

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

ENVIRONMENTAL ASSESSMENT FOR THE  
TITANIC TIMBER SALE  
&  
LANDSCAPE RESTORATION PROJECTS

Project Name/Number: OR-110-98-05

Project Location: T.34S., R.3E., Sections 11, 12, 13, 15, 21, 22, 23, 24, 25 & 27.  
Willamette Meridian, Jackson County, Oregon

Project Lead: John Osanski, Forester  
EA Preparation: Jean Williams, Environmental Coordinator

This environmental assessment (EA) for the proposed Titanic timber sale and associated landscape restoration projects were prepared utilizing a systematic interdisciplinary approach integrating the natural and social sciences and the environmental design arts with planning and decision making.

*Lance E. Nimmo (Acting)*

Lance E. Nimmo  
Butte Falls Area Manager

1/23/98

Date

The environmental assessment and Finding of No Significant Impact (FONSI) were made available for public review on January 22, 1998.

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

DECISION RECORD  
for the proposed

TITANIC ENVIRONMENTAL ASSESSMENT

**DECISION**

It is my decision to authorize the proposed action in the **Titanic Timber Sale** Environmental Assessment. The proposed action is described as Alternative 3 which includes the following:

**1. Timber Harvest on Matrix Lands**

The overall scope of this action alternative covers approximately 509 acres of Bureau of Land Management managed lands designated Matrix, located in T34S, R3E, sections 11, 12, 13, 15, 21, 22, 23, 24, 25, & 27; Willamette Meridian, Jackson County, Oregon. The silvicultural treatment methods identified under this alternative are: 307 acres of commercial thin, 118 acres of individual tree selection, 97 acres of modified shelterwood retention.

Harvest methods would include tractor (509 acres).

No new system road construction would occur. All logging and hauling would use existing roads. Approximately  $\frac{1}{4}$  of a mile of spur road will be constructed for access to units in sections 11 and 23. Following use, spur road will be fully decommissioned.

**2. Riparian Reserve Restoration**

Till compacted landing and skid trails, improve conifer stocking in understocked areas, and release conifers from competition which exist along approximately 3 miles of perennial streams.

**3. Aquatic Habitat Restoration**

Large woody debris placement to restore fish habitat complexity and provide improved spawning and rearing opportunities for native salmonid species in the N.F. of Big Butte Creek.

Replace the culvert to restore fish habitat connectivity on road 35-3E-3.

## Road Related Projects:

Road Improvement	7.34 miles
Road Decommissioning	4.41 miles
Road Fully Decommissioning	3.02 miles

Consultation under Section 7(a)(4) of the Endangered Species Act has not been completed with the National Marine Fisheries Service (NMFS) on the Coho Salmon. The sale contract will not be awarded until a final biological opinion or letter of concurrence, which includes a non-jeopardy determination, has been received. The sale was designed to follow the guidance of the Resource Management Plan and the Northwest Forest Plan, and to incorporate mitigations identified in the consultations on previously listed salmonids, as appropriate. Therefore, it is our expectation that the biological opinion will not make a jeopardy determination nor prescribe any reasonable and prudent measures or terms and conditions that are not already part of the sale design and mitigation. Because the United States retains the right to reject any and all bids for any reason, the mere offering of the sale does not make any irreversible or irretrievable commitment of resources which have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures. If additional reasonable and prudent alternative measures or terms and conditions are prescribed which would require alteration in the terms of the sale contract, the agency retains the discretion (prior to contract award) to adjust the sale design accordingly and re-advertise the sale if necessary.

## 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 (RMP), dated April 14, 1995. The timber sale area is located within Matrix lands. The proposed action complies with all applicable standards and guidelines. This action takes into consideration cumulative impacts of past harvesting and silviculture practices both on private and Federal lands.

Excess stocking of coniferous trees, has resulted in declining tree growth rates and increasing levels of tree mortality of all species, particularly ponderosa and sugar pine. Overall species diversity is being reduced. Forest health is declining, as moisture, nutrients and sunlight availability are becoming limited due to increased tree competition. Fire suppression has allowed a shift in species composition towards shade tolerant white fir and has created conditions which are more susceptible to insect infestations, diseases, and wildfire.

Many Riparian Reserve areas have been impacted by moderate to high levels of disturbance from intensive forest management practices. Smaller sized, undisturbed areas comprised of mid to late successional stands are intermixed between plantations. Small riparian corridors of varying width have been retained along some reaches. Much of the Riparian Reserves are in very early successional stage of conifer plantations and lack structural components normally associated with older forest stands typical of the area. An extensive road system has been created over the years to extract timber products. Many system roads follow creek drainages and have impacted the functioning condition of Riparian Reserves to varying degrees.

The objective of large woody debris placement is to restore fish habitat complexity and provide improved spawning and rearing opportunities for native salmonid species in the North Fork (N.F.) of Big Butte Creek.

The objective of road improvement is to upgrade existing roads to reduce erosion and fine sediment deposition into streams. Road decommissioning would reduce road densities, erosion, and sediment deposition into streams.



Lance E. Nimmo  
Butte Falls Area Manager

8/20/98  
Date

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

**FINDING OF NO SIGNIFICANT IMPACT**  
Titanic Timber Sale

The proposed action is to harvest between six and nine million board feet of timber on Matrix lands as designated in the Record of Decision for the Northwest Forest Plan Environmental Impact Statement (SEIS/ROD), pg. 7. The proposed projects of timber harvest, riparian restoration, aquatic restoration, and road work are located within the Central Big Butte and Lost Creek Watersheds of the Butte Falls Resource Area, Medford District BLM. All projects are located on public lands administered by the BLM.

The project is located in;

T.34S., R.3E., sections 11, 12, 13, 15, 21, 22, 23, 24, 25 & 27; Willamette Meridian, Jackson County, Oregon.

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

The proposed action is described in more detail in the Titanic Environmental Assessment (EA). The EA discussing the harvesting of timber is in conformance with the Medford District Resource Management Plan, Record of Decision (ROD), dated April 14, 1995. The EA is also consistent with the 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 (SEIS).

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 effects on the human environment, and therefore an 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 SEIS ROD and RMP ROD, therefore no significant impact to the human or natural environment will occur.

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

Approved By: \_\_\_\_\_

Lance E. Nimmo  
Butte Falls Area Manager

\_\_\_\_\_  
Date

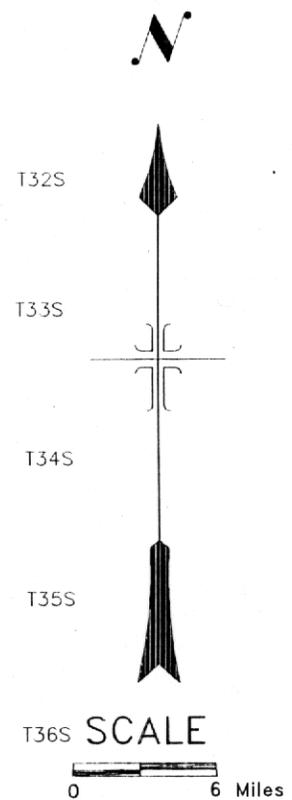
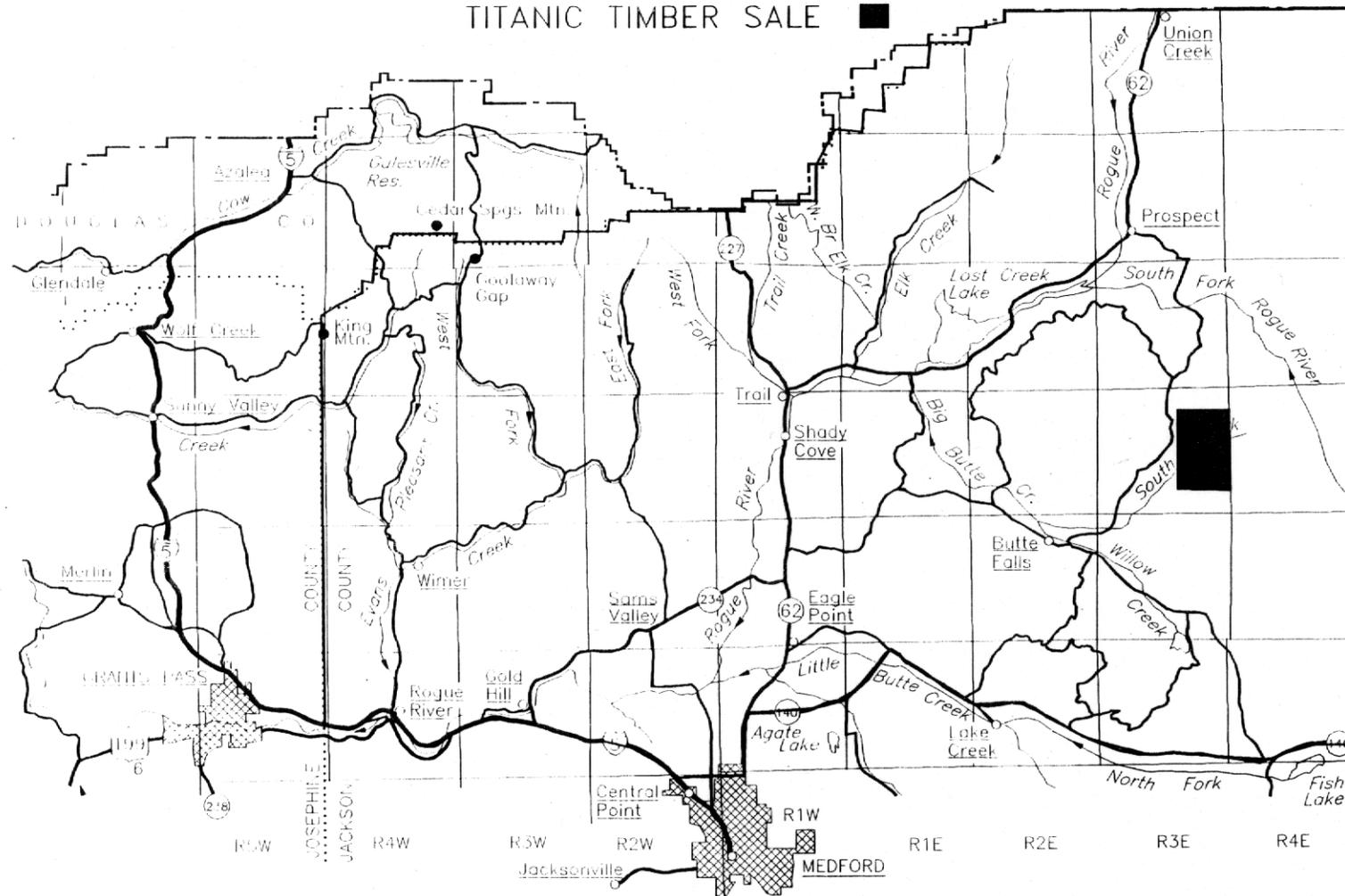
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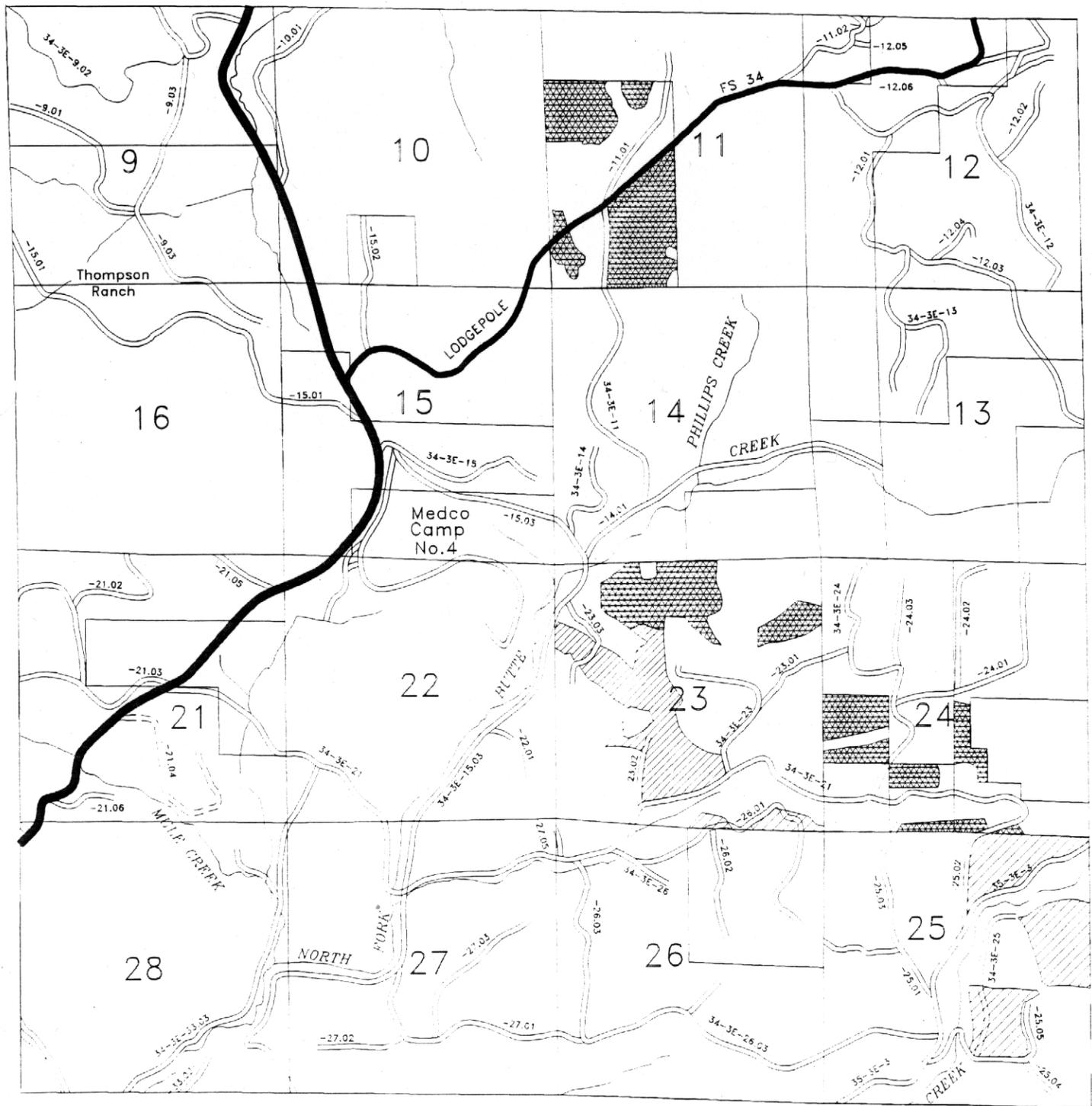
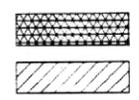
# BUREAU OF LAND MANAGEMENT Butte Falls Resource Area General Location Map TITANIC TIMBER SALE



# TITANIC TIMBER SALE ALTERNATIVE 2

T.34S., R.3E., Sec. 11, 23, 24, 25

Commercial Thinning  
Shelterwood Retention



# Riparian Reserve

## And

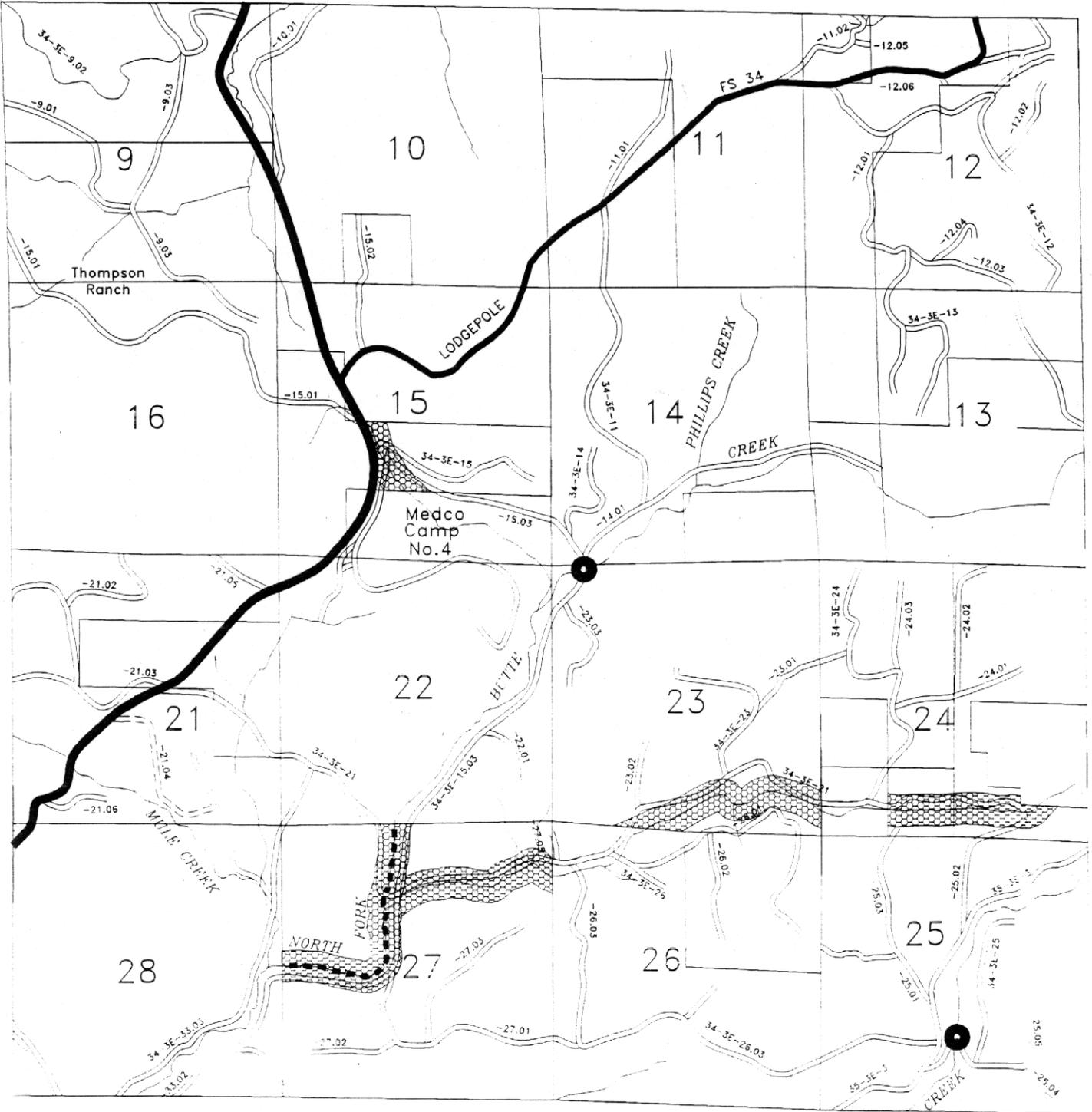
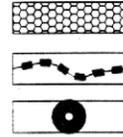
# Aquatic Habitat Restoration

T.34S.,R.3E.,Sec. 15,23,24,25,27

Riparian Reserve Restoration

Instream Log Placement

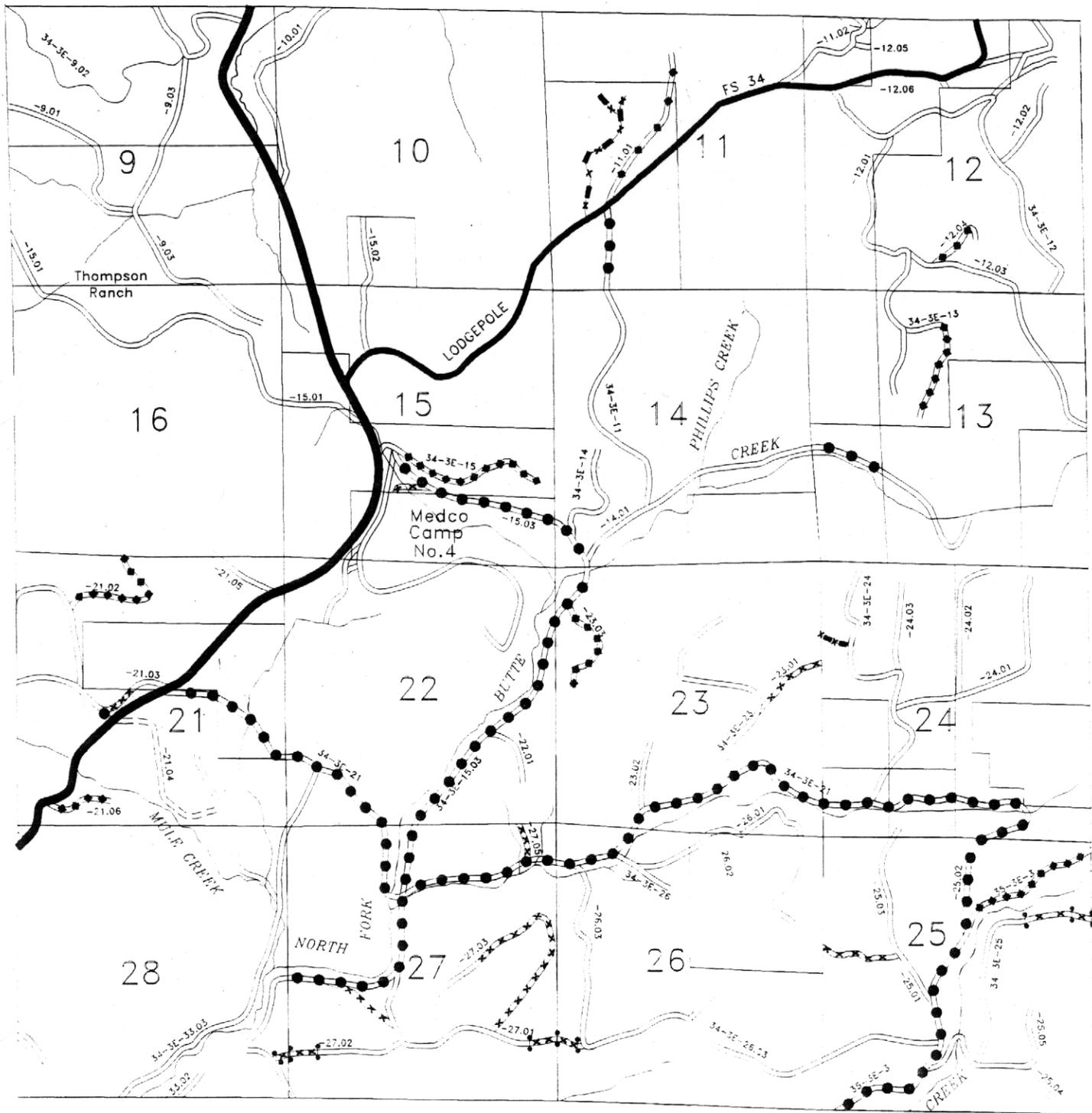
Culvert Replacement



# TITANIC T.S. ROADS

T.34S.,R.3E.,Sec. 15,23,24,25,27

- Decommission
- Full Decommission
- Improvement
- Proposed Spur Road
- Barricade





**Environmental Assessment  
for the  
Titanic Timber Sale  
&  
Landscape Restoration Projects**

**INTRODUCTION**

The Butte Falls Resource Area (BUTTE FALLS RESOURCE AREA) has identified areas in the Central Big Butte Creek and, a portion of the Lost Creek watersheds for timber harvest, Riparian Reserve restoration, instream log placement, culvert replacement and road maintenance work. 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. All projects are located on public lands administered by the BLM. (See map 1 for project location.)

**I. PURPOSE OF AND NEED FOR ACTION**

Action is needed to implement the goals, objectives and desired future condition on Matrix lands (Northern General Forest Management Area) and Riparian Reserves as described in the Record of Decision for the Northwest Forest Plan, the Medford District's Resource Management Plan and the Watershed Analyses for Central Big Butte Creek and Lost Creek , (see Table 1).

**Dense Forest Stands and Declining Stand Vigor**

Many timber stands in the watersheds are in need of treatment to improve vigor and growth. Conditions are variable; some stands have more trees than the site can sustain, while other stands have numerous trees that are declining and at higher risk of mortality due to drought, insects or disease. Fire suppression has allowed a shift in species composition towards shade tolerant white fir and has created conditions which are more susceptible to insect infestations, diseases, and wildfire.

Combinations of the following silvicultural methods are being proposed:

1. Commercial thinning; thinning would increase spacing between trees, creating a situation similar to the effects of a light underburn that would have killed smaller diameter trees. Removal of smaller and less vigorous trees would reduce competition and provide additional moisture and nutrients for the remaining dominant and co-dominant trees.
2. Individual tree selection; poor vigor trees would be selected for harvest to reduce competition for light, moisture, and nutrients. Canopy openings would be created allowing for the

establishment of small trees as well as providing stand diversity.

3. Shelterwood retention; stand canopies would be opened, allowing for the reestablishment of desired tree species. A minimum of 12-25 trees per acre greater than 20 inches diameter at breast height (dbh) would remain following entry. All trees less than 20 inches dbh would be removed. Canopy closure would be approximately 20-30%. Planting of conifer seedlings would occur following harvest.

4. Modified shelterwood retention; stand canopies would be opened, allowing for the reestablishment of desired tree species. A minimum of 12-25 trees per acre greater than 20 inches dbh would remain following entry. Additionally, all healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods less than 20 inches dbh would be left. Smaller white fir would be left when needed to meet the target canopy closure. Canopy closure would be 30- 40%. Planting of conifer seedlings would occur following harvest.

### **Riparian Reserve Restoration**

Riparian Reserve restoration projects are located in T.34S., R.3E., Sections 15, 23, 24, 25, 26, 27. The current condition of the targeted Riparian Reserves are in various stages of recovery from previous logging activities. The principal disturbances which have impacted Riparian Reserves are timber harvesting, logging equipment operation, high composition of ponderosa pine from reforestation, and cattle grazing. Previous logging operations created landings and skid roads and have left soils in compacted condition resulting in loss of physical structure and low levels of biological productivity. Long-term forest productivity within the Riparian Reserve would be improved by management actions which would till compacted, nonproductive soils, and increase conifer stocking levels in understocked areas, and reduce the level of competition from brush and hardwood species.

