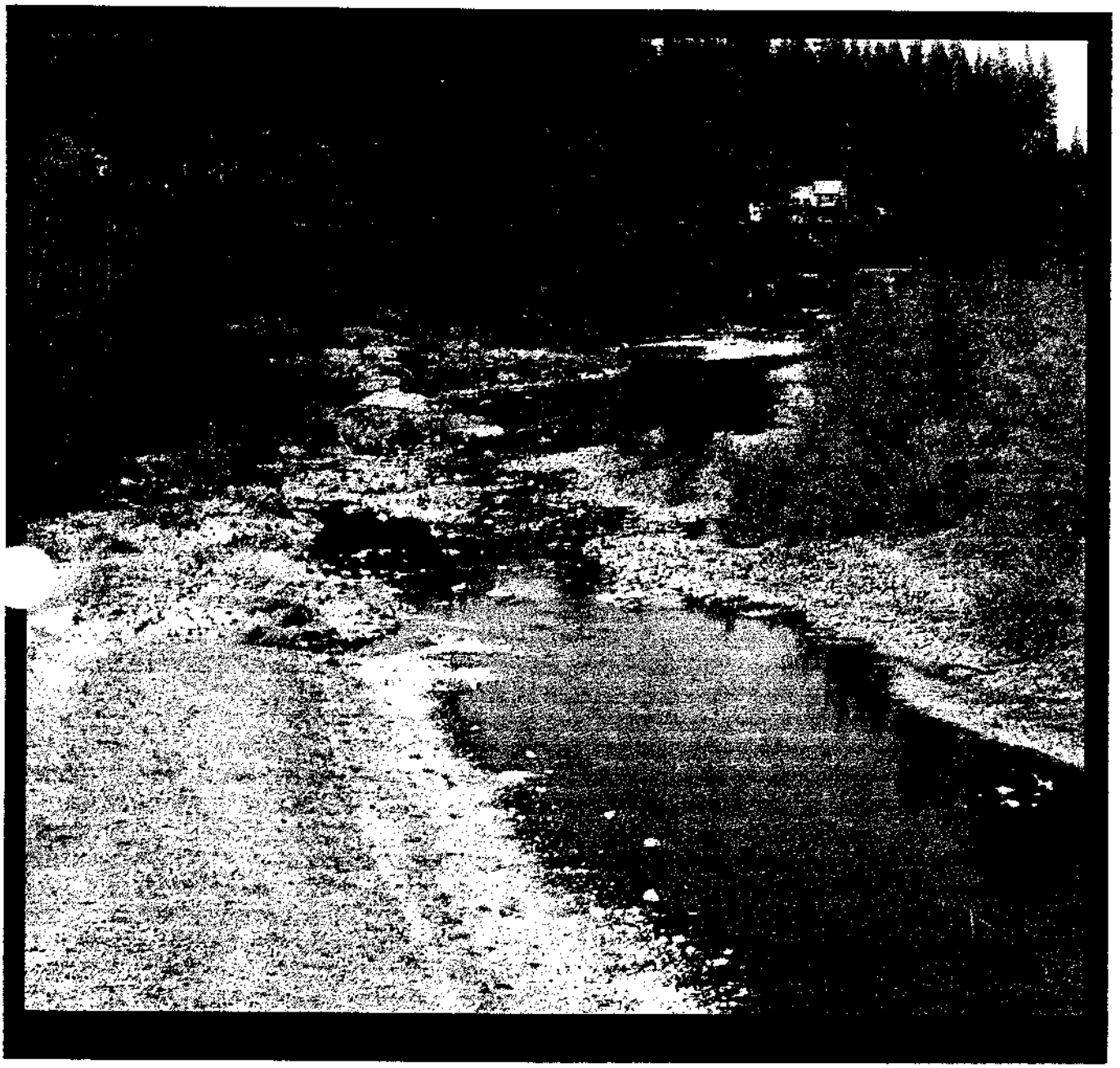
Watershed Analysis
of
East Evans Creek



Medford District Bureau of Land Management
Butte Falls Resource Area

EAST EVANS

WATERSHED ANALYSIS

March 1996

Butte Falls Resource Area

Summary: The East Evans Watershed Analysis Unit is located in the headwaters of the East Evans Creek Watershed. The area was analyzed and the follwings seven topics of concern were identified by the analysis team: vegetation, fire, wildlife, soils, aquatic,riparian/stream morphology, and social. Curent condition, reference condition, and interpretation are described on the physical, terrestrial, disturbance, riparian, aquatic and social elements. Included is a desired future acondition of the landscape along with key topic objectives and recommendations which will help the landscape move toward these desired conditions.

