

# HERITAGE FOREST DEMONSTRATION ENVIRONMENTAL ASSESSMENT

## Sisters Ranger District

Lead Agency: USDA Forest Service  
Deschutes National Forest, Sisters Ranger District  
P.O. Box 249  
Sisters, OR 97759

Responsible Official: Bill Anthony  
District Ranger  
Deschutes National Forest, Sisters Ranger District

For further information, contact:  
Terry Craig  
Soil Scientist  
Sisters Ranger District  
(541) 549-7720

## Table of Contents

## Chapter I

Introduction  
Purpose and Need for Action  
Proposed Action  
Management Direction  
Decisions to be Made  
Scoping Process  
Issues That Drove Alternatives to the Proposed Action  
Issues Related to the Proposed Action

## Chapter II

Alternatives Including the Proposed Action  
Mitigation Measures

## Chapter III

Affected Environment

## Chapter IV

Environmental Consequences

## List of Preparers

## **Figures**

- [Figure 1](#) - Vicinity Map
- [Figure 2](#) - Deschutes Land Resource Management Plan management allocations
- [Figure 3](#) - Northwest Forest Plan management allocations
- [Figure 4](#) - Alternative 2 (Proposed Action)
- [Figure 5](#) - Alternative 3
- [Figure 6](#) - Alternative 4
- [Figure 7](#) - Plant Association Groups (PAG)'s
- [Figure 8](#) - Ephemeral stream channel in unit 7.
- [Figure 9](#) - Intermittent stream channel (Davis Creek) in project area.

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/coverindex.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/coverindex.html>

Last Update: 6/26/01

R.A. Jensen

# CHAPTER I - Purpose and Need for Action

## Introduction

The Heritage Forest Demonstration Project is being proposed to assist in the education of residents and visitors to the Metolius Basin about the need for the differing methods used to manage ponderosa pine forests. Current conditions of the ponderosa pine and mixed conifer forests in the Metolius Basin are dense stands of trees, with relatively high rates of mortality and high risk of impacts from wildfire, insect and disease. Forest management is needed to maintain healthy, stable ecosystems and reduce the risk of loss of forests to catastrophic wildfire.

The 120 acre project is located in the Metolius Basin of the Sisters Ranger District (see [Vicinity Map](#)). Demonstration plots are located on both sides of Forest Road 1420. Legal description is T.13 S., R.9 E. Sec. 3, 4, 9, and 10. W.M. This project is near the edge of a broad flat, about three miles wide, at the base of the east side of the Cascade Mountains. The Metolius River is less than a mile to the east. Davis Creek runs through the project area. Elevation is between 2900 and 3000 feet.

## Purpose and Need for Action

Friends of the Metolius proposed that the Forest Service analyze and implement this collaborative project as a demonstration of forest management methods, with the interest of educating the public about the need for, and outcomes of similar proposed management throughout ponderosa pine and mixed conifer habitat in the Metolius Basin.

The long-term goal is maintaining the future sustainability of the old-growth ponderosa pine forest, and decreasing the risks of landscape-scale disturbances in the Metolius Heritage Area, such as insects, disease or wildfire. This is consistent with mutual goals of the Forest Service as documented in Forest Plans. Friends of the Metolius and the USDA Forest Service will implement the project jointly.

## Proposed Action

- Establish 8 small plots (varying in size from 5 to 11 acres) in which different types of vegetation management "treatment" would occur, including small and large tree removal, prescribed burning or mowing. All of these actions have the long-term goal of moving the forest stands toward sustainable old-growth conditions.
- Establish three or more "control" plots, which would not be treated, adjacent to the treated plots so that visual comparisons in forest conditions could be made.
- Locate the plots along Forest Road 1419 from "four corners" junction (Camp Sherman and Forest Road 1216) to Allingham junction (Forest Road 1217). This location is easily accessible by pedestrians and drivers in Camp Sherman.
- Provide education about the project on-site (posted signs) and of-site (tours, presentations).

Table 1. Vegetation treatments for demonstration plots as proposed by Friends of the Metolius.

<b>Plot Description</b>	<b>Location</b>	<b>Prescription</b>
1. Larch Restoration	SW Corner road intersections 1216/1419	Uses latest research, it will include thinning and mistletoe pruning; maybe burning
2. Commercial Thin (Commercial typically includes trees that have a value on the open-market, and generally are larger than 9 inches dbh*.)	NW Corner road intersections 1216/1419 to Davis Creek, and intermittent stream (160' setback)	Retain old growth especially ponderosa & white pine, larch & others where diversity needed; prune for mistletoe. Thinning will be in smaller sized trees (e.g. less than 20" dbh). Skid tree length to designated skid trails. Maybe winter log. Prescribe burn with protection for snags, old growth & downed logs.
3. Pre-commercial Thin (Stack 8' lengths) (Pre-commercial typically includes tree sizes less than 8 inches dbh or that are too small for traditional marketable wood products, but demand and uses for wood products is variable and there may be opportunities to utilize these trees rather than dispose of them by burning or chipping.)	North of Davis Creek (50" setback), west of road 1419, east of old clear cut and south of old haul road (presently open).	Remove all white fir <10-12" dbh and ponderosa pine <6-8" dbh. Retain all larch, western white pine, Douglas-fir, snags & downed logs. Stack 8'lengths & seek outlets for material.

4. Prescribe Burn	North of Davis Creek (stop back from creek and break) East of road 1419 and south of barricaded skid road.	Burn only. Protect western white pine & larch. Protect snags, logs and old growth.
5. Pre-commercial Thin	West of road 1419, north of haul road and south of barricaded skid road.	Retain ponderosa pine >6-8" dbh & all larch, western white pine & snags. Remove rest. Protect old growth during lopping and prescribe burn.
6. Mow and Burn	NW Corner road intersection 1217/1419	Protect old growth & snags
7. Turn of the Century	NE Corner road intersection 1217/1419	Use old photos to replicate what the site looked like; burn after treatment.
8. Mow	SW Corner of road intersection 1217/1419	Mow and leave to keep old growth pine, larch and WW Pine.
9-11	Various locations in area.	No treatment, use for local comparison.

\* dbh diameter at breast height.

Table 2. Unit numbers, acres treated, and treatments.

Unit	Acres	Treatment
1	8	Larch Regeneration
2	11	Thin From Below Trees 21" DBH and smaller

3	5	Thin Trees 12" DBH and Smaller
4	9	Prescribed Burn
5	7	Thin Trees 8" DBH and Smaller then Treat with Prescribed Burn
6	5	Mow and Burn
7	8	Turn of the Century Simulation
8	8	Mow
Total	61	
9	13	No Treatment
10	18	No Treatment
11	28	No Treatment
Total	59	

### Management Direction

Direction for management is provided by the following Plans and Assessments:

- Metolius Watershed Analysis (1995)
- Metolius Late Successional Reserve Assessment (1996)
- Metolius Wild and Scenic River Management Plan (2000)
- 1990 Deschutes NF Land and Resource Management Plan (1991)
- Northwest Forest Plan (1994)

### MWA

This project is consistent with the Metolius Watershed Analysis (MWA). The project is within the area described as Landscape Area 2 of the MWA (pg 152). The goals of Landscape Area 2 include providing

for healthy forest dominated by large ponderosa pine and providing for fuels reduction in the urban interface. Thinning trees and reducing shrubs to develop fuel breaks in the urban interface (Camp Sherman, Metolius Meadows, and the Summer Home tracts) are identified as vegetation management features to reduce the risk of high intensity wildfires. Reintroduction of fire is favored in the analysis, with the need for mechanical treatment to thin and reduce brush to be considered as a preparatory treatment.

### MLSRA

This project is consistent with the Metolius Late Successional Reserve Assessment (MLSRA), which was done in accordance with the Northwest Forest Plan. The memorandum approving the assessment found the MLSRA provides sufficient context and framework for decisions on future projects within the Late Successional Reserve. The memorandum exempts from further Regional Ecosystem Office review silvicultural and salvage activities described in the MLSRA that are consistent with Deschutes National Forest Plan Standards and guidelines and the respective MLSRA objectives and treatment criteria.

This project falls within Area G of the MLSRA. Area G encompasses the rural developed areas of Camp Sherman and Metolus Meadows with almost all of Area G included in the Metolius Wild and Scenic River corridor. It is primarily a ponderosa pine plant association group (PAG), with some wet mixed conifer PAG. The fire occurrence risk is described as high, primarily from human causes. The fuel loading at the time of the LSR assessment was described as low, with a moderate risk of stand replacement wildfire in stands with dense understories. Fire suppression is described as usually successful at keeping fires small and low intensity in this area due to easy access and quick fire detection.

In Area G, there are a number of focal late-successional animal and plant species that are known to exist or for which habitat exists. These species include terrestrial, aquatic, and plant species.

The goals for Management Area G are to:

- Manage for late-successional habitat that is primarily fire climax ponderosa pine.
- Promote stands dominated by large pine with open understories.
- Develop and maintain large tree habitat adjacent to riparian areas to provide future instream coarse woody debris.
- Reduce the risk of high intensity fires adjacent to rural and recreational development.

Management Objectives for Area G in the short-term are to reduce stand densities in the understories to lower risk of high intensity disturbance and to reduce competition with the larger trees. In the long term, objectives for Area G are to develop and maintain open park-like stands dominated by large trees over scattered clumps of even-aged understory. Vegetation should be managed to be consistent with the guidelines of the Metolius Wild and Scenic River Plan.

### MWSR

Much of the management of forested areas prescribed in the Metolius Late-Successional Reserve



Assessment is directed at reducing understory stand densities to promote the development of large trees and to attain a condition that allows for low-intensity natural or prescribed fires.

The Metolius Wild and Scenic River Management Plan Record of Decision, in accordance with the 1990 Deschutes NF Land and Resource Management Plan, identifies goals in the portion of the river defined as the Recreation River Segment. Goals include the dominant presence of majestic, mature forests with large trees, snags, and downed material. Stands with two or more canopy levels may be seen, but will be highlighted by the largest trees in the stand. Grasses and wildflowers should dominate the understories, with shrubs most prevalent in riparian areas (pg1). Vegetation management may include timber harvest, salvage, harvest of commercial forest products, and firewood cutting only to restore desired vegetation conditions, enable the safe and efficient use of prescribed fire, or protect surrounding stands which are at risk from high intensity disturbance. Firewood cutting and commercial harvest of special forest products are permitted only in designated areas to meet vegetation management goals or other resource needs (pg4).

- Healthy stands as defined by the ability to tolerate stress and recover from disturbance;
- Dominated by open stands of large trees, usually Douglas-fir, Ponderosa pine, or Western larch;
- Have understories of appropriate densities necessary to supply future replacement trees as well as structural and habitat diversity;
- Have numbers of snags and large down logs sufficient to provide viability for dependent species;
- Have forest canopies adjacent to the river of sufficient density to maintain the stream temperature requirements of the benefiting resources.

The Limits of Acceptable Change section (pgs 36-41) of the Wild and Scenic River Plan identifies management actions to be triggered if desired conditions are not present. These actions include treatments designed to reduce densities on overstocked, small size class stands. The objective of such treatments is to decrease the probability of high intensity disturbance and to maintain and promote the presence of large trees.

### LRMP

The 1990 Deschutes NF Land and Resource Management Plan (DLRMP) assigns land management allocations of Wild and Scenic River (discussed above) and Metolius Heritage to the area within the proposed project.

In the Metolius Heritage allocation, the goal is "to perpetuate a unique ecosystem represented by large yellow-belly ponderosa pine and spring-fed streams...to perpetuate peaceful, park like forests of ponderosa pine and western larch." (dRLMP pg 4-165). "Silviculture treatments necessary to promote stand health in order to sustain a large-tree ponderosa pine forest are permitted" (S&G M19-11). "Thinning and selected tree removal may be undertaken to promote stand health and vigor, so that replacement trees are available to perpetuate a "big-tree environment" (S&G M19-12). For Fire Management, "Fuel loadings will be determined at the time a proposal is made. Fuel treatment must be appropriate to the goals and objectives for the Heritage Management Area and must be adequate to meet

the fire suppression objective. Fuel reduction will be achieved through intensive utilization of material to the extent possible" (M19-36 and 37).

[Figure 2](#) - Deschutes Land Resource Management Plan management allocations

[Figure 3](#) - Northwest Forest Plan management allocations

## **Decisions to be Made**

The purpose of this document is to display the effects of the proposed action and the various alternative methods of addressing the issues identified for the Heritage Forest Demonstration Project Environmental Assessment. It documents an environmental analysis of the alternatives including a no action alternative. Based upon this information and public comments, the Sisters District Ranger will determine which alternative would be implemented in the project area and if so, where and under what conditions.

A site-specific environmental analysis was conducted by an interdisciplinary team (ID team). This analysis developed alternative designs for treatments, based on issues identified during the scoping process. The analysis is supported by reports and background material from resource professionals included in the appendix.

## **Scoping Process**

Issues related to the proposed action were identified from scoping processes conducted with Forest Service resource specialists; residents; industry and environmental interest groups; state, county, and other federal agencies.

A scoping letter inviting comments was mailed August 20, 1999 to a combination of 322 individuals, organizations, and agencies. Seventeen comments were received either in writing (letter, e-mail) or by phone. There was only one comment which clearly did not support the proposals, primarily based on the need to focus limited funding on riparian restoration work along the Metolius River, rather than adding new projects.

Within the agency, an interdisciplinary team of resource specialists with expertise in archaeology, botany, environmental coordination, silviculture, fuels management, soils, hydrology, and wildlife biology evaluated the issues and identified additional internal issues as part of the scoping process. The project record contains documentation of the scoping process and public response. It is available for public review at the Sisters Ranger District in Sisters, Oregon.

## **Issues That Drove Alternatives to the Proposed Action**

Criteria used to determine issues included the following; does the issue apply to the proposed project

and can it have an effect on alternative development.

### *Forest Health*

- Project proposes killing of some large mistletoe infected larch (up to 21 inch diameter at breast height "dbh") to create conditions for the regeneration of this early seral tree species. The concern is the loss of larger trees, which are considered by some to be below historic levels across this landscape.

### *Riparian Reserves*

- Project proposes treatments within riparian reserves. The concern is that management in riparian reserves may result in degradation of stream bank structure, increased sedimentation, and increased water temperatures.

### *Wildlife Habitat*

- Project proposes treatments in Late Sussuccessional Reserve (LSR) land allocations where some of the area is currently mapped as Nesting Roosting and Foraging (NRF) habitat. A field check to confirm NRF habitat found the project area did not contain the critical elements to function as NRF, so actions would not affect owl habitat. However, the issue is that some individuals may still have a concern that this area is important for Northern Spotted Owl NRF habitat.