Approximately 15 acres of compacted ground would be tilled and reforested with a mix of conifers. Approximately 15 acres of Riparian Reserve would be targeted to increase conifer stocking levels. Selectively release conifers from competition and reduce the amount of ponderosa pine abundance on conifer plantations.

### **Aquatic Habitat Restoration**

#### Instream Projects

*Large Woody Debris Placement (Tree Lining)* - The objective of large woody debris placement is to restore fish habitat complexity and provide improved spawning and rearing opportunities for native salmonid species in the North Fork (N.F.) of Big Butte Creek. Actions to complete this would include pulling over a total of 15-25 whole trees 21"- 30" dbh at 3-5 locations over a 3/4 mile stream. Material would be arranged in a pattern that mimics natural large woody debris accumulations. Trees for placement would come from the adjacent riparian reserve. Tree

placement would be completed with a small yarder. Large woody debris placement would occur on the N.F. of Big Butte Creek in T.34S., R.3E., Section 27 at 3-5 sites over approximately 1.0 mile.

*Culvert Replacement* - The objective of culvert replacement is to restore fish habitat connectivity. Actions to complete this would include removing existing culverts and replacing them with bottomless arches or similar structures that provide a natural stream bottom and do not create jump pools below the structures. This action would occur where the 35-3E-3 road crosses Titanic Creek in T.34S., R.3E., Section 25 and where the 34-3E-15.03 road crosses the N.F. of Big Butte Creek in T.34S., R.3E., Section 23.

### Road Related Projects

*Road Improvement* - The objective of road improvement is to upgrade existing roads to reduce erosion and sediment deposits into streams. Actions would include improving cross drain spacing, increasing culvert size, rock inadequately surfaced roads, and stabilize cutbanks and fillslopes by establishing vegetative cover. This action would occur on approximately 7.34 miles of road.

*Road Decommissioning* - The objective of decommissioning is to close the road to vehicles, reduce potential erosion, and minimize maintenance needs. The road would be left in an erosion resistant condition by removing cross drain culverts, constructing waterbars and/or removing fill crossings in stream channels and potentially unstable fill areas. Exposed soil would be contoured and revegetated to reduce sedimentation. This action would occur on approximately 4.41 miles of road.

*Road Full Decommissioning* - The objective of full decommissioning is to reduce road densities and reduce channelized runoff by identifying roads not needed for access in the foreseeable future. Full decommissioning would leave the road prism in place but would make the road self maintaining by removing drainage structures, ripping, waterbarring and seeding to grass or establishing other native vegetation. This action would not preclude future use. This action would occur on approximately 3.02 miles of road.

### **Long term soil productivity**

The long-term capability of the soil resource to provide water, air and nutrients to plants is adversely impacted by soil compaction. Soil compaction from the use of heavy ground-based equipment can severely restrict tree growth in forest stands (Froehlich, 1979 and Wert and Thomas, 1981).

The most efficient method of ameliorating soil compaction is by soil tillage to reduce soil densities

and improve aeration, water infiltration, and root growth.

Due to a high amount of existing soil compaction in this watershed (see Central Big Butte Watershed Analysis) several harvest units have been identified for soil tillage operations including some roads for full decommissioning. It is expected that continuing this practice where it is practical would reduce this overall impact to a minimal level and improve the long-term soil productivity within this watershed.

**Table 1. Project objectives**

- Improve forest ecosystem health, diversity, and resiliency (Central Big Butte Creek Watershed Analysis , pp 56.)
- Manage Riparian Reserves to accelerate the rate of forest stand development to achieve late successional characteristics and meet ACS objectives. (SEIS/ROD pp B11-B17)
- Provide a sustainable supply of timber. (Medford District Resource Management Plan, pp 72 )
- Reduce the risk of road generated sediment. (Central Big Butte Creek Watershed Analysis, pp 51)
- Minimize adverse impacts to soils. Maintain or improve long-term soil productivity. (Medford District Resource Management Plan, pp 44)
- Improve/increase fish habitat in creeks. (Central Big Butte Watershed Analysis, pp 51)

#### **A. Conformance With Existing Land Use Plans**

The proposed timber harvest would be in conformance with the BLM land use plans for the subject areas. The proposed harvest is consistent with management objectives and silvicultural systems for the public lands identified in the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (SEIS), approved April 13, 1994, and the Record of Decision and Resource Management Plan for the Medford District (RMP), approved June 1995.

All of the acreage (509 acres) proposed for harvest has been identified as Matrix lands. As defined in the SEIS (page C-39) and the RMP (pages 38-40), the Matrix consists of those federal

lands outside of the six categories of designated reserve areas in which most timber harvest would be conducted according to standards and guidelines. The Environmental Impact Statements (EISs) prepared in conjunction with the SEIS and the RMP included analysis of this land use allocation. Unless site-specific inventory or analysis determines timber harvesting is not suitable based on the existence of resource values (e.g., cultural resources, habitat for threatened and endangered species), this document would not readdress the suitability of Matrix lands for timber harvesting, but rather the appropriate intensity and method of harvesting and conformance of the proposed harvesting within the standards and guidelines.

Approximately, 30 acres are proposed for restoration within identified Riparian Reserves. The SEIS (pages C-31 and C-32) and the RMP page 27) provide for the application of silvicultural practices in Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy and Riparian Reserve objectives. The EISs prepared in conjunction with the SEIS and the RMP included analyses of such practices.

### **B. 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. Further, the EA is being used to arrive at final project design to meet a variety of resource issues.

Finally, the EA is also being used to provide the decision maker, the BUTTE FALLS RESOURCE AREA manager, the most current information relating to these projects upon which to base the decision.

### **C. 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 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 the BLM should harvest trees and implement other landscape treatments in the Central Big Butte Creek watershed, and which areas would be treated.

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 and other landscape treatments could occur.

#### **D. Summary of Scoping Activities**

Scoping letters were sent to adjacent landowners and to interested publics. The letter requested comments concerning issues that would be addressed in the Environmental Assessment. Responses are on file in the Butte Falls Resource Area, Medford BLM.

#### **E. 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--locations would be protected. (Appendix A)
- b) Special Status Plant-- surveys have been completed on all sites and none were discovered (Appendix B)
- c) T&E Wildlife/Sensitive species--spotted owl activity centers would not be entered. Appropriate seasonal restriction would be implemented. Great gray owl surveys would be completed by June 30, 1998. (Appendix C)
- d) Visual Resources Management (VRM)--meets RMP VRM standards (Appendix A)
- e) Mining--no active mining claims in the area

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

The issues identified through the initial scoping effort and through the interdisciplinary team process are listed in Table 2. Indicators or measures are suggested that may be used to compare how the alternatives address the issues. Chapter II contains a comparison summary of the alternatives and their response to the issues.

**Table 2. ISSUES TO BE ANALYZED IN DETAIL**

**Issue 1: Dense forest stands and declining stand vigor**

̄ The stands proposed for thinning and individual tree selection have more trees than the site can sustain. High stand densities result in declining tree vigor and growth, mortality of smaller trees and an increased susceptibility to insect attack, disease infection, and fire intensity. Removal of smaller trees and declining larger trees would reduce competition and provide additional site resources (nutrients, water, sunlight) for the remaining trees. The stands proposed for shelterwood retention are deteriorating and shifting to stands regenerating with white fir. Harvesting would maintain overstory shelter for the establishment of desired conifer species (Douglas-fir, ponderosa pine and incense cedar).

*Indicators for measuring this issue are:*

- Acres receiving silvicultural treatment
- Change in the number/density of trees per acre
- Change in growth of timber stands after treatment

**Issue 2: Riparian Reserve Restoration**

̄ Riparian Reserves have been impacted from previous harvest operations. Soils remain compacted and limit biological productivity on the site. Conifers are lacking in areas, growth is slowed from brush competition and the ponderosa pine component is higher than normally found in the area.

*Indicators for measuring this issue are:*

- Acres of vegetation treatment
- Acres of soil tillage

**Issue 3: Long-term soil productivity.**

̄ Minimize adverse impacts of compacted soils. Maintain or improve soil productivity

*Indicators for measuring this issue are:*

- Change in the amount of compacted acres in the project area

**Issue 4: Fish/Aquatic Habitat.**

̄ Aquatic habitat conditions in the North Fork of Big Butte Creek are generally of low to moderate quality. Major habitat features documented as impaired are pool quantity and quality, spawning gravel quantity and quality, large wood abundance, and riparian condition. Overall, this would be expected to result in low freshwater survival of salmonid species. Instream habitat and riparian restoration is likely to improve this current condition. Additionally, the lack of regular road maintenance has created conditions where fine sediment from roads has a higher potential of being delivered to streams from road surface erosion and road failure. This could potentially increase levels of fine sediment over current conditions.

*Indicators for measuring this are:*

- Anticipated degree of change in current aquatic habitat conditions.
- Anticipated degree of change in current freshwater survival rates of salmonid species.
- Miles of road maintenance, road improvement and decommissioning.
- Number of stream crossings improved or eliminated.
- Anticipated degree of change in fine sediment levels from current conditions.

## **II. Alternatives Including the Proposed Action**

### **A. Introduction**

The Butte Falls Resource Area has developed two action alternatives to achieve the project objectives (refer to pages 49 to 56 ) in the Central Big Butte Creek watershed. After receiving comments from the public through the scoping process, the alternatives were developed by a team of resource specialists. The Central Big Butte Creek Watershed Analysis provided information that was used in the analysis.

This chapter summarizes the consequences of the alternatives. The selected alternatives are described by the issue and how the alternative would affect the key issue.

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 affects the major issues listed in Chapter I.

### **B. Alternatives Considered But Eliminated**

The following alternatives were eliminated due to the findings of the Central Big Butte Watershed Analysis and site specific analysis.

1. ALTERNATIVE A-1: 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**

<b>Action</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 ROD Standards and Guidelines for Matrix Lands and Riparian Reserves</b>	<b>Alternative 3 Modified Treatment of the ROD Standards and Guidelines for Matrix Lands and Riparian Reserves</b>
<b>Timber Harvest:</b> Total area (Matrix) treated: Estimated volume Logging methods: * tractor Silvicultural Method: * commercial thin * individual tree mark * shelterwood retention * modified shelterwood retention Slash Treatment *Excavator Pile *Handpile *Lop and Scatter	0 acres 0 mbf 0 acres 0 acres 0 acres 0 acres 0 acres 0 acres 0 acres 0 acres 0 acres 0 acres	509 acres 9 MMBF 509 acres 307 acres 0 acres 202 acres 0 acres 202 acres 78 acres 229 acres	509 acres 6 MMBF 509 acres 307 acres 118 acres 0 acres 97 acres 97 acres 78 acres 334 acres
<b>Riparian Reserve Restoration:</b> Soil Tilled: Planted and Released	0 acres 0 acres	15 acres 30 acres	15 acres 30 acres
<b>Long Term Soil Productivity</b> Acres tilled	0 acres	35 acres	20 acres
<b>Fish/Aquatic Habitat:</b> Number of sites for instream log placement: Number of culverts replaced  Miles of roads improved Miles of roads decommissioned Miles of roads fully decommissioned	0 sites 0 culverts  0 miles 0 miles 0 miles	3-5 sites 2 culverts  7.34 miles 4.41 miles 3.02 miles	3-5 sites 2 culverts  7.34 miles 4.41 miles 3.02 miles

**C. Alternatives Examined in Detail**

## **1. ALTERNATIVE 1--NO ACTION**

Analysis of this alternative provides a baseline against which the effects of the action alternative can be compared. For this EA, the No Action Alternative is defined as no timber harvest or road decommissioning.

Riparian Reserve rehabilitation, instream log placement, culvert replacement, ripping of old landings, road improvement, and decommissioning projects may not occur.

## **2. ALTERNATIVE 2 - ROD STANDARD AND GUIDELINES FOR MATRIX LANDS AND RIPARIAN RESERVES**

The intent of this alternative is to achieve the goals, objectives, and desired future condition for the timber stands as specified in the Northwest Forest Plan and the Medford District Resource Management Plan. This alternative includes the projects described below:

### **a) Timber Harvest** (See Map 2 for project location)

The overall scope of this action alternative covers approximately 509 acres of BLM managed lands designated Matrix (Northern General Forest Management Area). This action consists of two silvicultural methods:

1. Commercial thinning of 307 acres where individual trees of poor vigor are removed from dense stands in order to redistribute growth to vigorous dominant and co-dominant trees. Thinning would occur in stands less than 120 years old.
2. Shelterwood retention harvest of 202 acres, retaining a minimum of 12-25 trees per acre greater than 20 inches dbh. This would occur in stands greater than 120 years of age. All trees less than 20 inches dbh would be removed. Canopy closure would be approximately 20-30%. Planting of conifer seedlings would occur following harvest.

Approximately three quarters of a mile of new spur road construction would occur for access to units in sections 11 and 23.

### **b) Riparian Reserve Restoration** (See Map 3 for project location)

The restoration project is to till compacted landings and skid trails, improve conifer stocking in understocked areas, and release conifers from competition which exist along approximately 3 miles of perennial streams.

### **c) Aquatic Habitat Restoration**

Instream Projects (See Map 3 for project location)

*Large woody debris placement* - Same as described in the Purpose and Need Section.

*Culvert Replacement* - Same as described in the Purpose and Need Section.

Road Related Projects (See Map 4 for project location)

*Road improvement* - This action would occur on approximately 7.34 miles of road.

*Road Decommissioning* - This action would occur on approximately 4.41 miles of road.

*Full Road Decommissioning* - This action would occur on approximately 3.02 miles of road.

#### **d) Long Term Soil Productivity**

Approximately 35 acres of soil compaction would be ameliorated by ripping skid roads to a depth of 18 inches utilizing wing-tooth rippers or a subsoiler in green tree retention harvest units to improve long-term soil productivity.

### **3. ALTERNATIVE 3 - MODIFIED TREATMENT OF THE ROD STANDARDS AND GUIDELINES FOR MATRIX LANDS AND RIPARIAN RESERVES**

The intent of this alternative is to achieve the goals, objectives, and desired future condition for the watershed as specified in the Northwest Forest Plan, the Medford District Resource Management Plan and Central Big Butte Watershed Analysis. This alternative reduces the amount of area proposed for shelterwood retention and also modifies the shelterwood retention method. This change will result in more canopy closure and greater structural diversity in treated stands. This alternative includes the projects described below:

#### **a) Timber Harvest** (See Map 5 for project location)

The overall scope of this action alternative covers approximately 509 acres of BLM managed lands designated Matrix. This action consists of three silvicultural systems:

1. Commercial thinning of 307 acres where individual trees of poor vigor are removed from dense stands in order to redistribute growth to vigorous dominant and co-dominant trees.
2. Individual trees selection of 118 acres that remove individual poor vigor trees. Stand densities would be reduced and free up site resources (water and nutrients) for the remaining trees.

3. Modified shelterwood retention harvest of 97 acres that retain a minimum of 12-25 trees per acre that are greater than 20 inches dbh will occur in stands greater than 120 years of age. Additionally, all healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods less than 20 inches dbh would be left. Smaller white fir would be left when needed to meet the target canopy closure. Canopy closure would be 30- 40%. Planting of conifer seedlings would occur following harvest.

Approximately three quarters of a mile of new spur road construction would occur for access to units in sections 11 and 23.

**b) Riparian Reserve Restoration** (See Map 3 for project location)

Same as alternative 2

**c) Aquatic Habitat Restoration**

In Stream Projects

*In-stream log placement* - Same as alternative 2

*Culvert Replacement* - Same as alternative 2

Road Related Projects

Same as alternative 2.

**D. MANAGEMENT ACTIONS COMMON TO ALL ACTION ALTERNATIVES  
(Project Design Features--PDF)**

1. Minimize the total number of skid roads by designating skid roads with 150' spacing. Avoid creating new skid roads and utilize existing roads where feasible in order to minimize ground disturbance, especially in thinning and individual tree mark (ITM) units where no tillage is proposed.
2. All tractor yarding and soil tillage operations would be restricted from October 15 to May 15 or when soil moisture exceeds 25%. Rip all access spur roads to a depth of 18" utilizing subsoiler or winged-toothed ripper.
3. Lop and scatter or pile activity slash. Burn piled slash during the fall and winter to reduce impacts on air quality. Burning would follow the guidelines of the Oregon

#### Smoke Management Plan.

4. Restrict tractor yarding operations to slopes generally less than 35%. In areas where it is necessary to exceed 35%, utilize ridge tops where possible.
5. Waterbar all skid trails during the same operating season.
6. All road renovation, decommissioning, and/or improvement work would be restricted from October 15 to May 15 or when soil moisture exceeds 25%.
7. Block or barricade all unsurfaced or inadequately surfaced roads after use and before beginning of rainy season (generally October 15).
8. Implement seasonal restriction March 1 to September 30 for activities within ¼ mile of known spotted owl sites, unless birds are determined not to be nesting.
9. Implement seasonal restriction April 1 to August 30 for activities within ¼ mile of known goshawk sites, unless birds are determined not to be nesting.
10. Maintain all snags. Snags which need to be felled for safety reasons would be left on site.
11. No timber harvesting would occur within Riparian Reserves.
12. Directionally fall all trees away from cabin site and corral located in section 23.

#### *North Fork Big Butte Creek Stream Restoration*

1. Remove soil and rock from the rootwad of lined trees which are to be yarded greater than 200', by using a high pressure hose and hand tools.
2. Where excessive disturbance occurs from lining trees, mulch exposed soils with chipped slash, straw, or other approved mulching materials to a depth of 3".
3. Place all large wood according to project design and minimize shifting or re-arranging of the large wood pieces.
4. All instream work should be done between June 15 and September 15 of any given year or the specified time period identified by the Oregon Department of Fish and Wildlife.

#### *Culvert Replacement*

1. Minimize or eliminate operation of equipment within the stream channel.
2. Install temporary sediment catchment at approximately 25 foot intervals for a minimum of 100 feet below the culvert replacement site.
3. Sediment collected in the catchment basins 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.
4. All instream work should be done between June 15 and September 15 of any given year or the specified time period identified by the Oregon Department of Fish and Wildlife.

**Table 4. THE ALTERNATIVES AND THE ISSUES - SUMMARY OF THE CONSEQUENCES**

Issues	Alternative 1 No Action	Alternative 2 ROD Standards and Guidelines for Matrix Lands and Riparian Reserves	Alternative 3 Modified Treatment of the ROD Standards and Guidelines for Matrix Lands and Riparian Reserves
<p><b>1) Dense forest stands and declining stand vigor</b>                      * Acres receiving treatment                      Thinning                      Individual Tree Selection                      Shelterwood Retention                      Modified Shelterwood Retention                      * Change in density of trees per acre                      * Change in growth rate of timber stands after treatment.</p>	<p>0 acres                      0 acres                      0 acres                      0 acres                      0 acres                      Relative Density 65 to &gt;100%                      Minimum growth per tree, growth/acre                      offset by mortality</p>	<p>509 acres                      307 acres                      0 acres                      202 acres                      0 acres                      Relative density 35-60%                      Stand vigor &amp; growth maximized</p>	<p>509 acres                      307 acres                      118 acres                      0 acres                      97 acres                      Relative density 35-60%                      Stand vigor &amp; growth maximized</p>
<p><b>2) Riparian Reserve Restoration</b>                      * Conifer Reforestation and Growth treatment Acres                       * Tilling/Reforestation of Compacted Acres</p>	<p>0 acres                      No long-term improvement of Riparian                      Reserve forest stands.                       0 Acres                      No short-term or long-term improvement                      of Riparian Reserve soils or forest stands.</p>	<p>15 acres                      Long-term improvement of Riparian Reserve forest                      stands.                       20 to 40 acres                      Short-term and long-term improvement of Riparian                      Reserve soil properties and forest vegetation.</p>	<p>15 acres                      Long-term improvement of Riparian                      Reserve forest stands.                       20 to 40 acres                      Short-term and long-term                      improvement of Riparian Reserve                      soil properties and forest vegetation.</p>
<p><b>3) Long-term soil productivity</b>                      * Tilling of compacted acres</p>	<p>0 acres                      Amelioration of existing soil compaction                      by soil tillage may not occur. High levels                      of existing long term productivity loss                      would remain unchanged.</p>	<p>35 acres                      Soil tillage would occur to reduce the effects of soil                      compaction and improve long-term soil productivity.</p>	<p>20 acres                      Soil tillage would occur to reduce                      the effects of soil compaction and                      improve long-term soil productivity.</p>

<p><b>4) Fish/Aquatic Habitat</b></p> <ul style="list-style-type: none"> <li>* Anticipated degree of change in fine sediment levels over current conditions.</li> <li>* Anticipated degree of change in aquatic habitat complexity within the proposed project reach.</li> <li>* Anticipated degree of change in freshwater survival rates of juvenile salmonids within the proposed project reach .</li> <li>* Miles Fully Decommissioned</li> <li>* Miles decommissioned</li> <li>* Miles of operational maintenance</li> <li>* Number of large woody debris pieces added</li> <li>* Number of culverts replaced</li> </ul>	<p>No anticipated short-term change, probable long-term, moderate level increase in baseline fine sediment levels.</p> <p>Maintain reduced aquatic habitat complexity.</p> <p>Maintain reduced freshwater survival of juvenile salmonids.</p> <p style="text-align: center;">0 miles 0 miles 0 miles</p> <p style="text-align: center;">0 0</p>	<p>Negligible short-term increase, long-term prevention of increase, and/or low level decrease in fine sediment levels.</p> <p>Moderate improvement in current aquatic habitat complexity.</p> <p>Moderate improvement in current freshwater survival rates of juvenile salmonids.</p> <p style="text-align: center;">3.02 miles 4.41 miles 17.21 miles</p> <p style="text-align: center;">15-25 2</p>	<p>Negligible short-term increase, long-term prevention of increase, and/or low level decrease in fine sediment levels.</p> <p>Moderate improvement in current aquatic habitat complexity.</p> <p>Moderate improvement in current freshwater survival rates of juvenile salmonids.</p> <p style="text-align: center;">3.02 miles 4.41 miles 17.21 miles</p> <p style="text-align: center;">15-25 2</p>
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The numbers shown are estimates based upon field data, growth models, and existing resource knowledge and studies

### **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 interdisciplinary 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, threatened and endangered plants and animals, and the survey and managed species ( See appendix A, B and C).

The following critical elements are not known to be present within the proposed project areas, or would not be affected by any of the alternatives, and would not be discussed further: Areas of Critical Environmental Concern, Cultural Resources, Prime or Unique Farmlands, Flood plains, Native American Religious Concerns, Water Quality, Wetlands, Wild and Scenic Rivers, and Wilderness.

#### **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 Central Big Butte Creek watershed, see the Central Big Butte Creek Watershed Analysis, completed in May 1995, which is available at the Butte Falls Resource Area, Medford District BLM Office.

##### **1. Dense Forest Stands and Declining Stand Vigor**

Excess stocking of coniferous trees, has resulted in declining tree growth rates and increasing levels of tree mortality of all species, particularly ponderosa and sugar pine. Overall species diversity is being reduced. Forest health is declining, as moisture, nutrients and sunlight availability are becoming limited due to increased tree competition. Moisture and nutrients are important 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.

Fire suppression has allowed a shift in species composition towards shade tolerant white fir and has created conditions which are more susceptible to insect infestations, diseases, and wildfire.

The amount and decay classes of coarse woody debris varies from stand to stand. Generally, most coarse woody debris occurs in the older stages of decomposition. This is typical for the stands 80-150 years old. Historically, decay classes 1 and 2 coarse woody debris, were most abundant in unmanaged young and old forest stages.

## **2. Riparian Reserve - Function and Complexity**

The Riparian Reserves within the project area are defined by the topographic, geologic, and soil characteristics of the area. Many Riparian Reserve areas have been impacted by moderate to high levels of disturbance from intensive forest management practices. Smaller sized, undisturbed areas comprised of mid to late successional stands are intermixed between plantations. Small riparian corridors of varying width have been retained along some reaches. Much of the Riparian Reserves are in very early successional stage of conifer plantations and lack structural components normally associated with older forest stands typical of the area.

The condition of most intermittent and perennial streams would be described as functioning at risk as a result of timber harvesting activities, equipment operations, extensive road system along the riparian area, loss of coarse woody debris component, high amount of early successional stage plantations with a high component of planted ponderosa pine, and cattle grazing. Very few reaches are classified as properly functioning.

Most of the forest structural components that older stands provide such as, canopy layers, crown closure, and coarse wood are lacking totally or contributing at a small fraction of the previous level. Coarse woody debris inputs to the aquatic and riparian ecosystems are low. These components are not expected to develop for a long period of time. The plant and animal biological community associated with older forest stands which include micro and macro invertebrates, vascular and nonvascular plants have shifted to a high proportion of early successional species. Overstory conifer vegetation is generally absent and allows direct solar radiation and rapid nighttime re-radiation. Frost pockets dominate the Riparian Reserves and delay growth of young conifers.

Ponderosa pine has been planted as a frost resistant species, but has contributed to the development of a nontypical plant community due to the high acidic levels of pine needles. Other biological indicators such as species complexity and diversity are generally in poor condition. Extensive reforestation of ponderosa pine has resulted in a shift of the vegetative community. Needle cast from an unusually high component of ponderosa pine has created an acidic duff layer and altered the nutrient cycling process. The change in soil pH has resulted in lower diversity of plant species and micro-organisms. From field evaluations, bryophytes, lichens, and fungi appear to be the most affected along with other vascular plants. Early successional grass and forb vegetative component is high for Riparian Reserves and comprised of many nonnative invader species.

