16,18 20 ALL TPA	58% 20-22 2 TPA	7	23	6252 BD/FT
CT/BELOW	UNIT 006	160	150	8,10, 12,14 16 ALL TPA	NONE	4	31	10003 BD/FT
ITM	UNIT 007	140	120	(6)				11393 BD/FT
ITM	UNIT 008	140	79	(6)				13004 BD/FT

CT/BE LOW	UNIT 002	160	205	8,10, 12,14 16 ALL TPA	NONE	5	45	11699 BD/FT
CT/BE LOW	UNIT 003	140	167	8,10, 12 ALL TPA	55% 12-14 39 TPA	12	91	10504 BD/FT
CT/BE LOW	UNIT 004	88	193	8,10 ALL TPA	86% 10-12 74 TPA	6	81	6854 BD/FT
	34-2-10							
ITM	UNIT 001	140	171	(6)				10113
ITM	UNIT 002	140	180	(6)				10816
ITM	UNIT 004	100	140	(6)				13756

(1) RED TREE VOLE AREA SEE WRITTEN PORTION OF GUIDELINE FOR TREATMENT.

(2) 60% CROWN CLOSURE BETWEEN MAIN ROAD AND BUFFER BOUNDARY. LEAVE SMALLER CONIFERS FOR HIDING COVER.

(3) HARDWOODS WILL BE HARVESTED UNDER SEPARATE SALE.

(4) VOLUME WILL BE LESS DUE TO RIPARIAN BUFFERS.

(5) HELICOPTOR UNIT NO HARDWOOD HARVEST

(6) HARVEST FROM ALL DIAMETER CLASSES WITH MORE HARVEST FROM THE

RELATIVE DENSITY GUIDELINES

Use RD 35 when thinning in stands dominated Douglas-fir. Use RD 25 as a guide when releasing large healthy ponderosa or sugar pines.

Estimate the average diameter of potential leave trees and determine the desired spacing in feet by referring to the table below. Follow the basal area and spacing table as closely as possible. Once the area has been marked verify the leave basal area using a relaskop or prism, adjust basal area as necessary. As the average diameter changes spacing will also change holding stand density constant.

RELATIVE DENSITY - 35%		
AVERAGE LEAVE TREE DBH	LEAVE TREE BASAL AREA	AVERAGE LEAVE TREE SPACING
8"	99	12' X 12'
10"	111	15' X 15'
12"	121	17' X 17'
14"	131	19' X 19'
16"	140	21' X 21'
18"	148	23' X 23'
20"	157	25' X 25'
22"	164	26' X 26'
24"	171	28' X 28'
26"	178	30' X 30'
28"	185	32' X 32'
30"	191	33' X 33'

RELATIVE DENSITY - 25%		
AVERAGE LEAVE TREE DBH	LEAVE TREE BASAL AREA	AVERAGE LEAVE TREE SPACING
8"	71	15' X 15'
10"	79	17' X 17'
12"	87	20' X 20'
14"	94	22' X 22'
16"	100	25' X 25'
18"	106	27' X 27'
20"	112	29' X 29'
22"	117	31' X 31'
24"	122	33' X 33'
26"	127	35' X 35'
28"	132	37' X 37'
30"	135	39' X 39'

COARSE WOODY DEBRIS	
TREE DBH	NUMBER OF PIECES PER TREE 16" x 16'
16"	1
20"	1
22"	2
24"	3
26"	4
28"	4
30"	5
32"	5
34"	6
36"	6
38"	6
40"	6
42"-50"	7
52"-58"	8
60"	9

TREES DESIGNATED FOR COARSE WOOD DEBRIS SHOULD HAVE CHARACTERISTICS OF DECAY CLASSES 1&2.

* BARK INTACT
* LIMBS INTACT
* TEXTURE MOSTLY SOUND
* SHAPE ROUND

NOTE:
In addition to high risk trees, use trees with multiple conks and white fir with frost cracks for CWD trees. Do not leave mistletoe infested trees for CWD trees.

Definition: Poor Vigor - High Risk of Mortality

Trees available for removal as poor vigor - high risk include:

1. Insect infested trees

Douglas-fir and white fir trees undergoing attack from the flatheaded fir borer and or the Douglas-fir bark beetle, as identified by red boring dust present in bark crevices or on the ground near the base of the tree. Foliage is thinning and yellowish in appearance. Borers typically begin their attack in the top of the tree, then may spread to the lower bole. Pitch streamers may also be present on the mid to upper bole.

Ponderosa pine trees undergoing current attack from western pine beetle or red turpentine beetle. Pitch tubes should contain reddish/brown granular frass. Pitch tubes clear in color indicate the tree has been successful in expelling the beetle, these trees should not be marked if otherwise healthy.

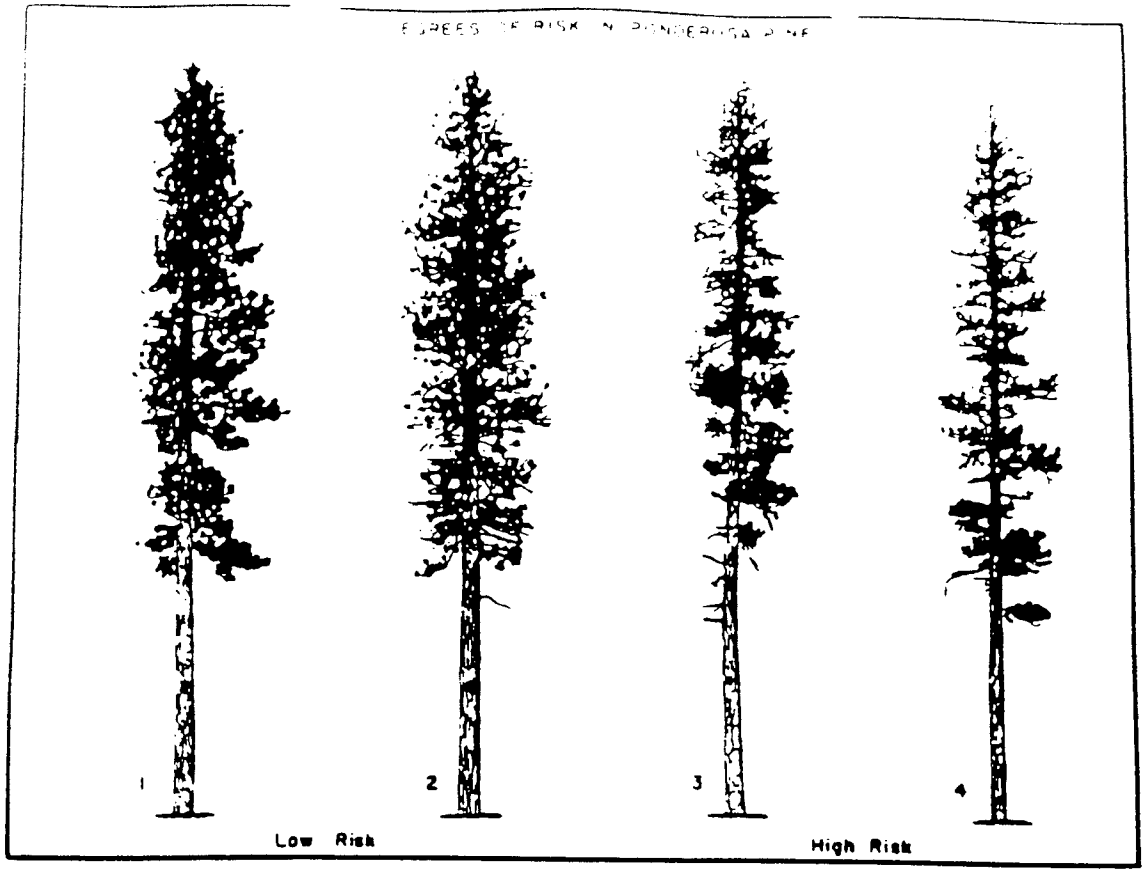
2. Poor vigor trees

a. Poor vigor, high risk ponderosa pine trees are defined as those trees meeting the criteria for risk classes #3 and #4, see attached guide.

b. High risk Douglas-fir and white fir trees are defined as:

* Crown has thin appearance when viewed against the sky.
* Short needle length
* Needle color very poor, yellowish.
* Dead or dying twigs or branches in the crown forming holes, sparse and ragged crown appearance.
* Poor crown ratio.
* Mistletoe affected.

All snags and coarse woody debris will be maintained as they presently occur with additional trees reserved to meet target levels.



#1 - LOW RISK
* Full foliage, healthy appearing crowns.
* Foliage of healthy appearance; needles are long, coarse and dark green.
* Practically all twigs with normal foliage compliment.
* No weaken parts of crown.

#2 - MODERATE RISK
* Fair to moderately healthy crowns, imperfect in spots.
* Foliage mostly healthy, needle length average or better, color fair to good.
* Some twigs or branches may lack foliage, but should not be localized to form definite "weak" spots in crowns.

#3 - HIGH RISK
* Crowns of fair to poor health, somewhat ragged or thin in parts of crown.
* Foliage in parts of crown thin, bunchy, or unhealthy, needles average to shorter than average in length.
* Needle color poor to fair.
* Some to many twigs or branches lacking foliage, few to many twigs or branches fading or dead.
* Small localized weaken parts of crowns usually present.
* Crown width is narrow or flat on one or more sides.

#4 - VERY HIGH RISK
* Crowns in poor condition, ragged or thin.
* Foliage thin or bunchy, needles short or sparse, poor color.
* Twigs and branches dead or dying, parts of crown definitely weakened.
* Crown width is very narrow and sparse or limbs all on one side.

WILDLIFE TREE MARKING--

DESCRIPTION OF TREES TO MARK FOR LEAVE:

1. Large hard (class 1 & 2) snags, damaged/dying trees, and/or defective green trees.

2. Soft snags need to be protected in the stands, but do not count toward snag numbers.

3. Large diameter rather than small diameter trees (≥20" dbh). (If unavailable ≥ 16"dbh are acceptable).

4. Tall wildlife trees (≥20 ft.) rather than shorter trees.

5. Dead trees with greater bark cover than trees with little bark cover.

6. Large live trees infected with heart rot and/or broken tops and scars, CONKS

7. Trees with large nests

8. Species mix should reflect the species mix present in the stand.

9. Retain LARGE hardwoods.

10. In some areas, it may be more suitable to clump trees. Other areas may be suitable to leave trees scattered across the landscape for connectivity.

11. Locate leave trees away from roads, or downhill from road to reduce loss from firewood cutters.

Snags provide nest sites, foraging sites, perching and roosting platforms. Large trees are used by more species, they are harder to replace in the stand, and remain standing longer.

Taller snags provide greater protection from ground dwelling predators and provide larger substrate for nesting and foraging.

APPENDIX F

SUBJECT: EAST EVANS FUELS REPORT
FROM: JOHN DINWIDDIE
DATE: 11/21/96

CONSEQUENCES OF THE NO ACTION ALTERNATIVE:
Current condition: The area falls into one of five fuel models or a combination of these models. (For a description of these models refer to GTR-INT-122 Aids to Determining Fuel Models For Estimating Fire Behavior) These fuel models will can be grouped by two series with three levels of fire intensity for each group. The first group is the brush/grass group which provide the live and aerial fuels component of the analysis (brushfields and dense reproduction stands). These fuel models are fuel model (FM) two, FM six and FM four. These models primarily influence spread rates and spotting potential. A large percentage this project area is susceptible to crown fire events because of dense conifer understory stocking which provide the ladder fuels necessary for crown fire events.

The second group consists of the ground fuels. These fuels consist of the timber litter layer, these models address the ground fuels which influence duration and intensity. The fuel models represented are fuel model eight and fuel model ten.
Fuel models are dynamic and are subject to rapid change by natural events such as floods and wind storms or extended drought periods.
The above fuel models can be tied directly to one of the three following fire intensity levels.