### *Public Education*

- Historically, residents and visitors have been reluctant to support vegetation management activities in the area due to concerns about possible effects on the scenic quality. There is a need for a forest demonstration on a small scale that can demonstrate possible vegetation treatment options to concerned individuals.

## **Issues Related to the Proposed Action**

In addition to the three issues listed above, members of the interdisciplinary team expressed issues related to the proposed action and reviewed issues received from respondents. These issues are presented below in context of how they relate to the proposed action.

### *Issues already decided by law or the Forest Plan:*

These issues included most of our compliance issues such as LSR, W&S River, and Heritage Forest.

### *Compliance*

- Forest plan land allocations include LSR, Wild and Scenic River, and Heritage Forest.
- Want to see an established desired future condition for area.

- LSRA compliance and REO review.
- Retention how much and where located.

*Issues that will be mitigated:*

*Heritage*

- Concern that heritage resources may be affected by proposed treatments.

*Fuels*

- The public is quite concerned about catastrophic wildfire because their businesses, homes and lifestyles are at risk.
- The public is also concerned about prescribed burning near private lands due to the risk of an escaped burn and also the resulting smoke.

*Recreation*

- Development of this project has the potential to increase use in the area, creating increased traffic and parking hazards. There is also a concern that opening stands may result in increased ATV/OHV vehicle use.
- Scenic quality may be affected by proposed treatments.
- A horse trail runs through treatment units.

*Wildlife*

- Goshawk nest located within proposed treatment area.
- The project area is near a known spotted owl activity area.

*Botany*

- Threatened and Endangered Species, Pecks penstemon plant in 7 of 8 treatment areas.
- Disturbance could lead to increased noxious weed introduction.

*Soils and Hydrology*

- Treatments may have potential for increased sedimentation in Davis Creek.
- Removal of vegetation in riparian reserves may lead to a reduction in stream bank stability.
- Treatments using mechanical harvest equipment will increase detrimental soil impacts such as soil compaction and soil displacement.

*Issues that are considered outside of the scope of the proposed action:*

Many of our preliminary issues appeared to fall under this category due to the small scale of the project (only 61 acres treated). For example concern over bitterbrush removal, fire risk associated with no treatment, and retention are all issues that would be significant in a larger scale project. However, it did not appear that implementing or not implementing this project will have a significant impact on these issues.

*Funding*

- How will the project be funded? There is a low percentage of commercial versus non-commercial treatments. (The project is already funded)
- Are any of the units economically feasible? If not, how will a similar large scale project be funded? (Outside the scope)

*Fuels Reduction*

- The fire risk associated with no treatment. (the value of the project is in demonstration, due to the small size of treatment area the project is considered to have little affect on fuels reduction in the area).

GO TO

- Chapter I
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Preparers](#)

---

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/chapter1.html>

Last Update: 6/26/01

R.A. Jensen

## CHAPTER II - Alternatives Including the Proposed Action

This section presents a description of the alternatives which are considered to be reasonable and viable, and which respond to the purpose and need for the project, and the key issues.

### Alternative 1 - No Action

Alternative 1 is the "No Action" alternative. This alternative is responsive to maintaining existing condition of the demonstration area. On this site and at this time the "No Action" alternative does not allow the opportunity for small-scale observation of potential future projects in the Camp Sherman area. The "No Action" alternative is a baseline from which the effect of the Proposed action can be measured. It also gives the decision maker the option of deferring management activities if deemed appropriate.

### Alternative 2 - Proposed Action

Alternative 2 is the proposed action that was described in the scoping letter mailed to the public (appendix A). The principle value of the project is in demonstration. This alternative treats eight small plants varying in size from 5 to 11 acres, using different silviculture treatments, small tree thinning, prescribed fire, and mowing of brush. Total size of the treated areas is 61 acres with an additional 59 acres identified as no treatment areas to be used to compare pre and post treatment.

This alternative proposes the following treatments by Unit:

#### Unit 1 - Larch Regeneration

Proposes a regeneration treatment to promote larch. It is desirable to maintain some larch within stands to increase tree species diversity. The purpose of this plot is to demonstrate using the latest knowledge about mistletoe pruning and silviculture treatments to restore a healthy larch stand. Larch and ponderosa pine dominated this site at one time but the larch is now being replaced by pine, Douglas-fir, and white fir. Larch is a pioneer species so it does best following a major disturbance such as wild fire. Larch grows very rapidly in open conditions but does not compete well with other more shade tolerant species. This is evidenced by the poor crown ratios and slow growth of the larch in this stand. Another major problem is that most of the larch is also infected with dwarf mistletoe. This is also contributing to reduced growth rates and mortality. The mistletoe in existing large trees will infect any larch seedlings that become established. To restore larch on this site will require treating both competition and mistletoe.

With this treatment all larch that is free of mistletoe or that can be pruned to remove mistletoe will be left along with the 21 inches DBH (diameter at breast height) ponderosa pine. Other tree species that are 21 inches DBH and larger will be treated by girdling and left on site. All other trees will be removed. Larch with mistletoe in adjacent stands that are within one hundred feet of this stand would also be

pruned. Slash will be disposed of by piling and burning or by broadcast burning and the site will be scarified to create a bare mineral seed bed. Larch seedlings would be planted to supplement the natural seeding. Additional thinning in five to ten years would also be desirable to remove other competing species. There will also be a need to recheck residual over story for mistletoe infection and to prune these when they occur.

This will result in a very open stand with only an estimated ten to fifteen larch and nine large pine trees per acre. With planting, thinning and prevention of mistletoe reinfection from adjacent stands has a high probability of reestablishing a healthy larch stand. When new trees are established, the over story will need to be thinned by cutting or girdling to allow new larch to grow at a healthy rate.

#### Unit 2 - Thin From Below

Proposes a "thin from below" treatment removing trees up to 21 inches DBH (diameter at breast height). The purpose of this plot is to demonstrate how thinning can be used to promote growth and health of residual trees in a stand while at the same time reducing the fire hazard. The existing stand is dominated by old growth pine but has significant stocking in all size classes and also includes larch, white fir, Douglas-fir and white pine. Present stocking is 118 sq. ft. basal area, which is about 15 percent above the LMZ (lower management zone) for this site. Mistletoe is present in the larch. The stand is otherwise fairly healthy except for the snow damage in the pole size (less than 10 inch dbh) trees.

A "heavy thinning" treatment would be done to reduce stocking below the LMZ and increase the time before another thinning would be needed. This stand would be thinned to favor white and ponderosa pine, and larch mistletoe will be pruned. Slash will be disposed of by piling and burning or by broadcast burning.

The residual stand will be stocked with the desired species mix and will be dominated by trees, mostly pine, over 25" DBH. There will also be a healthy component of younger trees to replace any large tree mortality. Thinning to LMZ will help maintain desired species composition and reduce risk of bark beetle damage in the pine.

#### Unit 3 - Thin Trees 12" DBH and Smaller

Proposes thinning of white fir 12 inches DBH and smaller and ponderosa pine 8 inches DBH and smaller. The purpose of this plot is to demonstrate how hand thinning of small diameter trees can be used to promote growth and health of residual trees in a stand while at the same time reducing the fire hazard. Tree boles would be cut into six or eight-foot lengths and removed by hand. Smaller slash would be hand piled and burned.

#### Unit 4 - Prescribed Burn

Proposes using prescribed fire to remove fuel from the forest floor and also provide some thinning in the smaller trees, especially dense thickets. The purpose of this plot is to demonstrate the use of prescribed fire in forest management.

### Unit 5 - Thin Trees 8" DBH and Smaller Then Treat With Prescribed Burn

Proposes thinning of smaller trees (8" DBH and smaller) and then using prescribed fire to remove fuel from the forest floor. Purpose of this plot is to demonstrate the use of small tree thinning and prescribe fire in combination.

### Unit 6 - Mow and Burn

Proposes mowing of brush along with using prescribed fire to reduce fuel loading from the forest floor. Purpose of this plot is to demonstrate the use of mowing and burning to reduce fire risk.

### Unit 7 - Turn of the Century

Proposes to emulate the stand conditions that were believed to occur around 1900 by removing some trees up to 21 inches DBH and thus providing an open stand of large trees. Purpose of this plot is to demonstrate how much of the forest has changed over the past 100 years due to harvest activities, disease, and lack of frequent low intensity fires. This stand is dominated by large ponderosa pine with an estimated 11 trees per acre over 25" DBH with one tree at 60" DBH. There are also a few larch in the stand and at least one white fir that is 21" DBH. There are some irregular patches in the stand that are stocked with black bark pine and larch from 8" to 20" DBH.

With this treatment the resulting stand should be open park-like dominated by large pine. Stocking in trees over 21" exceed 60 sq.ft. basal area so all smaller trees will be cut except where larger tree stocking is low.

### Unit 8 - Mow

Proposes to mow brush to change the fuel structure and reduce fire risk. Purpose of this plot is to demonstrate the use of mowing to reduce fire risk.

### Units 9-13 No Treatment

Purpose of these plots is to provide a pre treatment visual aid to be used to compare pre and post treatment conditions.

### Alternative 3

Alternative 3 places an increased emphasis on wildlife habitat and riparian areas. This alternative would reduce education opportunities by limiting the number of demonstration treatments. Mistletoe infected larch in Unit 1 would be treated by trimming trees infested with mistletoe but not turning them into snags or removing them. In this alternative no removal of trees of any species would occur in Unit 1. Treatment Unit 2 would be dropped from this alternative, also emphasizing maintenance of existing wildlife habitat. Alternative 3 avoids treatment in the riparian reserve in Units 1 and 2. All other treatments in alternative 3 would be the same as is proposed in alternative 2.



### Alternative 4

The objective of Alternative 4 is to increase educational value and opportunities by increasing the types of treatments. Alternative 4 modifies the treatment in half of Units 1 and 2 to provide additional demonstration opportunities.

In this alternative Unit 1 "Larch Restoration" would have half of the unit treated with a regeneration cut as described in the proposed action. The other half of Unit 1 would be treated as follows. The stand would be thinned to favor mistletoe free larch, but full stocking with the best trees available would be maintained. Pruning would also be done to remove mistletoe where feasible. Prescribed burning would then be used to remove slash and thin under story thickets.

The resulting stand in the modified treatment half of Unit 1 will be multi-age dominated by large trees 21 inch DBH and larger, but with a healthy component in all size classes. This stocking level is below the UMZ (upper management zone) for this site but the more open condition will favor the growth and long-term survival of the larch. If thinning is continued, then the existing healthy larch can be maintained for many decades but, without a major stand disturbance, the larch will eventually be replaced with pine and other more shade tolerant species. One of the uses of this comparison of different treatments to regenerate larch would be to discuss the advantages and disadvantages to different resources.

Alternative 4 also modifies the treatment in half of Unit 2 to provide additional demonstration opportunities. In this alternative, Unit 2 "Thin From Below" would have half of the unit treated as described in the proposed action "heavy thinning" to reduce stocking below LMZ. The other half of Unit 2 would be treated with a "lighter thinning" down to the LMZ but not below it.

The resulting stand in the modified treatment half of Unit 2 will be similar to the "heavy thinning" side except it will have a heavier stocking (more trees per acre) after treatment. One of the uses of this comparison would be to discuss the advantages and disadvantages to different resources, resulting from different degrees of thinning a stand.

Table 3. Comparison of Action Alternatives

<b>Unit</b>	<b>Activity</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
1	Larch regeneration	8 acres	none	4 acres

1	Thinning to favor mistletoe free larch	none	none	4 acres
2	Heavy thinning	11 acres	none	5.5 acres
2	Light thinning	none	none	5.5 acres
3	Thinning 12" DBH and smaller	5 acres	5 acres	5 acres
4	Prescribed burn	9 acres	9 acres	9 acres
5	Thin 8" DBH and smaller and prescribed burn	7 acres	7 acres	7 acres
6	Unit 6 Mow and burn	5 acres	5 acres	5 acres
7	Turn of the Century	8 acres	8 acres	8 acres
8	Mow	8 acres	8 acres	8 acres

[Figure 4](#) - Alternative 2 (Proposed Action)

[Figure 5](#) - Alternative 3

[Figure 6](#) - Alternative 4

## Mitigation Measures

### *Fuels*

1. Notify nearby residents prior to igniting a prescribed burn.
2. Minimize smoke impact on nearby residences by not burning when there is an inversion in the area. Also take advantage of wind patterns that will carry smoke away from residents.

## *Recreation*

1. Discourage increased ATV/OHV travel in the area by blocking access routes off of main roads and using subsoiling to rehabilitate skidtrails, landings and haul roads.
2. Identify horse trail and minimize disturbance to trail during treatment activities. Following treatment assure adequate signing of trail.

## *Wildlife*

1. Disturbance activities defined as ambient noise levels above normal activities (such as operation of chain saws, etc) and smoke resulting from prescribed fire will be restricted within 0.25 miles of known spotted owl, bald eagle, goshawk, and great blue heron activity centers from March 1 through September 30 unless non-nesting is verified.
2. Surveys will be conducted according to R-6 protocol in suitable habitat.
3. Maintain adequate levels and sizes of snags and down woody material to meet requirements (climatic climax - 13 snags/ac; fire climax - 6.5 snags/ac; ponderosa pine >30% CC - 4 snags/ac; and ponderosa pine <30% CC - 2.5 snags/ac). These need to be maintained during harvest activities as well and if they cannot be maintained, alternative methods need to be implemented to ensure this requirement is met. Leave adequate down woody material levels (mixed conifer - 33 logs >15"dbh). If levels of snags and down wood do not exist prior to treatment, creation of these levels is not required.

## *Botany*

1. Require clean equipment to reduce introduction of weed seed. Use standard clean clause in contract. Monitor compliance.
2. Avoid disturbing wet areas with machinery. High probability habitats for many of the potential TES and S&M species are associated with wet meadows, riparian areas, intermittent channels and stream edges. Hand thinning and prescribed fire are allowed in these areas.
3. Minimize ground disturbance to protect known habitat. Utilize existing roads or skidtrails, when possible.
4. Provide early detection and control of noxious weeds. Perform annual monitoring of disturbed areas associated with the project for the next 1-3 years. Document and map any newly discovered sites and manually remove any new weed starts.

## *Riparian*

1. Designate a no driving of equipment zone in Unit 1 approximately 100 feet out from both sides of the ephemeral drainage.
2. Designate a no cut zone in Unit 1 approximately 10 feet out from both sides of the ephemeral drainage.