Riparian brush and hardwood species such as willow, dogwood, vine maple, and ninebark are

generally dense along the banks and flood plain of Big Butte Creek due to high levels of sunlight and no overstory canopy. Grazing allotments are established within the project area (see appendix J). Cattle graze the Riparian Reserve meadows due to the high palatability of the vegetation especially late in the summer and fall. Cattle impede development of forest succession particularly when they remain in Riparian Reserves late in the season. Numerous openings through the riparian vegetation provide access to the creek and have caused some bank degradation. In as much as there are cattle distributed throughout the area, a small percentage of them will be found in any given area at any one time. During the past 15 to 20 years, there have been small areas considered to have been heavily grazed by cattle.

Numerous log landings and skidtrails were constructed on Riparian Reserve and Matrix lands. Biological productivity on these sites is low to nonexistent. Soils remain in various levels of compaction and lack adequate vegetation. The result is a loss of productivity to the forest community. These sites have restricted root growth, water percolation, and nutrient cycling, as well as reduced micro-organism and fungi communities.

An extensive road system has been created over the years to extract timber products. Many system roads follow creek drainages and have impacted the functioning condition of Riparian Reserves to varying degrees.

### **Riparian Reserve Assessment and Delineation**

Riparian Reserve surveys were completed on all perennial and intermittent streams within the proposed project area. Detailed riparian characteristics were recorded by reach and the headwaters point of all intermittent streams was established. Over 6.5 miles of Riparian Reserves were assessed including fish bearing reaches. Riparian Reserve boundaries were established and delineated on the ground based on one site tree distance (170') for nonfish-bearing streams and two site trees distance for fish-bearing streams.

### **3. Long-term soil productivity**

The dominant soil types in the proposed sale area are the Freezner and Geppert soil series. The Freezner soil is very deep (60+") and has formed in colluvium and residuum from andesitic rocks. This soil is well drained and has a clay loam subsoil. It is typically found on the plateau tops and gently sloping sidehills.

The Geppert soil is moderately deep (20-40") and is skeletal (>35% rock fragments in the subsoil) with an extremely cobbly clay loam subsoil. This soil has formed in colluvium from andesitic rocks and is typically found on the sideslopes of ridges.

The dominant mapping unit (see Jackson County Soil Survey by the Soil Conservation Service) in this watershed is the Freezner-Geppert soil complex which is 60% Freezner soils and 35% Geppert soils with 5% inclusions. These soils are considered to be relatively stable with respect to

surface erosion and landslide potential.

### **Cumulative Effects - Watershed/Soils**

Due to the relative flatness in the topography, a major portion of this watershed has been tractor yarded with conventional logging methods (i.e. multiple entries with no well spaced designated skid trails). This has resulted in an extensive network of skid trails, roads, and landings. This large amount of compacted ground creates the potential for increases in the magnitude and frequency of high flows in the local streams. These flow increases can destabilize stream channels and accelerate sedimentation rates.

Soil compaction (increase in soil bulk density) adversely affects tree growth in forest stands (Froehlich, 1979 and Wert and Thomas, 1981). The amount of loss in site productivity is dependent on the amount of ground disturbance( soil displacement and compaction) from ground based logging machinery. McNabb and Froehlich 1984 concluded that the loss in site productivity is approximately equal to one half of the area where soils become compacted in a unit (e.g., 20% of the acres in a compacted condition equals 10% overall loss in site productivity). Soil tillage with a wing toothed ripper or subsoiler can ameliorate 85-95% of the compaction under proper soil moisture condition, (Froehlich 1985).

### **4. Fisheries/Aquatic Ecosystem**

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

The proposed project is predominantly located in the North Fork and the South Fork of Big Butte Creek watersheds within the Rogue River system. Approximately 53 acres of the proposed project located in T.34S., R.3E., Section 11 occurs within the Beaver Dam Creek watershed of the Rogue River system above Lost Creek Dam.

Major fish-bearing streams within the proposed project area are the North Fork of Big Butte Creek, Camp Creek (tributary to the North Fork of Big Butte Creek), and Titanic Creek (tributary to the South Fork of Big Butte Creek). All streams located within the Beaver Dam Creek portion of the proposed project area are nonfish-bearing intermittent or ephemeral streams.

There are a variety of resident and anadromous fish species found within the North and South Forks of Big Butte Creek. Anadromous fish species which utilize these streams and their tributaries are coho salmon, steelhead trout, and potentially Pacific lamprey. Native resident fish species include cutthroat trout, rainbow trout, and sculpin species. Non-native resident fish species include Eastern brook trout.

Coho salmon are listed as a threatened species under the Endangered Species Act of 1973 as amended (ESA), while steelhead trout are proposed for listing as threatened under the ESA.

Pacific lamprey are a State of Oregon designated sensitive species. Overall, there has been a general decline in coho salmon and steelhead trout numbers in the Rogue River since record keeping began. It is suspected that Pacific lamprey and resident salmonid populations may be declining though this has not been documented (ODFW 1991).

A comprehensive aquatic habitat inventory has been completed for the North Fork of Big Butte Creek. Overall aquatic habitat conditions are currently in fair condition. Major features found to be impaired are pool quantity and quality, spawning gravel quantity and quality, large wood abundance, and riparian condition.

Preliminary aquatic habitat assessments have been completed on Camp Creek, Titanic Creek, and Beaver Dam Creek. On Camp Creek, stream reaches in T.34S., R.3E., Section 27, 23 & 24 were assessed and found to be in fair to good condition. On Titanic Creek, the stream reach located in T.34S., R.3E., Section 25 was assessed and found to be in good to excellent condition. On Beaver Dam Creek, stream reaches in T.34S., R.3E., Section 03 and 09 were assessed and found to be in fair condition.

#### **IV. Environmental Consequences**

##### **A. Introduction**

This chapter is organized by issue to describe the anticipated environmental impacts of the alternatives 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.

##### **B. Effects From Implementing Alternative 1 (No Action)**

###### **1. Dense Forest Stands and Declining Stand Vigor**

###### **a) Direct and Indirect Effects**

Stand densities would remain high, resulting in the continued demand and competition for moisture and nutrients. Current tree densities are resulting in increased competition and declining tree growth. The number of trees per acre is above the biologically sustainable level, resulting in a greater susceptibility to insects, disease, and severe fire behavior.

In the absence of disturbance events such as, fire, density management, or regeneration harvests, the shift in species composition would continue toward more shade tolerant white fir. With high densities and closed canopies the white fir will eventually crowd out the more drought and fire resistant species, such as ponderosa pine, sugar pine, Douglas-fir, and incense cedar. With this species shift, tree species diversity will decline and an important natural defense against prolonged drought, potential climatic change, and fire could be lost.

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

In the short-term (5-10 years) the no action alternative would result in the continuation of the existing forest conditions. Eventually, due to dense and deteriorating stand conditions, the probability of insect infestations and disease infections would be greater which would likely result in a decrease in long-term production.

**c) Irreversible/Irretrievable Commitments of Resources**

None identified.

**d) Cumulative Effects**

An 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.

**2. Riparian Reserve Restoration**

**a) Direct and Indirect Effects**

Riparian Reserve restoration projects located in T.34S., R.3E., Sections 15, 23, 24, 25, 26, 27 would not be implemented. The current trend of the targeted Riparian Reserves would remain in a low level of recovery from previous activities. The principal disturbances which have impacted Riparian Reserves are timber harvesting, compaction of soils from logging equipment operation, high composition of ponderosa pine for reforestation, and cattle grazing.

Compacted, nonproductive forest soils would not be tilled and reforested with conifer species. Soil properties such as soil texture, water percolation, nutrient cycling, and root penetration would not be reinstated. Low to nonproductive forest soils would be expected to persist for decades.

Reforestation and vegetative management activities that increase conifer stocking in understocked areas and improve the rate of growth of small conifers struggling with brush competition would not be implemented. Understocked areas would not be planted with conifer species. Current conifer species composition does not resemble the composition of the previous forest stand and would not change.

Watershed goals of reducing the amount of roads and compacted areas within the Riparian

Reserve would not occur. The action would not establish a positive management trend within the Riparian Reserve area to improve riparian functioning condition.

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

Tilling compacted soil would not occur, and long-term productivity of selected areas would not be improved. Reforestation of understocked areas and silviculture management practices which enhance the growth conifers would not occur. Compacted soils would continue to provide very low biological productivity.

Increased conifer stocking on understocked Riparian Reserves would not occur and the rate of growth of conifer species within Riparian Reserves would remain on the same trend. The desired structural characteristics of the forest stand would be delayed in the long-term. No change to the current species composition, which is very high in ponderosa pine would occur.

**c) Irreversible/Irretrievable Commitments of Resources**

None identified.

**d) Cumulative Effects**

No positive cumulative effect would occur. Existing trends would continue in Riparian Reserves. No improvement above the current natural trend to degraded soils and low productive sites would occur. Conifer stocking and growth trends would remain at a lower trajectory. The functioning condition of Riparian Reserves would not improve above the current trend.

**3. Long term soil productivity**

**a) Direct and Indirect Effects**

Soil tillage of areas with compacted soil would not occur. Adverse effects on long-term soil productivity would remain at the current level. The assumption is that no projects proposed in this E.A. would occur.

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

See Direct and Indirect Effects

**c) Irreversible or Irretrievable Commitments of Resources**

None

**d) Cumulative Effects**

Current condition would continue and there would be no change in long-term soil productivity.

#### **4. Fisheries/Aquatic Resources**

##### **a) Direct and Indirect Effects**

Indirectly, the vegetation within the Riparian Reserve would 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 to mid-successional condition it would be expected that late-successional characteristics would develop at a substantially slower rate. This would be expected to increase the length of time before the beneficial effects of a late-successional forest condition in these areas would be expressed in fish-bearing stream reaches.

This alternative would also indirectly maintain current aquatic habitat conditions and fish passage barriers. Maintaining this current situation would be expected to continue to result in the indirect negative effects of reduced freshwater survival of salmonids and delayed or obstructed fish migration.

Additionally, this alternative could indirectly contribute to stream sedimentation by delaying or foregoing routine maintenance and renovation of the transportation system. This would be expected to have an indirect negative effect on fisheries and aquatic resources through habitat degradation over the long-term.

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

No measurable change to the current trend in long-term productivity (50-100+ years) of fisheries and aquatic resources is anticipated by foregoing vegetation management and tillage operations within selected Riparian Reserve stands. However, foregoing management would continue to maintain negative stand and soil conditions and delay the time frame for contributions of large wood to the aquatic ecosystem. Maintaining the current Riparian Reserve vegetation throughout the remainder of the proposed project area would continue to provide the long-term necessary elements for healthy aquatic ecosystems and would be anticipated to maintain or increase the current productivity of fisheries and aquatic resources over the long-term.

By delaying or foregoing road decommissioning, road renovation, and road maintenance in the short-term (1-5 years), a higher risk of stream sedimentation from roads is likely in the long-term (>5 years). Current levels of stream sedimentation would be maintained or could increase. This would be expected to negatively affect aquatic habitat and, subsequently, the productivity of fisheries and aquatic resources in the watershed over the long-term.

Foregoing large woody debris placement would be expected to maintain negative aquatic habitat conditions in the proposed project area over the short-term (<50 years). This would be expected

to maintain current levels of fish production over the short-term until adequate recruitment of large wood is achieved from recovered Riparian Reserves over the long-term (50-100+ years).

Foregoing culvert replacements to accommodate fish passage would be expected to maintain negative fish passage conditions in the proposed project area until the next replacement rotation (approximately 30 years). This would be expected to maintain current levels of fish production over the short-term (<50 years).

**c) Irreversible or Irrecoverable Commitments of Resources**

None anticipated.

**d) Cumulative Effects**

A positive cumulative effect should result due to increased sizes and amounts of large wood contributed to the aquatic ecosystem as the Riparian Reserve vegetation develops and delivers material to the streams over the long-term. However, the early and mid-successional condition within portions of the Riparian Reserve would be maintained in the short-term and delay the time frame for these stands to make a long-term positive contribution to the aquatic ecosystem.

Due to the lack of road maintenance or renovation, current levels of stream sedimentation could be increased. Some roads may stabilize over time as they revegetate. 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. The lack of preventative road maintenance and renovation would be expected to have a negative cumulative effect on fisheries and aquatic resources.

Foregoing large woody debris placement and culvert replacements would continue to maintain current aquatic habitat conditions. This would be expected to maintain the current negative cumulative effect of degraded aquatic habitat and numerous fish passage barriers.

**e) Determination of Effects on Northern California/ Southern Oregon Coho Salmon (Transboundary Coho Salmon) and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative:**

*This Effects Determination applies to all portions of the Titanic Timber Sale except OI Units 002, 005, 006 and 007 in T.34S., R.3E., Section 11.*

***May Affect, Likely to Adversely Affect***

Due to the current degraded condition of aquatic habitat within the North and South Forks of Big Butte Creek, and the continued maintenance or further degradation of this condition from potential sediment delivery to streams from the transportation system, the No Action Alternative

is likely to result in more than a negligible chance of “take<sup>1</sup>” of these species. As a result, the No Action Alternative is considered “likely to adversely affect” Transboundary Coho Salmon (listed threatened) and KMP Steelhead Trout (proposed threatened). Formal consultation with the National Marine Fisheries Service (NMFS) was initiated in January 1998 for Transboundary Coho Salmon, while formal conferencing was initiated in January 1998 for KMP Steelhead Trout.

*This Effects Determination applies **only** to OI Units 002, 005, 006 and 007 in T.34S., R..3E., Section 11 of the Titanic Timber Sale.*

### ***May Affect, Not Likely to Adversely Affect***

This portion of the proposed timber sale is located above Lost Creek Dam on the Rogue River and no longer supports Transboundary Coho Salmon or KMP Steelhead Trout. The No Action Alternative is not likely to result in more than a negligible chance of “take<sup>1</sup>” of Transboundary Coho Salmon or KMP Steelhead Trout.

## **C. Effects From Implementing Action Alternative 2**

### **1. Dense Forest Stands and Declining Stand Vigor**

#### **a) Direct and Indirect Effects**

Implementation would reduce stand densities in stands less than 120 years old and create conditions for the reestablishment of conifer species in stands greater than 120 years old.

In stands (<120 years) identified for thinning, smaller and less vigorous trees would be harvested, accelerating the development of larger diameter and taller trees so that the characteristics of a mature stand are developed faster. Maintaining 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 a lumber commodity.

In stands (>120 years) identified for shelterwood retention harvests, a minimum of 12-25 of the most vigorous trees greater than 20 inches dbh would be left. Canopy closure would be reduced to 20-30%. Herbaceous, shrub, and tree species composition would be shifted toward shade intolerant species, reversing the current trend towards shade tolerant species.

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<sup>1</sup>“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).

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

In the short-term, the vigor of thinned stands would be increased. The long-term productivity would be expected to increase due to increased stand vigor and species diversity being maintained or increased. In the shelterwood retention stands overstory trees would provide for frost protection for the establishment and growth of planted seedlings. The species mix and density levels would trend towards the plant communities and stocking levels that historically would have been present.

**c) Irreversible/Irretrievable Commitments of Resources**

None anticipated.

**d) Cumulative Effects**

Treatment under this alternative would result in stands which are more vigorous, healthy, and resilient to environmental changes. Stand susceptibility to insect attack, disease infection and fire would be expected to be reduced. Species composition would shift towards drought and fire tolerant species.

**2. Riparian Reserve function and complexity**

**a) Direct and Indirect Effects**

Compacted, nonproductive forest soils would be tilled and reforested with conifer species. Soil properties such as soil texture, water percolation, nutrient cycling, and root penetration would be reinstated. Soil productivity would be improved and support the biological communities previously occurring on the site. Some sedimentation into streams may occur immediately after tilling until the site stabilizes.

Multiple reforestation and vegetative management activities are proposed to increase conifer stocking in understocked areas and improve the rate of growth of small conifers struggling with brush competition. Understocked areas would be planted with conifer species and protected from browse and grass competition. Planting sites within frost pockets would be selected to ensure protection and survival of conifer seedlings. Species selection would be targeted to resemble the composition of the previous forest stand.

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

The implementation of this project in the short-term is designed to reestablish original Riparian Reserve baseline conditions and achieve long-term riparian and aquatic ecosystem goals. Long-term productivity of selected areas would be improved by tilling compacted soils which are currently in a nonproductive or low productive state. Reforestation of tilled areas and

understocked areas and silviculture management practices which enhance the growth conifers are anticipated to improve long-term productivity of the site. Tilled soils would provide improved soil structural characteristics such as, percolation, water drainage and, nutrient cycling. Increased biological productivity would occur as newly available rooting medium which provides nutrients, water, and support for the forest community as well as habitat for micro-organism communities in the soil.

Increased conifer stocking on understocked Riparian Reserves would occur and improve the level of occupancy and the rate of growth of conifer species within Riparian Reserves. Douglas-fir, white fir and incense cedar would be favored. The desired Riparian Reserve forest stand structural characteristics would be improved in the long-term.

**c) Irreversible/Irretrievable Commitments of Resources**

None identified.

**d) Cumulative Effects**

The cumulative effects of Riparian Reserve restoration projects within the watershed would be expected to improve the functioning condition of Riparian Reserve areas in the long-term. Improvement above the current trend of degraded soils and biologically low productive sites would occur. Conifer stocking and growth trends would be expected to improve above the current level. The riparian and aquatic ecosystem would be expected to benefit in the long term. It is not anticipated that any adverse impacts, such as a possible short-term increase in sedimentation from tilling compacted soil, would have any measurable cumulative effects to the aquatic system.

**3. Long term soil productivity**

**a) Direct and Indirect Effects**

Approximately 35 acres of compacted soil would be ameliorated through tillage operations assuming that all proposed tillage in this E.A. occurs. This would occur in the proposed modified shelterwood retention units and other soil tillage projects. These units would improve in long-term soil productivity from their current condition.

Skid roads in thinning units and ITM units would not be tilled. Assuming no new skid roads would be created during logging operations, there would be no change in long-term soil productivity in these units. All newly created soil compaction where not adequately ameliorated would contribute to a decrease in long-term soil productivity.

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

Same as direct and indirect effects for this alternative

**c) Irreversible/Irretrievable Commitments of Resources**

In terms of long-term soil productivity there would be no anticipated irreversible or irretrievable commitment of the soil resource.

**d) Cumulative Effects**

The current condition of long-term soil productivity in this watershed is considered to be at a high adverse level from soil compaction as a result of past timber harvest activities. All newly created soil compaction that is not adequately ameliorated would contribute to this adverse effect. It is anticipated that there would be a decrease of approximately 35 acres of compacted soil, if all proposals for tillage are implemented under this alternative. Long-term soil productivity is expected to improve where tillage is implemented.

**4. Fish/Aquatic Resources**

**a) Direct and Indirect Effects**

No direct effects to fish or aquatic resources are anticipated from the proposed timber harvest. This alternative would allow the vegetation within the Riparian Reserve to continue to develop, and develop at an accelerated rate, to provide the long-term elements necessary for healthy aquatic ecosystems.

The proposed road decommissioning would be expected to restore more natural hydrologic flow paths and reduce the risk of erosion and subsequent stream sedimentation from these roads. This would be expected to indirectly benefit fish within the watershed by reducing the risk of sedimentation to streams from these roads. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year).

The proposed culvert replacement could have direct negative effects from the operation of heavy equipment in extremely close proximity or within the stream channel, and from falling debris. This could potentially injure or crush individual fish. Conversely, implementation of the proposed action would allow fish unobstructed passage to stream habitat which was previously inaccessible or partially inaccessible. This could directly benefit fishery resources by increasing potential fish production within the watershed. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year).

The proposed large woody debris placement could have direct negative effects from trees falling into the stream. This could potentially injure or crush individual fish. Conversely, implementation

of the proposed action would be expected to improve aquatic habitat quality and quantity. This could directly benefit fishery resources by improving freshwater survival and increasing potential fish production within the watershed. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 week).

Implementation of the appropriate PDFs is expected to minimize the anticipated indirect effects of the proposed actions to negligible levels.

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

No effects to the long-term productivity of fisheries and aquatic resources are anticipated from the proposed timber harvest. Maintaining the current Riparian Reserve design and allowing this vegetation to develop throughout the proposed project area, would continue to provide the long-term necessary elements for healthy aquatic ecosystems and would be anticipated to maintain or increase the current productivity of fisheries and aquatic resources over the long-term. Implementation of proposed vegetation rehabilitation and tillage operations within the Riparian Reserve could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). However, the likelihood of sediment generation from these actions is extremely low due to low gradient slopes in these areas. Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term, by accelerating development of a late-successional forest capable of delivering large wood to the aquatic ecosystem.

Short-term (<1 year) increases to baseline stream sediment levels are anticipated to occur from road maintenance, renovation, and decommissioning under the proposed timber sale. However, it is anticipated that an overall reduction in the risk to baseline stream sediment level increases would occur due to maintenance, renovation, and decommissioning of the road system. Subsequently, it is anticipated the current productivity of fisheries and aquatic resources in the watershed would be maintained or increased over the long-term.

Implementation of the proposed culvert replacement to accommodate fish passage could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term, by improving access to upstream spawning and rearing areas.

Implementation of the proposed aquatic habitat restoration project could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 week). Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term, by improving aquatic habitat conditions and improving freshwater survival of salmonid species.

Implementation of the appropriate PDFs is expected to minimize short-term increases to baseline stream sediment levels to negligible amounts.

**c) Irreversible or Irrecoverable Commitments of Resources**

None anticipated.

**d) Cumulative Effects**

No negative cumulative effects to fish and aquatic resources are anticipated from the proposed timber harvest. Additionally, this alternative would allow the vegetation within the Riparian Reserve to continue to develop, and develop at an accelerated rate, as a result of active management within the Riparian Reserve. This is anticipated to result in 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.

The proposed road related work could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment from road maintenance, renovation, and decommissioning. Conversely, a long-term, positive, cumulative effect to fish and aquatic resources is anticipated from reducing potential road generated fine sediment by completing road maintenance, renovation, and decommissioning.

Implementation of the proposed culvert replacement to accommodate fish passage could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment. Overall, implementation of the proposed actions would be expected to improve current conditions by reducing the number of fish passage barriers within the watershed.

Implementation of the proposed aquatic habitat restoration project could have a negative effect on fisheries and aquatic resources in the short-term by increasing stream turbidity from trees falling into the stream. Any increases in stream turbidity is expected to be at an extremely low level at very localized locations. Overall, implementation of the proposed actions would be expected to have a positive cumulative effect to fisheries and aquatic resources by improving aquatic habitat conditions and improving freshwater survival of salmonid species.

Implementation of the appropriate PDFs is expected to reduce the anticipated negative, cumulative effects of the proposed actions to negligible levels.

**e) Determination of Effects on Northern California/ Southern Oregon Coho Salmon (Transboundary Coho Salmon) and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Actions:**

*This Effects Determination applies to all portions of the Titanic Timber Sale except OI Units 002, 005, 006 and 007 in T.34S., R..3E., Section 11.*

### ***May Affect, Likely to Adversely Affect***

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. As a result, the proposed alternative is considered “likely to adversely affect” Northern California/Southern Oregon Coho Salmon (listed threatened) and Klamath Mountains Province Steelhead Trout (proposed threatened). It is anticipated the level of take should be extremely low, with the proposed project ultimately providing some level of long-term benefits to these species. Formal consultation with the NMFS was initiated on January 1998 for Transboundary Coho Salmon, while formal conferencing was initiated on January 1998 for KMP Steelhead Trout.

*This Effects Determination applies **only** to OI Units 002, 005, 006 and 007 in T.34S., R..3E., Section 11 of the Titanic Timber Sale.*

### ***May Affect, Not Likely to Adversely Affect***

This portion of the proposed timber sale is located above Lost Creek Dam on the Rogue River and no longer supports Transboundary Coho Salmon or KMP Steelhead Trout. The No Action Alternative is not likely to result in more than a negligible chance of “take” of Transboundary Coho Salmon or KMP Steelhead Trout.

## **D. Effects of Implementing Action Alternative 3**

### **1. Dense Forest Stands and Declining Stand Vigor**

#### **a) Direct and Indirect Effects**

Effects would be the same as Alternative 2 , except for the following: The stands identified for shelterwood retention would be harvested using either individual tree selection or a modified form of shelterwood retention. Both of which would provide for greater canopy closure and structural diversity. Within individual tree selection stands, vertical diversity will remain, as all size and age classes will be represented. Stand structure would generally be uneven-aged. Canopy closure would be equal to or greater than 50%. Within modified shelterwood retention stands, smaller (<20" dbh) vigorous seral species would remain in the understory, providing for additional canopy closure (30-40%) and greater vertical diversity.

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

Same as Alternative 2

**c) Irreversible/Irretrievable Commitments of Resources**

None anticipated.

**d) Cumulative Effects**

Same as Alternative 2.

**2. Riparian Reserve function and complexity**

**a) Direct and Indirect Effects**

Same as alternative 2.

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

Same as Alternative 2

**c) Irreversible/Irretrievable Commitments of Resources**

None anticipated.

**d) Cumulative Effects**

Same as Alternative 2.

**3. Long term soil productivity**

**a) Direct and Indirect Effects**

Same as Alternative 2 except only 20 acres would be tilled.

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

Same as Alternative 2

**c) Irreversible/Irretrievable Commitments of Resources**

None anticipated

**d) Cumulative Effects**

Same as Alternative 2 except only 20 acres would be tilled.

**4. Fish /Aquatic Resources**

**a) Direct and Indirect Effects**

Same as Alternative 2

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

Same as Alternative 2

**c) Irreversible or Irrecoverable Commitments of Resources**

Same as Alternative 2.