The analysis was interjected with standards and guidelines from the FSEIS, Record of Decision, Aquatic Conservation Strategy, and the Medford BLM District RMP. Fifty three letters were mailed to the local public to help identify issues and concerns. One response to this mailing was recieved, asking to be kept informed was received.

East Evans Watershed Analysis Team Members: John Bergin, John Dinwiddie, Linda Hale, Doug Kendig, Gary Krupp, Jon Raby, Bob Smith, Emily Hale, Ken VanEtten, Jim Welden, Ed Park

I. INTRODUCTION

Watershed analysis is a procedure used to characterize the human, aquatic, riparian, and terrestrial features, conditions, processes, and interactions that occur within a watershed. The objective of this analysis is to look at a "landscape" and describe its "ecosystem" structures and functions. A rudimentary understanding of landscape level processes and interactions is essential in arriving at ecologically sound management decisions. This planning process requires a major shift away from conventional single resource systems toward a comprehensive "landscape" approach of managing natural resources. Answers are not easily attainable and require extensive resource surveys, creative thinking, and trial and error.

The principal objective of managing on a landscape level is to provide for and sustain ecological health and resiliency. A sustainable system has the ability to undergo change and recover by responding and maintaining interactions. This is accomplished through the restoration or maintenance of diversity, function, and complexity within an ecosystem. Natural processes, population levels, and vegetation patterns that were present prior to European settlement are used as reference points. Reconstructing what the landscape looked like prior to management and fire control provides insight to determine the amount of diversity and complexity to retain or strive for through management actions. Logging, forest plantations, fire suppression, checkerboard ownership patterns, and rural development have altered most landscapes to the extent that a complete return to conditions of previous centuries is probably not possible, nor perhaps desired.

Although private lands are analyzed in this document, management of these lands is at the discretion of the landowner. The location and historical or current use of these properties may contribute to the spatial stability and patterns in the watershed and it is important that any analysis include as much information about these lands as is available to look at a landscape approach.

Landscape analysis and design processes used in this analysis are based on the methodology outlined in Draft Ecosystem Analysis at the Watershed Scale, the Revised Federal Guide For Watershed Analysis, Version 2.2, dated August 1995. This process divides the analysis into six major steps: 1) characterization, 2) key issues and key questions, 3) current conditions, 4) reference conditions, 5) interpretation, and 6) recommendations.

II. CHARACTERIZATION OF THE WATERSHED

Delineation of the watershed analysis unit (WAU) boundary is based upon BLM district criteria, using ridge features and drainage patterns.

The East Evans watershed analysis unit (WAU) is located northwest of Medford and covers approximately 21,136 acres (33 square miles). The WAU is in the Rogue River Basin and located within the Klamath Mountain Geological Province. It is within the Butte Falls Resource Area of the Medford Bureau of Land Management (BLM) and includes approximately 896 acres of U.S. Forest Service (USFS) Umpqua National Forest lands administered by the Tiller Ranger District (Figure 1). The WAU includes portions of Township 32, 33, and 34 South, Range 2 and 3 West. Ownership within this landscape analysis unit is displayed below (Table 1).

Table 1. East Evans WAU Ownership

BLM	FOREST SERVICE	*MEDITE	*BOISE CASCADE	OREGON STATE FOREST	OTHER PRIVATE	FARM
37%	4%	39%	13%	< 1%	7%	1%
7863 ACRES	896 ACRES	8143 ACRES	2757 ACRES	41 ACRES	1199 ACRES	237 ACRES

*Private timber companies

The WAU is on the south side of the Rogue-Umpqua divide and provides connectivity between the Cascade Range to the east and the Coast Range to the west. Cow Creek drainage is to the north and Sam's Valley to the south. The area provides an environmental gradient between the Klamath Mountain and Cascade Range geologic provinces. The WAU is the headwaters of East Evans Creek above the confluence with Sprignett Creek.