## *Soils and Hydrology*

1. Design harvest activities to not exceed detrimental soil impacts on more than 20% of an activity area. See Deschutes Forest Plan Soil Quality Standards and Guidelines (LRMP 4-70, SL1) and Region 6 Soil Quality Standards (FSM 2500).
2. After treatment, if post harvest monitoring shows an activity area to have more than 20 percent detrimental soil conditions then appropriate rehabilitation efforts will be initiated within these activity areas to reduce detrimental conditions below 20 percent. (LRMP SL-4); (Watershed Restoration BMP W-1)
3. Avoid equipment operations during periods of high soil moisture. This is especially important in treatment units that experience seasonal high water tables (Units 1 and 2).

## *Burn Plan Soil and Water*

1. Minimize fireline construction by using existing barriers for fire lines whenever possible.
2. Burn plan objectives should strive to reduce litter and duff, while not exposing bare mineral soil by the complete eliminating of the duff layer. Larch regeneration plot may be burned to expose bare mineral soil to promote larch regeneration, however, burn intensity must be below that described as detrimental. (Region 6 Soil Quality Standards 1998)
3. Minimize mop-up activities to what is necessary to prevent spread of fire out of unit.
4. When fire lines are constructed, assure water control structures such as water bars are installed and maintained to avoid excessive water runoff and accelerated soil erosion.

## *Brush Mowing Soil and Water*

1. Minimize soil displacement caused by excessive turning during the mowing operation.
2. Avoid operations during periods of excessive soil moisture conditions.

## GO TO

- [Chapter I](#)
- Chapter II
- [Chapter III](#)
- [Chapter IV](#)
- [Preparers](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/chapter2.html>

Last Update: 6/26/01

R.A. Jensen

## CHAPTER III - Affected Environment

### Vegetation - Forest Health

The site appears to be a transition between mixed conifer/snowberry/twinflower flatlands (CD-S6-12) and ponderosa pine/bitterbrush-snowberry/fescue (CP-S2-11), (Volland 1985). But neither description totally fits this site. The site is wetter near Davis Creek, as evidenced by more white fir and larch, and becomes drier to the north of Davis Cr. The existing live basal area varies from 118 to 240 sq. ft. per acre. This is based on stand exams completed in 2000. The measured Growth Basal Area at 10/20th (GBA10) is about 150 for ponderosa pine but there was considerable variation. Plot 3, which is along Davis Cr. showed a much higher GBA10.

The GBA10, and Stand Density Index (SDI) at the Upper and Lower Management Zones UMZ, and LMZ for these two plant associations compared to calculated GBA10 from stand measurements are shown in the Table 1.

Table 4. Stocking guidelines :GBA10, SDI-UMZ, and SDI-LMZ for CP-S2-11 and CD-S6-12 and measured on site.

<b>Plant Association</b>	<b>GBA10</b>	<b>SDI-UMZ</b>	<b>SDI-LMZ</b>
CP-S2-11	98	115	77
CD-S6-12	186	259	174
Measured	150	170	114

Site productivity for plots 1, 2, 3, 4, and 11 are probably close to the CD-S6-12 PAG and other plots are closer to CP-S2-11.

The dominant overstory species is ponderosa pine, and it is a major understory component in all stands. Other species are western larch, white fir, Douglas-fir, white pine, and lodgepole pine. Larch in this area is being replaced by the other more shade tolerant species. Since larch is a pioneer species, it does not tolerate competition well. This is demonstrated by the absence of larch regeneration on this site and the poor crowns and slow growth on existing older trees. Many of the larch in these stands are infected with Dwarf mistletoe, which is also causing mortality and poor growth.

The stand stocking in trees per acre and basal area by size class for each plot are shown in Table 5. This table shows that the large (25"+) size class is the dominant size class in most plots. The large trees are composed of old growth ponderosa pine with a very few white fir and larch. The smaller classes are dominated by pine except for plots 1, 3, 8, and 11 where white fir and larch are a major component. Most of these stands do have significant stocking in all size classes. The stands are generally composed of irregular groups of even-aged clumps rather than a uniform uneven-aged condition.

Table 5. Trees per acre (TPA) and basal area (BA) by size class for plots 1 through 11.

<b>Plot No.</b>	<b>Sapling (0.1-3.9)</b>	<b>Pole (4-7.9)</b>	<b>Small 1 (8-13.9)</b>	<b>Small 2 (14-20.9)</b>	<b>Medium (21-24.9)</b>	<b>Large (25.0+)</b>
	<b>TPA (BA)</b>	<b>TPA (BA)</b>	<b>TPA (BA)</b>	<b>TPA (BA)</b>	<b>TPA (BA)</b>	<b>TPA (BA)</b>
1	16 (0)	97 (1)	83 (10)	18 (29)	6 (17)	9 (46)
2	67 (3)	50 (10)	22 (17)	17 (25)	7 (21)	9 (54)
3	16 (0)	97 (25)	83 (58)	18 (29)	6 (17)	9 (46)
4	33 (1)	50 (5)	84 (47)	20 (28)	2 (5)	13 (75)
5	133 (5)	127 (23)	36 (25)	17 (25)	7 (21)	10 (46)
6	17 (1)	39 (9)	67 (42)	22 (33)	2 (5)	13 (75)
7	33 (2)	56 (8)	53 (33)	6 (8)	1 (4)	11 (67)
8	117 (4)	98 (19)	60 (47)	14 (19)	4 (14)	7 (37)
9	34 (2)	181 (32)	128 (70)	25 (33)	0 (0)	9 (47)
10	0 (0)	64 (13)	102 (65)	18 (28)	8 (23)	5 (33)
11	0 (0)	0 (0)	62(40)	28 (40)	10 (27)	26 (133)

This table does not include seedlings (trees less than 4.5 Feet tall). Many of the trees in the sapling and pole sizes have very poor crown ratios due to the competition from other trees. This results in slow growth and low diameter/height ratios. These trees are susceptible to snow breakage, which is very common in these stands.

Past logging, which was done between 1947 and 1989, consisted of salvage, sanitation and selection

cutting. This cutting provided space for the younger trees to become established and contributed to the irregular size class pattern that exists today. Salvage of beetle killed trees and prevention of future attacks was the primary reason for much of the past cutting.

There is no current significant insect activity in this stand. The greatest threat is from bark beetle, either western pine or mountain pine beetles. Ponderosa pine is a host to both species and is frequently killed by attacks. These stands are currently at moderate to high risk of attack due to the high stand densities. Bark beetle surveys have been conducted since the 1920's. A typical mortality from beetles was ten (10) percent per decade with a high of thirty (30) percent and a low of two and a half (2.5) percent, with considerable variation from year-to-year and between different parts of the district. More recent surveys show continued mortality from bark beetles but only show acres with infestations, and not percent of trees or volume. At normal beetle levels, it would be expected to lose a few large trees (five to ten percent) every decade. At epidemic levels, twenty percent or more of the large trees may be killed. Beetle populations often build up in unhealthy trees and overmature trees or trees weakened by drought, stand stagnation, or fire.(Barret, 1979)

The only significant disease is the mistletoe in the larch. This has infected most of the larch trees. It will require the removal of the mistletoe infection sources in order to successfully regenerate and grow larch on this site in the future. This could be done by pruning the mistletoe infected limbs and the killing of infected trees where pruning is not feasible.

[Figure 7](#) - Plant Association Groups (PAG)'s

### Soils, Hydrology and Riparian Reserves

The project area occurs on gently sloping outwash plains on the east side of the Cascade Range. Slopes are less than 4 percent and drainage is to the east. Elevation is approximately 3000 feet and the mean annual precipitation in the area is approximately 35 inches per year. Subsurface drainage is also an important source of moisture on this land type.

One intermittent stream and three ephemeral streams have been identified and mapped in the project area. These streams eventually drain into the Metolius River, approximately one half mile to the east. "Davis Creek" the largest of the streams, has a well-defined channel and has water flow into late spring in most years. Davis Creek also functions as an overflow channel for "First Creek" during extremely high flow events such as occurred in the winter of 1997. The other three ephemeral streams in the project area showed limited sign of annual channel scour and typically have low energy flows during winter snow melt and storm events. Riparian reserves have been identified along the intermittent and ephemeral streams. Widths are 160 feet out from both sides of the stream (reference Metolius Watershed Analysis 1995).



Two major soil types occur in the project area, (Larsen 1976). The first is the wetter Soil Resource Inventory (SRI) soil map unit 40 occurring mainly in the southern portion of the project area, south of Davis Creek. A second dryer soil type, SRI soil map unit 39, occurs mainly to the north of Davis creek. Both areas have small areas with inclusions of the wetter or dryer soil types. Soils formed from a moderately thick layer of volcanic ash (24 to 36 inches) over glacial outwash and lacustrine (old lake bed) deposits. Soil textures are typically sandy loam with some gravel in the soil profile. A perched water table is present in soil type 40 during spring runoff. Vegetation types are also identified for each soil-mapping unit, (Larsen 1976). Vegetation in soil map unit 40 is identified as CD-S6-12 Mixed conifer/snowbrush/twinflower flatland, and vegetation in soil map unit 39 is identified as CP-S2-11 ponderosa pine/bitterbrush/fescue, (Volland 1985).

Soils and hydrology have been influenced in the project area by road building and past timber management. Past timber management in the project area has included partial harvest in the form of salvage and or selective cutting. Soil and hydrology impacts from these activities mainly include detrimental soil compaction, soil displacement, increased runoff caused by reduced infiltration of water into soils, and bleeding of ground water in disturbed areas.

[Figure 8](#) - Ephemeral stream channel in unit 7. Note relatively low stream banks and signs of annual scour are limited to isolated areas.

[Figure 9](#) - Intermittent stream channel (Davis Creek) in project area. Note channel is deeper than ephemeral stream and the presence of riparian vegetation (willow) in channel.

## Fuels

The ponderosa pine and mixed conifer forest types in the project area and adjacent areas have historically been maintained by frequent, low intensity wildfires. Fires reoccurred on any given acre at intervals of about 5 to 20 years. Because of this frequency, ground fuels and understory shrubs and small trees were kept at relatively low levels. Fires often burned for weeks, but only rarely were able to develop intensities that caused damage to the large overstory trees. The forest was predominately composed of open stands of large pine, with a small proportion of even-aged thickets of various sizes, occasional small openings, and areas where moisture or long-term accidental avoidance of disturbance allowed denser stands to develop. Human property at risk from wildfire was a rare occurrence under these conditions.

Around the end of the First World War, settlement and development began to encroach further into these forested areas, and people began to treat fire as an enemy to human values. Fire exclusion, as a result of these new fire suppression policies put in place and practiced over the last 80 to 100 years, has dramatically increased the size and intensity of the fires we experience today.

Fire exclusion has lengthened the fire return intervals and increased the expected fire intensities in these forest types. A wide-spread, fire-protection age of trees has colonized across the landscape. This has created "dog-hair" thickets of pine and other tree species in many areas. Where once-frequent surface fires were carried through tree stands by needle litter and grass, they are now carried by shrub and branch fuels. The vertical continuity of fuelbeds is also higher than historically, which allows surface fires to develop into understory or crown fires under less severe weather conditions. At the same time that average fire intensity, due to fuel buildup, is increasing, average fire tolerance of stands has dramatically decreased as a function of overstocking and stagnation.

Examples of expected fire sizes and intensities in the analysis area include the Sage Flat Fire of 1992 and the Delicious Fire of 1990. The Sage Flat Fire burned 1035 acres in one afternoon while the Delicious Fire burned 2200 acres over 2 afternoons. These fires burned in the same fuel type and topographic conditions as found currently in and around the project area.

### Botany

In general, the project area varies from clumped, moist, mixed conifer stands to open, dryer stands with a higher ponderosa pine old growth component. Units 1 and 2 have the highest incidence of moisture and species diversity. Units 3-5 and 8 are dryer sites dominated by ponderosa pine. Units 6 and 7 overall had the least incidence of moisture and species diversity.

The Pre-field Review showed a high probability for threatened and endangered plant species (TSE) *Penstemon peckii* occurrence, with documented populations located within the project area. TES plants with a moderate probability of occurring were *Agoseris elata*, *Lycopodium complanatum*, and *Thelypodium howellii*. The review identified no high probability habitat for survey and managed (S&M) bryophytes, lichen or fungi within the project area. Details of species and probabilities are in the full Pre-field Review located in the project file.

### Survey Results

#### *Survey and Managed Fungi*

In accordance with Forest Service survey protocols, three intuitive controlled surveys were conducted in May and October 2000 for S&M species with potential habitat. There were no suspects found within the project area.

#### *S&M Bryophytes*

Surveys were completed for S&M bryophytes in July 2000. No bryophyte suspects were located.

#### *S&M and TES Vascular Plants*

Surveys were completed for S&M and TES vascular plants in July 2000.

Populations of sensitive plant species *Penstemon peckii* were located in all of the units except Unit 4. Within each sighting, approximately 35-40% of the plants were flowering. The number of plants in these

populations were counted and recorded as follows:

Table 6. *Penstemon peckii* Populations by Unit.

Unit	Acres	Plants encountered
1	8	1000
2	11	200
3	5	50
4	9	0
5	7	2000
6	5	200
7	8	800
8	8	2000
TOTAL	61	6250

These sightings are believed to be a sub-population of population #007, located in the Camp Sherman area. This population was first described in 1928, and was last observed in 1989. Estimated population size was 9,000 plants for areas not included in the demo area. Peck's penstemon is endemic to approximately 325 acres in the vicinity of Black Butte. This species requires seasonally moist old growth pine forest habitats including low elevation moist and wet meadows. It also indicates seasonal floodplains, moist habitats and channels. The five most important abiotic and biotic factors involved in the viability of Peck's penstemon populations are:

1. 1 abundant moisture
2. 2 light
3. 3 abundant pollinators
4. 4 periodic fire
5. 5 flooding for seed dispersal and germination

### *Weeds*

Noxious weed populations are found adjacent to the project area in the Metolius Basin along Forest Service roads 14 and 1419. No large noxious weed populations were identified in the project area. Scattered individuals of *Hypericum perforatum* were found along road 1419 and 1216 in Unit 1 and 2.

### *Noxious Weed Risk Assessment*

Forest Service Manual (FSM) direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds, Forest Service policy requires that decision documents must identify noxious weed control measures that will be undertaken during project implementation (FSM 2081.03, 29 November 1995).