**d) Cumulative Effects**

Same as Alternative 2

**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 Fisheries Determination of Effects, Alternative 2.

**V. List of Preparers**

<b>NAME</b>	<b>RESPONSIBILITIES</b>
John Osmanski, Forester	Silvicultural Prescription Writer
Jim Harper, Wildlife Biologist	T&E Animals

Jon Raby, Fisheries Biologist	Fisheries/ Aquatic Ecosystems
John Dinwiddie, Fuels Specialist	Fuels/Air Quality
Ron Miyamoto, Engineer	Engineering, Road design
Ken Van Etten, Soil Scientist/Hydrologist	Soils, Water, Wetlands, Floodplains
Doug Kendig, Riparian Reserve Coordinator	Riparian/T&E Plants
Tim Haller, Recreation Planner	Recreation/Cultural and Historical/VRM
Teresa Coffee, Hydrology Technician	Layout
Aaron Thayer, Forester	Layout
John Bergin, Forester	Timber Sale Contract Administration
Jean Williams, Environmental Coordinator	EA Writer

## APPENDIX A

### Affected Environment

#### Recreation

The main recreation activity which occurs within the sale area is hunting. Other less frequent activities include sightseeing, and small forest products collecting. Some camping and off-highway vehicle use occurs but it is limited and usually associated with hunting.

Several dispersed recreation sites occur within the sale area. These dispersed sites are primarily hunting camp locations that are rarely used outside of hunting seasons. The proposed road closures in the sale area will restrict access to some of these dispersed sites. The impacts are expected to be minimal because of the many opportunities that exist to utilize other dispersed sites within the sale area that will not be affected.

A recreational activity increasing in the area is tour route driving. Two tour routes are currently affected by the sale. Currently a few of the roads within the sale area are designated as part of the Butte Falls Discovery Loop Tour. This loop tour is a cooperative venture between BLM, USFS, and the town of Butte Falls, as a means to attract visitors to the Butte Falls area. In addition, the entire length of the Butte Falls to Prospect Highway (Jackson county road 992) is proposed as a BLM Backcountry Byway in the Medford RMP. (Chapter 3-81 Table 3-REC-6).

#### Visual Resources

Jackson county road 992 from the town of Butte Falls to Prospect is designated in the Medford RMP (Chapter 2-41) as Visual Resource Management (VRM) Class II. It states that "management activities may be seen but should not attract the attention of the casual observer". Although this road is within the sale haul routes no units in this sale fall within the viewshed foreground and middleground of this county road. All units within the sale fall into VRM Class IV (Medford RMP (Chapter 2-41)), with few restrictions on visual impacts.

The Butte Falls Discovery Loop Tour is not given any special VRM designation under the Medford District RMP. A sale unit in T.S. 43 S. R. 3 E. Section 11 occurs adjacent to Forest Service Road 34. This road is part of the Discovery Loop Tour and it is recommended to keep negative visual distractions to a minimum. A kiosk has been developed as part of this loop tour just a mile from this proposed unit. This kiosk interprets the rail road logging history in the area and is located in Section 15 T.S. 43 S. R. 3 E., at the junction of County road 992 and F.S. road 34.

#### Project Design Features

## Timber Harvest for Visuals

Units within the timber sale which have the potential to affect the viewshed from F.S. road 34 are located in section 11 T. 34 S. R. 3 E.. Selective harvesting of trees within 200 feet of the road will be allowed as long as the slash is lopped and scattered.

Tractor skid trails within 200 feet of F.S. road 34 will be kept to a minimum and pre-designated. All landings should occur at least 400 feet away from F.S. 34 road, and will be restricted to BLM interior roads.

SHPO Receipt Date

RECEIVED

DEC 24 1997  
STATE PARKS AND  
RECREATION DEPARTMENT

Project: BF 97-35 Lost Creek Inventory

Date: 12/23/97

Resource Area: Beatty Falls

County: Jackson

USGS Quad: McLeod, Cascade Group

Mud Run

BLM District

Prospect South, Whitstone Butte, Big Butte Springs

For further information contact: Kate Wintersop

Phone #: 541-770 2321

\*\*\*\*\*

The criteria of effect listed in 36CFR800.9 (1986) have been applied to the above referenced project on the cultural resources identified in the attached report.

In accordance with 36CFR800.5(b), we have determined that the proposed undertaking will have NO EFFECT. We will retain documentation and proceed with the undertaking unless you object within 15 days of receipt of this notice.

In accordance with 36CFR800.5(d), we have determined that the proposed undertaking will have NO ADVERSE EFFECT. We will retain documentation and proceed with compliance unless you object within 30 days of receipt of this notice (see below):

The project is covered under PMOA: \_\_\_\_\_ with a \_\_\_\_\_ day time frame;

Attached is a research design for DATA RECOVERY option;

Attached are formal determinations of eligibility.

In accordance with 36CFR800.5(e), we have determined that the proposed undertaking will have an ADVERSE EFFECT. We will retain documentation and proceed with compliance unless you object within 30 days.

\*\*\*\*\*

CONCUR  
 DO NOT CONCUR

REMARKS:

DATE: JAN 12 1998

[Signature]  
Signature

**NOTED**  
CH/SEM

## SENSITIVE PLANT SURVEYS FOR TITANIC T.S. E.A

### AFFECTED ENVIRONMENT

#### 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. 33 Special Status Plant Species are known in the Butte Falls R.A. on 213 sites.

Central Big Butte and Lost Creek watersheds have very few rare plant species. Special Status Plant surveys have been conducted on approximately 668 acres in the Central Big Butte and Lost Creek Watershed. Surveys were conducted by random traverses through the proposed project area with emphasis on special habitat such as riparian areas, meadows, rock outcrops as well as forest habitat. A comprehensive list of all vascular plants was created by unit.

No special status plant populations were discovered during the surveys.

### APPENDIX B

#### POTENTIAL SENSITIVE PLANT SPECIES

#### CENTRAL BIG BUTTE AND LOST CREEK WATERSHEDS

List of species that potentially could occur within the project area of Central Big Butte and Lost Creek Watersheds.

SPECIES	CURRENT STATUS
<i>Allotropa virgata</i>	SEIS
<i>Cimicifuga elata</i>	BSO
<i>Cypripedium fasciculatum</i>	BSO, SEIS
<i>Cypripedium montanum</i>	SEIS
<i>Illiamna latibracteata</i>	BAO
<i>Limnanthes floccosa</i> <i>ssp. bellingeriana</i>	BSO
<i>Lithophragma heterophyllum</i>	BTO
<i>Mimulus douglasii</i>	BWO
<i>Nemacladus capillaris</i>	BAO
<i>Perideridia howellii</i>	BWO
<i>Romanzoffia thompsonii</i>	BSO

Scribnaria bolanderii	BWO
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*Allotropia virgata* (Candy Stick) is a saprophyte generally found in mid and later successional stands. The plant is terrestrial and very colorfully striped red and white. Habitat conditions vary from relatively open rock outcrops with shallow soils and moderate organic debris to more closed canopy sites with deeper soils.

*Cimicifuga elata* (Tall Bugbane) is a rare vascular plant which inhabits forested areas. No sites have been found in the Butte Falls R.A, however populations were discovered to the north and south of the area.

*Cypripedium montanum* is a showy flowered orchid dependant upon conditions associated with mid to later successional forest communities. They are terrestrial species adapted to partial to full canopy closure with a moderate accumulation of organic debris are generally necessary. There appears to be a microrrhizza association also.

*Plagiobothrys glyptocarpus* is generally a riparian or seasonally wet area species associated with open areas along the margins of seasonal or perennial wetlands. Many times it is found growing on the edge of basalt dominated stream channels and flowers throughout late spring and early summer as seasonal flows dissipate. The numerous flowers are small, white, but somewhat showy as the raceme uncoils.

*Scribnaria bolanderii* is a rather inconspicuous native grass, generally associated with seasonally wet areas or seeps on rock cliffs. Known locations occur on sandstone and basalt rock outcrops and areas with shallow soils. Bolander's grass has been found at scattered locations from southern California to Washington.

## SENSITIVE PLANT SURVEYS FOR TITANIC T.S. E.A

### AFFECTED ENVIRONMENT

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<i>Illiamna latibracteata</i>	BAO
<i>Limnanthes floccosa</i> <i>ssp. bellingeriana</i>	BSO
<i>Lithophragma heterophyllum</i>	BTO
<i>Mimulus douglasii</i>	BWO
<i>Nemacladus capillaris</i>	BAO
<i>Perideridia howellii</i>	BWO
<i>Romanzoffia thompsonii</i>	BSO

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## Appendix C

### Wildlife Report for the TITANIC Timber Sale EA 19 November 1997 draft, Jim Harper, Wildlife Biologist

At the time of this draft, proposed unit boundaries have been flagged in. The sale vicinity is considered matrix lands in the context of the Northwest Forest Plan (NFP), with no large late successional reserves (LSRs) within five miles, and no units planned within designated connectivity blocks.

There has been concern raised in the watershed analysis for maintaining older seral connectivity stepping stones between the large LSR at Elk Creek and the LSR in Sky Lakes on USFS. Thinning proposed for section 11 would eventually enhance growth of older structure in that stand, which would provide a connectivity to a spotted owl 100 acre core in section 13.

#### Listed Species:

In compliance with the endangered species act, BLM and USFS submitted a biological assessment for ground disturbing activities in the Rogue Basin in FY 97 & 98 on 1 August 1996. The US Fish & Wildlife service responded with their biological opinion on 18 October 1996 that granted incidental take for listed species.

Bald Eagle - there is a nesting pair at Parsnip Creek which have been using the same clump of trees and producing young for five of the past six years. The nearest proposed unit is over ½ mile away with screening timber in between, so impact to the eagle nest would be a “no effect”. The adult eagles forage at Medco Pond, so harvest in proposed sale units would not be expected to disrupt hunting activity. No helicopter use will take place in association with the sale.

Northern Spotted Owl - The sale vicinity was surveyed to interagency protocol standards from 1990 through 1995. There are three known sites within the provincial radius of 1.2 miles. Two of those (Cur Creek, Titanic West) have produced young approximately every other year, and each has an established 100 acre core area (“unmapped LSR”). The third site (Mud Springs) was cutover and has not been detected since 1994 and is presumed abandoned. Removal of any suitable owl habitat, or reduction from suitable to dispersal within the provincial radius makes the determination a “may affect”, which is then covered by the USFWS biological opinion and incidental take.

The nearest sale units are at least ½ mile from the outside edge of the 100 acre core, so no seasonal restrictions are recommended to protect the known sites. However, there is a moderate probability of a floater single moving into the west half of section 23. I recommend a seasonal restriction from March 1 through June 1 each year until the area can be resurveyed for new owls.

If a survey was completed by May 15 with no owls detected, the restriction would be waived. If a new owl site were discovered anywhere in the sale vicinity, the E-4 contract stipulation would be invoked to halt activity until mitigating measures such as seasonal restrictions could be evaluated. Any new owl sites discovered after 1 January 1994 are not mandated to receive a core area reserve.

The four sections (11, 23,24,25) with proposed units contain 1,920 acres of federally managed land. Of that, 39.9 % is currently considered suitable owl habitat ( 252 acres of McKelvey 1 potential nesting , and 515 acres of McKelvey 2 roosting foraging habitat). In the current proposal, alternative 2 (heavier impact to owls) would enter 509 acres, with 307 acres of commercial thin (reducing suitable habitat to dispersal habitat) plus 202 acres of regen harvest (reducing suitable habitat to non habitat which maintains 20-30% canopy). In alternative 3 (lighter touch), there would be 509 acres entered, with 307 acres commercial thin, 118 acres of individual tree mark, and 97 acres of a modified shelterwood cut (maintaining 40% canopy closure, which would still be dispersal habitat for owls).

Most of the currently suitable habitat with the exception of riparian management areas would be entered. We presume that even a light thinning disrupts the suitability of a stand for owls in the short term (1 to 5 years), but that the habitat would recover and be improved as trees grow bigger in the long term (from 6 to 20 years post-sale). As flagged units are traversed, the 509 acre figure will decrease, reducing the impacts slightly. In the worst case (509 acres, alternative 2 prescription) suitable owl habitat would be reduced to 8.2% Adequate dispersal habitat would be maintained on a landscape basis.

Peregrine Falcon - There are no suitable nesting cliffs within five miles of sale sections, although wandering birds could be expected to occasionally pass through the area. No effect.

Species of special interest:

Various species known to occur on or adjacent to the Butte Falls Resource Area are listed in the attached table, along with their probability of occurrence and quality of habitat available in the sale vicinity, and the level of survey performed. Several of these species are elaborated upon below.

Red Tree Vole (survey and manage). Each sale unit was surveyed in July-August 1997 to protocol standards, with no detections. The area is well outside the currently known range, although surveys of surrounding areas have been limited.

Great Gray Owl (protection buffer species). One survey route in the most likely habitat was run for 6 repetitions in April-June 1997 with no detections. The route will be run again in 1998 and completed before the sale is scheduled to sell in late July. There are several pockets of suitable foraging habitat (meadows and fresh clearcuts) in the vicinity, but there have been no historic detections nearby. US Forest Service has a historic site 4 miles east of the sale. Probability of occurrence in the sale is low, or there should have been detections during many years of spotted owl surveys.

Northern Goshawk (petitioned for listing Sept 97, undergoing 1 year review process ) - Sale units in suitable habitat were surveyed in July-August 1997. One nest was confirmed 50 feet onto private in section 10, adjacent to a proposed unit. Oregon State Office guidance (IM-OR-94-112 expired, being reissued Nov 97) calls for retaining a 30 acre core area of the most suitable nesting habitat. A 30 acre circle has a radius of 645 feet. A 21 acre core on BLM was dropped from consideration as a unit . We presume that some remaining acreage will be maintained on the private half of the circle via the State Forest Practices Act. Due to a recent change in ownership, there is a high probability that the private landowner will want to harvest their lands within the next five years. The adjacent BLM sale units will be thinnings, which in the long term will enhance late seral conditions, and there are some nearby units not in the sale..

Experience from a small sample size of 5 to 10 Medford District sites has shown that goshawks usually do not return to the same nest tree in subsequent years. They can build a new nest each year, and may shift trees up to ½ mile annually. By mid November, the 97 nest was barely discernable after blowing out during high winds. The SW Goshawk management plan (GTR-RM-217) calls for maintaining three alternate nesting cores in a territory. So far the Oregon BLM guidance is to select only one core area.

By the time the sale purchaser is ready to log, the goshawks will probably be nesting outside the designated core and within a sale unit. My recommendation for that time is to decruise a 200 ft radius around the nest tree to preserve its microsite character. Thinning the surrounding stand will probably not be that great an impact for goshawk as long as there is a seasonal restriction within 1/4 mile, dependant on whether the birds are nesting, and what screening the surrounding terrain offers. The OSO memo states: *On sold and awarded sales, inventory for the presence or absence of northern goshawks and do your "best effort" to protect nest sites. Flexibility will, of course, depend upon the contract stipulations and the cooperation of the purchaser.*

The OSO memo also calls for maintaining a 400 acre post-fledging family area around each nest site, with 60% of the area retained in old growth, mature, or mid-seral stage forest. At this nest, there are only 240 acres if federal lands adjacent, and any units nearby are proposed for thinning, which should help maintain the area as goshawk habitat. Over the western states, goshawks are highly diverse in where they nest. They are secretive and difficult to detect and shift locations from year to year.

The E-4 Stip guidance package omitted mention of goshawk due to oversight, since it was felt at the time that this species was covered by the earlier goshawk instruction memo.

Coopers Hawk - A nest was discovered on the edge of a proposed unit in section 24 while surveying for goshawk. We have no local information on site fidelity for Coopers Hawks. E-4 guidance (recently expired) calls for maintaining a 15 acre nest buffer, with seasonal restrictions from March 1 thru July 15, with a radius of 1/4 mile for restriction considerations. The adjacent unit will be a thinning with very few stems removed, with much of the radius within a riparian management zone. The birds will probably shift cores from year-to-year. Adjacent unit OI 003 in NE sec 25 and OI 005 (south portion) in section 24 should receive a seasonal restriction until 15 July, waivable if the birds are detected elsewhere.

## Big Game:

There is high elk use in the sale vicinity, with heavy hunting and poaching pressure. The mosaic of private fresh clearcuts, several open meadows, stands of thermal cover, and relatively gentle slopes at 3100 to 3600 ft elevation provide big game habitat as good as it gets in the resource area. USFS considers their lands just east to be winter range, but BLMs designated winter range is further west at lower elevations

To reduce poaching opportunities and vehicular disturbance, our objective should be to reduce open road densities wherever possible by gateing or blocking dead-end spurs and unauthorized jeep tie-through roads. These have already been identified in the ID team meetings, but include: 1) block the two jeep tie throughs in NE sec 25 extending onto USFS. 2) closing the existing gate in south central sec 25 3) repair the existing guardrail in SE sec 23 into Merle Burn. 4) decommission any new operator spurs such as to be built in NW sec 11 and into SE sec 24. 5) block tie throughs and spurs in section 27 (no sale units in there). Any spurs to be blocked should maintain a turn-around or parking spot of a driveable 50 feet to accommodate the large number of hunters who camp in the area each fall.

A probable mineral lick was discovered on the edge of a proposed unit, so the boundary was shifted to avoid the site by 100 ft to minimize disturbance and maintain cover around the site.

Other Species - There are no survey & manage amphibian species (Del Norte Salamander, Siskiyou Mountains Salamander) thought to occur in the resource area. They have not been found within 25 miles of the sale, so no surveys are required. Surveys for S&M mollusks are not mandated until FY 99 sales, and survey protocols have not been received as of this date.

## Special Habitats

There are no cliffs, caves, wet meadows adjacent to proposed units. Many units are currently deficient of standing snags and downed coarse woody debris. Recent blowdown salvage and proposed hazard tree removal have reduced the availability of these. We need to be mindful of snag requirements and compensate within units for shortages along roads. Due to density of some stands, the hardwood component is being lost. I recommend we thin around some of the oak and madrone to preserve this component across the landscape.

SUMMARY - A large percentage of units in this sale will have seasonal restrictions from March 1 through June 15 or July 15 due to potential for nesting raptors, but surveys in April & May could narrow where the birds are nesting so that the restrictions could be waived. Due to the thinning nature of the majority of units, the raptors could be expected to continue to nest in the vicinity, but they will shift their core areas from year to year. Alternative 3 would be of less impact to wildlife due to less acres being regen harvested.

**BUTTE FALLS RESOURCE AREA  
1998 PROJECT SPECIAL STATUS SPECIES OCCURRENCE**

Table 1. Titanic Timber Sale.

<b>U.S. FISH &amp; WILDLIFE T&amp;E SPECIES</b>					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Peregrine falcon	FE. SE. 1	Y	A	Low	Thorough
Bald eagle	FT. ST. 1	Y	P	Medium	Thorough
Northern spotted owl	FT. ST. 1	Y	P	Medium	Thorough

<b>U.S. FISH &amp; WILDLIFE SPECIES of CONCERN (SoC)</b>					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Cascade frog	SoC. SV. 3	Y	P	Medium	Limited
Foothill yellow legged frog	SoC. SV. 3	Y	U	Medium	Limited
No. red legged frog	SoC. SU. 3	Y	U	Low	Limited
Tailed Frog	SoC. SV. 3	Y	U	Low	None
Northwestern pond turtle	SoC. SC. 2	Y	P	Low	Limited
Little willow flycatcher	SoC. 1	U	U	Low	None
Northern goshawk	SoC. SC. 3	Y	P	High	Thorough
Tricolored blackbird	SoC. SP. 2	Y	A	Low	None
Western burrowing owl	SoC. SC. 3	N	A	Low	None
Fringed myotis	SoC. SV. BS. SM. 3	Y	U	High	Limited
Long eared myotis	SoC. SU. SM. 3	Y	U	High	Limited
Long legged myotis	SoC. SU. SM. 3	Y	U	Medium	Limited
Townsend's big eared bat	SoC. SC. 2	Y	U	Medium	Limited
Yuma myotis	SoC. SU. 3	Y	U	Medium	Limited
Pacific fisher	SoC. SC. 2	Y	P	Medium	None
California wolverine	SoC. ST. 2	U	U	Low	None
Burnell's False Water Penny Beetle	SoC. 1	UNK	U	Medium	None

SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Denning's Agapetus caddisfly	SoC, 3	UNK	U	Medium	None
Green springs Mt. faurlan caddisfly	SoC, 3	UNK	U	Medium	None
Schuh's homoplectran caddisfly	SoC, 3	UNK	U	Medium	None
Siskiyou caddisfly	SoC, 3	UNK	U	Medium	None
Siskiyou chloealtis grasshopper	SoC, 3	UNK	U	Low	None
Mardon skipper butterfly	SoC, 2	UNK	U	Low	None
Franklin's bumblebee	SoC, 4	N	U	Low	None

**OTHER (ODFW AND BLM) SPECIAL STATUS SPECIES**

SPECIES	STATUS	RANGE	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Clouded salamander	SU, BS, 3	Y	S	Medium	Limited
Western toad	SV, 3	Y	S	Medium	None
California mt. kingsnake	SP, AS, 3	Y	S	Low	None
Common kingsnake	SP, AS, 3	Y	S	Low	None
Sharptail snake	SV, AS, 4	N	A	Low	None
Black backed woodpecker	SC, AS, 3	Y	S	Low	None
Flammulated owl	SC, AS, 4	Y	S	Medium	None
Grasshopper sparrow	SV, 3	N	A	Low	None
Great gray owl	SV, AS, SM, 4	Y	S	Low	Thorough
Greater sandhill crane	SV, 4	Y	S	Low	Incidental
Lewis' woodpecker	SC, AS, 3	Y	S	Low	None
Northern pygmy owl	SU, 4	Y	S	Medium	Incidental
Northern saw whet owl	AS	Y	P	High	Incidental
Oregon vesper sparrow	SC, 3	N	A	Low	None
Pileated woodpecker	SV, AS, 4	Y	P	High	Incidental
Pygmy nuthatch	SV, 4	N	A	Medium	None

SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Three-toed woodpecker	SC, AS, 4	N	A	Medium	None
Western bluebird	SV, AS, 4	Y	S	Medium	None
White headed woodpecker	SC, 3	Y	S	Low	None
Red tree vole	BS, SM	N	A	Medium	Thorough
Western gray squirrel	SU, 3	Y	P	High	Incidental
Pacific pallid bat	SV, AS, SM, 3	Y	P	High	None
Silver haired bat	SU, SM, 3	Y	S	Medium	None
American marten	SV, AS, 3	Y	S	Low	None
Ringtail	SU, 3	Y	P	Low	None

Status Codes:

- FE - USFW Endangered - in danger of extinction throughout a significant portion of its range
- FT - USFW Threatened - likely to become endangered species within the foreseeable future
- SoC - USFW Species of Concern (formerly Federal Candidate 1, 2, 3) -under consideration for listing, but additional information is needed to support a proposal to list under the Endangered Species Act
- C - Federal candidate which is likely to become an SoC when new USFW review is completed
- PE - Proposed endangered by National Marine Fisheries Service (NMFS)
- PT - Proposed threatened by NMFS
- SE - State Endangered - in danger of extinction in the state of Oregon
- ST - State Threatened - listed as likely to become endangered by the state of Oregon
- SC - State Critical - listing is pending, or appropriate, if immediate conservation action not taken
- SV - State Vulnerable - listing not imminent, and can be avoided through continued or expanded use of adequate protective measures and monitoring
- SP - State Peripheral or naturally rare - populations at the edge of their geographic range, or historically low numbers due to limiting factors
- SU - State Unknown - status unclear, insufficient information to document decline or vulnerability
- SM - Survey & Manage - Forest plan ROD directs protection of known sites and/or survey for new sites
- BS - Bureau Sensitive (BLM) - eligible for addition to Federal Notice of Review, and known in advance of official publication. Generally these species are restricted in range and have natural or human caused threats to their survival.
- AS - Assessment Species (BLM) - not presently eligible for official federal or state status, but of concern which may at a minimum need protection or mitigation in BLM activities.

- 1 - Oregon Natural Heritage Rank, critically imperiled throughout its range
- 2 - Oregon Natural Heritage Rank, imperiled throughout its range
- 3 - Oregon Natural Heritage Rank, not rare, threatened throughout its range
- 4 - Oregon Natural Heritage Rank, not rare, apparently secure throughout its range

P/A Presence:

- P - Present
- S - Suspected
- U - Uncertain
- A - Absent
- T - Possibly transitory

Habitat quality:

- H - High
- M - Medium
- L - Low
- A - Absent

SPECIAL STATUS WILDLIFE SPECIES--1997  
HABITAT AND OCCURRENCE IN THE BUTTE FALLS RESOURCE AREA

TITANIC TIMBER SALE VICINITY

**THREATENED AND ENDANGERED SPECIES**

**Peregrine falcon (*Falco peregrinus*)**

Primary habitat is tall cliffs. Three active sites occur in the Medford district. Occasional sightings are made during the winter months, but these are thought to be migrating individuals. Forest lands provide habitat for prey species for peregrine falcons. Prey is mostly birds, especially doves and pigeons. Peregrines also prey on shorebirds, waterfowl, and passerine birds. The nearest potential nesting cliffs are over ten miles from the sale area.

**American bald eagle (*Haliaeetus leucocephalus*)**

Six nest sites are known in the Medford BLM district, with 2 on adjoining private lands. Four of these are within the Butte Falls Resource area. The nearest is one mile from a proposed sale unit, and the adults remain in the vicinity through the winter. In Oregon, the majority of nests (84%) are located within one mile of lakes, reservoirs, large rivers, and coast estuaries. Nest trees are larger, dominant or co-dominant trees in the stand and are usually components of old growth or older second growth forests. Prey is fish, waterfowl, small mammals (rabbits, etc.), and carrion.