LEVEL ONE
LOW INTENSITY
Direct attack with hand tools
flame length - 0-2 ft.
spotting - little if any
FUEL MODEL REPRESENTED IS FM EIGHT

LEVEL TWO
MODERATE INTENSITY
Indirect attack supported by equipment
Dozers, engines and/or aircraft required
Flame length - 2-4 ft.
Spotting - moderate short range 100 - 400 ft.
Constant moderate fire growth
Occasional torching of individual trees and clumps
FUEL MODEL REPRESENTED IS FM 10

LEVEL THREE
HIGH INTENSITY
Indirect attack using topography break or fuel type change
Flame length 4 ft. and greater
Constant spotting, both short and long range
Constant rapid growth with spot fires as growth continues
High probability of crown fires
FUEL MODELS REPRESENTED ARE FM TWO, FM SIX AND FM FOUR

The current trend is for fuel loads to increase over time until reduced either by management actions or a fire event. There will be progression from the lower intensity FM eight to the higher intensity FM 10 in the ground fuels as timber stands mature.
The shift from FM 6 to FM 4 is more a matter of environmental circumstances than that of actual physical fuel changes.
Over time the meadows (FM2) are being converted to closed canopy brush fields (FM 4&6) which burn with greater intensity.
Fuel loadings and fire hazard will continue to increase over time.

Road access is poor to the Southeast section of the project area. The access problem means initial attack times are increased thereby decreasing probability of a successful initial attack by ground forces. With the reduced success of ground forces there will be a suppression cost increase if and when aerial support is required. In a multiple fire start event (lightening) air support may not available. Poor access also poses a safety hazard. Limited escape routes and safety zones increase the chance of entrapment or burnover of initial attack forces. Large blocks of dense stagnated conifer stands provide ladder fuels necessary for crown fires.

Under the no action alternative the pump chance on Musty Creek will eventually fail. This pump chance has been in a state of disrepair for 2-3 years. Continued unavailability of this pump chance will cause increased suppression costs and increased likelihood of a fire escaping initial attack. The pump chance on the Cleveland Ridge road is functioning at this time but will eventually fill sediment and access will be denied by brush regrowth.

SHORT TERM USE VS. LONG TERM PRODUCTIVITY
In the short term there will probably little change in existing conditions. In the long the probability of a stand replacement fire will increase, when this fire occurs we will see impacts to soils and vegetation thereby affecting site productivity for long periods of time.

CONSEQUENCES OF ALTERNATIVE TWO
With harvest actions there will be an increase in fuel loadings and fire potential, this will be mitigated by fuels treatments such as underburning, hand pile and burn, and lop and scatter.
The primary increase in fuels will be in the 1-3 inch size classes. The harvest areas will be a fuel model eleven after harvest and before treatment. Thinning activities and activity fuels (logging slash) treatments will reduce the potential for stand replacement fires. Activity fuels treatments will be designed to reduce fire intensities and duration. Fuels treatments will reduce fuel loadings to those equal to a fuel model eight. Fuels treatments will be in compliance with the Oregon Smoke management plan and will not have major impacts on air quality. On the 451 acres that are dropped from timber harvest consideration under this alternative fuels treatments would still occur as funding allows.

The Board Mtn. portion of the watershed is the greatest contributor to large fire potential for several reasons:
1. Lack of road access - directly affects fire suppression capabilities
2. Aspect south to west - area is subject to prevailing winds and sudden dramatic changes in both live and dead fuel moisture.
3. Lower elevation - Hot dry site subject to temperature inversions.
4. Large continuous blocks of fuel model six and four contribute to potential for large crown fires.

In the Antioch/Meadows School and Cold Springs project areas the current fuel models are a combination of FM 2 and FM 6. Treatment by underburning will reduce the brush component of the live fuels. By reducing the brush component there will be a reduction in fire intensities during a wildifre. Wildfire spread rates will remain high but resistance to control will be reduced.

SHORT TERM USE VS. LONG TERM PRODUCTIVITY

Under this alternative there will be a reduction in the potential for large scale fires over the project area (ACRES IN ALT3) for a period of 15 -20 years. The majority of treated acres will fall into either a **fire intensity level one or two.** The meadow burns will still fall into a **fire intensity level three** but will show a large decrease in resistance to control.

At that time natural fuels accumulations will begin to return a level of concern. Retreatment will need to be evaluated at that time.

LEVEL ONE
LOW INTENSITY
Direct attack with hand tools
flame length - 0-2 ft.
spotting - little if any
FUEL MODEL REPRESENTED IS FM EIGHT

LEVEL TWO
MODERATE INTENSITY
Indirect attack supported by equipment
Dozers, engines and/or aircraft required
Flame length - 2-4 ft.
Spotting - moderate short range 100 - 400 ft.
Constant moderate fire growth
Occasional torching of individual trees and clumps
FUEL MODELS REPRESENTED ARE FM 10,11

LEVEL THREE
HIGH INTENSITY
Indirect attack using topography break or fuel type change
Flame length 4 ft. and greater
Constant spotting, both short and long range
Constant rapid growth with spot fires as growth continues
High probability of crown fires
FUEL MODELS REPRESENTED ARE FM TWO, FM SIX AND FM FOUR

Pump chance renovation will result in increased effeciency in initial attack operations.

CONSEQUENCES OF ALTERNATIVE THREE

Same as alternative 2.

EAST EVANS SALE

FUELS HAZARD REDUCTION PRESCRIPTION

Prepared by: John Dinwiddie, Fuels Mgmt Specialist
Date: 11/17/96
Project Area: Southeast portion sections 3,7,9,10,35
Current stand conditions:
The majority of the current timber stands are overstocked with dense stands of 2-6 inch dbh. conifers. Stand exams conducted in the summer of 1996 show stocking levels that vary from a low of 510 stems less than 6" in diameter to a high of 2600 stems per acre of less than 6" dbh. (For an exact breakout of stems per OI unit see stand exam tables.)
Stands this dense provide high levels of live fuel loading and if combined with heavy dead and down fuels there exists a high potential for stand replacement type fires that will carry into the crowns of all conifers. These fires would be similar to East Evans and Hull Mtn.
The current dead and down fuel loading varies between fuel model eight and fuel model ten. These fuels would be sufficient when combined with the live fuels present on these sites to create fires of the stand replacement type. In addition road access is poor into these units further adding to the potential for large fires to occur. More importantly this combination creates a safety hazard for initial attack forces should an ignition occur when under extreme burning conditions.

Proposal:
The proposal will detail a two step operation that should reduce the potential for large fire occurrence. If implemented in conjunction with the fuels proposals in the timber sale EA it will give a defenseable fuel zone across about 4 miles at about the mid-slope zone. In most of the project area fuel loadings are too high to treat safely in one operation, in those areas a combination of piling and underburning will be necessary. There may be some areas where a either single underburn operation or a two entry undreburning operation will be successful. I would propose that we use the initial underburning option to reduce treatment costs whenever possible.

1. Slash all conifer repoduction in the 1-5" dbh range.
2. Precommercial thin conifers in the 6-7" dbh size classes favoring fire resistant species such pines buck to a 3" top and pile all tops and limbs.
3. Pile and burn this slash during the fall and winter.
4. At about 4-5 years following thinning and slashing units will be evaluated for an underburn to further reduce fuel laodings to acceptable levels. This underburn woud target the 0-3" (1- 100 hr.) size classes of fuels.

To mitigate wildlife concerns 1/2 acre to 1 acre pockets would be left either untreated or only thinned or slashed. By only doing one treatment it will still help to breakup the fuel ladder.

Cost:
Slashing costs will vary but should range from $130- 170 per acre. Hand piling and burning will be $450-500 per acre. Underburning costs will be about $240- 300 per acre. If roads are improved we might expect to see costs on the lower end.

Final total costs will be in th $500-700 range, while this seems, high suppression costs in the two aforemetioned fires were in the $750-900 range per acre. Rehabilation costs add an additional $200-450 per acre for a total cost of $950- 1350 per acre.

This proposal will serve as the basic fuels reduction proposal under the timber sale. If these units are dropped from the sale area under the EA then this proposal would serve as fuels reduction stand alone proposal.

APPENDIX H

E.F. Evans Creek Culvert Replacement Projects

General

Three major culverts currently result in obstructed fish passage (either adults or juveniles) on Federal lands or Federally controlled roads (Table 1.). Fill material is likely to be greater than or equal to 50 cubic feet in volume at all sites.

Table 1. Name and Approximate Location of Major Culverts Which Obstruct Fish Passage Within the East Fork of Evans Creek WAU.

Name	Approximate Diameter Size (ft)	Location
East Evans #1	5	33-2-8 SW NE
Wolf Creek #1	4	33-2-17 SW NE
Wolf Creek #2	3	33-2-17 NW NW

Project Proposal

To make these road crossings passable for multiple life history stages of fish under a variety of conditions, the current structures are proposed to be permanently removed, or replaced. The Wolf Creek #2 site is proposed for complete removal and re-contouring of the bank to pre-disturbance conditions. This would be completed with an excavator or backhoe.

The East Evans #1 and Wolf Creek #1 are proposed for replacement with bottomless arch type structures. Removal would be completed with an excavator or backhoe. The bottom of the stream would be excavated down to bedrock, and concrete footings poured. Pre-fabricated concrete arches or multi-plate arches would then be installed. These would then be covered with fill and resurfaced. May need a by-pass road while work is taking place.

Proposed Mitigating Measures

1) Install silt fences downstream of site.

2) Re-vegetate (seed and seedlings) and cover with a straw mulch.

3) Minimize riparian vegetation removal.

4) Other??

Reality

Probably will not do Wolf Creek #1 due to the Medite culvert installation approximately 0.7 mile upstream. Also unlikely that Medite will allow us to decommission the road which crosses at #2, so #2 is out also. East Evans #1 is probably the only culvert which will actually be replaced.

APPENDIX I

Note to East Evans Creek E. A. file

The pump chance on the Musty Creek Road No. 33-2-33.4 would be repaired by cleaning, deepening, rebuilding the fill in compacted layers, and installing both an overflow culvert and an 8" drain pipe near the bottom.

The pump chance on the Cleveland Ridge Road No. 33-2-20 would have minimal renovation, ie. logs would be cleared from the pond, brush would be trimmed along the access road, and a pool about 8' by 8' by 4 ' deep would be dug for the suction hose on the access end.

APPENDIX J

PROJECT #1:

MEADOWS SCHOOL/ANTIOCH FUELS REDUCTION & WILDLIFE BURN

Proposal: Combine selective thinning and prescribed fire to modify and reduce natural fuel loadings and improve wildlife habitat on 200 acres of land in T34S, R02W, section 15 and 16.

Desired future condition: Open meadows with pine/white oak savanna, high component of native grasses, early to mid-seral patches of manzanita and wedgeleaf.

Background:

A wildfire burned through the area in 1938. In 1958, the area was mostly manzanita brush field with scattered oak and no conifer reproduction. That year 198 acres were scarified and ponderosa pine was planted the next spring. Notes from the era indicate that the site was a "dry , poor soil, low site, formerly in oak, madrone, and manzanita". In 1980, 45 acres were scarified and planted to ponderosa pine again. In 1996, many of the pine are only 6-8 feet tall.

Description of the existing environment:

The area is hot and dry, and most likely never supported more than scattered large conifer trees, except in the cooler north facing draws with deeper soils. Few large white oak snags are scattered throughout the area, but patches of smaller white oak saplings are becoming established. Native grasses (wild blue rye and bunch grasses, etc.) are present in many areas. Some star thistle has become established in patches, but is not predominant. In the southwest part of section 15, dense wedgeleaf patches are present. Many of these have dead stems and are so thick that they are impenetrable. Impenetrable manzanita thickets are also present scattered throughout the proposed project.

Big game habitat is present in the area. The decadent wedgeleaf does not provide good browse or escape cover. However, surrounding thickets do provide escape, hiding, and thermal cover. Turkey, quail, and grouse are present In the meadows, the grasses provide forage and seed for animals, including many species of birds, both resident and neotropical. The area is within the range of several bureau sensitive species, including common king snake, sharptail snake, Flammulated owl, Lewis's woodpecker, Northern pygmy owl, western bluebird.