Aggressive non-native plants, or noxious weeds, can invade and displace native plant communities causing long-lasting management problems. Weed seeds can be introduced and spread by pedestrians, vehicles and equipment. Noxious weeds can displace native vegetation, increase fire hazards, reduce the quality of recreational experiences, poison livestock, and replace wildlife forage. By simplifying complex plant communities, weeds reduce biological diversity and threaten rare habitats. Potential and known weeds for the Deschutes National Forest are listed in Appendix A. The project was given a HIGH risk ranking because there are known noxious weed populations within and adjacent to the project area, areas are used for recreation, including horseback riding, hiking and off highway vehicle (OHV) use, and vehicles including Forest Service vehicles will be in the area.

### Heritage

Management direction for cultural resources is found in the Deschutes National Forest Resource Management Plan, in the Forest Service Manual section 2360, in federal regulations 36CFR64 and 36CFR800, and in various federal laws including the National Historic Preservation Act of 1966 (as amended), the National Environmental Policy Act, and the National Forest Management Act. In general, the existing management Forest to determine what cultural resources are present on the forest, evaluate each resource for eligibility to the National Register of Historic Places (Register) and protect or mitigate effects to resources that are eligible.

The entire area of potential effects was inventoried at an intensive level for this project. No historic properties were located. Two areas of past human use are present in the form of cans, glass, and other domestic debris scatters in the two locations. They were not recorded as historic sites and no further protection is required.

### Social

The Metolius River has been a popular attraction for recreationists and seasonal residents for over 100 years. In the early 1900's, wheat farmers from Sherman County, OR, who enjoyed visiting the area, established the small community of Camp Sherman (hence the name) on the banks of the river. Over the 20th century, the reputation of the Metolius Basin and River grew across Oregon, and the nation, and some international fame, as an area of outstanding beauty and excellent fishing. The designation of the Metolius River as a National Wild and Scenic River in has attracted even more visitors.

Now, the Camp Sherman community and surrounding area have grown to include a church, post office,

grocery store, gas station, two year-round lodgings, an elementary through middle grades school, a popular seasonal restaurant, as well as residences and summer homes. In addition to campers in the more than 11 campgrounds on the surrounding National Forest lands, there is also a number of day visitors in the Metolius Basin year round.

Historically, residents and visitors have been reluctant to support vegetation management activities in the area due to concerns about the possible effects on the scenic quality, one of the most important elements that attracted people to the area. However, with the dramatic change in forest conditions (crowded forest stands and a decline in the large-tree character), scenic quality is threatened. Many residents have become increasingly concerned about risk these conditions pose in terms of catastrophic wildfire. Now, there is high support for immediate management of the forest condition, though there is still concern that others (some visitors, and local and non-local environmental groups) may still not support the proposed action. Therefore, this demonstration project to educate public was proposed by Friends of Metolius to the Forest Service.

### Recreation

There are no recreation facilities in the project area, though local residents often use the area for hiking and exploring. Several "user-created" trails pass through the area.

### Fish

The Project occurs within the upper Metolius, Davis Creek and First Creek subwatersheds. The upper Metolius Watershed contains one intermittent and one perennial stream that flows into the Metolius River, which contains the Region 6 Sensitive redband trout (*Oncorhynchus mykiss*) and the threatened bull trout (*Salvelinus confluentus*). First Creek has little over two miles of fish bearing stream in the project area, with primarily brook trout and a few redband trout present. An age 2 bull trout was once found in an isolated pool of First Creek downstream of the project. Bull trout only spawn in the Metolius River approximately 1 mile downstream of the confluence of First Creek.

### Wildlife

Wildlife species are managed under federal and state laws (Table 1). In addition, the Forest Service has standards & guides for managing certain species inhabiting their land. Nationally, the USDI, Fish and Wildlife Service (USFWS) under the Endangered Species Act (1973) has species that are listed as Threatened, Endangered, or "species of concern". In Oregon, the Oregon Fish and Wildlife Commission (State) has species listed as Threatened, Endangered, or Sensitive under the Oregon Endangered Species Act. The Deschutes National Forest (DNF) has Management Indicator Species (MIS), which includes species on federal and state lists, Regional Forests list of species, and other species of interest.

Numerous wildlife species utilize the area including deer, elk, otter, cougar, bobcat, coyotes, raptors,

neotropical migrants, small mammals, and reptiles. The two plant associations in the project area provide habitat for a variety of wildlife species including red-tailed hawks, great blue herons, great-horned owls, wood ducks, turkey vultures, bobcats, goshawks (two historic nests), elk, deer, various small mammals, and song birds.

The wildlife species requiring special management consideration within the project area and their status are listed in the Biological Evaluation report. There are no known Threatened or Endangered species in the project area, however a portion of the project area has been designated as dispersal habitat for spotted owls. Therefore, informal consultation with USFWS will be necessary regarding the habitat because this project may have a "May Effect, Likely to Adversely Effect" on a Threatened species' habitat.

In addition, there is a northern goshawk nest in the project area. Goshawks are listed as "sensitive" or "species of concern" (previously designated as Category 2 species) by the U.S. Fish and Wildlife Service and are considered a Management Indicator Species in Region 6, USFS.

Intermittent streams and pools in the project area are utilized by a variety of species and may include the following riparian associated species: willow flycatcher, yellow warbler, and orange crowned warbler are unique neotropical birds; vagrant shrew, water shrew, deer mouse, and montane vole are common small mammals; and common garter snake, Pacific tree frog, rough skinned newt, and northwestern salamander are common amphibians found in riparian areas.

### *1. Threatened and Endangered Species and Their Habitats*

There are no known Threatened or Endangered Species in the project area and there are no known bald eagle or spotted owl nests in the project area. There is no habitat for the spotted frog. The entire project area is within the Metolius Late-Successional Reserve and units 1 through 5 are in an area designated as nest-roosting-foraging habitat (NRF) for spotted owls. However, after field checking the area it was determined that, at the present, units in the project area do not contain the elements required for NRF. Therefore, some of the area is currently designated as "dispersal habitat" rather than NRF. Management guidelines for this allocation can be found in the Northwest Forest Plan (1994). The Northwest Forest Plan states that, Late-Successional Reserves are to be managed to protect and enhance old-growth conditions. For each late-successional reserve, managers should prepare an assessment of existing conditions and appropriate activities (this was completed in the Metolius Late Successional Reserve Analysis 1996). No programmed timber harvest is allowed inside the reserves. However, thinning or other silvicultural treatments inside these reserves may occur in stands up to 80 years of age if the treatments are beneficial to the creation and maintenance of late-successional forest conditions.

The project area is within two management strategy areas (MSA) described in the Metolius LSRA. The strategy areas are MSA-D (on the west side of Road 1420) and MSA-G (on the east side of Road 1420). Management recommendations for each MSA are similar in that each describes thinning as a moderate priority silvicultural opportunity and habitat protection should take precedence over protection of individual plant or animal populations. In MSA-D, reducing the risk of fire, reintroducing fire, and

managing spotted owl habitat are also important.

Table 7. Time periods for restrictions on disturbing activities within a quarter mile of a nest site for the following species. Disturbing activities, as defined under mitigation measures for wildlife, will vary site specifically and evaluations will be made prior to planned activities. The restriction period may be compromised if nesting has not occurred or has been completed.

<b>SPECIES</b>	<b>SEASON ACTIVITY RESTRICTION PERIOD</b>
Goshawk	3/1 to 8/31
Coopers hawk	4/15 to 8/31
Sharp-shinned hawk	4/15 to 8/31
Spotted owl	3/1 to 9/30
Bald eagle	1/1 to 8/31
Golden eagle	2/1 to 7/31
Red-tailed hawk	3/1 to 8/31
Great gray owl	3/1 to 6/30
Great blue heron	3/1 to 8/31
Osprey	4/1 to 8/31

### *Bald Eagle*

Bald eagles have not been documented to nest within the project area. The nearest known nest is located approximately 4 miles north of the project area near the fish hatchery. The project area lies within the High Cascades Bald Eagle Recovery Zone 11. The project area is considered potential habitat because of its proximity to the Metolius River and availability of large trees.

### *Northern spotted owl*

This project area lies within the Metolius Late-Successional Reserve and is not within a Critical Habitat Unit. Units 1 and 2 are in a mixed conifer wet plant association. All other units are in a ponderosa pine dry plant association. The project area does not encompass known spotted owl nest sites or home ranges.

Field reconnaissance was done to determine the quality and condition of habitat. No units within the

project area are considered (NRF) habitat and most do not meet dispersal habitat requirements. There are pockets of dispersal habitat present but these are minimal in the project area. Units 1-5 do not qualify as NRF habitat because canopy closure is less than 35%, units are primarily second growth that was high-graded in the past 50 years, there are few large trees and snags, and dispersal habitat characteristics are patchy. Units 1 and 2 are mapped as being in mixed conifer wet, but ponderosa pine is the dominant species; Douglas-fir and white fir are uncommon. In unit 1, larch is more abundant than Douglas-fir and white fir. Units 3-5 are in ponderosa pine dry.

Surveys for spotted owls have been initiated. The first year of surveys of two required has been completed. No spotted owls were found within the project area.

## *2. Other species*

### *Northern Goshawk*

There are two northern goshawk nests adjacent to unit 5. These nest sites were active in 1993 and 1995 but not in summer 2000. Surveys will be conducted in spring 2001 to locate potential nesting pairs.

The nest sites (30 acres) are usually in older forests (old growth and mature) with high density of large trees (>21 inches dbh), high canopy cover (>50%), and high basal area (East-side Screens, USDA 1994, USDA 1991). A seasonal restriction on activities within 1/4 mile of nest site from March 30-September 1 should be implemented to avoid nest abandonment. The post-fledgling area or PFA (approximately 420 acres) surrounds the designated nest site and is important for survivorship of the young. The PFA includes mature and over-mature ponderosa pine.

The Proposed Goshawk Management Direction for the Pacific Northwest Region (October 1992) recommends that active nest sites be given the following protection: (a) At a minimum, 30 acres of the most suitable nesting habitat surrounding the active nest shall be designated for retention, (b) activities that have a high potential to adversely impact (disrupt courtship or nesting success) shall be avoided within the designated nesting area during the breeding season. Breeding season varies by latitude and longitude, (c) Designate a 400 acre Post Fledgling Area (PFA) around active nest sites.

### *Mollusks*

Surveys have been conducted and these species were not found in the project area.

### *California Wolverine*

There are no current or historic records of wolverines in the project area.

### *Western Big-eared Bat*

There is a very low probability of occurrence in the project area because these bats depend on caves for hibernation, for raising their young, and for day and night roosting.

### *Lynx*

There have not been any confirmed sightings of lynx on the Sisters Ranger District. There have been



several unconfirmed sightings. The project area is outside of designated Lynx habitat.

### *Preble's Shrew*

The Davis Creek riparian areas are potential habitat for the Preble's Shrew, a sensitive species. The probability of this species occurring on the area is low.

### *Flammulated Owl*

The flammulated owl is considered a sensitive species in the critical category by the Oregon Department of Fish and Wildlife because of habitat loss. Flammulated owls have been heard throughout the mid and lower elevation mixed conifer and ponderosa pine plant association groups.

### *Great Gray Owl*

There is a low probability of occurrence that this species is in the project area.

### *American Marten*

It is possible that this species occurs in the project area because they utilize mature to late successional mixed conifer, lodgepole pine, and mountain hemlock.

### *Fisher*

There are no reported fisher sightings within the project area, and the probability of this species occurring in the project area is considered unlikely.

### *Woodpeckers (Cavity Excavators/Nesters)*

White-headed, hairy woodpeckers, and common flickers are common species associated with the project area. Less common are the black-backed and three-toed woodpeckers. Standards and guidelines for management of primary cavity nesters are provided in the Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan 1994 (ROD)). In addition, the Deschutes National Forest Wildlife Tree and Log Implementation Strategy (WLTL; 1994) provides formulas for calculating the snag and green tree replacements (GTR) needed for various maximum population potential percentages.

#### *a. Green Tree Replacements (GTRS).*

Because management will be thinning from below and under burning, the maintenance of GTRs is not a concern.

#### *b. Hard Snags*

Hard snags in the project area are currently below preferred levels (Table 3 and 4). Only units 3 and 5 have adequate numbers of snags, all other units are deficient. The preferred level of snags were used in previous vegetaton management projects in the Metolius Watershed e.g., Santiam Restoration (Table 4).

Table 8. Recommended snag densities for the project area.

Plant Association Group	Snag size classes by DBH			
	10" - 14.9"	15" - 24.9"	25+"	Totals
Mixed Conifer Climatic Climax	1.92	6	5	12.92
Mixed Conifer Fire Climax	1.04	2.14	3.33	6.51
Ponderosa Pine >30% Canopy Cover	0.96	2.08	1.33	4.37
Ponderosa Pine <30% Canopy Cover	0	1.48	1	2.48

Table 9. Existing condition of snags in Heritage Forest Demonstration Project units. Estimates were derived from 6 one-tenth acre plots in each unit.

UNIT	SNAGS PER ACRE BY SIZE CLASS			
	8-14.9 inch diam	15-24.9 in. diam.	25+ in. diam.	TOTAL
1	3.3	None in plots	1.7	5
2	3.3	None in plots	1.7	5
3	1.7	None in plots	1.7	3.4
4	0	None in plots	1.7	1.7
5	1.7	1.7	None in plots	3.4
6	None in plots	None in plots	None in plots	None in plots
7	None in plots	None in plots	None in plots	None in plots
8	None in plots	None in plots	None in plots	None in plots
9	1.7	None in plots	None in plots	1.7
10	None in plots	1.7	None in plots	1.7
11	1.7	None in plots	None in plots	1.7

### *Amphibians*

Surveys were conducted and no amphibians were found in the project area.

### *Mule Deer*

Mule deer use the entire project area throughout the year. Deer may migrate there to winter. The project area may also serve as transition range during migration between summer and winter. The riparian areas associated with Davis Creek are the most important fawning areas in the project area. The area also provides hiding and thermal cover. The forest areas provide grass and shrub forage and cover. Some important forage species are bitterbrush, Idaho fescue, sedges, bluegrass and various forbs.

### *f. Neotropical Birds*

Populations of some migratory song birds, or landbirds, have declined because their habitats have been altered through timber harvesting, fire suppression, livestock grazing, invasion of exotic plants, and human development (Altman 2000). To ensure the long-term health of populations of landbirds, recommendations in the Conservation Strategy for landbirds of the East Slope of Oregon and Washington are to restore the historic range of variability to plant association groups.

GO TO

- [Chapter I](#)
- [Chapter II](#)
- Chapter III
- [Chapter IV](#)
- [Preparers](#)

---

#### [Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/chapter3.html>

Last Update: 6/26/01

R.A. Jensen

## CHAPTER IV - Environmental Consequences

### Effects on Vegetation and Forest Health

*Common to All Alternatives* - This project involves less than two percent of the Metolius LSR so the overall effect will be very small. A comparison of the four alternatives was developed showing what the LSR condition is expected to be following treatment. This assessment is based on meeting the criteria for live trees. In units to be treated, green trees will be left for snags so the snag requirement would also be met. Note: Alternative 1 is the existing condition.