**Northern spotted owl (*Strix occidentalis caurina*)**

Old growth coniferous forest is preferred nesting, roosting and foraging habitat, or areas with some old growth characteristics with multi-layered, closed canopies with large diameter trees with an abundance of dead and down woody material. Northern spotted owls commonly nest in cavities 50 or more feet above the ground in large decadent old growth trees. Other nest sites include large mistletoe clumps, abandoned raptor nests, and platforms formed by whorls of large branches. Over 200 northern spotted owl "core areas", 100 acres of the best habitat around activity centers for known sites (as of 1/1/94) have been designated and mapped as late successional reserves. Prey is primarily small arboreal mammals, such as flying squirrels, woodrats, voles, etc. and occasionally small birds. There are two active owl sites adjacent to the sale area.

**FEDERAL SPECIES of CONCERN (SoC)**

**Spotted frog (*Rana prettiosa*)**

Spotted frogs are likely extirpated from the Medford district BLM lands. Their habitat is marshy edges of ponds, lakes, or slow moving streams with permanent water where the bottom is soft and muddy. The nearest known population is the Wood River in Klamath County.

**Cascade frog (*Rana cascade*)**

Found in the Cascade mountains, above 2600 feet, on the east side of the District. They are most commonly found in small pools adjacent to streams flowing through meadows. They are also found in small lakes, bogs, and marshy areas that remain damp thorough the summer.

**Foothill yellow legged frog (*Rana boylei*)**

Habitat is permanent streams with rocky, gravelly bottoms. Distribution is west of the Cascade crest from sea level to 1800 feet. These frogs are closely associated with water.

**Northern red legged frog (*Rana aurora*)**

Red legged frogs prefer slack water of ponds and low gradient streams with emergent vegetation for reproduction. These frogs are found in lower elevations and can be found during the summer months up to 1000 feet from standing water in humid, old growth forests and moist meadows.

**Tailed frog (*Ascaphus truei*)**

Habitat is cold, fast flowing permanent streams in forested areas. Temperature tolerance range is low, 41-61 degrees fahrenheit. Tailed frog are closely tied to water.

**Northwestern pond turtle (*Clemmys marmorata marmorata*)**

Live in most types of freshwater environments with abundant aquatic vegetation, basking spots, and terrestrial surroundings for nesting and over-wintering. Some northwestern pond turtles leave water in late October to mid-November to overwinter on land. They may travel up to 1/4 mile from water, bury themselves in duff and remain dormant throughout winter. Turtles have been found to generally stay in one place in areas with heavy snowpack, but may move up to 5-6 times in a winter in areas with little or no snow. General habitat characteristics of overwintering areas appear to be broad. There may be specific microhabitat requirements, which are poorly understood at this time. In many areas, predation on the hatchlings and competition from bullfrogs, bass, and other exotic species is limiting population levels. Adult turtles are relatively long lived, but as the adults age, recruitment is not occurring at levels which can maintain future healthy populations. Turtles are found in nearby Parsnip Creek marshlands and at Medco Pond, but have not been located in or adjacent to sale units.

**Little willow flycatcher (*Empidonax trailii brewsteri*)**

Subspecies of the willow flycatcher group. Willow flycatchers are common in mountain meadows along streams and in dry upland pastures.

**Northern goshawk (*Accipiter gentilis*)**

Goshawks are found in a variety of mature forest types, including both deciduous and conifer types. Dense overhead foliage or high canopy cover is typical of nesting goshawk habitat. Perches where they pluck their prey, known as plucking posts, are provided by stumps, rocks, or large horizontal limbs below the canopy. There has been one nest located adjacent to a sale unit.

**Tricolored blackbird (*Agelaius tricolor*)**

Tricolored blackbirds are found in the interior valleys of southern Oregon, near freshwater marshes and croplands. Individuals have been reported near Roxy Ann Peak, in Sams valley, and near Table Rock.

**Western burrowing owl (*Speotyto cunicularia*)**

A viable population no longer exists in the Rogue River Valley, where they were formerly present. May occasionally be present in winter. Habitat is sagebrush steppe, grasslands, pastures, and airports where vegetation is sparse and terrain is level.

**Fringed myotis bat (*Myotis thysanodes*)**

Fringed myotis is a crevice dweller which may be found in caves, mines, buildings, rock crevices, and large old growth trees. They have been captured in openings and in mid-seral stage forest habitats. Food consists of beetles, butterflies, and moths.

**Long eared myotis (*Myotis evotis*)**

A crevice dweller found in coniferous forests in the mountains. Individuals are frequently encountered in sheds and cabins. They have also been found beneath the loose bark of trees. They seldom reside in caves, but may occasionally use caves as a night roost. They are not known to occur in large colonies.

**Long legged myotis (*Myotis volans*)**

Long legged myotis is an open forest dweller which is found in small pockets and crevices in rock ledges, caves, and buildings. When in caves, they hang in clumps in deep twilight zones.

**Pacific Townsend's big-eared bat (*Plecotus townsendii*)**

Roost in mines, caves, cavities in trees, and attics of buildings. They have low tolerance to changes in temperature and humidity and removal of trees around these sites may change airflow patterns to make the area less desirable as a hibernaculum, maternity, or roosting site. Food consists primarily of moths, and other

arthropods. There are no known caves or mines within five miles of the sale area.

**Yuma myotis (*Myotis Yumanensis*)**

Yuma myotis is commonly found in human structures, closely associated with water nearby. They will use caves as night roost areas. The species is colonial and hangs in a closely clumped group, often under bridges, in mines and caves.

**Fisher (*Martes pennanti pacifica*)**

Habitat is mature and old growth forests. They appear to be closely associated with riparian areas in these forests. In a study done in Trinity County, California, a preference was shown for conifer forests with some hardwoods present. They seem to prefer 40-70% canopy cover. They mainly use large living trees, snags and fallen logs for denning. Occasional sightings on the Medford district, but little information is available as to distribution and density. There is an ongoing telemetry study on fisher on USFS lands just east of the sale area.

**California wolverine (*Gulo gulo luteus*)**

Wolverine use Douglas fir, mixed conifer forests. Historic sightings near Medford BLM lands have occurred at White Rock Creek near Oregon Caves (1975) and near Dry Creek, east of Medford, in 1970. Recent wolverine sightings have been reported by fur trappers in the Rogue River National Forest lands adjoining BLM lands. Large areas of medium or scattered mature timber and ecotone areas around cliffs, slides, swamps, and meadows are important habitat components. They appear to prefer remote areas away from humans. Wolverines may be found in higher elevations in summer and lower elevations in winter.

**Coho salmon (*Oncorhynchus kisutch*)**

Coho are present in most of the larger lower elevation rivers and larger perennial streams on the district, including North Fork Butte Creek adjacent to the sale.

**Summer and winter steelhead trout (*Oncorhynchus mykiss*)**

Steelhead are present in most of the larger streams on the district in the Rogue River drainage system.

**Pacific lamprey (*Lampetra tridentata*)**

Present in the Rogue River and larger tributaries. Migrates up river from the ocean and reproduces in the Rogue, Illinois, and Applegate rivers and larger perennial tributary creeks. Little habitat information is available.

**Burnell's false water penny beetle (*Acneus burnelli*)**

This species has not been found in the Medford BLM district, but could be present. Adults are found along small, rapid, low elevation streams, frequently near waterfalls. Larvae were found in rapid sections of a stream in pools of quiet water protected from any current by large boulders. This species has been found in Coos Co., Upper Middle Creek, 15 miles SW of Powers, OR.

**Denning's agapetus caddisfly (*Agapetus denningi*)**

This species has not been found in Medford BLM district, but could be present. No habitat information is available. The only information available is from the life history of *A. taho*, a similar species, which is found in cool, mid to large size streams of moderate gradient in forested areas over a large elevation range. A single specimen was collected in Rogue River National Forest.

**Green springs Mt. farulan caddisfly (*Farula davisi*)**

Species of *Farula* inhabit cool, highly humid areas. This species was collected near a small stream with a marshy area nearby. One is probably the habitat. Two adult specimens were collected from Green Springs Mt., 10 miles east of Ashland near a large stream.

**Schuh's homoplectran caddisfly (*Homoplectra schuhi*)**

Larvae are found in spring-sedge habitats in forested montane areas. *Homoplectra* sp. are found in streams with moderate to close shading from a forest canopy with most sites having a mixed deciduous- conifer

canopy. The distribution of the species appears to be limited with specimens found in the Cascade and Coast range mountains of southwestern Oregon and northern California, where suitable habitat is found.

**Siskiyou caddisfly (*Tinodes siskiyou*)**

Adult collection records indicate the larvae are associated with mid-size streams, with moderate to dense shading from a mixed hardwood/conifer overstory. Adults have been collected adjacent to both cool, spring-fed streams and from streams with a high annual temperature range. Members of this genus have been found from the coastal mountains of northern Calif. and from 2 disjunct populations in Oregon, one from the Squaw Lakes region of the Rogue River National Forest, 10 miles SW of Medford.

**Siskiyou chloea grasshopper (*Chloea aspasma*)**

This species has been found in the Siskiyou Mountains near Mt. Ashland and near Willow Lake. Appears to be associated with elderberry plants. Females lay eggs in the pith of elderberry plants.

**Mardon skipper butterfly (*Polites mardon*)**

Only known in four localities, two in Washington state, one in Del Norte County coastal mountains, and the fourth in high mountain meadows along the summit of the Cascade Mountains in Jackson and Klamath Counties. They are found in wet mountain meadow habitats.

**Franklin's bumblebee (*Bombus franklini*)**

Franklin's bumblebee has been found in herbaceous grasslands between 1400-4000 ft. elevation. Activity spans the entire blooming season, so they do not appear restricted to a particular host or flower. Adults probably present and in active flight from May (on warm sunny days) through early September. Range restricted to southwestern Jackson County, Oregon, perhaps southeastern corner of Josephine Co., perhaps part of northern California.

<b>OREGON STATE SENSITIVE SPECIES</b>
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**Clouded salamander (*Aneides ferreus*)**

Habitat requirements are forest and forest edges from sea level to 1500 meters. There is a correlation between clouded salamander abundance and large conifers as well as down woody material. They occur mainly under loose bark in decayed, standing and fallen snags, and stumps. They have been found as high as 20 feet in trees. May also be found in cracks in cliff rocks, under moss and leaf litter.

**Western toad (*Bufo boreas*)**

Largely terrestrial, found from sea level to high mountains. They often use rodent burrows. They are nocturnal during dry weather, and may forage in daytime on rainy or overcast days. Optimal habitat is humid areas with dense undergrowth. They have been found beneath bark and within decayed wood in large Douglas fir logs, especially those partially submerged in water. Breed in ponds, pools, and slow moving water in streams. In the Oregon Cascades, they may prefer mud bottomed shallows of lakes and ponds.

**California mountain kingsnake (*Lampropeltis zonata*)**

Habitat includes oak and pine forests. Found under or inside rotting logs and in talus areas. They are not common, and are mostly found in the western part of the District.

**Common kingsnake (*Lampropeltis getulus*)**

In Oregon, they are found only in Douglas, Jackson, and Josephine Counties in the more mesic river valleys. Common kingsnake inhabit oak/pine woodlands, open brushy areas, and river valleys, often along streams, and in thick vegetation. They may also be found in farmlands, especially near water areas.

**Sharptail snake (*Contia tenuis*)**

Habitat is conifer forests and oak grassland edges. Found in rotting logs, moist talus, under rocks, boards, or other objects, mostly in interior valleys.

**Black-backed woodpecker (*Picoides arcticus*)**

Presence is undetermined in the Medford BLM district. Has been documented in Cascade Mountains in Jackson County and in the Siskiyou Mountains in Josephine County. In Oregon, the black-backed woodpecker tends to occur in lower elevation forests of lodgepole pine, ponderosa pine, or mixed pine/conifer forests. Dead trees used for foraging have generally been dead three years or less.

**Flammulated owl (*Otus flammeolus*)**

Habitat is a mosaic of open forests containing mature or old-growth ponderosa pine mixed with other tree species. In California, habitat included conifer and black oak. Nests mainly have been located in abandoned Northern flicker or pileated woodpecker cavities. The presence of dense conifers for roosting may be a necessary habitat components. Feeds mostly on insects. May also eat other arthropods and small vertebrates.

**Grasshopper sparrow (*Ammodramus saviannarum*)**

Grasshopper sparrows inhabit grasslands which have some shrubs. Populations have been reported near White City and Eagle Point in Jackson County.

**Great gray owl (*Strix nebulosa*)**

Habitat preference is open forest or forest with adjoining deep-soil meadows. Nest in broken top trees, abandoned raptor nests, mistletoe clumps, and other platforms created by whorls of branches. Majority of nests in one study were in over-mature or remnant stands of Douglas fir and grand fir forest types on north facing slopes. Probably found in low densities across the district. There are several meadows in the sale vicinity on private land where great grays could occur, but they are not close to sale units.

**Greater sandhill crane (*Grus canadensis tabida*)**

A spring and summer resident of Oregon, sandhill cranes roost, nest, and rear young in wet meadows, including wild, irrigated hay meadows and shallow marshes. The cranes may use agricultural croplands for feeding during non-nesting season. Sandhill cranes have been observed on the Ashland Resource Area near Howard Prairie and Hyatt Lake and in the Butte Falls Resource area near the communities of Prospect and Butte Falls. There are some ponds and marshy areas near the sale.

**Lewis' woodpecker (*Melanerpes lewis*)**

These woodpeckers breed sparingly in the foothill areas of the Rogue and Umpqua river valleys in Douglas, Jackson, and Josephine counties. Habitat preference is hardwood oak stands with scattered pine near grassland shrub communities. Breeding areas in the Rogue valley are uncertain. In some locales, the woodpeckers breed in riparian areas having large cottonwoods and in oak conifer woodlands. They usually do not excavate nest cavities, but most often use cavities excavated by other woodpecker species. They winter in low elevation oak woodlands.

**Northern pygmy owl (*Glaucidium gnoma*)**

Believed to be present across district. Population numbers and trends are unknown. Habitat needs are not clear, but the species is regularly recorded in forested areas of numerous types and age classes in Oregon, most commonly along edges of openings such as clearcuts or meadows. Nests in tree cavities excavated by woodpeckers. Feeds on insects, small vertebrates and birds.

**Northern saw-whet owl (*Aegolius acadicus*)**

Believed to be present across the district. Population numbers and trends are unknown. Habitat is dense conifer and mixed conifer/hardwood forests. Nest in abandoned woodpecker holes and natural cavities. Feed on small mammals and birds.

**Oregon vesper sparrow (*Pooecetes gramineus*) Western Interior Valleys Only**

Found in dry, open grasslands, farmlands, forest clearings, and sagebrush.

**Pileated woodpecker (*Dryocopus pileatus*)**

Pileated woodpeckers are common across the Medford BLM district. They are found mainly in old growth

and mature forests, but can feed in younger forests and clearcuts. A new nest is excavated each year. They mainly use dead trees that have the strength to handle a nest cavity that averages 8 inches wide and 22 inches deep ( $\geq 20$  inches dbh). Pileated woodpeckers excavate a new nest each year, and need 1-2 hard snags per 100 acres. Studies show that the pileated woodpeckers need about 45 large trees with existing cavities in their home range (300-1000 acres) to provide roosting habitat.

**Pygmy nuthatch (*Sitta pygmaea*)**

Habitat is mature and old growth ponderosa pine, especially open stands with less than 70% canopy. The birds will forage in young ponderosa pines. It nests and roosts in cavities more than 20 feet from the ground that are located in large dead or decaying ponderosa pines which usually exceed 20 inches dbh. It excavates its own nest cavities which are often started in a fissure in a soft snag. Found in the Cascade mountains. Pygmy nuthatch populations drop significantly with timber harvest and snag removal.

**Three toed woodpecker (*Picoides tridactylus*)**

Presence is undetermined in the Medford BLM district. Range is along the crest of the Cascade Range and eastward. Generally found in higher elevation forests, above 4000 feet. In eastern Oregon, three-toed woodpeckers nest and forage in lodgepole pine forests. They are occasionally found roosting in hemlock and Engelmann spruce trees in mature and overmature mixed conifer forests. Bark beetle larvae are primary food source.

**Western bluebird (*Sialia mexicana*)**

In western Oregon, western bluebirds nest in open areas near farms and in clearcuts in standing snags. They nest in natural cavities, old woodpecker holes, and in nest boxes.

**White headed woodpecker (*Picoides albolarvatus*)**

Presence in the BLM Medford district is undetermined. White headed woodpeckers occur in ponderosa pine and mixed ponderosa forests. They forage mainly on trunks of living conifers for insects. Nest cavities are within 15 feet of ground in dead trees which have heart rot. Standing and leaning snags and stumps are used. The sale area is on the periphery of known range.

**California red tree vole (*Arborimus pomo*)**

An arboreal vole which lives in Douglas fir, spruce, and hemlock forests. Food consists entirely of needles of the tree in which they are living. They build a bulky nest, up to the size of a half bushel measure in the branches, usually near the trunk, 15-100 feet above the ground. The nest becomes larger with age, and may be occupied by many generations. None have been located during intensive surveys in the sale vicinity.

**Western gray squirrel (*Sciurus griseus*)**

Arboreal squirrel that is found in oak, oak-pine, hardwood-mixed conifer, and mixed conifer forests. Feeds mostly on acorns and conifer seeds. Nests in tree cavities or in nests made of sticks and shredded bark.

**Pallid bat (*Antrozous pallidus*)**

This bat is a crevice dweller. Rock crevices and human structures are used as day roosting sites. Recent radiotelemetry studies indicate that these bats also use interstitial spaces in the bark of large conifer trees as a roost site. One colony of pallid bats was observed roosting in a hollow tree. Food consists of beetles, grasshoppers, moths, and other insects found on or near the ground or on grasses or shrubs.

**Silver-haired bat (*Lasionycteris noctivagans*)**

The species is a tree dweller, living mostly under bark and in tree trunks. It may also be found roosting in foliage of trees. Silver haired bats are rarely found in human structures.

**American martin (*Martes americana*)**

Martin inhabit mature and old growth forests that contain large quantities of standing and downed snags and other coarse downed woody material, often near streams. They often use down logs for hunting and resting. They feed on small mammals, birds, fruits, and insects.

**Ringtail (*Bassariscus astutus*)**

Ringtails are most commonly found in areas having cliffs, rocky terrain near water, riparian hardwoods, and sometimes conifers. They nest in hollow trees, brush piles, caves, and abandoned buildings. They are encountered infrequently across the District.

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TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS: LOST CREEK

ROAD NO.				REMARKS
32 S	01 E	13	F	SPOT ROCK STREAM CROSSING
32 S	01 E	35	A	JAC MA
32 S	01 E	35.01		
32 S	01 E	35.02	B	CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	01 E	35.04		Blocked and partially overgrown; CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	01 E	35.05		CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	01 E	35.06		BLOCK W LOG; CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	01 E	35.07		CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	01 E	36	A2	
32 S	02 E	33	A	CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	02 E	33	B	CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	02 E	33.01		CURRENTLY HAS LOG BLOCK; CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
32 S	02 E	33.02		LIMIT ACCESS
32 S	02 E	34	A	Access to Founce Rock ACEC and EE area, Self guided tour route segments A-F
32 S	02 E	34	B	Access to Founce Rock ACEC and EE area, Self guided tour route segments A-F
32 S	02 E	34	C	Access to Founce Rock ACEC and EE area, Self guided tour route segments A-F
32 S	02 E	34	D	Access to Founce Rock ACEC and EE area, Self guided tour route segments A-F
32 S	02 E	34	E	Access to Founce Rock ACEC and EE area, Self guided tour route segments A-F
32 S	02 E	34	F	Access to Founce Rock ACEC and EE area, Self guided tour route segments A-F
33 S	01 E	2	A2	GATED FOR EROSION CONTROL
33 S	01 E	2	B	GATED FOR EROSION CONTROL
33 S	01 E	2	C	GATED FOR EROSION CONTROL
33 S	01 E	2	D	GATED FOR EROSION CONTROL
33 S	01 E	2	E	GATED FOR EROSION CONTROL
33 S	01 E	3		Naturally decommissioned
33 S	01 E	11		
33 S	01 E	11.01		Powerline road; gate installed at east end; gate to be installed in Sec. 12.
33 S	01 E	11.02		
33 S	01 E	14.01	B	GATED; IMPROVE DRAINAGE
33 S	01 E	14.01	C	GATED; IMPROVE DRAINAGE
33 S	01 E	14.01	D	GATED; IMPROVE DRAINAGE
33 S	01 E	14.02		INSTALL GATE; CUT OFF TIE BY INSTALLING LOG/EARTH BARRICADE.
33 S	01 E	15		actively eroding; CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
33 S	01 E	22.01		
33 S	01 E	23	A1	Gated by the Corps. Access to Four Corners Camp for maintenance.
33 S	01 E	23	A2	IMPROVE DRAINAGE BEYOND THE PARKING AREA.
33 S	01 E	25		LAURELHURST ACCESS ROAD
33 S	01 E	25.01	A	TIE ROAD
33 S	01 E	25.01	B	TIE ROAD
33 S	01 E	27	B	seeps and springs on cutbank, rec access to lake; Burnt Peak Road.
33 S	01 E	27	C	fillslope setting, rec access to lake; Burnt Peak Road.
33 S	01 E	27	D	missed opportunity for culvert, rec access to lake; Burnt Peak Road.
33 S	01 E	27	E	rec access to lake; Burnt Peak Road.
33 S	01 E	27	F	rec access to lake; Burnt Peak Road.
33 S	01 E	27	G	rec access to lake; Burnt Peak Road.
33 S	01 E	27	H	
33 S	01 E	27	I	
33 S	01 E	27	J	
33 S	01 E	27	K	
33 S	01 E	27	L	
33 S	01 E	27	M	
33 S	01 E	27	N	
33 S	01 E	27	O	
33 S	01 E	35		GATED
33 S	01 E	35.01		CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
33 S	01 E	36	A	TIE ROAD
33 S	01 E	36.01		
33 S	01 E	36.02	A	
33 S	01 E	36.02	B	ALREADY GATED W CORPS
33 S	02 E	5	A	CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
33 S	02 E	5	B	CONSIDER DECOMMISSIONING THIS ROAD; CHECK R/W AGREEMENT
33 S	02 E	5.01		GUARD RAIL INSTALLED; CHECK CONDITION.
33 S	02 E	13	A1	
33 S	02 E	13	A2	DRAINAGE MAINTENANCE NEEDED
33 S	02 E	13	B	

TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS: LOST CREEK

ROAD NO.				REMARKS
33 S	02 E	13.01	A	
33 S	02 E	13.01	B	
33 S	02 E	13.02	A	
33 S	02 E	13.02	B	
33 S	02 E	13.03	A	
33 S	02 E	13.04		INSTALL GUARD RAIL
33 S	02 E	13.05		EXISTING BLOCK
33 S	02 E	14	A	OPPORTUNITY FOR SPOT ROCKING
33 S	02 E	14	B	OPPORTUNITY FOR SPOT ROCKING
33 S	02 E	14	C	OPPORTUNITY FOR SPOT ROCKING
33 S	02 E	14	D	OPPORTUNITY FOR SPOT ROCKING
33 S	02 E	14.01		
33 S	02 E	14.02		
33 S	02 E	14.03		
33 S	02 E	15	A	
33 S	02 E	15	B	LOW PRIORITY TO BLOCK
33 S	02 E	15	C	
33 S	02 E	15.01	A	
33 S	02 E	15.01	B	
33 S	02 E	19		CORPS HAS BLOCKED; Seth Bullie- future recreation site.
33 S	02 E	20		MEDITE HAS GATED
33 S	02 E	21		
33 S	02 E	22	A	
33 S	02 E	22	B	INSTALL CULVERT
33 S	02 E	22.01	A	POOR CONDITION; IMPROVE DRAINAGE
33 S	02 E	22.01	B	
33 S	02 E	22.02		
33 S	02 E	22.03		
33 S	02 E	22.04	A1	
33 S	02 E	22.04	A2	
33 S	02 E	22.05		COULD BLOCK, DECOMMISSION OR BRUSH; IMPROVE DRAINAGE & DECOMMISSION AFTER USE
33 S	02 E	22.06	A	
33 S	02 E	22.07		
33 S	02 E	22.08		
33 S	02 E	23		ONCE HAD GUARDRAIL; INSTALL GATE UNDER TIMBER SALE
33 S	02 E	23.01		
33 S	02 E	24		
33 S	02 E	24.01		
33 S	02 E	24.02		
33 S	02 E	25	A	DECOMMISSION AFTER USE
33 S	02 E	25	B	
33 S	02 E	25.01		HAS GUARDRAIL
33 S	02 E	25.02	A	IMPROVE DRAINAGE?
33 S	02 E	25.02	B	IMPROVE DRAINAGE?
33 S	02 E	25.03		
33 S	02 E	26	A	
33 S	02 E	26	B	
33 S	02 E	27	A	
33 S	02 E	27	B	
33 S	02 E	27.01	A	
33 S	02 E	27.01	B	
33 S	02 E	27.01	C	
33 S	02 E	27.02		GUARD RAIL
33 S	02 E	27.03		NEEDS LOG, GUARD RAIL, OR GATE
33 S	02 E	27.04		needs log, earthen block not functioning DECOMMISSION AFTER USE?
33 S	02 E	27.05		needs log, earthen block not functioning DECOMMISSION AFTER USE?
33 S	02 E	27.06		OPEN
33 S	02 E	27.07	A	
33 S	02 E	27.08		DECOMMISSION
33 S	02 E	28	A	REVIEW IMPOVEMENT
33 S	02 E	28	B	DECOMMISSION
33 S	02 E	28.01		
33 S	02 E	28.02		
33 S	02 E	29		
33 S	02 E	29.01		

**TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS: LOST CREEK**

ROAD NO.			REMARKS
33 S	02 E	29.02	
33 S	02 E	29.03	
33 S	02 E	29.04	
33 S	02 E	31 A	
33 S	02 E	31 B	
33 S	02 E	31 C	
33 S	02 E	31 D	
33 S	02 E	31.01	HAS GUARDRAIL; OSPREY NEST
33 S	02 E	31.02 A	
33 S	02 E	31.02 B	
33 S	02 E	31.03	CHECK ROAD
33 S	02 E	31.04 A	
33 S	02 E	31.04 B	
33 S	02 E	31.05 A	BLOCK AFTER PUMP CHANGE
33 S	02 E	31.06	EXISTING BLOCK; EAGLE'S NEST
33 S	02 E	31.07	
33 S	02 E	32	INSTALL GATE
33 S	02 E	32.01 A	
33 S	02 E	32.01 B	
33 S	02 E	32.02	
33 S	02 E	32.03	
33 S	02 E	32.04	
33 S	02 E	32.05	
33 S	02 E	33 A	"B" ROAD
33 S	02 E	33 B	"B" ROAD
33 S	02 E	33 C	"B" ROAD
33 S	02 E	33.01 A	CURRENTLY BLOCKED
33 S	02 E	33.01 B	GUARDRAIL REMOVED; BLOCK AT SECTION LINE
33 S	02 E	33.02 A	
33 S	02 E	33.02 B	
33 S	02 E	33.03	GUARDRAIL INSTALLED
33 S	02 E	33.04	
33 S	02 E	33.05	
33 S	02 E	34 A	
33 S	02 E	34.01	
33 S	02 E	34.02	
33 S	02 E	34.03 A	
33 S	02 E	34.03 B	
33 S	02 E	34.04	
33 S	02 E	35	BLOCK BOTH ENDS
33 S	02 E	35.01	
33 S	02 E	35.02 A	
33 S	02 E	35.02 B	
33 S	02 E	35.02 C	
33 S	02 E	35.02 D	
33 S	02 E	35.03	EXISTING GUARDRAIL; DECOMMISSIONED BY PREVIOUS BRUSH PILING
33 S	02 E	35.04	EXISTING LOG BLOCK BEING BYPASSED; IMPROVE BLOCK
33 S	02 E	35.05 A	
33 S	02 E	35.05 B	
33 S	02 E	36.01 A	
33 S	02 E	36.02	
33 S	03 E	18	OWL CORE- NEED BLOCK
33 S	03 E	18.01 A	GUARDRAIL INSTALLED
33 S	03 E	19 A1	"B" ROAD
33 S	03 E	19 A2	"B" ROAD
33 S	03 E	19 B	"B" ROAD
33 S	03 E	19.01 A	IMPROVE? FIELD CHECK
33 S	03 E	19.01 B	
33 S	03 E	19.02	
33 S	03 E	19.03 A	
33 S	03 E	19.03 B	
33 S	03 E	19.04 A	BEHIND 14 STINGS GATE
33 S	03 E	19.04 B	BEHIND 14 STINGS GATE
33 S	03 E	20 A	14 STINGS GATE. BEHIND GATE
33 S	03 E	28 A	

**TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS: LOST CREEK**

ROAD NO.				REMARKS
33 S	03 E	28	B	
33 S	03 E	28	C	
33 S	03 E	28	D	
33 S	03 E	28	E1	
33 S	03 E	28	E2	
33 S	03 E	28	F	
33 S	03 E	28.01	A1	
33 S	03 E	28.01	A2	
33 S	03 E	28.01	B	
33 S	03 E	28.01	C	
33 S	03 E	28.02	A	
33 S	03 E	28.02	B	
33 S	03 E	28.03	A	
33 S	03 E	29	A	HAD GUARDRAIL; REPAIR GUARDRAIL
33 S	03 E	29	B	HAD GUARDRAIL; REPAIR GUARDRAIL
33 S	03 E	29	C	BEHIND RAIL
33 S	03 E	29.01		BEHIND RAIL
33 S	03 E	29.02		
33 S	03 E	29.03		BEHIND RAIL
33 S	03 E	30		
33 S	03 E	30.01		
33 S	03 E	31		
33 S	03 E	31.01		
33 S	03 E	31.02		EXISTING GUARDRAIL
33 S	03 E	31.03		
33 S	03 E	31.04		
33 S	03 E	31.05		BLOCK WITH RAIL
33 S	03 E	31.06		YES
33 S	03 E	32		INSTALL GATE
33 S	03 E	33		
33 S	03 E	33.01		
33 S	03 E	33.02		DECOMMISSION
33 S	03 E	34	A1	"A" ROAD
33 S	03 E	34	A2	"A" ROAD
33 S	03 E	34	B1	"A" ROAD
33 S	03 E	34	B2	"A" ROAD
33 S	03 E	34.01	A	
33 S	03 E	34.01	B	
33 S	03 E	34.01	C	USED TO BE BLOCKED; CHECK & BLOCK BOTH ENDS
33 S	03 E	34.01	D	
33 S	03 E	34.01	E	
33 S	03 E	35	A	
33 S	03 E	35	B	
33 S	03 E	35	C	
33 S	03 E	35	D	CONSIDER DECOMMISSIONING THIS SEGMENT
34 S	02 E	1.01		USFS ROAD
34 S	02 E	2	A	BLOCK
34 S	02 E	2	B	BLOCK
34 S	02 E	2.01	A	KEEP OPEN
34 S	02 E	2.01	B	KEEP OPEN
34 S	02 E	4		
34 S	02 E	4.01		
34 S	02 E	4.02	A	2 BLOCKS AT PROPERTY LINE; STEEP GRADE.
34 S	02 E	4.02	B	
34 S	02 E	4.03		
34 S	02 E	4.04		
34 S	02 E	8		
34 S	02 E	8.03	A	
34 S	02 E	8.03	B	
34 S	02 E	8	B1	"A" ROAD
34 S	02 E	8	B2	"A" ROAD
34 S	02 E	8	C1	"A" ROAD
34 S	02 E	8	C2	"A" ROAD
34 S	02 E	8	C3	"A" ROAD
34 S	02 E	8.01	B	"B" ROAD

TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS: LOST CREEK

ROAD NO.				REMARKS
34 S	02 E	8.01	C	"B" ROAD
34 S	02 E	8.02	E	
34 S	02 E	29	C	
34 S	03 E	1	A	CHECK ACCESS
34 S	03 E	1	B	CHECK ACCESS
34 S	03 E	2		DECOMMISSION
34 S	03 E	3	A	
34 S	03 E	3	B	
34 S	03 E	3.01		
34 S	03 E	3.02	A	KEEP BLOCKED - EAGLE NEST
34 S	03 E	4	A	BLOCKED BY SWAMP; IMPROVE ROAD BY SURFACING 1ST 0.25 MILES
34 S	03 E	4.02	A	
34 S	03 E	4.02	B	
34 S	03 E	4.03	A	
34 S	03 E	4.03	B	DECOMMISSION THIS SEGMENT
34 S	03 E	4.03	C	
34 S	03 E	4.03	D	
34 S	03 E	5		
34 S	03 E	5.01		
34 S	03 E	5.02		BLOCKED BOTH ENDS
34 S	03 E	5.04		DECOMMISSION
34 S	03 E	5.05		
34 S	03 E	7		
34 S	03 E	7.01		
34 S	03 E	7.02		
34 S	03 E	7.03		DECOMMISSION
34 S	03 E	7.04		GUARD RAIL INSTALLED?
34 S	03 E	9	A	VINE MAPLE ROAD
34 S	03 E	9	B	VINE MAPLE ROAD
34 S	03 E	9	C	VINE MAPLE ROAD
34 S	03 E	9	D	VINE MAPLE ROAD
34 S	03 E	9	E	VINE MAPLE ROAD
34 S	03 E	9	F	VINE MAPLE ROAD
34 S	03 E	9.01	A	
34 S	03 E	9.01	B	MAY BE ECOMMISSIONED NATURALLY
34 S	03 E	9.02	A	WAS BLOCKED
34 S	03 E	9.02	B	INSTALL BLOCK @ BOTH ENDS
34 S	03 E	9.02	C	ONCE BLOCKED BOTH ENDS; PORTION OF THIS SEG TO BE BLOCKED; REST OPEN.
34 S	03 E	9.03	A	missed opportunity for culvert - BLOCK @ PROPERTY LINE
34 S	03 E	9.03	B	
34 S	03 E	9.03	C	
34 S	03 E	10.01	A	OLD RAIL ROAD GRADE
34 S	03 E	10.01	B	OLD RAIL ROAD GRADE
34 S	03 E	10.01	C	OLD RAIL ROAD GRADE
34 S	03 E	10.01	D	ALREADY BLOCKED? DECOMMISSION
34 S	03 E	10.01	E	ALREADY BLOCKED? DECOMMISSION
34 S	03 E	11	A	
34 S	03 E	11	B	
34 S	03 E	11.01	A	GUARD RAIL
34 S	03 E	11.02	A	
34 S	03 E	11.02	B	ROCK STREAM CROSSING
34 S	03 E	11.02	C	IMPROVE STREAM CROSSING
34 S	03 E	12	A	REDUCE MAINTENANCE
34 S	03 E	12	B	REDUCE MAINTENANCE
34 S	03 E	12	C	REDUCE MAINTENANCE
34 S	03 E	12.02		REDUCE MAINTENANCE
34 S	03 E	12.05		DECOMMISSION
34 S	03 E	12.06		DECOMMISSION
34 S	03 E	15.01	B	
34 S	03 E	15.01	C	
34 S	03 E	15.02	A	
34 S	03 E	15.02	B	COULD BLOCK
34 S	03 E	17	A	IS THIS A ROAD?
34 S	03 E	17	B	

APPENDIX E - ALTERNATIVES CONSIDERED BUT ELIMINATED

ALTERNATIVE A-1 - Approximately 418 acres were originally considered for harvest entry but eliminated from consideration due to current stand conditions or access concerns.

Township-Range-Section	OI Unit	Acres
34S-3E-14	001	25
	002	23
	003	14
	004	18
34S-3E-15	004	73
	006	18
	008	13
34S-3E-23	001	16
	009	14
	012	35
34S-3E-25	005	13
34S-3E-26	001	88
	002	39
	003	7
	004	22
	TOTAL	418

## APPENDIX F - SILVICULTURAL PRESCRIPTION & MARKING GUIDELINES

### SILVICULTURAL PRESCRIPTION - TITANIC TIMBER SALE MANAGEMENT DIRECTION AND OBJECTIVES

#### Management Direction

To harvest timber on matrix lands as provided for under the Medford District Resource Management Plan and the Record of Decision for the Northwest Forest Plan.

#### Treatment Objectives

The objectives of a harvest entry in the Titanic sale area at this time are:

1. To favor a return to the seral phase of the white fir series as a long term silvicultural approach to provide for sustainable forest conditions. Potential climatic change may alter conditions on these sites such that the future sustainable vegetation may be the more drought tolerant seral phases of the white fir series. Favored species should be the shade intolerant and intermediates, ponderosa pine, sugar pine, incense cedar, Douglas-fir and hardwood species.
2. In merchantable second growth stands, to thin from below to redistribute growth to vigorous dominant and co-dominant trees.
3. To harvest trees which show characteristics of poor vigor.
4. To maintain coarse woody debris, snags and large green conifers for long term site productivity and biological legacies.
5. To harvest trees which due to insects, disease, or past logging damage are at high risk of mortality or threaten the health of surrounding residual trees.
6. To adequately prepare units for seedling establishment and growth by providing suitable site conditions for planting and overstory shelter for frost protection.
7. Return areas of diminished conifer productivity to their full, long term capability..

#### SITE/STAND DESCRIPTION

##### 1. General Description of the Site

The proposed sale area is located in portions of Sections 11, 23, 24 and 25 Township 34S, Range 3E.

##### 2. Abiotic Conditions

- a. Soil types - The dominant soil types are the Geppert and Freezner soil series. The Freezner-Geppert soil complex is defined as 60% Freezner soils and 35% Geppert soils with 5% inclusions. Freezner soils are very deep, well drained and have a clay loam subsoil. The Geppert soil is moderately deep and is skeletal (> 35% rock fragments in the subsoil with a extreme cobbly clay subsoil.
- b. Topography - The landform within this area is generally flat to gentle slopes and not highly dissected. The elevational range is approximately 3100- 3600 feet ASL. Precipitation averages 45" annually, with approximately 7" of dry season precipitation.

c. Potential site problems - High growing season temperatures, frequent frosts, high evaporative demands characterize the climate of this sale area. Frost can be a regeneration problem. Cold air often accumulates (puddles) in low lying areas with slopes less than 15%. Late frosts caused by excessive loss of heat through nighttime re-radiation are a common occurrence in some areas. The degree of vegetative frost damage is influenced by terrain, soil moisture content, and the amount and kind of ground cover present.

d. Site Index - The average site index within the sale area is 88 for Douglas-fir, based upon Hann-Scrivani site index equations with a base age of 50 years. Site index is the average height of dominant trees at age 50. Height growth of dominant trees is relatively independent of stand density and therefore can be used as a measure of site productivity.

### 3. Biotic Conditions

a. Plant associations - The north/south orientation of the Cascade Mountains, provides the environmental gradient that influences the presence and abundance of vegetative species. Slope, aspect, elevation, soil depth and geology further define the extent and occurrence of various species. Within the proposed Titanic timber sale area, white fir is the dominate plant series. The white fir series is one of the most widespread, diverse and productive plant series of the southern Oregon Cascades. Ponderosa pine, sugar pine, incense cedar, and Douglas-fir represent the early seral component of this series. Douglas-fir generally dominates the overstory of most stands before being replaced by white fir.

The plant communities are on the warm/dry end of the environmental gradient, with moisture limitations late in the growing season limiting biomass production. The understory is dominated by white fir, with Douglas-fir common. White fir, Douglas-fir, incense cedar and sugar pine will invade the site following disturbance. Hardwoods present include minor amounts of California black oak, madrone in areas of relatively recent fires and golden chinkapin on shallow rocky soils. Shrub competition is generally moderate to severe following site disturbance in which the overstory canopy is opened up (< 60% crown closure). Vegetative management will be required to insure successful establishment and growth of conifer regeneration. Shrub species which are present in varying amounts are deerbrush ceanothus, oceanspray, vine maple, hazel, red stem ceanothus, oregongrape and thimbleberry. Common herbaceous vegetation includes, pathfinder, western starflower, western twinflower and white inside-out flower.

b. Stand history - Historically, fire was the primary large scale natural disturbance event. Both stand replacement fires and less intense underburns were common prior to fire suppression. High summer temperatures and moderate precipitation provide conditions favorable for fires. Intense stand regeneration fires occur approximately every 80-200+ years, with less intense underburns more frequent. The presence of madrone or ponderosa pine indicates relatively recent fires.

During the past 70 years, logging has replaced fire as the primary event that has shaped stand condition and structure. The most recent entries occurred during the 1980's in which portions of sections 23, 24 & 25 were clearcut or partial cut.

c. Structure Description - The structural characteristics of the stands within the proposed sale area are either single canopy even-aged stands (60-90 years old) or multi-canopy stands. Widely scattered 40" + Douglas-fir trees are also present in some of the younger even-aged stands, fire remnants of previous stands..

d. Insect, Disease, Forest Health

Root pathogens are not a widespread problem but do occur in the area. Infection centers of *Armillaria ostoyae* and *Phellinus weirri* root pathogens are present. Small pockets of white fir, ponderosa pine and Douglas-fir are affected.

In some small areas of section 25, Douglas-fir mistletoe is present and affecting tree vigor. Mistletoe is host specific and may cause: tree mortality, growth loss, alteration of crown and canopy structure, increased fire hazard and increased susceptibility to bark beetles, root rots and drought.

Pocket gopher populations are at endemic levels within the proposed sale area. Creation of favorable gopher habitat will be discouraged by maintaining canopy closure and limiting site preparation to excavator piling. Re-initiation of early seral herbaceous vegetation will be minimized.

e. Coarse woody debris (CWD) - Transects were completed within the sale area. The amount and decay classes of woody debris reflects the stage of stand development. In a natural cycle, two stages of stand development typically have the greatest amounts of CWD. Those stages are, stand initiation following a stand replacement event and as the old growth phase.

The objectives within the treatment area are: 1). In the younger 60-90 year old stands maintain existing levels as they currently are. 2). In stands proposed for shelterwood retention create or maintain 120 linear feet of logs per acre greater than or equal to 16 inches in diameter and 16 feet long, decay class 1&2.

f. Snags - The kind and amount of snags varies depending on the stage of stand development. Under natural processes, early and old growth stands typically have the greatest amounts of stage 1&2 snags. In late seral stands, the snag component is usually variable with the majority in stages 3, 4 & 5. The objective of this prescription is to retain all stage 1&2 snags for wildlife and future coarse woody debris. The only instances where stage 1 snags may be removed in areas are when they are a safety hazard. In the shelterwood retention units the target level of snags is 1.8 snags per acre.

## ANALYSIS IN SUPPORT OF THE PRESCRIPTION

The target stand reflects not only what is planned for the future but also what is expected immediately after treatment. The target stand represents optimum conditions to strive for through management.

### **Target Stand - Individual Tree Mark (ITM), Stands: 23-006, 23-010 & 23-002**

Immediately following the harvest entry, these stands are composed of the most vigorous trees of all species. Large healthy ponderosa pine have been released to insure their continued presence in the stand. Species composition is dominated by Douglas fir, with smaller amounts of ponderosa pine, sugar pine, white fir and incense cedar. All hardwoods have been left. Vertical and biological diversity is present through the retention of healthy trees of all age and size classes. Basal area in small even-aged stands have been regulated to reduce density levels and to accelerate growth rates and vigor in co-dominant and dominant crown classes. Basal area is approximately 160-180 sq. ft. Coarse woody debris (CWD) is present and provides conditions favorable for nutrient recycling, soil mychorrhizae, and the development of nitrogen fixing bacteria. Cull trees have been left to insure that a near-term "pulse" of CWD and snags will be available.

YEAR	TREATMENT
0	<ul style="list-style-type: none"> <li>* Initial harvest - risk mark in all age classes and thin where appropriate.</li> <li>* Use widely spaced designated skidtrails, directional falling and log length skidding to reduce site impacts.</li> <li>* Lop and scatter heavy slash concentrations.</li> <li>* Slash all sprung or severely damaged conifers and hardwoods between 1&amp;6"</li> <li>* Where necessary, seedlings and saplings in the understory have been thinned and released from brush competition.</li> </ul>
10-20	<ul style="list-style-type: none"> <li>* Conduct stand exam to assess stand conditions and to determine if any additional management treatments are needed.</li> </ul>

### Individual Tree Mark (ITM) - Silvicultural Options Considered:

The silvicultural prescription process considered other harvest methods as well as no action.

Existing stand condition: In the stands recommended for ITM, a large percentage of the trees have good crown ratios and vigor; a smaller percentage of the trees are showing symptoms of decline (poor crown ratios & chlorotic thinning foliage). As a tree matures and grows larger, the tree requires an increasing amount of photosynthates (food) to maintain day to day metabolic processes. Without a vigorous healthy crown to produce enough photosynthates the tree is under considerable stress. With an increasing number of trees under stress, insect populations also increase and attack poor vigor trees.

Based upon the existing stand conditions a regeneration harvest is not recommended for these stands. With healthy overstory trees as well as variable amounts of understory trees a

healthy stand can remain following entry. Stand densities will also be reduced, freeing up site resources (water & nutrients) for the remaining trees. The post harvest stand would be more vigorous and resilient to environmental stresses (drought, insects, disease, climate change).

**Target Stand - Modified Shelterwood Retention - Stands: 23-002W, 25-004N & 25-004S**  
12-25 green conifers/acre, greater than 20" dbh remain following entry. Healthy Douglas-fir, ponderosa pine, white fir, incense cedar and sugar pine will be favored to leave as the overstory trees greater than 20" dbh. Additionally, all vigorous ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods regardless of size would be left unless thinning of pockets is appropriate. . All of the smaller diameter white fir 8-20" would removed unless needed to meet canopy closure targets. All white fir 1 to 4-6" would be removed. Basal area would approximate 120-160 square feet, with canopy closure 30-40% (except in stand 23-00W, canopy closure will be less than 25%). This density of leave trees and canopy closure will provide frost protection for the establishment of planted seedlings. Trees smaller than 20" dbh would be an important component towards meeting the desired canopy closure. In addition to stage 3,4 & 5 snags a minimum of 1.8/acre stage 1&2 snags are present. All decay classes of coarse woody debris are present (either standing or down) with a minimum of 120 linear feet of decay class 1&2. Site preparation has included shrub control and slash treatment by excavator piling from designated skidtrails. These units have been planted with a mix of conifer species. Species diversity is present with Douglas-fir, ponderosa pine, sugar pine, and incense cedar. Once the understory is established and the stand has reached the point where frost tolerance requirements have been met, approximately 15-30 years, overstory trees in excess of 6-8 trees/acre may be removed. Stand density would be periodically regulated by precommercial thinning and commercial thinning entries. Approaching age 100, this stand is a fully stocked stand of healthy, vigorous dominant and co-dominant second growth trees with scattered large remnants. Stocking would be approximately 35% relative density (185 SDI).

**MODIFIED SHELTERWOOD RETENTION**

YEAR	TREATMENT
0	<p>* Harvest - Leave 12-25 green conifer trees/acre, &gt; 20" dbh and all vigorous ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods regardless of size. Smaller diameter white fir 8-20" would be removed unless needed to meet canopy closure targets a minimum.</p> <p>1.8 snags/acre (stage 1&amp;2) and 120 linear feet coarse woody debris (decay class 1&amp;2, 16" X 16") would be left.</p> <p>* Use widely spaced designated skidtrails, directional falling and log length skidding to reduce site impacts.</p> <p>* Site preparation: Slash unmerchantable 1 to 4-6" white fir and all trees damaged from logging activities, 1-6". Slash all conifers and hardwoods between 1&amp;6" within the dripline of leave pine trees. <b>Leave all other healthy unmerchantable trees.</b> Excavator pile brush and slash. Limit piling of logging slash to pieces &lt; 16" diameter.</p> <p>* Rip skidtrails</p> <p>* Burn piles</p>
0-1	<p>* Plant with a mix of ponderosa pine, Douglas-fir, sugar pine and incense cedar. Plant Douglas-fir in the more closed canopy conditions and ponderosa pine, sugar pine and incense cedar in the more opened canopy conditions. Apply appropriate maintenance (vexar tubing, mulching, shading, scalping, baiting) treatments to insure planting success.</p>
1	<p>* Conduct 1st year survival survey, assess need for supplemental planting or additional maintenance treatment.</p>
3	<p>* Conduct 3rd year survey, assess need for replanting and/or additional maintenance needs.</p>
5	<p>* Conduct 5th year stocking survey. Target stand will have a minimum a 280 well spaced trees per acre. Competing vegetation will have been controlled, with trees growing rapidly.</p>
10-15	<p>* Precommercial thin the understory if more than 400 trees per acre are present.</p>
15-30	<p>* Assess the potential to remove trees in excess of 6-8/acre.</p>
35	<p>* Average diameter at breast height is 10". commercial thin if stand density is appropriate. otherwise delay until crown closure and competition reduces growth rates.</p>
45-80	<p>* Commercial thin if appropriate, consider underburning to provide nutrient "pulse" and for regulating understory seedling and sapling component.</p>
100+	<p>* Assess stand and watershed conditions for possible regeneration harvest.</p>

## Shelterwood Retention - Silvicultural Options Considered:

**Existing Conditions:** The overstory in many stands exhibit declining characteristics, such as, poor crown conditions, low crown ratios, poor growth rates and mistletoe infestation. White fir where it occupies the dominant and co-dominant crown position is often of declining vigor. The understory is predominantly well distributed small white fir 1-6" in diameter dbh.

### Uneven-aged Regeneration Options:

Neither individual tree selection nor group selection are desirable due to the structure, vigor and species composition of the existing stands. These types of methods would further encourage the establishment and growth of undesirable white fir.

### Intermediate Treatment Options:

Commercial thinning is not appropriate due to the advanced age, structure, poor vigor and current stand density within the units.

**Target Stand - Density Management - Stands: 11-002, 11-003, 11-004, 11-005, 11-006, 11-007, 23-002, 23-003, 23-007, 23-008, 24-002, 24-004, 24-005 & 24-006.**

Immediately following the harvest, these stands will have density levels that near the carrying capacity of the site. Species composition is well represented with Douglas-fir, ponderosa pine, sugar pine, incense cedar and white fir. Hardwood species occur as an occasional stand component either singly (California black oak) or in clumps (madrone or chinkapin). Trees sizes include seedlings, saplings, and small and large conifer trees. The residual merchantable trees (>8" dbh) are characterized by co-dominant or dominant attributes, such as, crown ratios greater than 35%, good growth rates and larger diameters. The mosaic of size classes provides the structural diversity. These stands will possess late successional characteristics with growth accelerated. Crown closure will be approximately 45% or greater, with basal area ranging from 130-150 sq.ft.. The amount of coarse woody debris (CWD) will be dependant upon the current levels, availability of overstory snags, and residual green trees. Stage 1 and 2 snags will remain for wildlife. Large fire remnant trees generally >200 years and >40" dbh will be a scattered stand component.

YEAR	TREATMENT
0	<ul style="list-style-type: none"> <li>* Initial harvest - thin from below, favor seral species, utilize relative density of 35%.</li> <li>* Use widely spaced designated skidtrails, directional falling and log length skidding to reduce site impacts.</li> <li>* Lop and scatter heavy slash concentrations.</li> <li>* Slash all sprung or severely damaged conifers and hardwoods between 1&amp;6"</li> </ul>
10-20	<ul style="list-style-type: none"> <li>* Conduct stand exam to assess stand conditions and to determine if any additional management treatments are needed.</li> </ul>

**POTENTIAL FOR "AVOIDANCE" VEGETATION MANAGEMENT STRATEGIES:**

The objectives of vegetative management are:

- to improve early soil moisture conditions by eliminating or reducing the transpirational demands of competing brush and herbaceous vegetation.
- to improve survival by manipulating the distribution, density and composition of competing vegetation.
- to create access for tree planting and subsequent silvicultural treatments.
- to increase site productivity and tree growth leading to a reduction in rotation length.
- to reduce the risk of wildfire.