Thick patches of wedgeleaf and manzanita with pine needle accumulations and dead, dry branches are present in the decadent patches. A wildfire in the area would move through the area rapidly and be difficult to control. The proposed project adjacent to a rural interface area.

The historical fire return interval is approximately every 15-20 years at this elevation and aspect.

Recommendations:

Reduce fire hazard in approximately 200 acres. This would occur within the 1958 scarification project boundaries. Spacing for the existing pine would be increased with a desired spacing of approximately 20 feet minimum. Some oak patches would be protected within the proposed project boundary. Tractors would be used to crush some of the thick manzanita and wedgeleaf thickets - no scarification is proposed. The grass meadows would be burned to provide a flush of nutrients, reduce wedgeleaf competition, and reduce the density some of the oaks and pine (where this is determined to be high). No tractor work other than fire line construction would be required in the meadow/brush combination areas. The objective is to maintain the area with scattered larger pines in a grass savanna with white oak patches scattered throughout, in a more natural system. By reducing vertical fuel continuitys the potential for a large fire to remove the pine and oak component will be lessened. This will reduce fire intensities thereby increasing the probability of successful initial attack on future wildfires. Native grasses tend to be less flammable later into the season than non-native annuals.

The area would be managed as pine/white oak savanna for the future condition. Initially the fire return interval would be every three to five years. This would be designed to keep the manzanita and wedgeleaf densities low, with smaller vigorous plants, that have a low dead to live ratio. Once the desired condition is achieved a more natural fire cycle of every 15-20 years would be implemented for maintenance of the site. Fire trails and crushed areas would be planted with native grasses both to reduce the invasion of noxious weeds and to reduce sprouting of brush species in pure stands.

PROJECT #2:

COLD SPRINGS MEADOW BURN

Proposal: Use prescribed fire to modify and reduce natural fuel loadings, reduce conifer encroachment, rejuvenate grass lands and white oak stands, maintain meadow habitat and improve wildlife habitat on 80 acres of land in T34S, R01W, section 5. Selective thinning of dense oak stands.

Desired future condition: Open meadows and white oak savanna, high component of native grasses, early to mid-seral patches of manzanita and wedgeleaf.

Description of the existing environment:

One hundred sixty acres of BLM lands surrounded by USFS lands to the north and Boise Cascade lands to the east, south, and west. Scattered conifers are beginning to encroach in the edge of the meadow and in a few of the white oak stands. The oaks in the area are small, the majority are 6-8 inches in diameter, but core samples reveal that they are 100-130 years old. There is little oak regeneration occurring. The soils in the area are shallow, and support grasses and shrubs with some oak woodlands interspersed. Native grasses are present in the grassy slopes. Some star thistle has become established in patches, but is rare. In the eastern edge, some patches of dense wedgeleaf is present. Manzanita is decadent and not regenerating in most of the areas where it is present.

The meadow provides excellent wildlife habitat. Large timber to the east provides shade and shelter, with ample forage with grasses, seeds, acorns, etc. present in the meadow. Two small springs provide water to the area year round, one feeding into a helipond on USFS lands on the northern boundary. Turkey and deer are common year around. Elk use the area in the winter. Woodpeckers, redtail hawks, turkey vultures, resident and neotropical birds, small mammals, and owls are also present in the area. Great gray owls have been reported one mile west of this

meadow.

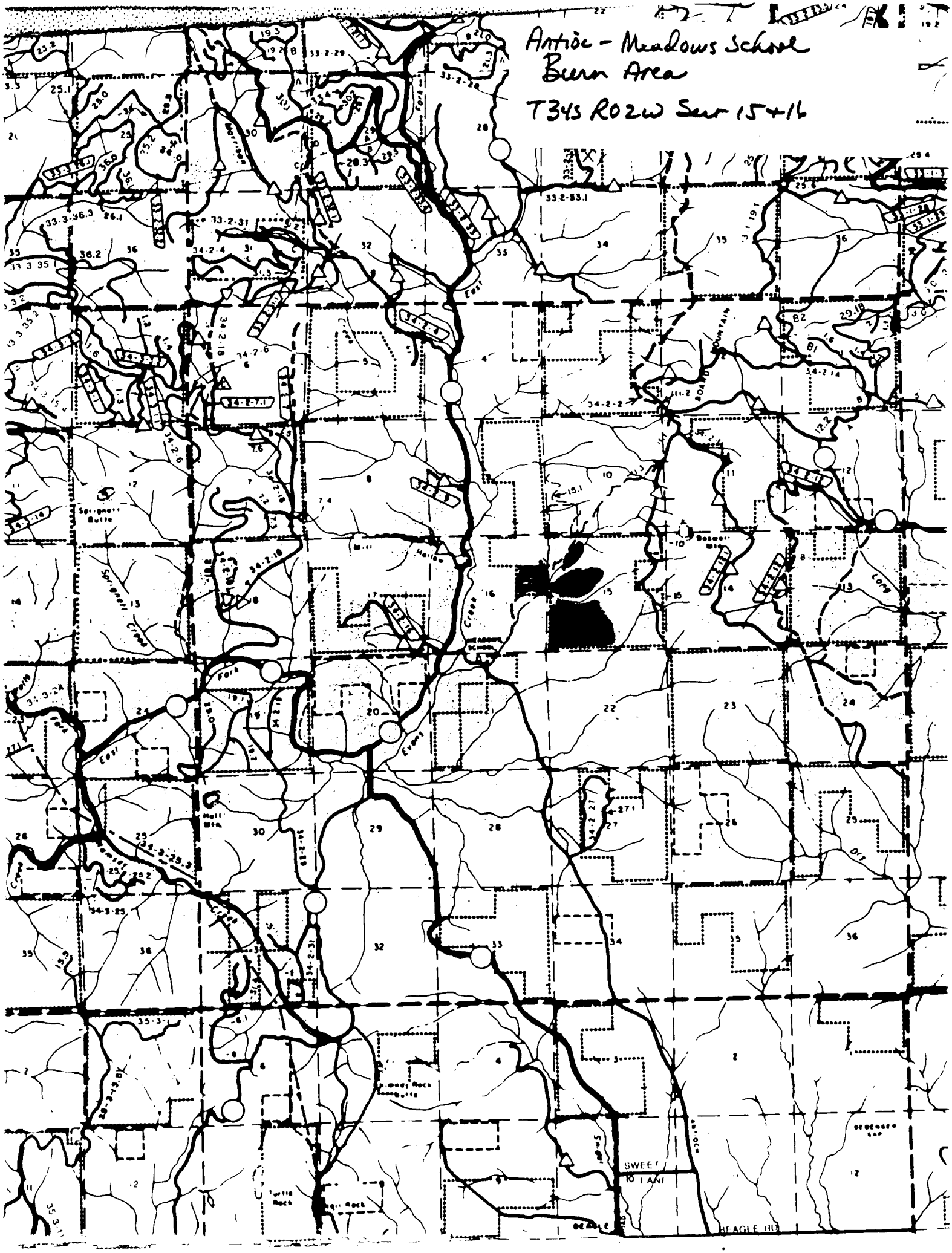
Recommendations:

Conversations with Kate Winthrop, district archeologist, indicate that historically the area was most likely burned by Native Americans, and several archeological sites have been located nearby. The age of the trees (130 years) seems to support this. Burning the area will return the meadow to what is believed to be a more historical condition.

The grass meadows, some of the white oak stands, and wedgeleaf patches would be burned to provide a flush of nutrients, reduce wedgeleaf competition, reduce oak density and reduce conifer encroachment. The road would be used as a firebreak and most fire lines would be hand lines. No tractor work other than fire line construction would be required. Some oak thinning would occur. The objective is to maintain the area with scattered larger oak in white oak/grass savanna with white oak patches scattered throughout, in a more historic pattern. This proposed action would be designed to improve native white oak and native grasses. Native grasses tend to be less flammable later into the season than non-native annuals. Younger, more vigorous white oak would produce more acorns and improve forage opportunities for many species of wildlife. Great gray owl foraging habitat would be maintained and improved.

The area would be managed as white oak savanna and open grass meadows for the future condition. Initially the fire return interval would be every three to five years. This would be designed to keep the manzanita and wedgeleaf densities low, with smaller vigorous plants, that have a low dead to live ratio. Once the desired condition is achieved a more natural fire cycle of every 15-20 years would be implemented for maintenance of the site. Fire trails would be planted with native grasses both to reduce the invasion of noxious weeds and to reduce sprouting of brush species in pure stands.

NOTE: ALL ACTIONS WOULD OCCUR WITHIN WITHDRAWN LANDS.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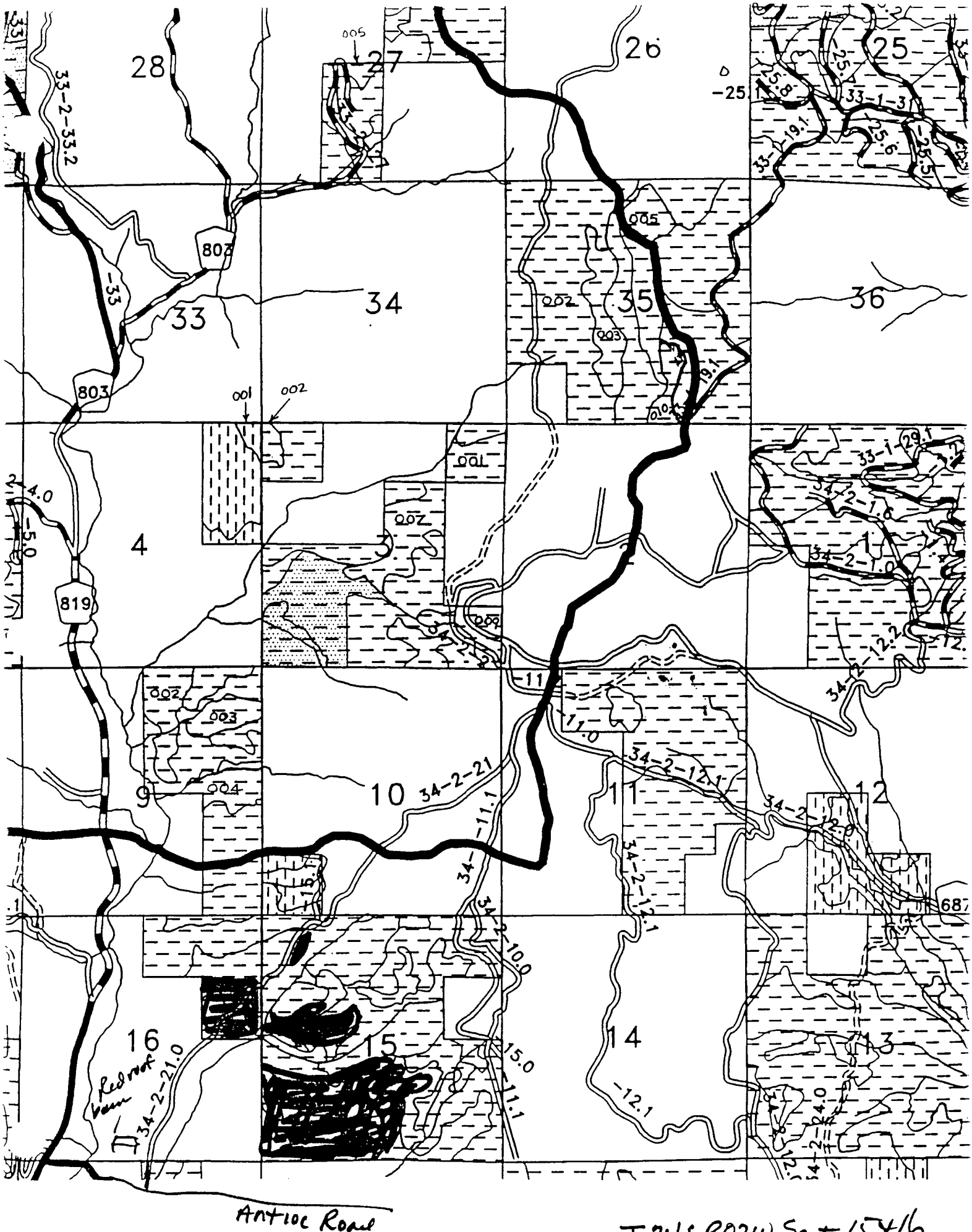
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Redrock Farm
Antioch Road
T34S R02W Sect 15 + 16

Appendix K

To: East Fork Evans Creek Environmental Assessment File

From: Jon Raby, Fishery Biologist, Butte Falls RA

Subject: 11/25/96 EA Input

Cleveland Railroad EA

Fisheries/Aquatic Affected Environment

General

The East Fork of Evans Creek is a tributary to Evans Creek which flows into the mainstem Rogue River. The West Fork of Trail Creek is a tributary to Trail Creek, which also flows into the mainstem Rogue River. Additionally, two small, unnamed tributaries flow into the Cow Creek watershed within the South Umpqua River. There are numerous tributaries to the East Fork of Evans Creek, the more notable being Sprignett Creek, Morrison Creek, Coal Creek and Wolf Creek. More notable tributaries to the West Fork of Trail Creek are Chicago Creek, Walpole Creek and Paradise Creek.