Table 10. Expected Late Successional Reserve Condition for Each Unit by Alternative.

Unit No.	Acres	Alternative 1	Alternative 2	Alternative 3	Alternative 4
1	8	CCMC *	None	CCMC	half CCMC / half None
2	11	CCMC	FCMC **	CCMC	CCMC
3	5	CCMC	FCMC	FCMC	CCMC
4	9	CCPP ***	CCPP	CCPP	CCPP
5	7	CCPP	CCPP	CCPP	CCPP
6	5	CCPP	CCPP	CCPP	CCPP
7	8	FCPP ****	FCPP	FCPP	FCPP
8	8	CCPP	CCPP	CCPP	CCPP

\* CCMC - climatic climax mixed conifer

\*\* FCMC - fire climax mixed conifer

\*\*\* CCPP - climatic climax ponderosa pine

\*\*\*\* FCPP - fire climax ponderosa pine

*Common to all Action Alternatives* - Unit 1 (8 acres) under Alternative 2 and 4 the vegetation would no longer meet Late-Successional Habitat conditions and it would be another 100 years or more before it would again meet these conditions. It would insure maintaining larch on the site and be very resistant to

future catastrophic events. This could be managed toward meeting the long-term goal of open park-like larch stand.

Unit 2 (11 acres) would change from CCMC to FCMC in Alternative 2, which would meet the short-term objectives.

Unit 3 (5 acres) would change from CCMC to FCMC in both Alternatives 2 and 3, which would also meet the short term objectives of this LSR.

Units 4-7 (29 acres) would still meet the same habitat conditions under all Alternatives. But these treatments would reduce fire risks and treatment in Unit 7 would create and maintain an open park-like condition.

Alternative 2 would nearly eliminate the larch mistletoe in treatment unit 2 allowing the development of a new stand dominated by larch.

The thinning and brush removal with other units treated in Alternatives 2, 3, and 4 would reduce competition which would normally reduce the risk of bark beetle attacks, but because of the small size of each treatment unit, the overall effect will be minimal.

### Effects on Soils and Hydrology

*Alternative 1 (No Action)* - Selection of this alternative would result in no additional impacts to the soil and water resource from management activities. No biomass would be removed from the site providing maximum soil carbon and nutrient recycling, provided the area did not burn in a wildfire.

*Common to all Action Alternatives* - Impacts to the soil resource following ground disturbing operations are monitored yearly as part of the Forest Land Resource Management Plan (LRMP) monitoring requirements. Information learned from this monitoring is summarized in yearly reports. Information from these reports provides the reference data used for making the following statements.

Direct effects of machinery causing soil compaction and soil displacement, account for the majority of the detrimental soil impacts on the Deschutes National Forest. Soil compaction results in a decrease in soil pore space and an increase in soil strength. Reduced soil pore space can affect soil function by greatly reducing water infiltration in compacted areas contributing to accelerated runoff and increased localized sedimentation to streams. A reduction in soil pore space also affects soil water holding capacity and the exchange of soil air in turn reducing site productivity. Increased soil strength associated with compaction limits root growth of vegetation making it difficult to re-vegetate sites as well as increasing the opportunity for undesirable plant species to invade. Soil displacement is the physical movement of nutrient rich surface soil lowering site productivity and affecting soil function.

Soil mitigation measures would be used to limit mechanical impacts to the soil resource, however, some impact will still occur and the indirect effect of those impacts will be areas with a loss in proper soil function. Funding will be sought to do soil restoration in areas that have been impacted. Soil restoration includes activities such as subsoiling. Subsoiling increases soil porosity and reduces soil strength thus providing the conditions for recovery of the resource back to the non-impacted state over time.

Reduction of the risk of wildfire resulting from the action alternatives could benefit soils and hydrology over time. Catastrophic wildfires can cause soil impacts that are very different from prescribed fires, which are designed to protect resources. Risk of soil damage from fire increases with fire intensity and duration. Burns of higher intensity and longer duration impact soils by loss of soil nutrients, lowering mineral soil organic matter, and causing accelerated erosion (McNabb, 1990). Proposed treatments lower the risk of wildfire and also demonstrated what could be accomplished on a larger scale to lower risk, thereby helping to protect the soil resource from potential impacts in the future.

*Alternative 2 (Proposed Action)* - The Proposed Action proposes to demonstrate commonly used treatments to reduce fire risk and improve forest health. These include small tree thinning, prescribed fire, and mechanical brush mowing. Small tree thinning is typically done by hand or using a small shear machine which limits impacts to soils and hydrology. Soil monitoring of areas treated by prescribed fire have little or no impact to the soil resource resulting from the actual burn. Prescribed burning benefits the soil resource in these plant associations by recycling nutrients and reducing the risk of high intensity wildfires. The need to do mechanical vegetation treatments that can result in soil compaction and displacement is often also eliminated by the use of prescribed fire. Brush mowing operations have been monitored to evaluate increased soil impacts caused by mowing. Due to the relatively small size of machinery proposed for use in this operation, soil compaction and soil displacement caused by this operation are predicted to be minimal.

Proposed treatment units 1, 6, 7, and 8 have intermittent streams within the treatment unit boundary. Riparian reserves are identified by boundaries of 160 feet on each side of intermittent streams. The proposed action would apply the same treatment prescriptions within the riparian reserves as is applied to the rest of the unit. This can have a positive effect of providing adequate spacing of tree species for increased growth and resistance to disease. Potential negative effects are the risk of increased soil disturbance and stream bank destabilization resulting from activities. Mitigation measures are identified for activities in riparian reserves to minimize adverse effects.

*Alternative 3* - Alternative 3 limits the types of treatments that can occur within the riparian reserves to prescribed burning, mowing, and hand thinning of smaller trees (8 inch DBH and smaller). This would avoid any potential negative effects from equipment causing increased soil disturbance and stream bank destabilization resulting from activities.

*Alternative 4* - Treatments units one and two in alternative 4 provide an opportunity to demonstrate treatment methods that limit the cumulative effect of repeated entries over a long period of time. The cumulative effect of repeated entries over a long period of time is identified in the Deschutes LRMP as

having the greatest potential for lowering forest soil productivity (Deschutes LRMP, Appendix 14). Forest soil monitoring has confirmed that each successive harvest entry or mechanical fuel treatment in an activity area, increases detrimental soil impacts (Deschutes NF, Yearly Soil Monitoring Reports). The cumulative effect of repeated entries on resources other than soils can also be discussed with a side-by-side treatment comparison. By treating different areas of units one and two differently, tradeoffs to different resources and potential impacts to a stand over an entire rotation can be discussed.

Alternative 4 treats riparian reserves the same as alternative 3.

### *Aquatic Conservation Strategy (ACS)*

The following section will discuss how each alternative meets or does not meet Aquatic Conservation Strategy (ACS) Objectives. For more explanation of the Aquatic Conservation Strategy and its relationship to riparian reserves, see Northwest Forest Plan.

#### ACS Objective #1

Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted. (USDA, Forest Service, Northwest Forest Plan, 1994)

##### *Effects common to all Alternatives*

Objective 1 is written to consider whole watershed and landscape scale features. The Heritage Demo Project area is a small 120 acre project that would have no measurable adverse effects to the system at the watershed scale (see section on Cumulative Watershed Effects). The Metolius Watershed is 149,000 acres. On a watershed and landscape scale, all four alternatives are consistent with the Aquatic Conservation Strategy Objective 1. Mitigation measures and protection of stream channels will ensure that sediment routing to the Metolius River will not have a measurable effect.

#### ACS Objective #2

Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include flood plains, wetlands, upsweep areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

##### *Effects common to all Alternatives*

All four alternatives maintain the connectivity between watersheds. None of the alternatives would block any species[j's1]. Davis Creek and the un-named intermittent and ephemeral channels would maintain their current condition of connectivity. All four alternatives would meet the intent of ACS Objective 2.

#### ACS Objective #3

Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

### *Effects common to all Alternatives*

All four alternatives would maintain the physical integrity of the channels within the proposed project area. The action alternatives, 2-4, would not have a measurable effect on the physical integrity of the channels. Riparian buffers and a buffer that prohibits mechanical entry will ensure ACS objectives are maintained. Additionally, designated skid trails that cross ephemeral channels will be restored to ensure stream bank integrity.

### *ACS Objective #4*

Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

### *Effects common to all Alternatives*

All the alternatives meet ACS Objective 4. None of the alternatives will have a measurable effect on the riparian, aquatic or wetland ecosystems. There are no perennial streams within the project area. The small riparian areas along the intermittent and ephemeral streams will not be entered by mechanical equipment and will be protected. Routing of sediment, to the channels, will be minimized by using Best Management Practices and Mitigation and Management Constraints. No adverse measurable effects to the biological, physical, and chemical integrity of the system are expected.

### *ACS Objective #5*

Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

### *Alternative 1*

Alternative 1 would maintain and restore the sediment regime under which the aquatic ecosystem evolved. The current sediment regime is not expected to change. Alternative 1 would meet the intent of ACS Objective 5 with riparian revegetation.

### *Alternative 2,3,4*

Sediment impacts from the action alternatives would be mitigated through erosion control measures. No harvest buffer along the channels, designated skid trails, Best Management Practices, and Mitigation and Management Constraints will maintain the current sediment regime and the character of sediment input, storage and transport. All the action alternatives will meet the intent of ACS Objective 5.

### *ACS Objective #6*

Maintain and restore in-stream flows sufficient to create and restore riparian, aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration and spatial distribution of peak, high, and low flows must be protected.

### *Effects common to all Alternatives*

Because of the type of harvest and the size of the proposed units, water yield is not expected to increase or the increase would not be measurable with current scientific methods. Timing, magnitude, duration and spatial distribution of peak, high, and low flows should not change. Alternatives 1,2,3 and 4 have no



measurable effects on in-stream flows and meet the intent of ACS Objective 6.

#### *ACS Objective #7*

Maintain and restore timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands

##### *Effects common to all Alternatives*

The proposal has no measurable effects on flood plains and water table elevations in meadows and wetlands in all alternatives. All alternatives would meet ACS Objective #7.

#### *ACS Objective #8*

Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability.

##### *Effects common to all Alternatives*

The proposal has no measurable effects on the species composition of plant communities within the riparian areas. Riparian buffers and sufficient woody debris both standing and on the ground will be maintained in all the alternatives.

#### *ACS Objective #9*

Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

##### *Effects common to all Alternatives*

The proposal has no measurable effects on riparian dependent species. The riparian areas will not be entered and all stream channels will be protected. Native plant species of concern will be protected in all the action alternatives.

### Effects on Fuels

*Alternative 1 (No Action)* - Presently the area within the proposed project as well as much of the surrounding area have ample surface litter, cured dry grasses, and continuous brush/shrub component for surface fires to start easily and spread rapidly under typical summer weather conditions. Fire behavior predictions based on current fuel conditions indicate expected rates of spread could range from 20 to 90 chains per hour while producing flame lengths of 3 to 11 feet under dry fuel and weather conditions. Un-suppressed fires could reach 2 to 20 acres in size within 30 minutes (Hwy 20 Project Analysis 1998).

This fire behavior could surpass initial attack suppression capability within this analysis area, especially if there were high winds, multiple ignitions, or delay in reinforcement resources. Thickets and brush are continuous enough across the area to generate high intensity fire behavior ranging from isolated torching to significant runs of fire through existing tree crowns. Even a ground fire could be of sufficient

intensity to cause extensive damage to existing stands including large trees. This potentially volatile condition will continue to increase through time.

Due to the small size of the project area the project itself would have little effect on fuels reduction in the area. The main value of the project is in education of residents and visitors to the Metolius Basin about potential methods that could be used to manage ponderosa pine forest in the area.

*Common to all Action Alternatives* - All action alternatives would have an effect on reduction of fire hazard within units treated, due to the consumption of fuels in many size classes, and would provide a reduction in "needle-drape" and ladder fuels that allows a surface fire to climb into the tree crowns. However, because the projects main value is in demonstration, and due to the small scale of the project, fire hazard reduction would be minor when compared to the larger landscape. Prescribed fire also reduces the stocking level of dense stands of trees. Prescribed burning would allow bare soils to promote the regeneration of some species that have evolved in a fire-dependent ecosystem. Prescribed burning and mop-up operations always carry a risk of an escaped fire, which is not presented by other mechanical fuel treatments.

Prescribed burning would remove primarily fine fuels (<3 inches in diameter); however, burning could be applied under varied prescription conditions to create a mosaic of diverse effects. Using prescribed fire would not cause soil compaction or soil displacement and burning prescriptions could be designed to protect the decaying duff layer and important soil components such as fungi. The re-introduction of fire into the ecosystem would reduce competition for nutrients and water, and increase short-term nutrient cycling.

Other effects include the potential for increased short-term stress on overstory trees, reduction of grazing and browse forage in the short-term, smoke production during the burning operation, increased risk of loss of wildlife logs and reserve clumps, higher costs than most mechanical fuel treatment methods, soil disturbance from fire-line construction, and potential loss of snags and down woody debris.

Prescribed burning could produce an area where the dominant color is black, partially or completely, for a year or more. The large retained tree boles or trunks may be blackened for 3 to 5 years following the burn. The lower limbs and needles of large trees may appear red or brown until they fall off in 1 to 3 years. If the prescribed fire is designed to thin or kill small trees, the area would have pockets of dead trees. The small trees that have been scorched would have red or black needles for 1 to 3 years, then the needles would begin to fall off. After the needles have fallen off, the stem of the tree would remain standing for another 5 to 15 years. Tree growth within the burned area may be decreased for 3 to 10 years following the burn.

Heavy smoke would be generated on the day of the prescribed burn. Depending upon the fuels treatment objectives and the burning prescription, the burn area may have a smoky haze for 2 to 4 days following ignition. Alternative 2 and 4, with more acres treated, would have a greater effect on fuel reduction, than alternative 3.

## Effects on Botany

*Alternative 1 (No Action)* - would protect all Peck's penstemon populations from the direct effects of thinning, mowing, and prescribed fire (i.e. crushing and uprooting existing plants). No bare mineral soil areas where new plants could germinate would be created. Forest canopies would continue to close, reducing the amount of light and moisture available to plants and limiting flowering and seed production.