With these objectives in mind, possible avoidance or prevention strategies are formulated. Under these strategies, control of vegetation relies in total or in part on habitat modifications or the complementing of natural ecosystems and processes. Method considered fall under three categories:

1. Manipulation of cutting methods -- partial cutting methods which retain sufficient

canopy to reduce/prevent understory shrub growth yet still provide conditions suitable for tree growth or regeneration (natural or artificial).

2. Intensive methods -- fire, mechanical (cat piling/excavator piling/scarification/ripping), handtools (brushing).
3. Combinations of 1 & 2.

For the Titanic timber sale, vegetation control is tied to the cutting method and the retention of sufficient canopy to preclude the establishment of excessive amounts of competing shrubs. Within the shelterwood retention units excavator piling of brush greater than 1 inch in diameter would occur.

## MONITORING

Implementation of the standard and guidelines in the Record of Decision (ROD) and management direction contained within the Medford District Resource Management Plan and Final Environmental Impact Statement (RMP/FEIS) require a monitoring system to insure effective on-the-ground results. The ROD states the following: "Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies. The implementation of these standards and guidelines will be monitored to ensure that management actions are meeting the objectives of the prescribed standards and guidelines, and that they will comply with laws and management policy. Monitoring will provide information to determine if the standards and guidelines are being followed (implementation monitoring), verify if they are achieving the desired results (effectiveness monitoring), and determine if underlying assumptions are sound (validation monitoring). Some effectiveness and most validation monitoring will be accomplished by formal research."

Monitoring of the proposed actions will follow the outline in the Medford District RMP/EIS. Volume II, Appendices 147-163. Monitoring will be specific to the land allocations and resources affected in the Titanic sale area.

Monitoring should:

- \* Detect changes in ecological systems from both individual and cumulative management actions and natural events
- \* Provide a basis for natural resources policy decisions
- \* Provide standardized data
- \* Compile information systematically
- \* Link overall information management strategies for consistent implementation
- \* Ensure prompt analysis and application of data in the adaptive management process
- \* Distribute results in a timely manner

Monitoring begins with resource assessment and data collection which describes the existing conditions prior to management actions. Data collection is in the form of sampling which provides a representative description of the proposed treatment area. Stand exams were completed in the proposed sale area. Stand information was collected, using a comprehensive stand exam process. Within stands, a systematic sampling grid was used to establish plot

centers. From the plot centers a variable plot and two nested fixed plots were used to record tree data. Information collected included:

- tree growth
- presence of insects or disease
- stand structure (tree height, diameter, crown ratio)
- species composition for all vegetation (trees, shrubs, herbaceous vegetation).
- coarse woody debris (diameters, length, decay class)
- canopy closure
- aspect, percent slope and topographic position
- snags (diameter, height and decay class)
- shrub and herbaceous vegetation (species, percent cover, location by slope and aspect)
- site index tree to determine site class/potential.

This information is then used in a BLM stand exam program that provides a variety of analysis reports. These reports provide a description of stand characteristics and a detailed assessment of stand conditions and health.

Post harvest monitoring can then be implemented, using the pre-harvest stand information to determine if the objectives have been met.

## TITANIC MARKING GUIDELINES

### Summary of treatment objectives

1. To favor a return to the seral phase of the white fir series as a long term silvicultural approach to provide for sustainable forest conditions. Favored species should be the shade intolerant and intermediates, ponderosa pine, sugar pine, incense cedar, Douglas-fir and hardwood species.
2. In merchantable second growth stands, to thin from below to redistribute growth to vigorous dominant and co-dominant trees.
3. To harvest trees which show characteristics of poor vigor.
4. To maintain coarse woody debris, snags and large green conifers for long term site productivity and biological legacies.
5. To harvest trees which due to insects, disease, or past logging damage are at high risk of mortality or threaten the health of surrounding residual trees.
6. To prepare units for seedling establishment and growth by providing suitable site conditions for planting and overstory shelter for frost protection.
7. Return areas of diminished conifer productivity to their full, long term capability.

### INDIVIDUAL TREE SELECTION (ITS)

UNITS 23-006 - 55 ACRES, 23-010 - 16 ACRES & 25-002 - 49 ACRES

1. Remove trees showing characteristics of poor vigor. This and density reduction are the primary objectives for these stands. The average residual basal area should be approximately 160-180 square feet. Clumpiness of residual trees is okay, tree vigor is more important than meeting a spacing requirement. Spatial and structural variability is a desired stand condition.
2. Where appropriate use RD 35 spacing guidelines to reduce density levels.
3. Release around vigorous dominant or co-dominant ponderosa pine and sugar pine using RD 25 spacing guidelines. Pine species selected for release should have full crowns with dark green foliage and minimal weak spots. Pine species with poor crowns characterized by a ragged appearance as well as foliage which is bunchy and of poor color should be removed. **do not release around.** All trees, underneath the dripline of released pines should be removed.
4. Leave all hardwoods.
5. Leave all snags, stages 1-5, except those that are a safety hazard.
6. Leave all coarse woody debris.
7. Minimize the marking of large, >20" dbh, broken, fork top and deformed trees. Retain for plant and animal habitat, as well as future sources of coarse woody debris and snags.

Unit 23-006: Risk mark poor vigor overstory. Release healthy ponderosa pine. Thin dense pockets favoring Douglas-fir.

Unit 23-010: Remove suppressed, intermediate and poor vigor trees. Leave highest possible canopy closure to discourage vine maple growth. Scattered pine throughout, leave only the best.

Unit 25-002: Fomes pini common in Douglas-fir. Remove DF with mistletoe on the eastside of unit. Risk mark poor vigor overstory.

## MODIFIED SHELTERWOOD RETENTION

UNITS 23-002W - 24 ACRES, 25-004N - 33 ACRES & 25-004S - 40 ACRES

The objectives are:

1. To favor a return to the seral phase of the white fir series as a long term silvicultural approach to provide for sustainable forest conditions. This will be accomplished by:
  - a). Discriminating against second growth white fir, particularly in the <1-6" size class.
  - b). Piling of shrubs and logging slash to create planting spots for favored seral species.
  - c). Planting of Douglas-fir in the more closed canopy conditions and ponderosa pine, sugar pine and incense cedar in the more opened canopy conditions.
2. To provide for frost protection by retaining adequate canopy closure.
3. To minimize pocket gopher activity by discouraging early seral forb production.

*Due to stand structure and varying tree condition the post harvest stand will not be a uniform distribution of evenly spaced overstory trees. Rather it will reflect the existing stand conditions and have a variable pattern of species, size and structural conditions which will provide shelter for planted seedlings.*

The minimum requirements in these units are:

1. 1.8 wildlife trees/acre. >20" dbh. See the table below for the existing number of snags/acre.
2. 120 linear feet of CWD. See the table below for the existing level of CWD.
3. The target canopy closure should be 30-40%. Depending on stand conditions some areas may have greater canopy closure and others less. For frost protection the higher the canopy closure the better.

Reference: 12 TPA >20" dbh = approximately 20% canopy closure.

18 TPA >20" dbh = approximately 30% canopy closure.

25 TPA >20" dbh = approximately 38% canopy closure.

In unit 23-002W, the canopy closure will be less than 30%, due to existing levels and overstory tree condition.

4. Target residual basal area, 100-160 square feet. Stand conditions will result in variable levels of basal area across the stand.
5. 12-25 green conifers/acre, >20" dbh. Leave trees should have the following attributes:
  - a). windfirm (dominant/co-dominant)
  - b). disease free. specifically, mistletoe free Douglas-fir.
  - c). Crown ratio >30%, with a healthy crown, dark foliage, dense needles.
  - d). Favor healthy seral species, ponderosa pine, sugar pine, incense cedar, where possible. Tree diameter should not be the deciding factor for removing a tree, crown vigor should.
6. All healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods regardless of size should be left (<1"-20"dbh). These trees should have the following attributes:
  - a). crown ratios 30%
  - b). healthy foliage
  - c). disease and insect free.
 Small diameter white fir 8-20" should be left if needed to meet canopy closure targets. *Trees smaller than 20" dbh will be an important component towards meeting the desired canopy closure.*
7. Retain all large hardwoods.

### EXISTING CONDITIONS

UNIT	ACRES	SNAGS/ACRE > 16"DBH, 1&2	CWD/LFT/ACRE DC 1&2 >16" 16'	TPA >20"DBH
23-002W	24	2.3	256	22
25-004N	33	2.9	103	36
25-004S	40	2.2	68	30

Unit 23-002: There is a concentrated pocket of blowdown in the southeast corner of the unit. Within this area, excess merchantable CWD (>120 LFT) can be salvaged. In all other areas leave the existing CWD. Cull (white fir with indian paint fungus) trees should be left for additional wildlife trees and future CWD.

Unit 25-004N: Along the southern boundary of this unit there is a small thinning area, thin to RD 35. Some DF mistletoe is present, remove the infected trees. Adjacent to this area the stand type changes and DF mistletoe occurs in small pockets, with both overstory and understory trees infected. This is generally limited to the southeast 1/4 of this unit. Remove all infected trees, favor leaving white fir, pine species, incense cedar and hardwoods when available.

Unit 25-004S: The northern end of this unit has healthier trees and is expected to have a higher residual canopy closure. The southern end has a scattered overstory of large trees of variable condition, many declining. In this areas, smaller trees <20" dbh will be an important component in meeting the target canopy closure.

#### THIN

UNITS 11-002-18 Acres, 11-003 - 62 Acres, 11-004 - 13 Acres, 11-005 - 19 Acres, 11-006 - 10 Acres, 11-007 - 6 Acres, 23-002 - 34 Acres, 23-003 - 13 Acres, 23-007 - 10 Acres, 23-008 - 59 Acres, 24-002 - 31 Acres, 24-004 - 14 Acres, 24-005 - 7 Acres & 24-006 - 10 Acres.

1. Commercial thin second growth stands/clumps

\* Stocking will be reduced to RD 35

\* Leave trees need to be dominant and codominant with the best crown ratios.

\* Favor healthy ponderosa pine, sugar pine, Douglas-fir, incense cedar.

\* Trees to be removed are in excess of wildlife, CWD and biological diversity needs.

2. Leave all large fire remnant trees >40" dbh, regardless of condition.

Unit 11-002: Some individual tree selection along the north boundary. Thin dense pockets. Lots of vine maple in between. Laminated root rot is present along the boundary with unit 11-005.

Unit 11-003: This stand was last harvested in 1971, Trees to be marked occur in scattered clumps located between numerous skidtrails. Volume is low.

Units 11-004, 11-005, 11-007 - All stands are similar. Dense stands, thin to RD 35.

Unit 11-005: The unit acreage will be reduced once the goshawk habitat area is identified.

Unit 11-006: Ponderosa pine is common in this unit, several have been attacked and killed by bark beetles. Release the only the most vigorous pine, otherwise favor Douglas-fir.

Unit 23-005: A old cabin site is located in an opening adjacent to Unit 23-007. Do not mark any trees around the perimeter of this area. Any trees marked beyond the immediate area will require directional falling away from the site.

**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'

Definition: Poor Vigor - High Risk of Mortality
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Trees available for removal as poor vigor - high risk include:

1. 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.

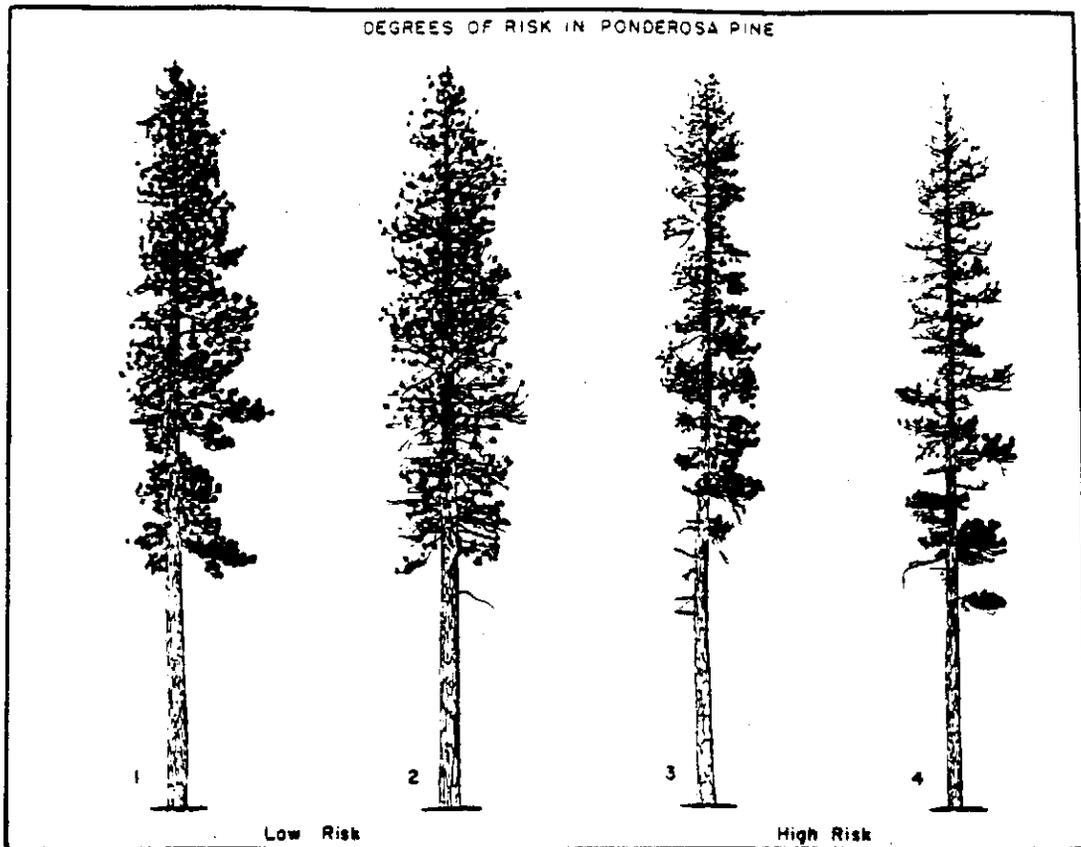
2. Insect infested trees

Douglas-fir and white fir trees undergoing attack from 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.

All snags and coarse woody debris will be maintained as they presently occur, except where noted in the marking guidelines.

DEGREES OF RISK IN PONDEROSA PINE



**#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.

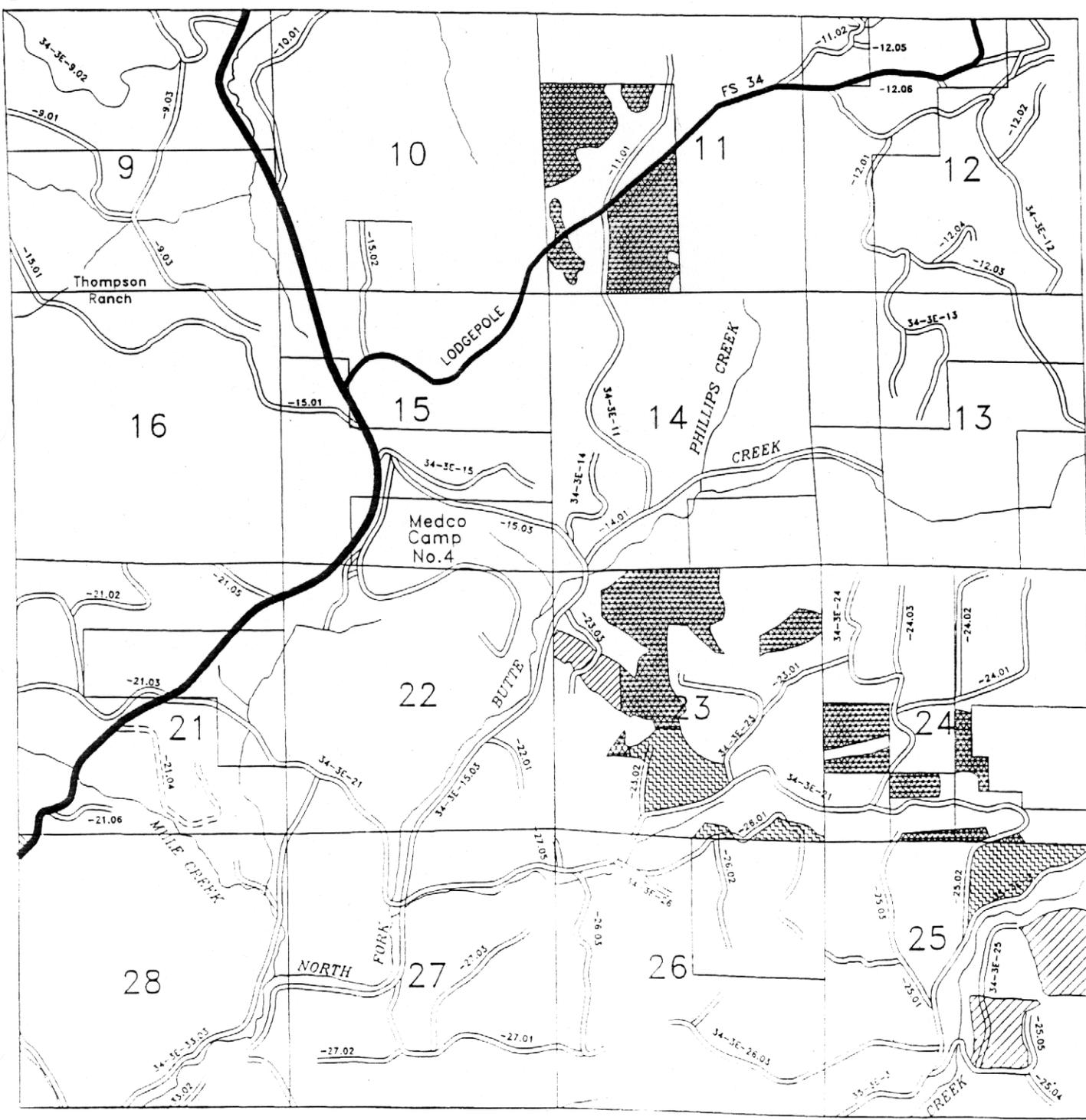
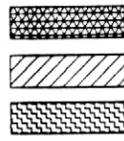
**#4 - VERY HIGH RISK**

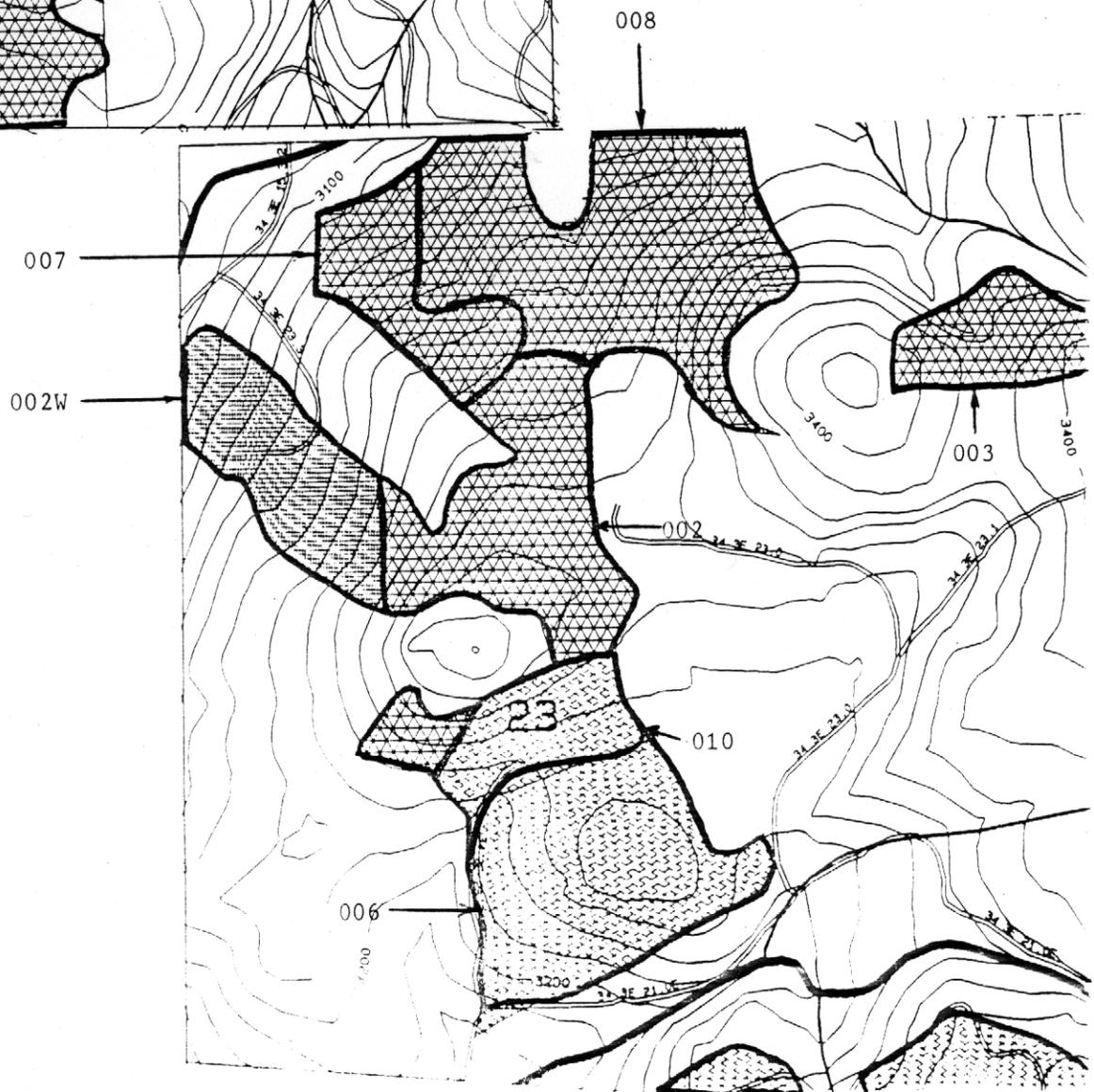
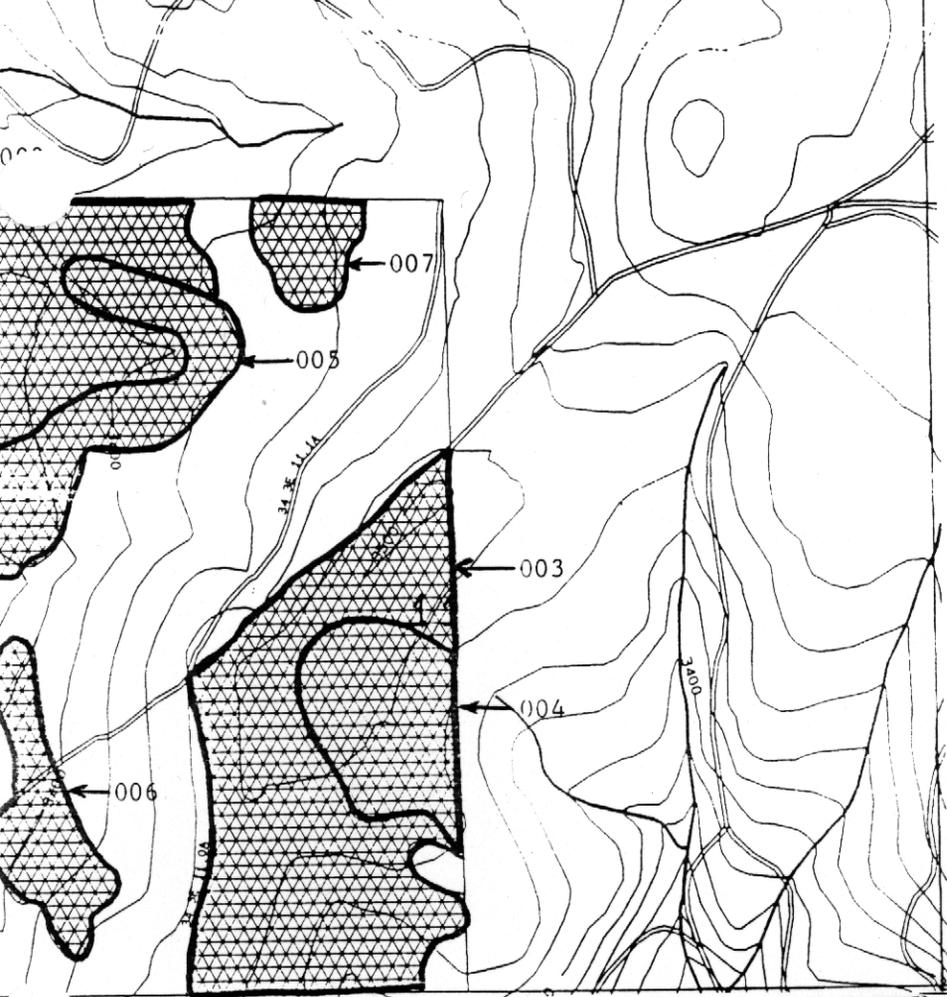
- \* Crowns in poor condition, ragged or thin.
- \* Foliage thin or bunchy, needles short or sparse, poor color.
- \* Twigs and branches dead or dying, parts of crown definitely weakened.
- \* Crown width is very narrow and sparse or limbs all on one side.