In general, valley form characteristics range throughout the watersheds from steep-V to moderate-V in the upper portions of the watershed, to broad valley floors in the lower reaches. The lower reaches generally support a single active channel constrained by terraces formed as a result of down-cutting of the channel primarily due to the loss of instream structure (e.g. large wood, beaver dams) in these areas. The steep-V reaches are generally constrained by either adjacent hillslopes or roads which have been constructed at the base of a hillslope. Moderate-V reaches are constrained by either hillslopes, roads, or alternating hillslopes and terraces. The broad valley floor and moderate-V reaches are characterized by a lower stream gradient with relatively wider valley floors which either historically provided or currently provide some of the best available aquatic habitat.

The watershed is also characterized by geologic formations which are of volcanic, metamorphic, and sedimentary in origin. This bedrock parent material, has resulted in schist and pyroclastic soil types which are highly erodible and unstable.

Roads and Stream Morphology

Stream channel confinement from roads often results in simplification of aquatic habitats by the down-cutting of the stream, channelizing water velocity subsequently dislodging debris jams and finally confining the stream to a single channel which cannot regularly access its floodplain. In general, road encroachment in this watershed is not viewed as a primary influence in confining large portions of the stream channel but can, at certain locations, be a dominant factor in confining the channel. Cumulatively, this can result in many stream miles being confined.

One measure of the magnitude of channel confinement is the amount of roads which have been constructed within the Riparian Reserve (Table 2.). Of the approximate total of 234.9 miles of road constructed within the East Fork of Evans Creek Watershed, 101.3 miles (44%) have been constructed within the Riparian Reserve. Of this total 33.9 miles (15%) are located BLM land with 13.1 miles (6%) found adjacent to major streams[1] on BLM land.

Table 2. Estimated Miles of Roads by Ownership in the Riparian Reserve in East Fork of Evans Creek Watershed.

Total Road Miles in E.F. Evans Watershed	Ownership	All Roads in 3rd Order and Greater Riparian Reserves	Percent of Total Riparian Reserve Road Miles	Percent of 3rd Order and Greater Riparian Reserve Total	All Roads in 1st and 2nd Order Riparian Reserves	Percent of Total Riparian Reserve Road Miles	Percent of 1st and 2nd Order Riparian Reserve Total
234.9 mi.	BLM	13.1 mi.	6%	31%	20.8 mi.	9%	36%
	Private	29.7 mi.	13%	69%	37.7 mi.	16%	64%
	Totals	42.8 mi.	19%	100%	58.5 mi.	25%	100%

Some uninventoried roads are suspected to present channel confinement problems, but the extent or magnitude has not yet been determined. In addition, although not identified at this time, there could be locations where road encroachment from the abandoned road system is confining the stream channel as well.

Water Quality

Water Temperature

Water temperatures were collected at one site, below Sprignett Creek, in the mainstem of the East Fork of Evans Creek from June 15, 1994 to June 26, 1994. Temperatures were measured at twenty-four minute intervals and the unit was factory calibrated to within ±0.4° F. Data was then compared with the Oregon Department of Environmental Quality (ODEQ) temperature standard of 64° F to determine thermally limited stream reaches.

Because there are a limited number of sampling sites and data points available for analysis, it is difficult to identify the extent of temperature sensitive reaches within the watershed or draw definitive conclusions about the role of extreme water temperatures within this watershed. However, at the Sprignett Creek site, the seven-day average maximum stream temperature was found to be 69.4° F. This value is outside the ODEQ criteria and results in stream reaches from the mouth of the East Fork of Evans Creek to Sprignett Creek being especially sensitive to impacts from management activities which may alter water temperatures and subsequently salmonid survival. It is suspected that areas above Sprignett Creek are thermally limited as well, although, this has not been documented.

[1] Stream orders are used here as a surrogate for defining stream size. Major streams which could potentially be fish-bearing are defined here as third order and greater streams and intermittent and ephemeral streams as first and second order.

Non-Point Source Sedimentation

Road Sediment Potential

Non-point source sedimentation as a result of land management activities is often difficult to quantify. However, road construction and roads are often the greatest contributors to stream sedimentation especially where highly erodible soils are present.

Deposition of fine sediment in streams can acutely affect survival of salmonids (1) during intragravel incubation of eggs and embryos; (2) as fingerlings; and (3) throughout the winter (Chapman and MacLeod 1987). Increasing proportions of fine sediment in substrates have been associated with reduced intragravel survival of embryonic coho salmon (Phillips et al. 1975) steelhead trout (Tappel and Bjornn 1983) and cutthroat trout (Irving and Bjornn 1984) . Currently, the average percent of the wetted area of riffle habitat composed of fine substrate (silt, sand and organics)[2] has been documented as being greater than 15% for numerous streams within the watershed (mainstem East Fork Evans Creek, Morrison Creek, Chapman Creek and Sprignet Creek). At or above this level, spawning gravels are considered to be low in quality (ODFW 1995) for salmonid egg and embryo survival.

Although the amount of sediment being delivered to stream channels from BLM roads is currently unknown, it is known what types of roads are the greatest contributors and have the greatest risk of delivering sediment to streams from surface or mass movement erosion. Roads found within the Riparian Reserve and/or roads which cross streams on steep, unstable soils generally are considered to have the greatest risk of delivering sediment to the stream. The surface type, road location, parent geology, soils type and construction manner though, generally characterize the type and quantity of sediment which is delivered to the stream.

Three major road types are found within this watershed. Bituminous surface type (BST) roads (paved or black topped roads) generally have the least risk of generating sediment from surface erosion. and stream crossing fills covered by this surface are the least likely to fail. Rocked roads generally have a low to moderately high risk of generating sediment from surface erosion, and stream crossing fill has a low to moderately high risk of failing and being delivered to the stream. Natural surfaced (dirt) roads have a moderately high to high risk of generating sediment from surface erosion, and stream crossing fill has a moderately high to high risk of failing and being delivered to the stream.

Of the 101.3 total miles of road in the Riparian Reserve for the watershed, 33.9 miles of road are located within the BLM Riparian Reserve. Of the total road mileage in the BLM Riparian Reserve. 31.7 miles of rock, natural surface and non-attributed roads are considered to have

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[2] This is stream substrate material which is generally <2.0 mm in size.

moderately high to high risk of delivering sediment to streams (Table 3.).

Table 3. Miles of Roads by Surface Type and Ownership in the Riparian Reserve in the East Fork of Evans Creek Watershed.

Surface Type	Roads in BLM 3rd Order and Greater Riparian Reserve	Roads in PVT 3rd Order and Greater Riparian Reserve	Watershed Totals	Roads in BLM 1st and 2nd Order Riparian Reserve	Roads in PVT 1st and 2nd Order Riparian Reserve	Watershed Totals
BST	2.2 mi.	3.1 mi.	5.3 mi.	0.0 mi.	1.5 mi.	1.5 mi.
Rock	7.4 mi.	3.8 mi.	11.2 mi.	14.6 mi.	6.1 mi.	20.7 mi.
Natural	2.0 mi.	1.6 mi.	3.6 mi.	4.3 mi.	3.9 mi.	8.2 mi.
Non-attributed[3]	1.5 mi.	21.2 mi.	22.7 mi.	1.9 mi.	26.2 mi.	28.1 mi.
Totals	13.1 mi.	29.7 mi.	42.8 mi.	20.8 mi.	37.7 mi.	58.5 mi.

Of the 31.7 miles of rock, natural surface and non-attributed roads within the Riparian Reserve, 2.1 miles are located within Timber Production Capability Classification (TPCC) fragile slope gradient[4] areas. These areas would be considered to have a very high potential for delivering sediment to streams due to their steep, unstable nature (Table 4.).

Table 4. Miles of Road by Surface Type in BLM TPCC Fragile Slope Gradient Areas.

Surface Type	Roads in BLM TPCC Withdrawn 3rd Order and Greater Riparian Reserves	Roads in BLM TPCC Withdrawn 1st and 2nd Order Riparian Reserves
BST	0.7 mi.	0.0 mi.
Rock	0.4 mi.	0.7 mi.
Natural	0.1 mi.	0.1 mi.
Non-Attributed	0.0 mi.	0.1 mi.
Totals	1.2 mi.	0.9 mi.

Aquatic Invertebrates

Aquatic Mollusks

There have been no recorded surveys for aquatic mollusks in the East Fork Evans Creek, Trail

[3] Non-attributed roads in the Watershed are primarily rock or natural surface roads and can be driveways to private residences, private timber company access roads, or uninventoried BLM roads.

[4] These sites consist of steep to extremely steep slopes that have a high potential for debris-flow landslides. Gradients commonly range from 60 to 100+%. Classifications are based on geology, geomorphology, physiographic position, climate (especially precipitation), soil types and other factors.

Creek or Cow Creek watersheds. Current information shows no known sites of sensitive species of aquatic mollusks within these watersheds. They are however, within the range of the Highcap lanx (*Lanx alta*), a State of Oregon designated Species of Concern.

Fisheries

Distribution/ Occurrence

There are a variety of anadromous, and resident fish which occur within the East Fork of Evans Creek, West Fork Trail Creek and unnamed Cow Creek tributary. No anadromous fish-bearing reaches are located within the proposed project areas of the Cow Creek and West Fork Trail Creek watersheds, and no fish-bearing reaches are located within the proposed project areas of the West Fork Trail Creek watershed. Anadromous fish species that utilize the East Fork of Evans Creek and its tributaries are coho salmon, winter and summer steelhead trout, and potentially Pacific lamprey. Although habitat is available for Pacific lamprey in the watershed, their presence/ absence and distribution is currently unknown .

Coho and winter and summer steelhead penetrate deep into the smaller tributaries with steelhead being able to access higher gradient areas that are unattainable to coho. They generally spawn in lower gradient or flat areas of high gradient streams. Coho generally rear for approximately one year in fresh water before migrating to the ocean, while steelhead rear for between one and four years, with two years being the most common for Rogue River steelhead. For coho, deep pools with cover, side channels and backwaters are critical for over-wintering (ODFW Sensitive Vertebrates of Oregon, 1992). Both coho and steelhead adults and juveniles, historically and currently have extensive access and distribution throughout these watersheds and can be found in all the major tributaries. This represents approximately 8.3 miles of coho habitat and 10.0 miles of steelhead habitat within the East Fork of Evans Creek WAU. Of this total, approximately 2.4 miles of coho habitat and 2.1 miles of steelhead habitat are on BLM lands.