An indirect and cumulative effect would be that prescribed fire would not occur in population areas. Fire exclusion would continue. Fire is known to be beneficial to the plant. Thinning, mowing, or fire operations would not introduce noxious weeds. Less bare soil would be available for weed spread from new and existing populations. Because of the continued reduction of moisture and light by closing canopies, and the lack of fire, this alternative is the least beneficial to Peck's penstemon populations.

*Common to all Action Alternatives* - Severe ground disturbance, such as timber harvest activities, can extirpate populations by crushing, uprooting or damaging plants. Moderate to light disturbance, which does not destroy plants, can create bare soil where new plants can grow. However, there is no evidence that timber harvest, done by conventional methods with heavy equipment that causes extensive ground disturbance, is beneficial to populations. A study completed on the effects of timber harvest on Peck's penstemon (Ingersoll 1993) showed the abundance of plants declined extensively at all harvest sites.

Management requirements to protect soil would limit ground disturbance to 20% of the unit area. Loss of plants would likely occur in these areas; therefore the risk to the population is within the guidelines of the Conservation Strategy for Peck's penstemon.

A study involving the management treatment of mowing in a Peck's penstemon population was completed in 1998. Observations showed few plants were damaged by this treatment and the effect was seen as generally beneficial to the population due to reduced competition and increased light availability.

The reintroduction of fire would be directly beneficial causing vegetative spread and enhanced seed production. Fire would improve habitat by reducing litter, opening brush and tree canopies, and releasing nutrients. A potential indirect effect would be an escape resulting in a wildfire. Suppression activities can be damaging to plant populations because heavy equipment and vehicles can crush vegetation, destroy plants and introduce weeds. Fire mop-up can also disturb soils and uproot plants.

The introduction, spread and enhancement of growing conditions for noxious weeds is a potential indirect and cumulative effect of thinning, mowing, and fire.

*Alternative 2 and 4* - will have the greatest effects on Peck's penstemon populations. Beneficial effects are the increase in available sunlight and bare soil, with reduced competition from other plant species. Detrimental effects include the direct impact to populations through the damage of plants with heavy equipment in Units 1,2, and 7. These effects will be the least with Alternative 3 due to the decrease in affected area.

## Effects on Heritage

Since no historic properties or potential historic properties are present, none of the action alternatives will have an effect on any historic properties.

## Effects Social

There are several important qualities of the Metolius Basin that attracts residents and visitors. A primary quality is the outstanding scenery of an old-growth ponderosa pine forest. Another important quality is the easy access to a variety of recreation activities, including camping, fishing, hiking, and horseback riding. However, these qualities have recently been threatened by the increased growth of thousands of small trees in the old-growth stands, increasing the fuel levels (and thus fire risk), and resulting in competition stress on the large ponderosa pines and larch.

Most residents, visitor, and local forest industry representatives have expressed a strong interest in having the Forest Service address these issues on National Forest lands in the basin. To help educate the public about how forest management can reduce the risk of catastrophic fire, and enhance scenic quality over the long term, this demonstration project was proposed. When contacted, regional and local environmental groups, such as the Oregon Natural Resource Council, Sierra Club, and Sisters Forest Planning committee, expressed support for the demonstration project.

Alternatives 2 and 4- would meet the interest of local residents for an environmental education opportunity about forest management in the area, and options for reducing fuel loads. Alternative 3 would provide less opportunity for environmental education and Alternative 1 (no action) would not provide any opportunity for environmental education.

### *Recreation*

All Action Alternatives - It is predicted that the "user-created" trails that travel through the project area may be affected by the project in the short-term during implementation but not removed or obliterated permanently.

### *Economic*

All Alternatives - not expected to have much of an economic effect on local residents, or to measurably affect the economy of Camp Sherman businesses. The forest products produced by the project may provide income for local small sale operators, depending on costs of implementing the project (mitigation, removal/haul), with minimal returns to the Federal Government.

## Effects on Fish

### *All Action Alternatives*

These alternatives are consistent with the Aquatic Conservation Strategy, because it does not prevent meeting the Aquatic Conservation Strategy Objectives. (See the Northwest Forest Plan section on ACS Objectives for more discussion). Additional sediment inputs would negatively affect the Metolius River. Mitigation measures should minimize this effect. Mitigations to prevent some fine sediment inputs to the creek would be implemented during road use to reduce this risk. Spawning areas in the Metolius River would be protected from fine sediment in this alternative through sediment filtering by restoration of riparian areas and through implementing best management practices during construction and maintenance of crossing locations of intermittent channels.

## Effects on Wildlife

### *Alternative 1*

Direct Effects: No suitable spotted owl habitat (NRF) would be impacted.

Indirect Effects: No treatment would occur with this alternative. In the absence of catastrophic occurrences, habitat characteristics, e.g., canopy layers, canopy cover, structure, down woody material and snags would increase and connectivity would be maintained. Mixed conifer stands would continue to lose the large ponderosa pine and Douglas-fir components being replaced by white fir and other shade tolerant species. Suitable habitat would continue to exist with white fir providing the nesting, roosting, and foraging component. This habitat would be short-lived because white fir is intolerant to insects, disease, and drought.

Cumulative Effects: Cumulatively, this alternative would have no affect on survivorship of known pairs in the LSR.

### *Alternative 2*

Direct Effects: No NRF habitat will be treated with this alternative. Treatments will occur in stands with 30-35% canopy closure. Operations would not be within 1/4 mile of known spotted owl activity centers and will not disrupt nesting activity.

Indirect Effects: Proposed treatments may lessen the risk of a fire event occurring in these units. Ponderosa pine restoration will focus on fire climax stands and will remove mainly true fir < 8 " dbh and may thin the stand from below. Different treatment scenarios exist depending on the existing basal area of the stand. All >21" dbh trees will remain. This aids in maintaining large trees by reducing their susceptibility to fire and insects. However, thinning reduces canopy cover and opens up the stand.

Thinning through the remaining stand will decrease densities and allow for faster growth of young trees while reducing risk. These treatments will result in both negative (short term) and beneficial (long term) impacts to spotted owls. Units 1-5 are delineated as NRF habitat, however, from our field reconnaissance, units 1-5 do not have spotted owl habitat characteristics. Treatments will reduce habitat components (canopy cover, logs, snags, prey habitat) in the short term. Beneficial impacts should result from reducing risk of fire, and facilitating the development of future habitat. Short-term impacts (thinning) may result in long-term benefits (large trees and snags).

Treatments will create two openings of approximately 5 acres in size, generally in areas where a higher proportion of the stand is composed of undesirable species such as white fir, for the purpose of regenerating desired species such as larch in unit 1, and Douglas-fir and ponderosa pine in unit 2. This will increase the diversity by restoring fading larch stands. Harvest does fragment the landscape but at a small scale. These openings are more likely to mimic gaps that occur naturally over the landscape and within stands.

Loss of structural diversity and snags may result in a potential increase in predation and increased competition by other owls and raptors. It may also reduce the habitat effectiveness for spotted owl prey base species. Decadent trees and logs already present on site may be removed or degraded by fuels treatment activities. Dispersal habitat may be reduced with these treatment methods, especially where the resulting canopy is 20% or less.

### *Alternative 3*

*Direct Effects:* Approximately 42 acres are proposed for treatment with Alternative 3, no treatments in units 1 and 2 except for some pruning of mistletoe infected trees. No NRF habitat will be treated with this alternative. Treatments will occur in stands with less than 35% canopy closure. Operations will not occur within 1/4 mile or in close proximity to known spotted owl activity centers. Project activities will not disrupt nesting activity.

*Indirect Effects:* This alternative proposes several different treatments to reduce the potential for additional mortality from further insect and disease outbreaks, reduce the potential for a stand replacement fire event, and to facilitate the development of suitable spotted owl habitat. Treatments proposed are thinning from below, ponderosa pine and larch restoration, and small tree thinning.

Proposed treatments may lessen the risk of a fire event occurring in these units. Ponderosa pine restoration will focus on fire climax stands and will remove mainly true fir < 8 " dbh and may thin the stand from below. Different treatment scenarios exist depending on the existing basal area of the stand. All >21" dbh trees will remain. This aids in maintaining large trees by reducing their susceptibility to fire and insects. However, thinning reduces canopy cover and opens up the stand. Thinning through the remaining stand will decrease densities and allow for faster growth of young trees while reducing risk. These treatments will result in both negative (short term) and beneficial (long term) impacts to spotted owls. Units 3-5 are delineated as NRF habitat, however, from our field reconnaissance, units 1-5 do not have spotted owl habitat characteristics. Treatments will reduce habitat components (canopy cover, logs,

snags, prey habitat) in the short term. Beneficial impacts should result from reducing risk of fire, and facilitating the development of future habitat. Short-term impacts (thinning) may result in long-term benefits (large trees and snags).

Loss of structural diversity and snags may result in a potential increase in predation and increased competition by other owls and raptors. It may also reduce the habitat effectiveness for spotted owl prey base species. Decadent trees and logs already present on site may be removed or degraded by fuel treatment activities. Dispersal habitat may be reduced with these treatment methods, especially where the resulting canopy is 20% or less.

Units 1 and 2 will not be treated with this alternative. Unit 2 has small patches of dispersal habitat existing within the unit boundary. By not treating this unit, dispersal habitat will be maintained. However, this habitat component is very patchy and exists in very small clumps, which may not provide adequate habitat for spotted owls. Diversity may be lost over time as well by not treating these units. Larch and Douglas-fir may be eliminated from the stands as the mistletoe problem worsens.

#### *Alternative 4*

Alternative 4 places an increased emphasis on demonstration by splitting the types of treatment applied to units 1 and 2. Effects on wildlife habitat in this Alternative will be the same as Alternative 2.

#### *Species by Alternative*

##### *Bald Eagle*

Action alternatives would not affect potential nesting-roosting habitat for bald eagles because large trees would be maintained.

##### *Northern Goshawk, USFWS "Species of Concern"*

There are no standards and guidelines pertaining to protecting of nest sites except for seasonal restrictions on disturbing activities (March 1 to August 31). Surveys for Northern Goshawk are planned for June 2001. If a Goshawk nest is found to be active, required mitigation measures will be followed if any activities occur.

*Alternative 1 (No Action)* - Implementing Alternative 1 would not change habitat characteristics of the nest site or the surrounding post fledging and foraging habitat. The potential for disturbing nesting raptors is minimized with this alternative. This alternative will leave the nesting habitat intact compared to the action alternatives.

*Alternative 2 (Proposed Action)* - Alternative 2 would treat approximately 2-5 acres of the nest site area (30 acre) and approximately 50 acres of foraging habitat with prescribed fire, mowing, and thinning of trees < 8 inch diameter. There is a high probability that activities associated with implementing treatments will disturb (displace or cause nest failure) unknown nest sites. Units 3, 5, 8, and a portion of 4 are within the quarter mile seasonal restriction area.

*Alternative 3* - Alternative 3 would treat the goshawk nest site area the same as Alternative 2 except there would be no treatments in units 1 and 2. Fewer acres would be treated and treatments would enhance foraging opportunities for goshawks.

*Alternative 4* - Alternative 4 places an increased emphasis on demonstration by splitting the types of treatment applied to units 1 and 2. Effects on wildlife habitat in this Alternative will be the same as Alternative 2.

### Management Indicator Species

Management Indicator Species (MIS) are species listed in the Deschutes National Forest Land Resource Management Plan. Management Indicator Species on the Deschutes National Forest that utilize or may utilize the area include: great blue herons, accipiters, woodpeckers, owls, elk, bats, marten, osprey, deer, and species associated with down woody debris.

### *Deer*

The entire project area is utilized by deer. The deer population in the Metolius Unit is somewhat stable to slightly declining (C. Heath, ODFW, pers. commun.). Summer range, transition range (spring and fall) and winter range occur within the project area. Bitterbrush in this area is in relatively good condition and does not appear to be heavily utilized. This portion of deer range also functions as a migration corridor between summer and winter ranges. Due to the small size of the treatment units there will not be an effect on deer winter range.

### *Cavity Excavators and Nesters*

Cavity nesters known or expected to occur in the project area include: flammulated owl, white-headed woodpecker, hairy woodpecker, black-backed woodpecker, northern three-toed woodpecker, pygmy nuthatch, pileated woodpecker, Williamson's sapsucker, Lewis woodpecker, and yellow-shafted flickers.

*Alternative 1 (No Action)* - This alternative would maintain the existing level of snags in the project area.

*All Action Alternatives* - This alternative would maintain required snag levels where they exist.

### *Amphibians*

Cascades Frog - Habitat for this frog exists adjacent to the project area. It is unlikely this species occurs in the project area because the project area does not have a perennial stream in it. R. Scrocca conducted amphibian surveys in fall of 1999 and spring of 2000 and did not find any amphibians.

Alternative 1 would have no affect on riparian habitat.

Alternative 2, 3, and 4 would treat riparian habitat. Treatments would reduce cover along the intermittent streams in the short term. This would reduce hiding opportunities and make frogs more vulnerable to predators. In the long term, vegetation should return and provide adequate cover.



### *Neotropical Birds*

Focal species for ponderosa pine habitats include: white-headed woodpecker, pygmy nuthatch, chipping sparrow, and Lewis' woodpecker. Focal species for mixed conifer include: brown creeper, Williamson's sapsucker, flammulated owl, hermit thrush, and olive-sided flycatcher. Focal species are highly associated with important attributes or conditions within a habitat type. Managing for a species representative of important components in a functioning ecosystem helps to conserve other species and elements of biodiversity.

Of the species listed above, the olive-sided flycatcher, brown creeper, and chipping sparrow are declining. Managing vegetation within its historic range of variability should help maintain viable populations.

### *Alternative 1.*

This alternative would maintain the existing condition. Habitat for focal species for PP and MCW would continue to deteriorate.

### *Alternatives 2.*

Treating PP with underburning and thinning would benefit PP focal species. Treating MCW would benefit most focal species. Hermit thrush would not benefit from thinning and underburning in MCW because it uses multi-layered/dense canopy forest conditions, which will be reduced in units 1 and 2.

*Alternative 3* - Treatments should improve and diversify habitat for all focal species.

*Alternative 4* - Effects on wildlife habitat in this Alternative will be the same as Alternative 2.

## **Specifically Required Disclosures**

### *Effects of Alternatives on Prime Farm Land, Rangeland, and Forest Land*

All Alternatives are within the intent of the Secretary of Agriculture Memorandum 1827 for prime farmland, rangeland and forest land. National Forest lands would be managed with consideration of the impacts on adjacent private lands, and the objectives of the action Alternatives would be to reduce potential impacts on adjacent lands from severe disturbances (insect, disease, wildfire).

This project area does not contain any prime farm lands or rangelands. Prime forest lands on private lands within this project area would benefit indirectly from a decreased risk of impacts from wildfire.