The climate of this area is Mediterranean type with typically cool, wet winters and hot, dry summers. Summer temperatures range from the 80's to the high 90's. Occasional daytime temperatures in the summer may reach 100+ degrees Fahrenheit (F). Winter lows drop regularly to 10 to 20 degrees F. Annual precipitation ranges from 35 to 50 inches. Typically, most precipitation occurs in the late fall, winter, and early spring as rainfall with the exception of the upper ridges where snow may accumulate.

Elevation ranges from 1675 ft. on the valley floor along East Evans Creek to the topographic high of 4600 ft. at the Forest Service Lookout on the Rogue/Umpqua Divide in Section 23, Township 32S, Range 2W. The dominant ridges forming this drainage are primarily north to south with many lateral finger ridges.

The topography within this landscape varies from relatively steep (60-80%) canyon slopes to gently sloping terrain with broad low gradient terrain along East Fork Evans Creek in the southern portion of the watershed.

The dominant soil types in the upper elevations of the WAU are silt loams. These soils are moderately deep (20-40"), well drained, and have a high water erosion hazard. The soil types are prone to slumping and sliding, particularly on the steeper side slopes (>60%) and under saturated conditions.

In the lower end of the WAU where residential property and farmlands are located, the soils are characteristically deep alluvial silt deposits.

The transient snow zone (TSZ) ranges in elevation from 3500 to 4500 feet. This is the elevation zone where rain on accumulated snow pack is most likely to occur and create flooding conditions. Roads in the upper elevations are frequently blocked by snow in the winter months.

The major drainages in the WAU are Sprignett, Morrison, Musty, and East Evans Creek. The area is sparsely populated, with scattered farms and residences along East Evans Creek in the southern portion of the WAU.

All of the Federal lands in this WAU are designated "matrix" lands in the Forest Ecosystem Management Assessment Team Report (FEMAT), also referred to as "The President's Plan." Matrix lands are those federal lands outside of reserves, withdrawn areas, and Managed Late-Successional areas. The other land allocations in the WAU are Northern spotted owl activity centers, which are managed as late successional reserves, riparian reserves, and one connectivity block. Most timber harvest and other silvicultural activities will be conducted in that portion of the matrix with suitable forest lands, according to the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (ROD), April 1994. The matrix lands are all within the Northern General Forest Management Area (ROD 1994, pg C-42, Medford District Resource Management Plan, RMP 1995, pg 38).

AREAS ADJACENT TO WATERSHED

Section 1, T33S., R3W., is located on the ridge separating the Umpqua and Rogue drainage systems. Section 1 is on the northern boundary of the East Evans WAU. Section 1 has not been included in any watershed analysis for either the Butte Falls or Glendale Resource Areas. To insure that the section is not overlooked, section 1 will be included in the East Evans WAU.

In 1987, approximately one-half of section 1 was burned in the Angel Camp Fire. The areas burned have been planted with conifers and are recovering from the fire. The vegetation within section 1 is similar to the vegetative types described for the northern portion on the watershed.

Features and conditions within section 1 are similar to the rest of the northern portion of the watershed except drainage of three/quarters of the section is to the north and the Umpqua System instead of the Rogue System.

Concerns and actions for the East Evans Watershed are appropriate for section 1 and can be incorporated into this analysis for implementation.

III. KEY ISSUES AND KEY QUESTIONS

The values and uses associated with the watershed have been identified to focus this analysis on the key elements that are determined to be most relevant to management questions, human values, and existing resource conditions. Seven key topics of concern were identified by the analysis team. These were vegetation, fire, threatened & endangered (T&E) wildlife species and wildlife habitat, soils, aquatic habitat, riparian and stream morphology, and social issues. Key questions were designed to address the issues and focus on the elements that influence, and are influenced by humans.

KEY ISSUES AND QUESTIONS

1. VEGETATION

- What are the current vegetative elements within the WAU?
- How have land management activities affected the composition and structure of the elements?