Resident fish, as their name implies, are species which spend their entire life cycle in fresh water. Cutthroat trout have a wide distribution throughout the Rogue basin and can be found year-round in virtually any tributary with perennial flow. Within the watersheds, cutthroat have been found throughout all the major tributaries and in numerous small tributaries which are inaccessible to anadromous fish use. This represents approximately 19.2 miles of cutthroat trout habitat within the watershed, of which about 8.4 miles is on BLM lands. Additionally, sculpin species are found throughout these watersheds, though actual extent of distribution is unknown. The extent of squawfish, largescale sucker, red-sided shiner, and speckled dace distribution in these watersheds is currently unknown as well.

The stream located within the NE quarter of Section 1 which flows into Cow Creek, contains resident cutthroat trout, which amounts to approximately 0.5 mile of cutthroat trout habitat.

Status

As anadromous salmonids ascend their spawning streams they become reproductively isolated

from one another and form locally adapted populations, also referred to as stocks. To qualify as being distinct, a stock must represent an evolutionarily significant unit of that species which, 1.) must be substantially reproductively isolated from other conspecific population units, and 2.) must represent an important component in the evolutionary legacy of the species (Waples 1991).

Of the 175 "at-risk" anadromous fish stocks that occur in Oregon (FEMAT 1993), 3 occur within this watershed (Table 5.). The reasons for these stocks becoming "at-risk" are numerous, with many being out of the hands of Federal land managers. These include ocean harvest, hydroelectric dams and water diversions, and hatchery management. (PACFISH 1993). Loss and degradation of freshwater habitats, however, are the most frequently cited factors responsible for this decline (FEMAT 1993).

Table 5. At-risk Anadromous Salmonid Stocks Occurring Within the East Fork of Evans Creek Watershed.

Species (Stock)	Nehlsen et al.	Nickelson et al.
Coho (Middle and Upper Rogue)		Depressed
Summer Steelhead Trout (Rogue)	Moderate Risk of Extinction	Depressed
Winter Steelhead Trout (Rogue)		Healthy

Because of concern over the decrease in numbers and distribution of anadromous salmonids across much of their Pacific Northwest range, numerous groups have submitted petitions to list these species under the Endangered Species Act. Currently the National Marine Fisheries Service has proposed Southern Oregon/ Northern California coho and Klamath Mountains Province steelhead (summer and winter) for listing as threatened under the Endangered Species Act of 1974 as amended. Both species occur in the Rogue River basin and its tributaries, including the East Fork of Evans Creek and West Fork of Trail Creek.

All cutthroat trout in the Umpqua River found below natural barriers are listed as Endangered under the Endangered Species Act of 1974 as amended. Formal consultation with NMFS on the proposed action was initiated on August 15, 1996.

Population Trends

There is no specific data related to fish population trends for the East Fork of Evans Creek watershed. Overall, there has been a general decline in coho and steelhead numbers in the Rogue River since record keeping (ODFW 1991). It is suspected that resident salmonid populations may be declining, as well.

Passage Barriers

The primary barriers for adult and juvenile fish in the watershed are culverts and diversion dams. The seasonal effects of these range from delayed to complete obstruction of upstream migration for either adult or juvenile fish species. Within the East Fork of Evans Creek watershed there are seven irrigation diversion dams, with three occurring within this Watershed Analysis Unit (Table 3.).

Table 3. Names and Locations of Diversion Dams Within the East Fork of Evans Creek WAU.

Name	Height	Location
Mitchell Dam	3'	Mile 7.6
Reed Dam	3'	Mile 8.25
Nelson Ditch Dam	4'	Mile 9.1

Three major culverts currently result in obstructed fish passage (either adults or juveniles) on Federal lands or Federally controlled roads (Table 4.).

Table 4. Name and Approximate Location of Major Culverts Which Obstruct Fish Passage Within the East Fork of Evans Creek WAU.

Name	Approximate Diameter Size (ft)	Location
East Evans #1	4	33-2-8 SW NE
Wolf Creek #1	3	33-2-17 SW NE
Wolf Creek #2	3	33-2-17 NW NW

Aquatic Habitat

1995-1996 Aquatic Survey

Aquatic habitat inventories were conducted during the low flow period in 1995 and 1996. The inventories utilized an intensive, quantitative methodology (ODFW 1995) which focused on instream habitat and riparian conditions. The streams inventoried were, East Fork of Evans Creek, Morrison Creek, Sprignet Creek, and Chapman Creek. The proposed actions do not take place within either the Sprignet Creek or Chapman Creek watersheds, and will not be analyzed further in this document. Additionally, there is no quantitative aquatic habitat data related to the small unnamed tributary which flows into Cow Creek. The West Fork of Trail Creek watershed was surveyed in the summer of 1996, however data is currently unavailable for analysis.

East Fork of Evans Creek

This survey covers 27,558 m (17.1 miles) of the mainstem of East Fork of Evans Creek, from its confluence with the West Fork of Evans Creek to the headwaters. The valley bottom is broad or moderately- V shaped, throughout the survey, resulting in a stream channel that is generally wide, with a high potential for meander and side channel development. The channel is constrained by either terraces or hillslopes. Stream gradient is low to moderate, with the average habitat unit gradient between 0.9% and 4.5%.

Riffles account for 35% of the habitat area, and have primary substrates of cobbles (29%) and gravels (26%). The average width to depth ratio for riffles is 11.3. Silt, sand and organics in riffles is 23%. Pool habitat comprises 26% of the total habitat area, with residual pool depth

averaging 0.56 m. Stream substrate throughout the survey is composed predominantly of silt, sand and organics (26%), cobbles (24%) and gravels (23%). Secondary channels make up approximately 2% of the total habitat area.

Large wood pieces range between 0.4 and 10.7/ 100 m, with wood volume ranging from 0.8 to 44.6 m^3/100 m. The average wood complexity rating is 1.4, indicating that woody debris is absent or very low in abundance, and contributing little to habitat complexity or cover.

Boulders ≥0.5 m in diameter are the dominant instream cover/ structure. The greatest boulder densities and numbers generally occur in rapids and riffle habitat units, with 7% of the total found in pool habitats.

Riparian tree species are hardwoods and conifers, with average conifer size being <15 cm dbh. Average stream shading ranges from 73% to 93%. Human influenced riparian disturbances are a combination of rural residences, agricultural/ pasture lands, grazing and timber harvest.

Overall, stream conditions are considered in fair condition and "at-risk" for further degradation. Measures which could be taken to improve conditions in the watershed would be to reduce non-point source sedimentation from roads, place large wood instream, restore or create side-channels, encourage beaver colonization and maintain and actively manage to promote a late-successional Riparian Reserve.

Morrison Creek

This survey covers 8,268 m (5.1 miles) of Morrison Creek, from its confluence with the East Fork of Evans Creek to the headwaters. The valley bottom is broad in the lower reaches and becomes moderately V-shaped in the upper reaches with the channel being constrained by terraces or hillslopes. Stream gradient is moderate to high, with the average habitat unit gradient between 2.9% and 6.5%.

Rapids are the dominant habitat type, and account for 66% of the habitat area. Riffles make up approximately 11% of the habitat area and have primary substrates of gravels (28%) and cobbles (25%). The average width to depth ratio for riffles is 9.23. Silt, sand and organics in riffles is 36%. Pool habitat comprises 9% of the total habitat area, with residual pool depth averaging 0.51 m. Stream substrate throughout the survey is composed predominantly of silt, sand and organics (31%), gravels (25%) and cobbles (20%). Secondary channels make up approximately 2% of the total habitat area.

Quantitative large wood information is currently unavailable for this survey. However, the average wood complexity rating was 1.7, indicating that woody debris is absent or very low in abundance, and contributing little to habitat complexity or cover.

Boulders ≥0.5 m in diameter are the dominant instream cover/ structure feature. The greatest boulder densities and numbers generally occur in rapids and riffle habitat units, with 8% found in pool habitats.

Riparian tree species are hardwoods and conifers, with average conifer size being approximately 15 cm dbh. Average stream shading ranges from 84% to 91%. Human influenced riparian disturbances are a combination of rural residences, agricultural/ pasture lands and timber harvest.

Overall, stream conditions are considered in fair condition and "at-risk" for further degradation. Measures which could be taken to improve conditions in the watershed would be to reduce non-point source sedimentation from roads, place large wood instream, and maintain and actively manage to promote a late-successional Riparian Reserve.

West Fork of Trail Creek

A cursory review of stream reaches downstream of the project area revealed conditions similar to the East Fork of Evans Creek. Specifically, high stream sediment levels, low large wood abundance and a riparian forest dominated by young to mid successional vegetation. Overall conditions would be considered fair to poor, with risk for further degradation.

Unnamed Cow Creek Tributary

A cursory review of stream reaches downstream and adjacent to the project area revealed high stream sediment levels, low to moderate large wood abundance and a riparian forest dominated by young to mid successional vegetation. This small watershed was highly impacted by the Angle Camp Fire and subsequent timber salvage operations. Overall, there is a relatively high degree of cumulative impacts within the watershed, and stream habitat is generally in fair to poor condition, with risk for further degradation.

Aquatic/ Fisheries

FEATURES COMMON TO ALL ALTERNATIVES

1) Implement full Riparian Reserve widths to all streams based on a site potential tree index as defined in the ROD Standards and Guidelines (page C-30).

2) All instream work should be done **between** the time period June 15 and September 15 (both days inclusive) of any given year.

3) For any amount of new road constructed, an equal amount of road will be decommissioned.

PROJECT DESIGN FEATURES (PDF's)/ MITIGATING MEASURES

Individual Tree Mark, Density Management, and Commercial Thin Harvest of Proposed Project Units,

1) Maintain or upgrade all roads adjacent to streams that will be used during the course of harvest activity to current standard.

2) Enforce a seasonal use restriction (dry season only) on all natural surfaced roads adjacent to streams.

3) All new stream crossings should have culverts which will successfully withstand a 100 year flood event.

4) Minimize or eliminate new road construction within the Riparian Reserve boundary.

5) *??Engineering recommendations and standards??*

6) All excavated or excess material resulting from road construction should be placed and stabilized in a manner that will not allow that material to enter the stream channel.

7) Decommission designated operator spurs.

8) All exposed areas resulting from the road construction should be seeded with an approved grass seed mix and mulched.

9) For roads which currently exist within the Riparian Reserve, no operation of equipment or additional road building outside of the existing road prism and existing landings.

10) Minimize the total number of skid roads.

11) Designated skid roads should be reclaimed where operationally feasible.

12) Minimize the total number of crossings at seasonal precipitation collection zones and protect those crossings which are identified as needing additional protection during the course of skid road designation.

13) No skid road construction directly within the course of the seasonal precipitation collection zones.

14) Directionally fall all trees away from the seasonal precipitation collection zones. Trees which may fall into the seasonal precipitation collection zones should have the tops bucked and left in the channel.

15) No harvest of trees directly along the course of the seasonal precipitation channels.

16) No new skid road construction within the Riparian Reserve.

17) All skid roads and landings located within the Riparian Reserve should be ripped, seeded and straw mulched after use. Where feasible, obliterate these areas.

Proposed Fire Suppression Impoundment Repair

1) All exposed areas should be seeded with an approved grass seed mix.

2) All exposed areas should be mulched with a non-seeding straw mulch.

Proposed Prescribed Meadow Burn

1) No burning of vegetation or construction of hand line within 25 feet of a stream channel.

Proposed Culvert Replacements

1) Minimize or eliminate operation of equipment with the stream channel.

2) All exposed areas should be seeded with an approved grass seed mix.

3) All exposed areas should be mulched with a non-seeding straw mulch.

4) Temporary sediment catchment basins should be installed at approximately 25 foot intervals for a minimum of 100 feet below the replacement site.

5) Sediment collected in the catchment basins should be removed with hand tools and placed and stabilized in a manner that will not allow that material to re-enter the stream channel.

Road Decommissioning

1) All exposed areas, including the ripped road, should be seeded with an approved grass seed mix.

2) All exposed areas, including the ripped road, should be planted with a mixture of conifer and hardwood tree species which resembles the surrounding area, for roads within the Riparian Reserve.

3) All exposed areas, including the ripped road, should be mulched with a non-seeding straw mulch.