# TITANIC TIMBER SALE

T 34S., R. 3E., Sec. 11, 23, 24, 25

Commercial Thinning  
Shelterwood Retention  
Individual Tree Mark







TO: E.A. LEAD  
FROM: DOUGLAS KENDIG RIPARIAN AND SENSITIVE PLANT SPECIALIST  
DATE: NOVEMBER 17, 1997  
SUBJECT: RIPARIAN RESTORATION PROJECTS TITANIC E.A.  
SENSITIVE PLANT SURVEYS

## APPENDIX G

### General Description

The current condition of the riparian areas targeted for restoration are in the process of slow recovery from deforestation, logging equipment operation and cattle grazing. Most of the large overstory conifer trees along Butte Creek and Camp Creek have been harvested.. Structural characteristics of the original stand, such as canopy closure, canopy layers, biomass accretion, nutrient cycling, species associated with old-growth are lacking and are expected to develop slowly over a long period of time. Overstory conifer shade is absent allowing direct solar radiation and reradiation. Coarse woody debris inputs to the aquatic and riparian ecosystems are low. The grass and forb vegetative component is very high and comprised of mostly invader species. Riparian brush and hardwood species are well developed along the banks of Big Butte Cr.

A high proportion of the riparian reserve area is managed in early seral plantations. A shift to early seral vegetation has occurred in the riparian reserve area in comparison to what would normally be expected. Regeneration cuts have resulted in heavy frost layer and regeneration problems. Ponderosa pine was planted as conifer species resistant to frost damage, but the pine component of the plantations is higher than was found in the previous stand. Pine needles have changed the characteristics of the duff layer and lowered the pH of the soils. As a result the vegetative community has shifted to more acid loving species. Species complexity and diversity has declined particularly in relation to the nonvascular plant community.

A well developed road system was constructed along the major stream systems for access to timber. Some stream reaches have been highly constrained due to road construction activities such as along Big Butte Cr and Camp Cr at the confluence with Big Butte Cr. Some ephemeral and intermittent channels along Big Butte Creek and Camp Creek have been interrupted by skid road crossing and logging equipment.

Numerous log landings and cat trails were constructed and remain on riparian reserve lands from previous logging operations. Soil productivity on these sites is low to nonexistent. Soils remain in compacted and in various levels of degraded biological productivity and lack adequate vegetation. The result is a loss of productivity to the forest community. These sites remain impenetrable to root growth and water percolation, are unavailable to micro-organism, fungi communities and nutrient cycling and lack a developing vegetative community.

## Restoration Project Outline

Project	Location	Objective	Specific Elements	Acres
Ripping of compacted Soils	T.34S.R.3E. Sec 15, 23,24,25,26,27	Improve structural and productivity qualities	Till compacted landings and cat roads. Reforest as needed	
Reforest understocked Riparian and upland areas	T.34S.R.3E. Sec 15, 23,24,25,26,27	Improve conifer stocking/historic vegetative composition	Plant DF, WF and IC in riparian and upland areas. Consider frost areas. Protect from browse.	
Release Brushing	T.34S.R.3E. Sec 27	Reduce competition for sunlight	Circular cut to release existing conifer from brush and hardwoods.	

## APPENDIX I - STAND INVENTORY SUMMARY

### DEFINITIONS:

1. T-R-S

Township-Range-Section, the geographic location of the area.

2. OI #

Operational inventory (OI) unit number. This is a stand of trees with similar characteristics.

3. TOTAL MATRIX ACRES

Approximate acres of matrix lands proposed for harvest. Matrix lands are outside of reserves and special management areas that are available for timber harvest at varying levels (Record of Decision, C-39).

4. BA SQ FT

Basal area (BA) in square feet (SQ FT) as measured by the cross sectional area of a tree at 4.5 feet above the ground.

5. RD

Relative Density (RD) is a measure of crowding in a stand of trees. It compares the number of trees present to the number of trees that the site has resources (water, nutrients, sunlight) to support. At a relative density of 35-50%, stand vigor and growth is maximized. At relative densities greater than 60% the following conditions begin to occur:

- \* Competition related mortality becomes significant.
- \* Self thinning starts.
- \* Decline in growth.
- \* Volume growth/acre is offset by mortality.
- \* Increased susceptibility to insect attack and disease infection.

6. ROD CWD LFT/AC

Linear feet per acre (LFT/AC) of decay class 1&2 coarse woody debris (CWD) that is at least 16" on the large end by 16' in length as defined in the Record of Decision (ROD C-40).

7. SNAGS/AC, STAGE 1&2, > 16"

Number of dead standing stage 1&2 trees per acre greater than 16" diameter at breast height.

T-R-S	OI #	TOTAL MATRIX ACRES	VOLUME /ACRE BD.FT	BA SQ FT	RD	ROD CWD LFT/AC	SNAGS/AC STAGE 1&2 >16"	CANOPY CLOSURE %
34S 3E 11	002	8	-	-	-	-	-	-
	003	62	35021	206	.76	43	1.1	96
	004	13	44503	270	.83	-	-	100
	005	13	40095	227	.69	-	-	89
	006	7	36157	221	.71	0	9.3	92
	007	6	33603	200	.62	-	-	100
		(119)						
34S 3E 23	002	24	32949	132	.39	256	2.3	31
	002	34	29581	173	.66	0	0	86
	003	13	61622	316	1.0	0	0	100
	006	49	52346	223	.76	0	0	96
	007	14	55787	256	.79	0	0	99
	008	59	28924	201	.69	0	0	89
	010	16	108029	338	1.2	68	3.0	96
		(209)						
34S 3E 25	002	40	51000	224	.96	-	1.8	100
	004N	32	61162	232	.94	103	2.9	96
	004S	40	55998	250	.95	68	2.2	100
		(113)						
34S 3E 24	002	30	48552	271	.88	57	1.95	100
	004	14	32797	190	.55	-	-	75
	005	7	51744	265	.78	-	-	98
	006	9	48229	250	.75	-	-	95
		(60)						
	TOTAL	(509)						

## Appendix J

Bob Budesa

Within the perimeters of the Titanic project area there are portions of two livestock grazing allotments. The Big Butte Pasture (12,749 acres) of the Big Butte allotment, and the Parsnip Creek (11,759 acres) and Mule Creek Pastures (16,624 acres) of the Summit Prairie Allotment. All three of these pastures are rather large, and livestock are well distributed throughout each of them. The licensed livestock numbers in each of these pastures is as follows:

Big Butte Pasture	175 cows	June 1 - October 15
Parsnip Creek Pasture	170 cows	June 1 - September 30
Mule Creek Pasture	183 cows	June 1 - September 30

the livestock numbers listed above reflect those authorized to graze on both BLM and the old Medite Timber Corp. Lands, which now belong to Superior, Lone Rock, Rough & Ready, C&D Lumber and Rouge Resources. (See attached maps for ownership) Livestock numbers are based on the percentage of ownership in each pasture. Therefore, in the Big Butte Pasture for example, 40 % of the land is owned by BLM, and therefore 40% of the above listed livestock are licensed by BLM (70 cows). The remained are licensed by the private timber companies.

# Appendix K

**TABLE II  
TIMBER SALE**

ROAD NO.				LENGTH	SURFACE	CONTROL	REMARKS
				MILES	TYPE		
34S	03E	11	A	0.31	NAT	BL	RENOVATE AND SURFACE; REALIGN APPROACH @ ROAD JCT 34
34S	03E	11.01	A	0.55	NAT	BL	DECOMMISSION
34S	03E	12.04		0.31	ASC	BL	DECOMMISSION
34S	03E	13	B	0.38	ASC	BL	DECOMMISSION BEYOND PUMP CHANGE
34S	03E	14.01	B	0.29	NAT	BL	RENOVATE, INSTALL ARMORED WATER DIP (AWD) AND SURFACE
34S	03E	15	A	0.05	NAT	BL	RENOVATE, REINFORCE SUBGRADE, AND SURFACE
34S	03E	15	B	0.61	NAT	BL	DECOMMISSION
34S	03E	15.03	A1	0.88	PRR	BL	RENOVATE AND SURFACE
34S	03E	15.03	A2	1.22	PRR	PV	RENOVATE AND SURFACE
34S	03E	15.03	B1	0.27	PRR	BL	RENOVATE AND SURFACE
34S	03E	15.03	B2	0.68	ASC	BL	REPLACE UNDERSIZED CROSS DRAIN AND/OR INSTALL AWD
34S	03E	21	A	0.18	ASC	BL	RENOVATE AND SURFACE
34S	03E	21	B	0.86	ASC	PB	RENOVATE AND SURFACE
34S	03E	21	C1	0.29	ASC	BL	RENOVATE AND SURFACE
34S	03E	21	C2	0.64	ASC	BL	RENOVATE AND SURFACE
34S	03E	21	D	0.34	ASC	PB	RENOVATE AND SURFACE
34S	03E	21	E	0.89	ASC	BL	RENOVATE AND SURFACE
34S	03E	21	F	0.26	ASC	PB	RENOVATE AND SURFACE
34S	03E	21	G	0.53	ASC	BL	RENOVATE AND SURFACE
34S	03E	21.02		0.53	NAT	BL	DECOMMISSION
34S	03E	21.03	A2	0.15	NAT	BL	DECOMMISSION
34S	03E	21.05		0.25	<del>NAT</del>	BL	<del>DECOMMISSION</del>
34S	03E	21.06		0.14	NAT	BL	DECOMMISSION
34S	03E	23		0.59	NAT	BL	BLOCK BYPASS ON EXISTING GUARDRAIL; INSTALL AWD
34S	03E	23.01		0.3	NAT	PV	FULL DECOMMISSION ON RLM LANES
34S	03E	23.02		0.3	ABC	BL	RENOVATE
34S	03E	23.03		0.41	ABC	BL	DECOMMISSION AFTER USE
34S	03E	24	A	0.46	ABC	PV	RENOVATE
34S	03E	24	B	0.56	ABC	PV	RENOVATE
34S	03E	24.04	A	0.25	NAT	BL	NEW SPUR CONSTRUCTION; FULLY DECOMMISSION AFTER USE
34S	03E	25	A	0.91	ABC	BL	RENOVATE
34S	03E	25	B	0.28	NAT	BL	FULLY DECOMMISSION
34S	03E	25.01	A	0.19	ASC	BL	RENOVATE
34S	03E	25.01	B	0.15	NAT	BL	FULLY DECOMMISSION
34S	03E	25.02		0.62	ASC	BL	RENOVATE AND PLACE SPOT ROCKING
34S	03E	25.03		0.51	ASC	BL	RENOVATE
34S	03E	25.04		0.4	ABC	BL	RENOVATE
34S	03E	25.05		0.4	ABC	BL	RENOVATE
34S	03E	26	A	0.09	ASC	BL	RENOVATE
34S	03E	26.01		1.21	ASC	BL	RENOVATE
34S	03E	26.02		0.4	ABC	BL	REINFORCE SOFT SPOTS
34S	03E	27.01		0.96	PRR	BL	FULLY DECOMMISSION UNSURFACED SECTION
34S	03E	27.02		0.42	PRR	BL	FULLY DECOMMISSION UNSURFACED SECTION
34S	03E	27.03		0.47	PRR	BL	FULLY DECOMMISSION UNSURFACED SECTION
35S	03E	3	A1	1.1	ASC	BL	RENOVATE AND PLACE SPOT ROCKING
35S	03E	3	A2	0.7	ASC	BL	RENOVATE AND PLACE SPOT ROCKING
35S	03E	3	B1	0.54	ASC	BL	RENOVATE AND PLACE SPOT ROCKING
35S	03E	3	B2	1	ASC	BL	RENOVATE AND PLACE SPOT ROCKING
35S	03E	3	C	0.63	ABC	BL	RENOVATE AND PLACE SPOT ROCKING
35S	03E	10	A	0.94	ASC	PB	RENOVATE AND PLACE SPOT ROCKING
USFS	32			0.5	ASC	USFS	RENOVATE
USFS	34			1.34	BST	USFS	BRUSH

To: Titanic Timber Sale EA File

Date: 11-18-97

From: Jon Raby, Fishery Biologist, Butte Falls RA

Subject: Fisheries Input for Titanic Timber Sale EA File

### **Aquatic Habitat Restoration**

#### **Instream Projects**

*Large Woody Debris Placement (Tree Lining)* - The objective of large woody debris placement is to restore fish habitat complexity and provide improved spawning and rearing opportunities for native salmonid species in the North Fork (N.F.) of Big Butte Creek. Actions to complete this would include pulling over a total of 15-25 whole trees 21"- 30" dbh at 3-5 locations over a 3/4 mile stream. Material would be arranged in a pattern that mimics natural large woody debris accumulations. Trees for placement would come from the adjacent riparian reserve. Tree placement would be completed with a small yarder. Large woody debris placement would occur on the N.F. of Big Butte Creek in T.34S., R.3E., Section 27 at 3-5 sites over approximately 1.0 mile.

*Culvert Replacement* - The objective of culvert replacement is to restore fish habitat connectivity. Actions to complete this would include removing existing culverts and replacing them with bottomless arches or similar structures that provide a natural stream bottom and do not create jump pools below the structures. This action would occur where the 35-3E-3 road crosses Titanic Creek in T.34S., R.3E., Section 25 and where the 34-3E-15.03 road crosses the N.F. of Big Butte Creek in T.34S., R.3E., Section 23.

### **Fisheries/Aquatic Ecosystem**

The proposed project is predominantly located in the North Fork and the South Fork of Big Butte Creek watersheds within the Rogue River system. Approximately 53 acres of the proposed project located in T34S-R03E-Sec.11 occurs within the Beaver Dam Creek watershed of the Rogue River system above Lost Creek Dam.

Major fish-bearing streams within the proposed project area are the North Fork of Big Butte Creek, Camp Creek (tributary to the North Fork of Big Butte Creek) and Titanic Creek (tributary to the South Fork of Big Butte Creek). All streams located within the Beaver Dam Creek portion of the proposed project area are nonfish-bearing intermittent or ephemeral streams.

There are a variety of resident and anadromous fish species found within the North and South Forks of Big Butte Creek. Anadromous fish species which utilize these streams and their tributaries are coho salmon, steelhead trout, and potentially Pacific lamprey. Native resident fish species include cutthroat trout, rainbow trout and sculpin species. Non-native resident fish species include Eastern brook trout. Although coho salmon occur within the North Fork and South Fork of Big Butte Creek watersheds, they have not been documented as occurring within the boundaries of the proposed project area.

Coho salmon are listed as a threatened species under the Endangered Species Act of 1973 as amended (ESA), while steelhead trout are proposed for listing as threatened under the ESA. Pacific lamprey are a State of Oregon designated sensitive species. Overall, there has been a general decline in coho salmon and steelhead trout numbers in the Rogue River since record keeping began. It is suspected that Pacific lamprey and resident salmonid populations may be declining though this has not been documented (ODFW 1991).

A comprehensive aquatic habitat inventory has been completed for the North Fork of Big Butte Creek (ODFW 1996). Overall aquatic habitat conditions are currently in fair condition. Major habitat features found to be impaired are pool quantity and quality, spawning gravel quantity and quality, large wood abundance, and riparian condition.

Preliminary aquatic habitat assessments have been completed on Camp Creek, Titanic Creek and Beaver Dam Creek. On Camp Creek, stream reaches in T34S-R03E-Sec.27, 23 & 24 were assessed and found to be in fair to good condition. In general habitat elements found to be impaired were a relatively high proportion of fine sediment in riffle habitat, relatively low abundance of large wood, and a riparian area heavily influenced by the 20.0 road. On Titanic Creek, the stream reach located in T34S-R03E-Sec.25 was assessed and found to be in good to excellent condition. No outstanding impaired habitat elements were noted on Titanic Creek. On Beaver Dam Creek, stream reaches in T34S-R03E-Sec.03 & 09 were assessed and found to be in fair condition. No proposed harvest units are located in the Beaver Dam Creek watershed.

#### **IV. Environmental Consequences**

##### **4. Fisheries/Aquatic Resources**

###### **a) Direct and Indirect Effects**

Indirectly, the vegetation within the Riparian Reserve would 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 to mid-successional condition it would be expected that late-successional characteristics would develop at a substantially slower rate. This would be expected to increase the length of time before the beneficial effects of a late-successional forest condition in these areas would be expressed in fish-bearing stream reaches.

This alternative would also indirectly maintain current aquatic habitat conditions and fish passage barriers. Maintaining this current situation would be expected to continue to result in the indirect negative effects of reduced freshwater survival of salmonids and delayed or obstructed fish migration.

Additionally, this alternative could indirectly contribute to stream sedimentation by delaying or foregoing routine maintenance and renovation of the transportation system. This would be expected to have an indirect negative effect on fisheries and aquatic resources through habitat

degradation over the long-term.

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

No measurable change to the current trend in long-term productivity (50-100+ years) of fisheries and aquatic resources is anticipated by foregoing vegetation management and tillage operations within selected Riparian Reserve stands. However, foregoing management would continue to maintain negative stand and soil conditions and delay the time frame for contributions of large wood to the aquatic ecosystem. Maintaining the current Riparian Reserve vegetation throughout the remainder of the proposed project area would continue to provide the long-term necessary elements for healthy aquatic ecosystems and would be anticipated to maintain or increase the current productivity of fisheries and aquatic resources over the long-term.

By delaying or foregoing road decommissioning, road renovation and road maintenance in the short-term (1-5 years), a higher risk of stream sedimentation from roads is likely in the long-term (>5 years). Current levels of stream sedimentation would be maintained or could increase. This would be expected to negatively affect aquatic habitat and, subsequently, the productivity of fisheries and aquatic resources in the watershed over the long-term.

Foregoing large woody debris placement would be expected to maintain negative aquatic habitat conditions in the proposed project area over the short-term (<50 years). This would be expected to maintain current levels of fish production over the short-term until adequate recruitment of large wood is achieved from recovered riparian areas over the long-term (50-100+ years).

Foregoing culvert replacements to accommodate fish passage would be expected to maintain negative fish passage conditions in the proposed project area until the next replacement rotation (~30 years). This would be expected to maintain current levels of fish production over the short-term (<50 years).

**c) Irreversible or Irrecoverable Commitments of Resources**

None anticipated.

**d) Cumulative Effects**

A positive cumulative effect should result due to increased sizes and amounts of large wood contributed to the aquatic ecosystem as the Riparian Reserve vegetation develops and delivers material to the streams over the long-term. However, the early and mid-successional condition within portions of the Riparian Reserve would be maintained in the short-term and delay the time frame for these stands to make a long-term positive contribution to the aquatic ecosystem.

Due to the lack of road maintenance or renovation, current levels of stream sedimentation could be increased. Some roads may stabilize over time as they revegetate. 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. The lack of preventative road

maintenance and renovation would be expected to have a negative cumulative effect on fisheries and aquatic resources.

Foregoing large woody debris placement and culvert replacements would continue to maintain current aquatic habitat conditions. This would be expected to maintain the current negative cumulative effect of degraded aquatic habitat and numerous fish passage barriers.

**e) Determination of Effects on Northern California/ Southern Oregon Coho Salmon (Transboundary Coho Salmon) and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative:**

*This Effects Determination applies to all portions of the Titanic Timber Sale except OI Units 002, 005, 006 and 007 in T34S-R03E-Sec.11.*

***May Affect, Likely to Adversely Affect***

Due to the current degraded condition of aquatic habitat within the North and South Forks of Big Butte Creek, and the continued maintenance or further degradation of this condition from potential sediment delivery to streams from the transportation system, the No Action Alternative is likely to result in more than a negligible chance of "take<sup>1</sup>" of these species. As a result, the No Action Alternative is considered "likely to adversely affect" Transboundary Coho Salmon (listed threatened) and KMP Steelhead Trout (proposed threatened). Formal consultation with the National Marine Fisheries Service (NMFS) was initiated in September 1997 for Transboundary Coho Salmon, while formal conferencing was initiated in September 1997 for KMP Steelhead Trout.

*This Effects Determination applies only to OI Units 002, 005, 006 and 007 in T34S-R03E-Sec.11 of the Titanic Timber Sale.*

***May Affect, Not Likely to Adversely Affect***

This portion of the proposed timber sale is located above Lost Creek Dam on the Rogue River and no longer supports Transboundary Coho Salmon or KMP Steelhead Trout. The No Action Alternative is not likely to result in more than a negligible chance of "take<sup>1</sup>" of Transboundary Coho Salmon or KMP Steelhead Trout.

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<sup>1</sup>"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).

## **C. Effects From Implementing Action Alternative 2**

### **4. Fish/Aquatic Resources**

#### **a) Direct and Indirect Effects**

No direct effects to fish or aquatic resources are anticipated from the proposed timber harvest. This alternative would allow the vegetation within the Riparian Reserve to continue to develop, and develop at an accelerated rate, to provide the long-term elements necessary for healthy aquatic ecosystems.

The proposed road decommissioning would be expected to restore more natural hydrologic flow paths and reduce the risk of erosion and subsequent stream sedimentation from these roads. This would be expected to indirectly benefit fish within the watershed by reducing the risk of sedimentation to streams from these roads. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (< 1 year).

The proposed culvert replacement could have direct negative effects from the operation of heavy equipment in extremely close proximity or within the stream channel, and from falling debris. This could potentially, injure or crush individual fish. Conversely, implementation of the proposed action would allow fish, unobstructed passage to stream habitat which was previously inaccessible or partially inaccessible. This could directly benefit fishery resources by increasing potential fish production within the watershed. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (< 1 year).

The proposed large woody debris placement could have direct negative effects from the operation of heavy equipment within the stream channel. This could potentially, injure or crush individual fish. Conversely, implementation of the proposed action would be expected to improve aquatic habitat quality and quantity. This could directly benefit fishery resources by improving freshwater survival and increasing potential fish production within the watershed. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (< 1 year).

Implementation of the appropriate PDF's is expected to minimize the anticipated indirect effects of the proposed actions to negligible levels.

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

No effects to the long-term productivity of fisheries and aquatic resources are anticipated from the proposed timber harvest. Maintaining the current Riparian Reserve design and allowing this vegetation to develop throughout the proposed project area would continue to provide the long-

term necessary elements for healthy aquatic ecosystems and would be anticipated to maintain or increase the current productivity of fisheries and aquatic resources over the long-term.

Implementation of proposed vegetation rehabilitation and tillage operations within the Riparian Reserve could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (< 1 year). However, the likelihood of sediment generation from these actions is extremely low. Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term, by accelerating development of a late-successional forest capable of delivering large wood to the aquatic ecosystem.

Short-term (1 -5 years) increases to baseline stream sediment levels are anticipated to occur from road maintenance, renovation, and decommissioning under the proposed timber sale. However, it is anticipated that an overall reduction in the risk to baseline stream sediment level increases would occur due to maintenance, renovation, and decommissioning of the road system. Subsequently, it is anticipated the current productivity of fisheries and aquatic resources in the watershed would be maintained or increased over the long-term.

Implementation of the proposed culvert replacement to accommodate fish passage could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (< 1 year). Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term, by improving access to upstream spawning and rearing areas.

Implementation of the proposed aquatic habitat restoration project could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (< 1 year). Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term, by improving aquatic habitat conditions and improving freshwater survival of salmonid species.

Implementation of the appropriate PDF's is expected to minimize short-term increases to baseline stream sediment levels to negligible amounts.

**c) Irreversible or Irretrievable Commitments of Resources**

None anticipated.

**d) Cumulative Effects**

No negative cumulative effects to fish and aquatic resources are anticipated from the proposed timber harvest. Additionally, this alternative would allow the vegetation within the Riparian Reserve to continue to develop, and develop at an accelerated rate, as a result of active management within the Riparian Reserve. This is anticipated to result in 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.

The proposed project could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment from road maintenance, renovation, and decommissioning. Conversely, a long-term, positive, cumulative effect to fish and aquatic resources is anticipated from reducing potential road generated fine sediment by completing road maintenance, renovation, and decommissioning.

Implementation of the proposed culvert replacement to accommodate fish passage could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment. Overall, implementation of the proposed actions would be expected to improve current conditions by reducing the number of fish passage barriers within the watershed.

Implementation of the proposed aquatic habitat restoration project could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment. Overall, implementation of the proposed actions would be expected to have a positive cumulative effect to fisheries and aquatic resources by improving aquatic habitat conditions and improving freshwater survival of salmonid species.

Implementation of the appropriate PDF's is expected to reduce the anticipated negative, cumulative effects of the proposed actions to negligible levels.

e) **Determination of Effects on Northern California/ Southern Oregon Coho Salmon (Transboundary Coho Salmon) and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Actions:**

*This Effects Determination applies to all portions of the Titanic Timber Sale except OI Units 002, 005, 006 and 007 in T34S-R03E-Sec.11.*

***May Affect, Likely to Adversely Affect***

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<sup>1</sup>" of these species. As a result the proposed alternative is considered "likely to adversely affect" Northern California/ Southern Oregon Coho Salmon (listed threatened) and Klamath Mountains Province Steelhead Trout (proposed threatened). It is anticipated the level of take should be extremely low, with the proposed project ultimately providing some level of long-term benefits to these species. Formal consultation with the NMFS was initiated on September 1997 for Transboundary Coho Salmon, while formal conferencing was initiated on September 1997 for KMP Steelhead Trout.

*This Effects Determination applies only to OI Units 002, 005, 006 and 007 in T34S-R03E-Sec.11 of the Titanic Timber Sale.*

***May Affect, Not Likely to Adversely Affect***

This portion of the proposed timber sale is located above Lost Creek Dam on the Rogue River and no longer supports Transboundary Coho Salmon or KMP Steelhead Trout. The No Action Alternative is not likely to result in more than a negligible chance of "take" of Transboundary Coho Salmon or KMP Steelhead Trout.

**D. Effects of Implementing Action Alternative 3**

**4. Fish /Aquatic Resources**

**a) Direct and Indirect Effects**

Same as Alternative 2

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

Same as Alternative 2

**c) Irreversible or Irrecoverable Commitments of Resources**

Same as Alternative 2.

**d) Cumulative Effects**

Same as Alternative 2

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

See Fisheries Determination of Effects, Alternative 2.