### *Energy Requirements of the Alternatives*

There are direct and indirect effects upon energy requirements necessary to implement the proposed

alternatives. There would be no unusual energy requirements for any of the Alternatives.

### *Environmental Justice and Effects on Minorities and Women*

This project would not have an effect on the equality for environmental justice for American Indians, women, other minorities, or the Civil Rights of an American Citizens. Local consumers would be affected by the supplies of various good and services.

### *Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands)*

Executive Orders 11988 and 11990 direct Federal agencies to avoid, to the extent possible, both short-term and long-term adverse impacts associated with the modifications of floodplains and wetlands. All alternatives have no specific actions that adversely affect wetlands and floodplains. Proposed activities in Alternatives 2, 3, and 4 are compliant with the orders and USDA Departmental Regulation 9500-3.

GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- Chapter IV
- [Preparers](#)

---

### [Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/chapter4.html>

Last Update: 6/26/01

R.A. Jensen

## List of Preparers

Terry Craigg	Soil Scientist and Project Leader/EA Writer
Don Wood	Silviculturist (Private consultant for FOM)
Brian Tandy	Silviculturist
Mark Rapp	Fuels Planner
Maret Pajutee	Plant Ecologist
Don Zettel	Archaeologist
Jeff Grenier	Wildlife Biologist
Lauri Turner	Wildlife Biologist
Kris Martinson	Consultation

## List of Agencies and Persons Consulted

Gregory McClarren	Vice President, Friends of the Metolius
Toni Foster	President, Friends of the Metolius
Area Residences	(See Project file for complete list of area residents)

## GO TO

- [Chapter I](#)
- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- Preparers

---

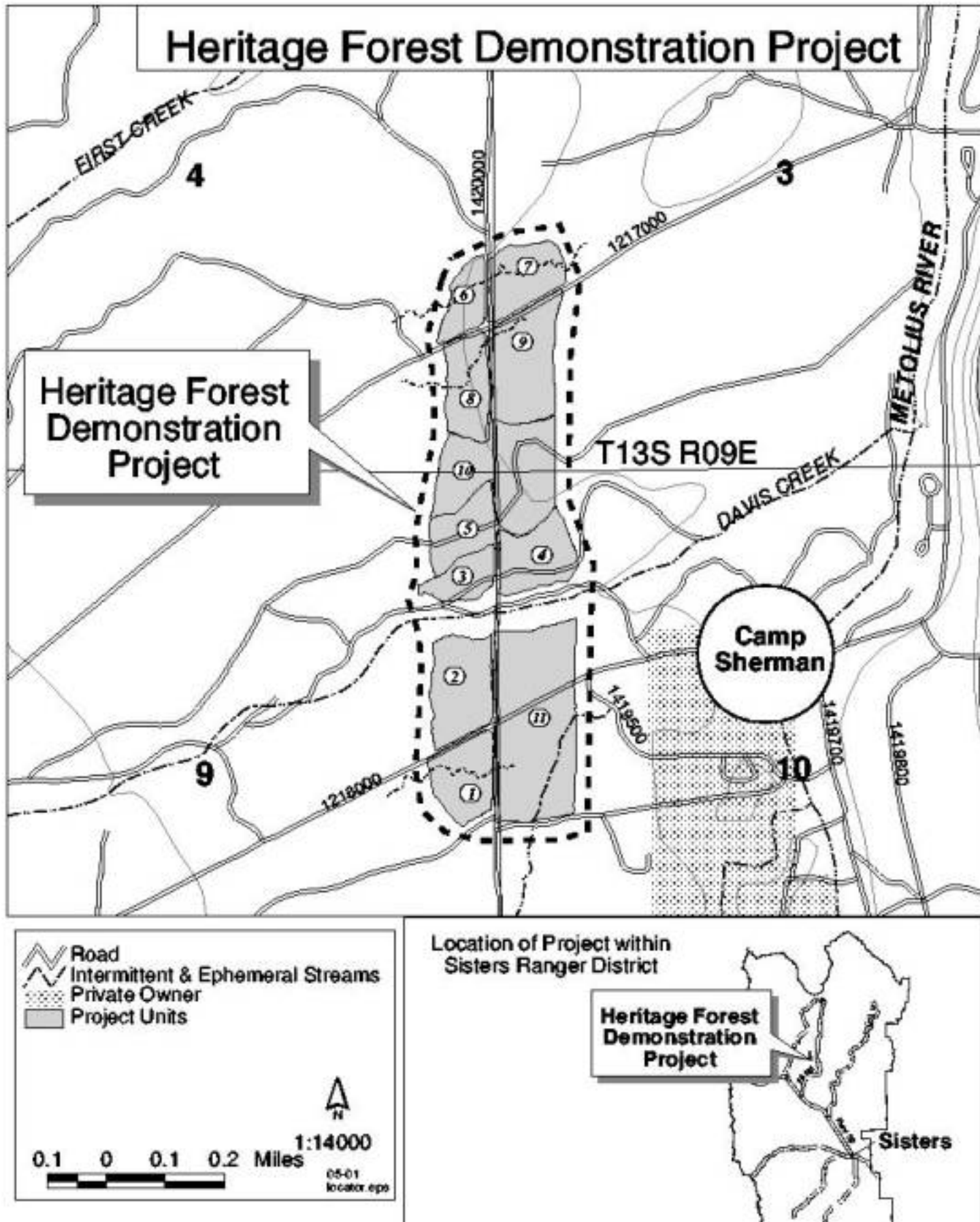
### [Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/preparers.html>

Last Update: 6/26/01

R.A. Jensen

Figure 1 - Vicinity Map





---

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure1.html)

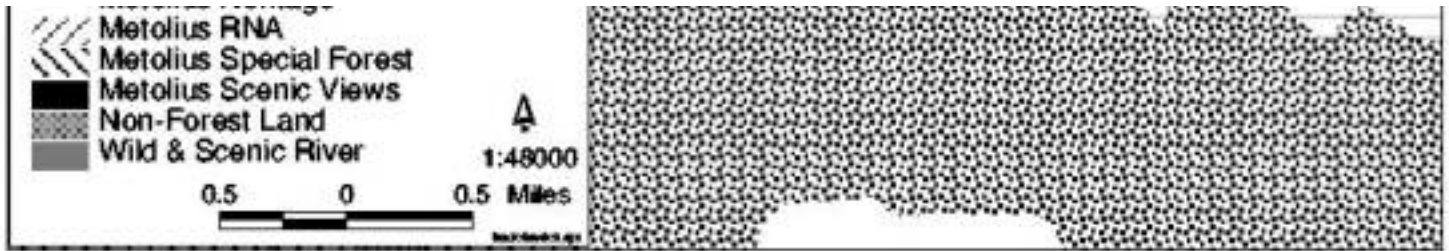
<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure1.html>

Last Update: 6/26/01

R.A. Jensen

### Figure 2 - Deschutes Land Resource Management Plan management allocations





[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure2.html)

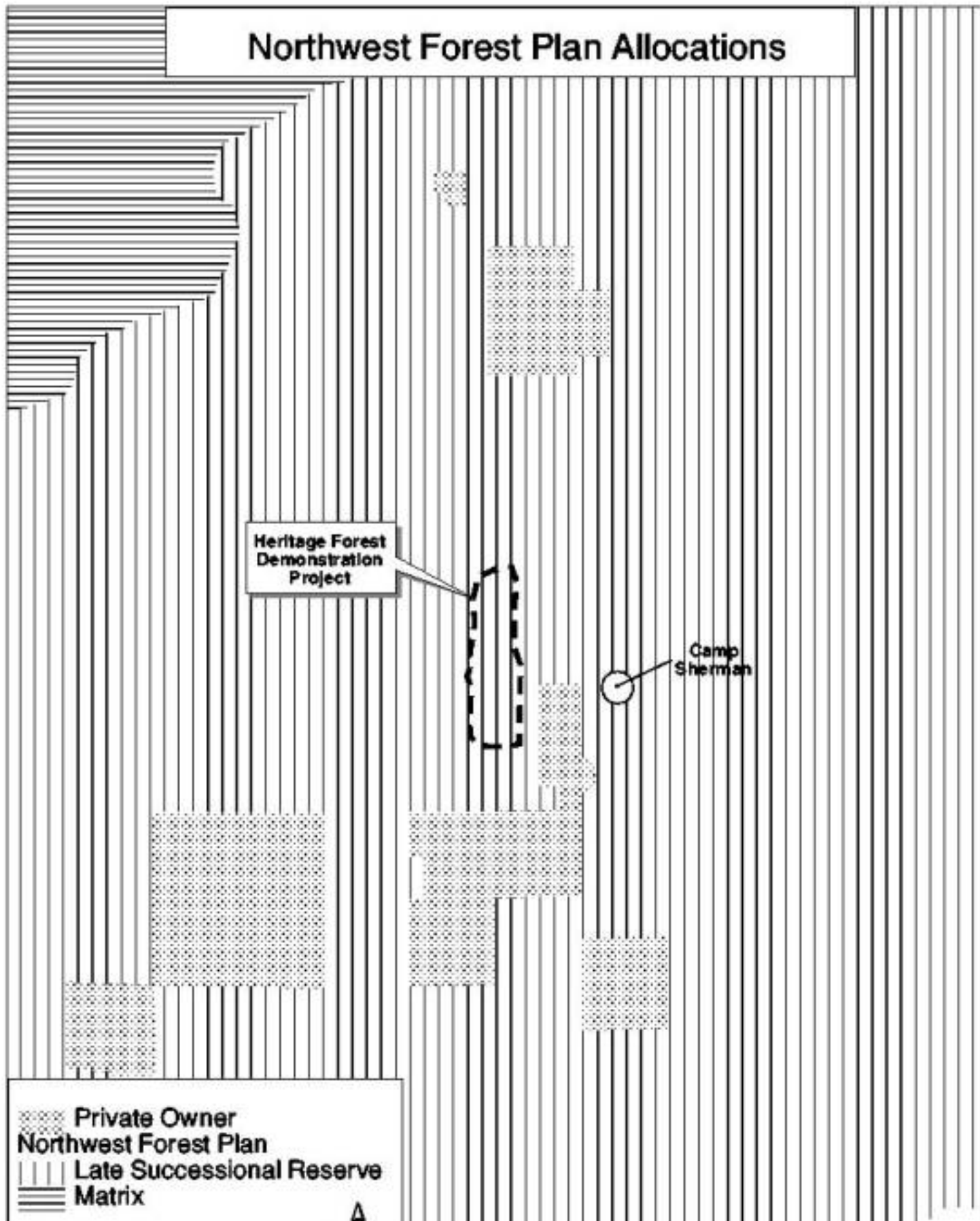
<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure2.html>

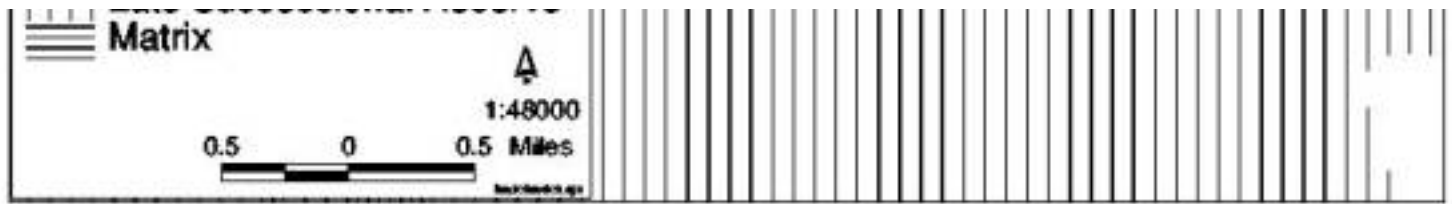
Last Update: 6/26/01

R.A. Jensen



### Figure 3 - Northwest Forest Plan management allocations





---

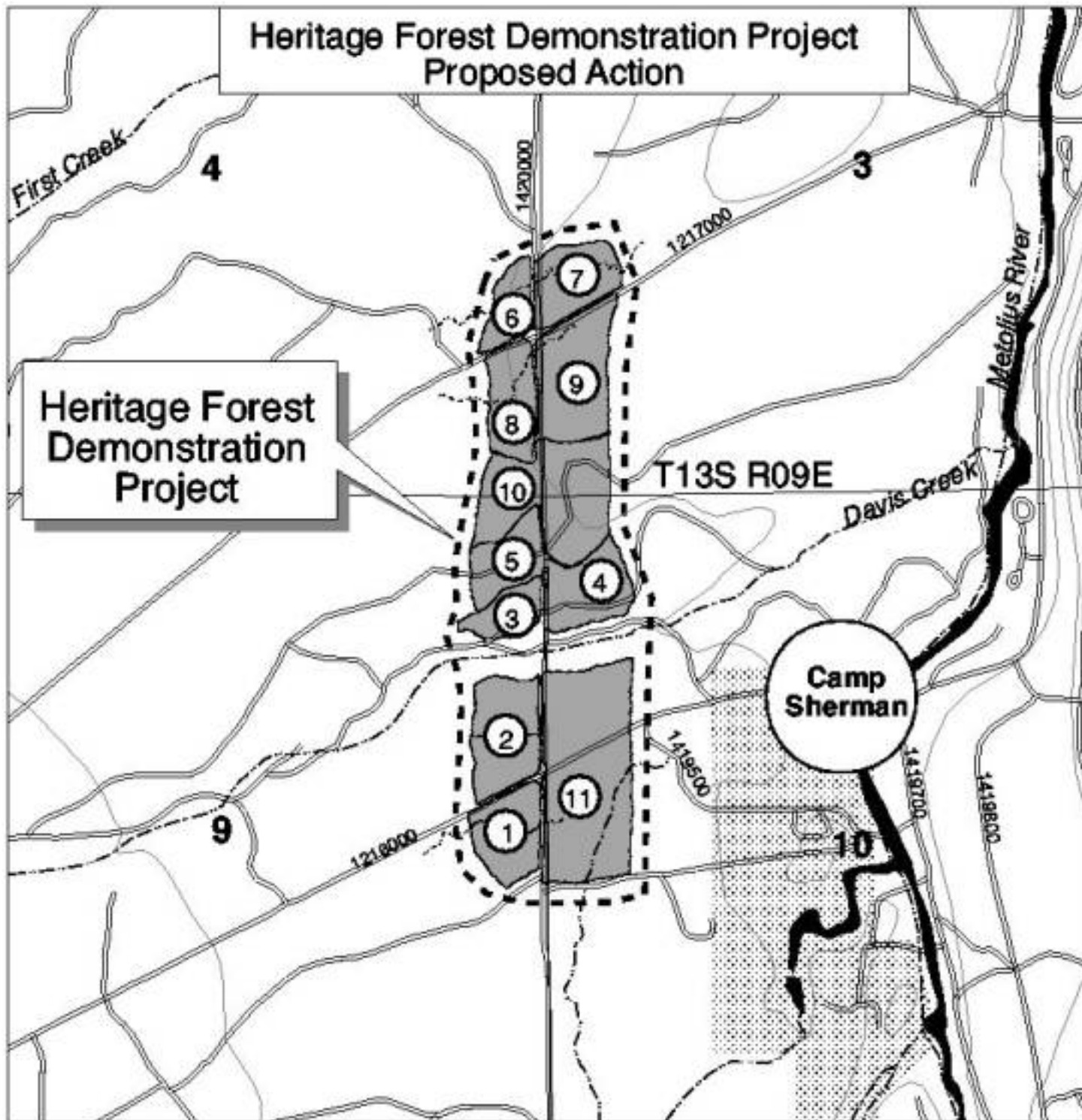
[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure3.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure3.html>