4) Portions of roads which are within ten feet of the stream channel should not be ripped.

PROJECT DESIGN FEATURES (PDF's)/ MITIGATING MEASURES

For Alternative #4 - Ken to develop.

I. Alternative 1 - No Action

A. Direct and Indirect Effects

The No Action Alternative would provide no measurable direct negative effects to aquatic resources within the proposed project area. Indirectly, this alternative would allow the vegetation within the Riparian Reserve to continue to develop and provide the long-term necessary elements for healthy aquatic ecosystems and meet the goals of the Aquatic Conservation Strategy (ACS) as outlined in the ROD Standards and Guidelines (page B-11). Additionally, this would indirectly contribute to maintaining current high levels of stream sedimentation in the watershed by allowing the continued degradation of the transportation system, and fire suppression impoundment which would be expected to have an indirect negative impact on fisheries and aquatic resources.

B. Cumulative Effects

With the continued degradation of the transportation system, current high levels of stream sedimentation would be expected to be maintained. The degraded condition of the roads might remedy itself over time as they revegetate and stabilize. However, this may take many decades to achieve. This is also dependent upon private activities and their use and maintenance of the transportation system in the watershed. Cumulatively, this could have a negative impact on fisheries and aquatic resources. Additionally, there should be a positive cumulative effect due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem as the Riparian Reserve vegetation develops and delivers this material to the streams. This positive cumulative effect should be seen throughout the East Fork of Evans Creek watershed.

C. Relationship of Short-Term Uses and Long-Term Productivity

With the continued degradation of the transportation system, it is anticipated that current high levels of stream sedimentation would be maintained. This could negatively impact aquatic habitat, and subsequently the productivity of fisheries and aquatic resources in the watershed over the long-term.

D. Irreversible or Irretrievable Commitments of Resources

It is expected there would be no measurable Irreversible or Irretrievable Commitments of Resources to fisheries or aquatic resources from the implementation of the No Action Alternative. However, as more large wood routes through the watershed after flood events, private entities may perceive some of these large wood accumulations as problems for fisheries and aquatic resources. This could potentially result in their removal, causing aquatic habitats to be destroyed or destabilized. This could potentially be an indirect Irreversible or Irretrievable Commitment of Resources (i.e.

large wood) from public lands.

E. Determination of Effects on Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Actions

Likely to Adversely Affect

II. Alternative 2 - 1) Individual Tree Mark, Density Management and Commercial Thin Harvest of Proposed Units, 2) Proposed Fire Suppression Impoundment Repair, 3) Proposed Prescribed Meadow Burn, 4) Proposed Major Culvert Replacement, and 5) Proposed Road Decommissioning and Upgrade. (No SE Units)

A. Direct and Indirect Effects

1) No direct impacts are anticipated to occur from implementation of the proposed action. Indirectly, fish and aquatic resources could be negatively impacted by implementation of the proposed action from short-term increases and continued maintenance of high stream sediment levels as a result of new road construction, maintenance, renovation and obliteration. Additionally, this alternative would allow the vegetation within the Riparian Reserve to continue to develop and provide the long-term necessary elements for healthy aquatic ecosystems and meet the goals of the Aquatic Conservation Strategy (ACS) as outlined in the ROD Standards and Guidelines (page B-11). This would be expected to indirectly benefit fisheries and aquatic resources.

2) No direct impacts are anticipated to occur from the proposed action. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in baseline stream sediment levels. Conversely, the proposed action would be expected to indirectly benefit fisheries and aquatic resources by reducing the risk of this impoundment failing and delivering large amounts of sediment to the stream, and overall reducing the amount of fine sediment currently being delivered to the stream.

3) No direct impacts are anticipated to occur from the proposed action. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in baseline stream sediment levels.

4) Direct negative impacts to fish could occur from the proposed action due to machinery operating in extremely close proximity or within the stream channel, or from falling debris. This could potentially, injure or crush individual fish. Additionally, this would allow fish, unobstructed and undelayed passage to stream habitat which was inaccessible or partially inaccessible previously. This could directly benefit fishery resources by increased fish production from the watershed. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in baseline stream sediment levels dowstream of the proposed project area.

5) No direct impacts are anticipated to occur from the proposed action. Indirectly, fish and aquatic resources could be negatively impacted due to short-term increases in stream sediment levels. Indirectly, fish and aquatic resources could be positively impacted due to a long-term reduction in stream sediment levels.

Implementation of the appropriate PDF's would be expected to minimize the anticipated negative direct and indirect effects of the proposed actions to negligible levels.

B. Cumulative Effects

1) The proposed action would be expected to have a negative impact on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment from new road construction, maintenance, renovation and decommissioning. However, it would be expected that a long-term positive cumulative effect on fish and aquatic resources should result from a reduction in total miles of road in the watershed.

With the continued degradation of the transportation system in portions of the watershed, current high levels of stream sedimentation would be expected to be maintained. The degraded condition of the roads might reverse over time as they revegetate and stabilize. However, this may take many decades to achieve and is dependent upon private activities and their use and maintenance of the transportation system in the watershed. It is unlikely that non-point sedimentation from the majority of roads within the watershed will be reduced, which is likely to result in a neutralization of the anticipated beneficial impacts from the proposed project.

Additionally, as the Riparian Reserve vegetation develops and delivers material to the streams there should be a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem. This positive cumulative effect should be seen throughout the East Fork of Evans Creek watershed.

2) A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the proposed action as a result of short-term increases to baseline stream sediment levels. However, the proposed action would be expected to cumulatively benefit fisheries and aquatic resources by reducing the risk of this impoundment failing and delivering large amounts of sediment to the stream, and reducing the amount of fine sediment currently being delivered to the stream. This should lead to a reduction in baseline stream sediment levels in the long-term.

3) A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the proposed action as a result of short-term increases to baseline stream sediment levels.

4) A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the proposed action as a result of short-term increases to

D. Irreversible or Irretrievable Commitments of Resources

1) No irreversible or irretrievable commitments of resources would be anticipated to result from implementation of the proposed action beyond those described in Fisheries/Aquatic 2d. of this document.

2) None anticipated.

3) None anticipated.

4) None anticipated.

5) None anticipated.

E. Determination of Effects on Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Actions

Likely to Adversely Affect

III. Alternative 3 - 1) Individual Tree Mark, Density Management and Commercial Thin Harvest of Proposed Units, 2) Proposed Fire Suppression Impoundment Repair, 3) Proposed Prescribed Meadow Burn, 4) Proposed Major Culvert Replacement, and 5) Proposed Road Decommissioning and Upgrade.

A. Direct and Indirect Effects

1) No direct impacts are anticipated to occur from implementation of the proposed action. Indirectly, fish and aquatic resources could be negatively impacted by implementation of the proposed action from short-term increases to high stream sediment levels as a result of new road construction, maintenance, renovation and obliteration. Additionally, this alternative would allow the vegetation within the Riparian Reserve to continue to develop and provide the long-term necessary elements for healthy aquatic ecosystems and meet the goals of the Aquatic Conservation Strategy (ACS) as outlined in the ROD Standards and Guidelines (page B-11). This would be expected to indirectly benefit fisheries and aquatic resources.

Projects 2-5

Same as II.A.2-5.

B. Cumulative Effects

1) The proposed action would be expected to have a negative impact on fisheries and aquatic resources in the short term by adding to current high levels of stream sediment

baseline stream sediment levels. However, the proposed action would be expected to cumulatively benefit fish and aquatic resources by allowing, unobstructed and undelayed passage to stream habitat which was inaccessible or partially inaccessible previously. This could directly benefit fishery resources by increased fish production from the watershed.

5) A short-term negative impact to fisheries and aquatic resources would be anticipated to result from implementation of the proposed action as a result of short-term increases to baseline stream sediment levels. However, implementation of the proposed action would be expected to cumulatively benefit fisheries by adding to the current amount of available habitat.

Implementation of the appropriate PDF's would be expected to minimize the anticipated negative cumulative effects of the proposed actions to negligible levels.

C. Relationship of Short-Term Uses and Long-Term Productivity

1) It is anticipated that short-term increases to baseline stream sediment levels could occur from implementation of the proposed action. However, it is anticipated that an overall reduction to baseline stream sediment levels should occur and subsequently maintain or increase the current productivity of fisheries and aquatic resources in the watershed over the long-term.

2) Same as II.C.1.

3) It is anticipated that short-term increases to baseline stream sediment levels could occur from implementation of the proposed action. However, with implementation of the appropriate PDF increases in baseline stream sediment levels should be negligible. Subsequently the current productivity of fisheries and aquatic resources in the watershed should be maintained over the long-term.

4) It is anticipated that short-term increases to baseline stream sediment levels could occur from implementation of the proposed action. However, with implementation of the appropriate PDF's increases in baseline stream sediment levels should be minimal. Subsequently baseline habitat conditions downstream of the proposed project area should be maintained over the long-term. Additionally, with increased aquatic habitat availability it would be expected that some amount of increase to the long-term productivity of fisheries and aquatic resources in the watershed should result.

5) Same as II.C.1.

Implementation of the appropriate PDF's would be expected to maintain or increase the long-term productivity of fisheries and aquatic resources.

from new road construction, maintenance, renovation and decommissioning. However, it would be expected that a long-term positive cumulative effect on fish and aquatic resources should result from a reduction in total miles of road in the watershed and a reduction in non-point sedimentation from known sources. It is unlikely that non-point sedimentation from the majority of roads within the watershed will be reduced, which could result in a neutralization of the anticipated beneficial impacts from the proposed project.

Additionally, as the Riparian Reserve vegetation develops and delivers material to the streams there should be a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem. This positive cumulative effect should be seen throughout the watershed.

Projects 2-5

Same as II.B.2-5.

C. Relationship of Short-Term Uses and Long-Term Productivity

Same as II.C.

D. Irreversible or Irretrievable Commitments of Resources

Same as II.D.

E. Determination of Effects on Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Actions

Likely to Adversely Affect

IV. Alternative 4 - 1) Individual Tree Mark, Density Management and Commercial Thin Harvest of Proposed Units, 2) Proposed Fire Suppression Impoundment Repair, 3) Proposed Prescribed Meadow Burn. 4) Proposed Major Culvert Replacement, and 5) Proposed Road Decommissioning and Upgrade. (Minimal road improvement SE)

A. Direct and Indirect Effects

1) No direct impacts are anticipated to occur from implementation of the proposed action. Indirectly, fish and aquatic resources could be negatively impacted by implementation of the proposed action from anticipated short-term increases as well as, long-term increases and maintenance of high stream sediment levels as a result of new

alternative would allow the vegetation within the Riparian Reserve to continue to develop and provide the long-term necessary elements for healthy aquatic ecosystems and meet the goals of the Aquatic Conservation Strategy (ACS) as outlined in the ROD Standards and Guidelines (page B-11). This would be expected to indirectly benefit fisheries and aquatic resources.

Projects 2-5

Same as II.A.2-5.

B. Cumulative Effects

1) The proposed action would be expected to have a negative impact on fisheries and aquatic resources by adding to current high levels of stream sediment from new road construction, maintenance, renovation and decommissioning and maintaining this condition over the long-term. Because it is unlikely that non-point sedimentation from the majority of roads within the watershed will be reduced, implementation of the proposed action could have severe adverse cumulative impacts on fisheries and aquatic resources within the watershed.

Additionally, as the Riparian Reserve vegetation develops and delivers material to the streams there should be a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem. This positive cumulative effect should be seen throughout the watershed.

Projects 2-5

Same as II.B.2-5.

C. Relationship of Short-Term Uses and Long-Term Productivity

1) It is anticipated that short-term and long-term increases to baseline stream sediment levels could occur from implementation of the proposed action. Because of the anticipated long-term increases in baseline stream sediment levels, the long-term productivity of fisheries and aquatic resources could be severely compromised. This could lead to a long-term decrease in the productivity of fisheries and aquatic resources within the watershed to below current levels.

Projects 2-5

Same as II.C.2-5.

D. Irreversible or Irretrievable Commitments of Resources

Same as II.D.

E. Determination of Effects on Northern California/ Southern Oregon Coho Salmon and Klamath Mountains Province Steelhead Trout from Implementation of the Proposed Actions

Likely to Adversely Affect

Alphonso Dam 1999: The Butte Falls Resource Area has identified the Upper Alphonso Diversion Dam for removal. Alphonso Dam is located along the East Fork of Evans Creek. The dam was built in 1890, and a concrete fish ladder was added in the 1950's. The dam has a span of 56 feet, a height of 10 feet, and a width of 3 feet. The fish ladder is located on the west side of the dam and provides for adult salmonid passage. Juvenile salmonid passage at the site is limited. Dam removal will begin in the summer of 1999 in order to restore historic fish passage conditions within the East Evans Creek watershed.

Sediment testing is currently being done in the impounded area directly behind the dam. The impounded area directly behind the dam varies in depth from 2 to 7 feet. The influence of the dam spreads upstream for a distance of approximately 550 feet with an average stream width of approximately 41 feet. Stream substrate is composed of bedrock, boulders, cobbles, gravels, sand and silt with approximately 600 cubic yards of substrate deposited behind the dam. Stream habitat prior to construction of the dam was likely a bedrock or boulder cascade.

Alphonso Dam is located approximately two miles above the confluence with the West Fork of Evans Creek and does not appear to be an obvious barrier to adult coho migration. If adult coho were able to pass the dam, it would be expected that coho juveniles would inhabit the pool area behind the dam. It is possible that dam may delay or block fish passage enough, especially during years with low amounts of precipitation, that adult escapement above the dam is extremely low. However, the actual reasons for limited coho presence above the dam site are unknown.

This project work is funded under the Jobs-in-the-Woods initiative to restore ecosystems and provide employment opportunities in specific geographic areas

APPENDIX L

CLEVELAND RAILROAD
ALTERNATIVE 2
TABLE 1

OI #	UNIT #	UNIT ACRES	HARVEST METHOD	YARDING SYSTEM	EST. VOLUME MBF
33-002	33-1	5	THIN	PS,CR	45
33-003	33-2	29	THIN	PS,CR	261
33-003	33-3	17	THIN	CR	119
33-003	33-4	4	THIN	PS	28
33-003	33-5	25	THIN	PS	175
3-011	33-4	3	THIN	PS	21
33-895	33-2	12	THIN	PS	119
5-002	5-5	48	THIN	HE	252
5-002	5-7	6	THIN	HE	17
5-002	5-8	21	THIN	PS	61
5-003	5-1	4	THIN	HE	8
5-003	5-2	30	THIN	PS	57
5-003	5-3	4	THIN	PS	51
5-004	5-3	13	THIN	PS	166
5-004	5-4	10	THIN	HE	128
5-005	5-8	16	THIN	PS	46
5-006	5-5	5	THIN	HE	18
5-013	5-6	4	THIN	PS	9
5-013	5-7	4	THIN	HE	12
5-017	5-5	17	THIN	HE	61

7-013	7-3	3	THIN	HE	28
9-001	9-1	5	THIN	PS	36
9-001	9-3	8	THIN	PS	58
9-001	9-4	6	THIN	CR	19
9-010	9-11	7	THIN	HE	67
9-011	9-10	10	THIN	PS	76
9-012	9-9	4	THIN	CR	30
9-012	9-10	11	THIN	PS	84
9-013	9-8	12	THIN	PS,CR	125
9-013	9-6	7	THIN	PS	22
9-015	9-3	4	THIN	PS	29
9-015	9-4	13	THIN	CR	40
9-015	9-5	7	THIN	CR	22
9-015	9-6	6	THIN	PS	19
9-017	9-12	12	THIN	PS	81
9-018	9-2	6	THIN	PS	43
17-003	17-7	25	THIN	PS	115
17-003	17-8	12	THIN	PS	55
17-005	17-5	17	THIN	PS	54
17-005	17-6	16	THIN	HE	51
17-008	17-4	22	THIN	HE	59
17-010	17-1	8	THIN	PS	46
17-010	17-2	3	THIN	CR	17
17-010	17-3	6	THIN	PS	35

MUSTY DONUT
ALTERNATIVE 2
TABLE 1

OI #	UNIT #	UNIT ACRES	HARVEST METHOD	YARDING SYSTEM	EST. VOLUME MBF
29-002	N.A.	74	TH	PS	705
29-004	"	34	TH	PS	540
29-005	"	32	TH	PS	202
29-010	"	11	TH	PS	98
31-001	"	87	ITM	PS,HE	1064
31-007	"	87	ITM	PS,HE	1588
5-001	"	71	TH	HE	330
5-002	"	28	TH	HE	175
5-006	"	22	TH	HE	184
5-007	"	41	ITM	HE	364
5-008	"	36	ITM	HE	353
5-009	"	20	TH	HE	154
TOTAL		**543**			**5,757**

N.A. -unit #'s not assigned

CLEVELAND RAILROAD
Alternative 3
TABLE I

OI #	UNIT #	UNIT ACRES	HARVEST METHOD	YARDING SYSTEM	EST. VOLUME MBF
33-002	33-1	5	THIN	PS,CR	45
33-003	33-2	29	THIN	PS,CR	261
33-003	33-3	17	THIN	CR	119
33-003	33-4	4	THIN	PS	28
33-003	33-5	25	THIN	PS	175
3-011	33-4	3	THIN	PS	21
33-895	33-2	12	THIN	PS	119
5-002	5-5	48	THIN	HE	252
5-002	5-7	6	THIN	HE	17
5-002	5-8	21	THIN	PS	61
5-003	5-1	4	THIN	HE	8
5-003	5-2	30	THIN	PS	57
5-003	5-3	4	THIN	PS	51
5-004	5-3	13	THIN	PS	166
5-004	5-4	10	THIN	HE	128
5-005	5-8	16	THIN	PS	46
5-006	5-5	5	THIN	HE	18
5-013	5-6	4	THIN	PS	9
5-013	5-7	4	THIN	HE	12
5-017	5-5	17	THIN	HE	61
7-001	7-2	12	THIN	PS	121

9-001	9-1	5	THIN	PS	36
9-001	9-3	8	THIN	PS	58

CLEVELAND RAILROAD
ALTERNATIVE 3 (cont.)
TABLE 1

9-001	9-4	6	THIN	CR	19
9-010	9-11	7	THIN	HE	67
9-011	9-10	10	THIN	PS	76
9-012	9-9	4	THIN	CR	30
9-012	9-10	11	THIN	PS	84
9-013	9-8	12	THIN	PS,CR	125
9-013	9-6	7	THIN	PS	22
9-015	9-3	4	THIN	PS	29
9-015	9-4	13	THIN	CR	40
9-015	9-5	7	THIN	CR	22
9-015	9-6	6	THIN	PS	19
9-017	9-12	12	THIN	PS	81
9-018	9-2	6	THIN	PS	43
17-003	17-7	25	THIN	PS	115
17-003	17-8	12	THIN	PS	55
17-003	17-9	4	THIN	PS	18
17-005	17-5	17	THIN	PS	54
17-005	17-6	16	THIN	HE	51
17-008	17-4	22	THIN	HE	59
17-010	17-1	8	THIN	PS	46

TOTAL		705			4666

MUSTY DONUT
ALTERNATIVE 3
TABLE 1

OI #	UNIT #	UNIT ACRES	HARVEST METHOD	YARDING SYSTEM	EST. VOLUME MBF
27-001	N.A.	74	ITM/TH	CR,DR,PS	890
29-002	"	77	TH	PS	705
29-004	"	34	TH	PS	540
29-005	"	32	TH	PS	202
29-010	"	11	TH	PS	98
31-001	"	87	ITM	PS,HE	1064
31-007	"	87	ITM	PS,HE	1588
35-002	"	145	TH	CR,PS,HE	1399
35-003	"	24	TH	CR,PS,HE	222
35-005	"	10	TH	HE	100
35-010	"	10	ITM	HE	83
3-001	"	23	TH	CR	212
3-002	"	8	TH	HE	57
3-007	"	36	TH	CR,DR,PS	258
3-009	"	20	TH	HE,PS	341
4-001	"	7	TH	HE	35
5-001	"	71	TH	HE	330
5-002	"	28	TH	HE	175
5-006	"	22	TH	HE	184
5-007	"	41	ITM	HE	364
5-008	"	36	ITM	HE	353
5-009	"	20	TH	HE	154

N.A. -unit #'s not assigned

CLEVELAND RAILROAD
ALTERNATIVE 4
TABLE 1

OI #	UNIT #	UNIT ACRES	HARVEST METHOD	YARDING SYSTEM	EST. VOLUME MBF
33-002	33-1	5	THIN	PS,CR	45
33-003	33-2	29	THIN	PS,CR	261
33-003	33-3	17	THIN	CR	119
33-003	33-4	4	THIN	PS	28
33-003	33-5	25	THIN	PS	175
3-011	33-4	3	THIN	PS	21
33-895	33-2	12	THIN	PS	119
5-002	5-5	48	THIN	HE	252
5-002	5-7	6	THIN	HE	17
5-002	5-8	21	THIN	PS	61
5-003	5-1	4	THIN	HE	8
5-003	5-2	30	THIN	PS	57
5-003	5-3	4	THIN	PS	51
5-004	5-3	13	THIN	PS	166
5-004	5-4	10	THIN	HE	128
5-005	5-8	16	THIN	PS	46
5-006	5-5	5	THIN	HE	18
5-013	5-6	4	THIN	PS	9
5-013	5-7	4	THIN	HE	12
5-017	5-5	17	THIN	HE	61
7-001	7-2	12	THIN	PS	121

9-001	9-3	8	THIN	PS	58
9-001	9-4	6	THIN	CR	19
9-010	9-11	7	THIN	HE	67

CLEVELAND RAILROAD
ALTERNATIVE 4 (cont.)
TABLE 1

9-011	9-10	10	THIN	PS	76
9-012	9-9	4	THIN	CR	30
9-012	9-10	11	THIN	PS	84
9-013	9-8	12	THIN	PS,CR	125
9-013	9-6	7	THIN	PS	22
9-015	9-3	4	THIN	PS	29
9-015	9-4	13	THIN	CR	40
9-015	9-5	7	THIN	CR	22
9-015	9-6	6	THIN	PS	19
9-017	9-12	12	THIN	PS	81
9-018	9-2	6	THIN	PS	43
17-003	17-7	25	THIN	PS	115
17-003	17-8	12	THIN	PS	55
17-005	17-5	17	THIN	PS	54
17-005	17-6	16	THIN	HE	51
17-008	17-4	22	THIN	HE	59
17-010	17-1	8	THIN	PS	46
17-010	17-2	3	THIN	CR	17
17-010	17-3	6	THIN	PS	35
1-006	1-3	7	THIN	PS	71
1-009	1-1	16	THIN	HE	142

MUSTY DONUT
ALTERNATIVE 4
TABLE 1

OI #	UNIT #	UNIT ACRES	HARVEST METHOD	YARDING SYSTEM	EST. VOLUME MBF
27-001		74	ITM/TH	CR,DR,PS	890
29-002		77	TH	PS	705
29-004		34	TH	PS	540
29-005		32	TH	PS	202
29-010		11	TH	PS	98
31-001		87	ITM	PS,HE	1064
31-007		87	ITM	PS,HE	1588
35-002		145	TH	CR,PS,HE	1399
35-003		24	TH	CR,PS,HE	222
35-005		10	TH	HE	100
35-010		10	ITM	HE	83
3-001		23	TH	CR	212
3-002		8	TH	HE	57
3-007		36	TH	CR,DR,PS	258
3-009		20	TH	HE,PS	341
4-001		7	TH	HE	35
5-001		71	TH	HE	330
5-002		28	TH	HE	175
5-006		22	TH	HE	184
5-007		41	ITM	HE	364
5-008		36	ITM	HE	353
5-009		20	TH	HE	154