Last Update: 6/26/01

R.A. Jensen

Figure 4 - Alternative 2 (Proposed Action)





---

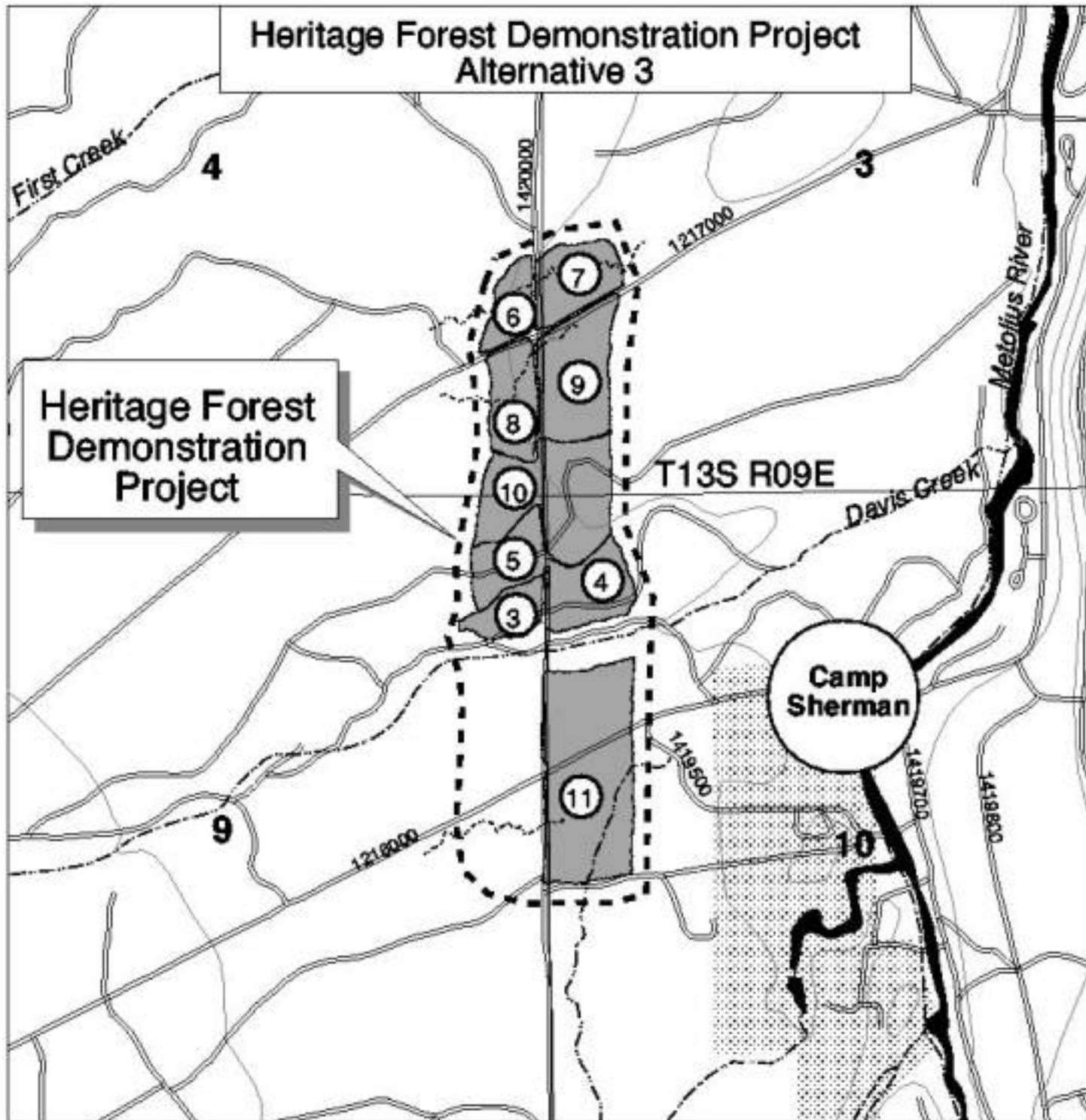
[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure4.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure4.html>

Last Update: 6/26/01

R.A. Jensen

Figure 5 - Alternative 3





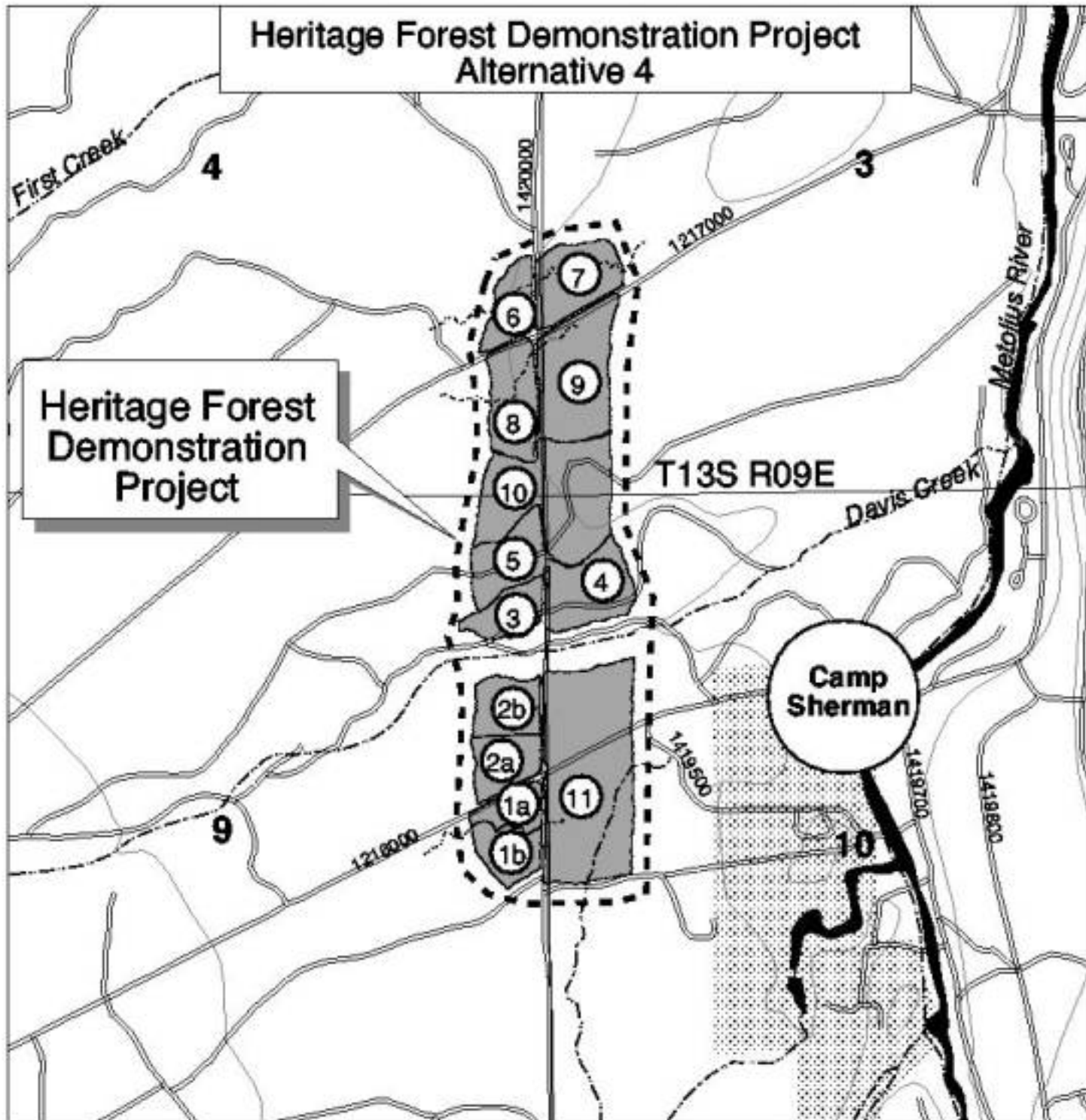
[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure5.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure5.html>

Last Update: 6/26/01

R.A. Jensen

Figure 6 - Alternative 4





---

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure6.html)

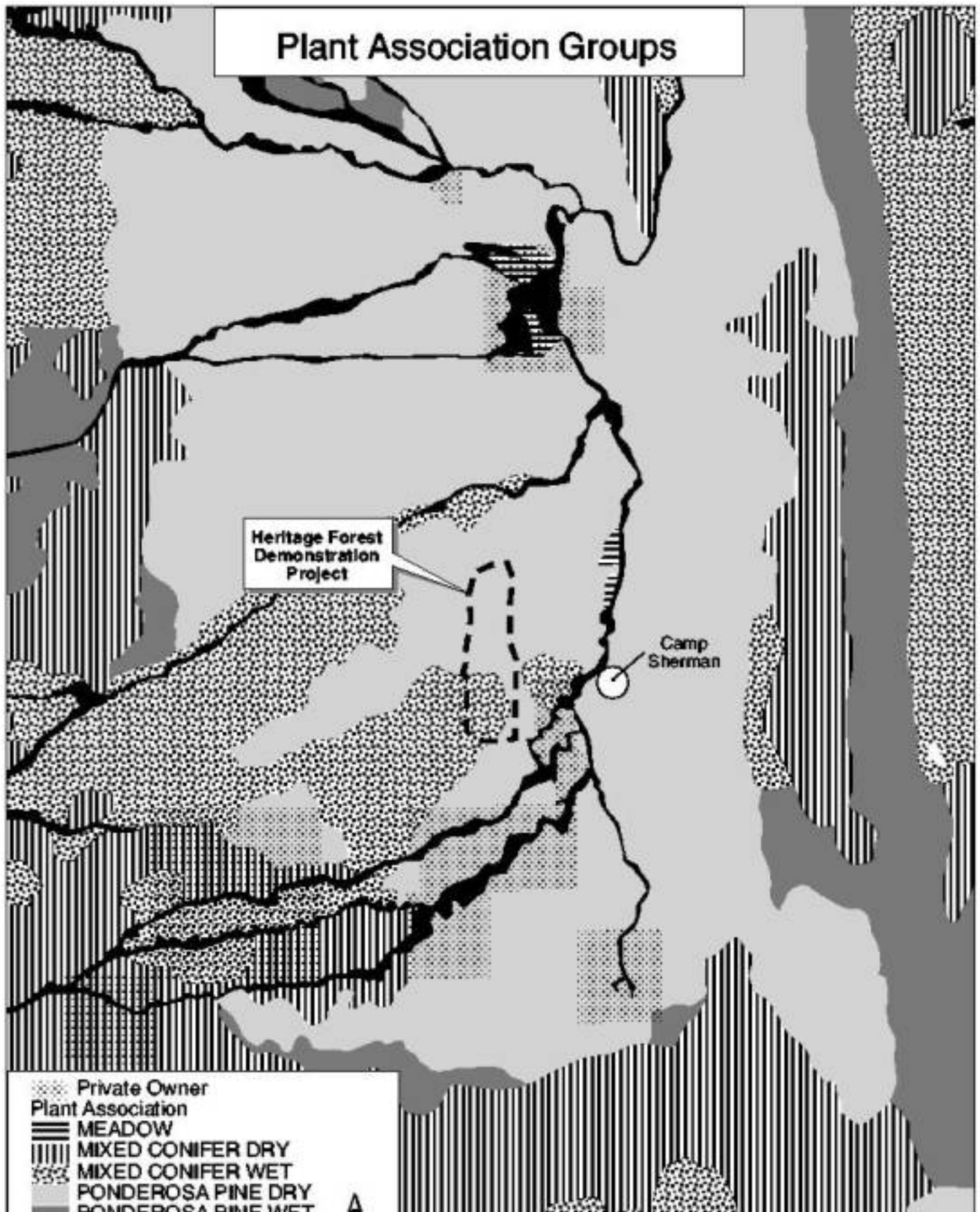
<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure6.html>

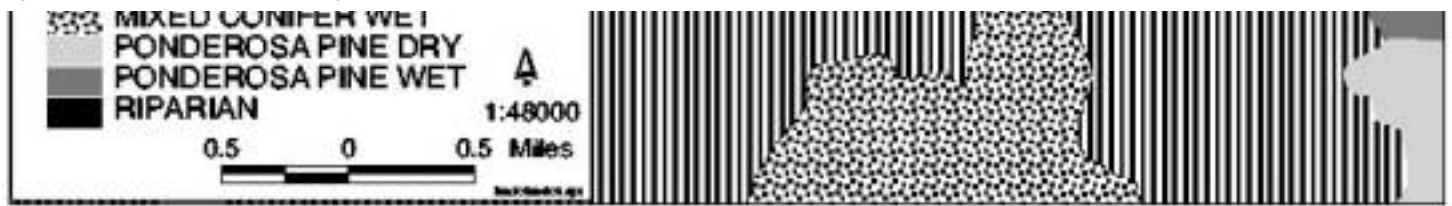
Last Update: 6/26/01

R.A. Jensen



Figure 7 - Plant Association Groups (PAG)'s





[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure7.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure7.html>

Last Update: 6/26/01

R.A. Jensen

**Figure 8 - Ephemeral stream channel in unit 7. Note relatively low stream banks and signs of annual scour are limited to isolated areas.**



---

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure8.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure8.html>

Last Update: 6/26/01

R.A. Jensen

**Figure 9- Intermittent stream channel (Davis Creek) in project area. Note channel is deeper than ephemeral stream and the presence of riparian vegetation (willow) in channel.**



---

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure9.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/sisters/heritageforest/figure9.html>

Last Update: 6/26/01

R.A. Jensen