N.A. -unit #'s not assigned

APPENDIX M

CLEVELAND RAILROAD
ALTERNATIVE 2
TABLE 2

ROAD #'S	SEGMENTS	MILES	SURFACE TYPE	CONTROL	REMARKS
32-2-33.2		0.30	ASC	BLM	RENOVATE
32-2-33.5	A1	0.31	ABC	BLM	RENOVATE
	A2	0.49	ASC	BLM	RENOVATE/DECOMMISSION
32-2-33.8		0.64	ASC	BLM	RENOVATE
32-2-33.9		0.76	ASC	BLM	RENOVATE
32-2-33.11		0.21	NAT	BLM	NEW CONSTRUCTION,DECOMMISSION
32-2-33.12		0.10	NAT	BLM	NEW CONSTRUCTION,DECOMMISSION
33-2-4.0	A	0.26	ABC	BLM	RENOVATE
	B	2.61	ABC	BLM	RENOVATE
	C	0.25	ABC	BLM	RENOVATE
33-2-5.0		0.94	ABC	BLM	RENOVATE
33-2-5.1	A	0.59	ABC	BLM	RENOVATE
	B	0.76	ABC	PVT	RENOVATE
	C	0.25	ABC	BLM	RENOVATE
33-2-5.2		0.17	ABC	BLM	RENOVATE
33-2-5.3	A	0.27	ABC	USFS	RENOVATE
33-2-5.4		0.63	GRR	BLM	NEW CONSTRUCTION,SURFACE
33-2-5.5		0.08	NAT	BLM	NEW CONSTRUCTION/DECOMMISSION
33-2-7.0	A	0.42	ASC	BLM	RENOVATE,X-DRAIN CMP'S
	B	0.09	PRR	BLM	RENOVATE
	C	0.23	NAT	PVT	RENOVATE

33-2-7.4		0.27	NAT	BLM	RENOVATE
33-2-7.5		0.25	NAT	BLM	RENOVATE/DECOMMISSION
33-2-8.1		0.86	NAT	PVT	RENOVATE,IMPROVE DRAINAGE
33-2-9.0		0.64	ASC	BLM	RENOVATE
33-2-9.3	A	0.20	PRR	BLM	RENOVATE
	B	1.02	NAT	BLM	RENOVATE,IMP.DRAINAGE, SURFACE M.P. 0.20-0.65
33-2-9.5		0.40		BLM	NEW CONSTRUCTION,DECOMMISSION
33-2-9.6		0.08		BLM	NEW CONSTRUCTION, DECOMMISSION
33-2-16.1		0.40	NAT	BLM	RENOVATE
33-2-16.2		0.24	NAT	BLM	RENOVATE
33-2-17.0	A	0.76	ASC	BLM	RENOVATE,X-DRAIN CMP'S
	B	0.35	ASC	PVT	RENOVATE,X-DRAIN CMP'S
	C1	0.52	ABC	BLM	RENOVATE,X-DRAIN CMP'S
	C2	0.34	NAT	BLM	RENOVATE,DECOMMISSION
33-2-17.3		1.10	PRR	BLM	RENOVATE,IMP.DRAINAGE,SPOT ROCK
33-2-17.4		0.20	NAT	BLM	RENOVATE
33-2-17.5		0.20	NAT	BLM	DECOMMISSION
33-2-17.6		0.20	NAT	BLM	RENOVATE,DECOMMISSION
33-2-20.0	A	2.44	ASC	BLM	RENOVATE
	B	1.49	ASC	BLM	RENOVATE
	C	0.25	ASC	BLM	RENOVATE
	D	1.24	PRR	BLM	RENOVATE
	E	0.67	PRR	BLM	RENOVATE
33-2-33.0	A	2.55	BST	BLM	RENVATE
	B	1.89	BST	BLM	RENOVATE

33-3-1.5		0.95	ABC	BLM	RENOVATE
33-3-1.7		0.30	ABC	BLM	RENOVATE
33-3-12.1	A3	0.30	ABC	PVT	RENOVATE
	B	0.60	ABC	BLM	RENOVATE
33-3-12.2	A	0.12	ABC	BLM	RENOVATE
	B	0.67	ABC	BLM	RENOVATE
	C	0.80	ABC	BLM	RENOVATE

SOUTH 1/2 ALTERNATIVE 2
TABLE 2

ROAD #'S	SEGMENTS	MILES	SURFACE TYPE	CONTROL	REMARKS
33-2-29		1.53	ABC	BLM	RENOVATE
33-2-29.1	A	0.25	ABC	BLM	RENOVATE
	B	0.69	PRR	BLM	RENOVATE
33-2-29.2	A	0.68	PRR	BLM	RENOVATE
	B	0.44	ABC	BLM	RENOVATE
33-2-29.3		0.70	ABC	BLM	RENOVATE
33-2-29.4		0.07	ABC	BLM	RENOVATE
33-2-29.5		0.12	ABC	BLM	RENOVATE
33-2-30.2		0.78	ABC	BLM	RENOVATE
33-2-31.0		0.33	PRR	BLM	RENOVATE,DECOMMISSION
33-2-31.2		0.85	NAT	BLM	RENOVATE
33-2-31.3		0.13	PRR	BLM	RENOVATE
33-2-33.1	A	0.20	ABC	PVT	RENOVATE
	B	0.34	ABC	PVT	RENOVATE

TABLE 2
ALTERNATIVE 3
(INCLUDES THE FOLLOWING ROADS WITH ALT. 2 ROADS)

ROAD #'S	SEGMENTS	MILES	SURFACE TYPE	CONTROL	REMARKS
33-1-19.1	A	2.47	PRR	BLM	RENOVATE
	B	1.53	ASC	BLM	RENOVATE
	C	0.42	ASC	BLM	RENOVATE
33-2-23.10	A	0.25	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
	B	0.85	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
	C	0.25	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
	D	0.80	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
	E	0.75	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
	F	0.45	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
33-2-26.0	A	0.19	NAT	PVT	RENOVATE/CONSTRUCT,SURFACE
	B	0.21	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
	C	0.38	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
33-2-27.1		0.25	NAT	BLM	RENOVATERECONSTRUCT,SURFACE
33-2-27.2		0.15	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
33-2-27.3		0.15	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
33-2-35.0		0.40	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
33-2-35.1		0.15	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
34-2-2.0	A	0.10	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
	B	0.25	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
34-2-3.0	A	0.20	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
	B	0.05	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
	C	0.15	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE

34-2-21.0	A	0.01	NAT	PVT	EASEMENT NEEDED, RENOVATE,RECONSTRUCT SURFACE
	B	0.09	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
	C	0.70	NAT	PVT	RENOVATE/RECONSTRUCT,SURFACE
	D	0.82	NAT	BLM	RENOVATE/RECONSTRUCT,SURFACE
34-2-3.2	B	0.25	NAT	BLM	NEW CONSTRUCTION,DECOMMISSION
34-2-3.3		0.10	NAT	BLM	NEW CONSTRUCTION,DECOMMISSION

TABLE 2
ALTERNATIVE 4
(INCLUDES THE FOLLOWING ROADS WITH ALT. 4 ROADS)

ROAD #	SEGMENTS	MILES	SURFACE TYPE	CONTROL	REMARKS
33-1-19.1	A	2.47	PRR	BLM	RENOVATE
	B	1.53	ASC	BLM	RENOVATE
	C	0.42	ASC	BLM	RENOVATE
33-2-23.1	A	0.25	NAT	BLM	MINIMAL IMPROVEMENT
	B	0.85	NAT	PVT	MINIMAL IMPROVEMENT
	C	0.25	NAT	PVT	MINIMAL IMPROVEMENT

33-2-27.2		0.15	NAT	BLM	MINIMAL IMPROVEMENT
33-2-27.3		0.15	NAT	BLM	MINIMAL IMPROVEMENT
33-2-35.0		0.40	NAT	BLM	MINIMAL IMPROVEMENT
33-2-35.1		0.15	NAT	BLM	MINIMAL IMPROVEMENT
34-2-2.0	A	0.10	NAT	PVT	MINIMAL IMPROVEMENT
	B	0.25	NAT	BLM	MINIMAL IMPROVEMENT
34-2-3.0	A	0.20	NAT	PVT	MINIMAL IMPROVEMENT
	B	0.05	NAT	BLM	MINIMAL IMPROVEMENT
	C	0.15	NAT	PVT	MINIMAL IMPROVEMENT
	D	0.05	NAT	BLM	MINIMAL IMPROVEMENT
34-2-3.1	A	0.20	NAT	PVT	MINIMAL IMPROVEMENT
	B	0.20	NAT	BLM	MINIMAL IMPROVEMENT
34-3-3.2	A	0.15	NAT	PVT	MINIMAL IMPROVEMENT
34-2-11.2	B	0.40	NAT	BLM	MINIMAL IMPROVEMENT
34-2-15.1	A	0.21	NAT	BLM	MINIMAL IMPROVEMENT
34-2-21.0	A	0.01	NAT	PVT	EASEMENT NEEDED, MINIMAL IMPROVEMENT
	B	0.09	NAT	BLM	MINIMAL IMPROVEMENT
	C	0.70	NAT	PVT	MINIMAL IMPROVEMENT
	D	0.82	NAT	BLM	MINIMAL IMPROVEMENT
34-2-3.2	B	0.25	NAT	BLM	NEW CONSTRUCTION,DECOMMISSION
34-2-3.3		0.10	NAT	BLM	NEW CONSTRUCTION,DECOMMISSION

Roads added by
 alternatives 3 and 4 are highly degraded, so a dozer and/or excavator will
be required to restore the road prism

SUMMARY OF TABLE 2 ALTERNATIVES

ALTERNATIVE 2	ROAD MILES	RENOV.		SURFACE	NEW CONST.	DECOM
CLEVELAND R.R.	42.98	41.28		1.08	1.50 mi.	2.35
South 1/2	14.79	14.79				0.63
Total	57.77	56.07		1.08	1.50	2.98

ALTERNATIVE 3	ROAD MILES	RENOV.	RECONST	SURFACE	NEW CONST.	DECOM.
CLEVELAND R.R. mi	42.98	41.28 mi.		1.08 mi.	1.50 mi.	2.35
South 1/2	28.37	19.21	8.81	8.81	0.35	0.98
Total	71.35	60.49	8.81	9.89	1.85	3.33

ALTERNATIVE 4	ROAD MILES	RENOV.	MIN. IMP.	SURFACE	NEW CONST.	DECOM.
CLEVELAND R.R.	42.98	41.28		1.08	1.50 mi.	2.35
South 1/2	28.37	19.21	8.81		0.35	0.98
Total	71.35	60.49	8.81	1.08	1.85	3.33

MUSTY DONUT
ALTERNATIVE 4
TABLE 1

OI #	UNIT #	UNIT ACRES	HARVEST METHOD	YARDING SYSTEM	EST. VOLUME MBF
27-001		74	ITM/TH	CR,DR,PS	890
29-002		77	TH	PS	705
29-004		34	TH	PS	540
29-005		32	TH	PS	202
29-010		11	TH	PS	98
31-001		87	ITM	PS,HE	1064
31-007		87	ITM	PS,HE	1588
35-002		145	TH	CR,PS,HE	1399
35-003		24	TH	CR,PS,HE	222
35-005		10	TH	HE	100
35-010		10	ITM	HE	83
3-001		23	TH	CR	212
3-002		8	TH	HE	57
3-007		36	TH	CR,DR,PS	258
3-009		20	TH	HE,PS	341
4-001		7	TH	HE	35
5-001		71	TH	HE	330
5-002		28	TH	HE	175
5-006		22	TH	HE	184
5-007		41	ITM	HE	364
5-008		36	ITM	HE	353
5-009		20	TH	HE	154
9-002		24	TH	HE	281
9-003		15	TH	HE	158
9-004		21	TH	HE	144
10-001		8	ITM	PS	70
10-002		7	ITM	PS	76
10-004		6	ITM	PS	77
TOTAL		**984**			**10,160**

N.A. -unit #'s not assigned