2. FIRE

- Where is the vegetation at high risk for repetitive burning?
- What are the potential landscape effects of fire?
- How has management influenced the role of fire and altered the landscape?
- What were the traditional/historical level and frequency of fire in the watershed?

3. WILDLIFE

- What is the current distribution, status/trends of the spotted owl and owl habitat in the watershed?
- How can late successional habitat for wildlife species be maintained/improved?
- What is the relative abundance of coarse woody debris and snags?

4. SOILS

- Are the cumulative effects of timber harvest activities affecting soil stability and erosion in the watershed?

- How have management practices impacted vegetation manipulation by creating openings that have an effect on the rain-on-snow events?

5. AQUATIC

- What is the current distribution, status/trends of aquatic invertebrate, amphibian, and fish species?
- How do the current conditions vary from historical conditions or how have conditions been altered by human activities?
- What are the key areas for aquatic activity?
- What are the water quality and quantity concerns in the watershed?

6. RIPARIAN AND STREAM MORPHOLOGY

- What is the condition and trend of the riparian community?
- What is the effect of timber harvest on these processes?

7. SOCIAL

- What are the influences and relationships between human uses and other ecosystem processes in the watershed?

IV. CURRENT CONDITIONS, REFERENCE CONDITIONS AND INTERPRETATIONS

Physical Elements

GEOLOGY

The geology on the steeper dissected areas in the west and northern portion of the watershed is dominated by metamorphosed volcanic rocks of amphibolitic and schistic mineralogy. These geologic types are prone to translational movement (shallow landslides) due to the inclination and stratification of the bedding plane particularly along fault zones. Associated with these geologic areas are intrusions of granitic and grandioritic plutons. There are also small intrusions of serpentine along fault zones in these areas.

In the southern portion of the watershed where the topography is predominantly valley bottom lands, the geology consists of fluvial sandstones characterized by conglomerate, sandstone, mudstone, and coal seams (Wiley 1993). Some of the minerals present in these geologic types

are chromite, copper, zinc, and uranium. See Appendix A for a more complete geological description.

SOILS

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

In the lower end of the watershed where residential property and farmlands are located, the soils are characteristically deep alluvial silt deposits.

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

On the steep uplands, the removal of conifer trees has also contributed to a greater potential for rain on snow pack, which often leads to flooding or peak flows that can destabilize stream channels. Removal of large conifer trees along side slopes adjacent to stream channels has also increased the risk of slumping and landslides, particularly in the decomposed schist soil types.

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

In summary, the cumulative impact of timber harvest and agricultural activities in the East Evans Watershed has increased the risk of soil erosion and created a situation where the watershed is less resilient to natural occurring processes than prior to human occupation.

CUMULATIVE EFFECTS

Sprignett Creek drainage, T34S., R03W., is deferred in the Medford District Resource Management Plan (RMP, 1994) because of high cumulative impacts as a result of management activities and the presence of sensitive soils.

The cumulative effects of road construction, timber harvest, and agricultural practices have combined to increase the risk of landslides, stream channel erosion, and subsequent deposition of sediments throughout this watershed.

SLOPE STABILITY

Road fillslopes and cutbanks on steep sideslopes (>60%) are the most susceptible to slope instability. Slope failures have the greatest potential to introduce large amounts of sediments into stream channels in a short period of time. Also, roads that are in close proximity to stream courses (within the riparian reserve areas) have a potential to deliver sediments into the channels. Proper road maintenance, proper road drainage (i.e., culvert spacing and sizing), revegetation of fillslopes and cutbacks, and minimizing future road construction, particularly on steep sideslopes, are all important to reducing this risk within this watershed.

Steep side slopes adjacent to stream channels are also at risk for slope failure where the large conifer component has been removed. The decomposed schist soil types are particularly susceptible when wet or saturated. Typically, the landslides and road related erosion are triggered by intense rainstorms and/or saturated soil conditions. There are still remnants of slope failures resulting from the floods of 1964 and 1974 which were classified as 100 year storm events. Maintaining adequate numbers of large conifers within the riparian reserves is critical to minimizing this level of risk.

In the flat lower portion of this watershed where agricultural land is predominant, the removal of riparian vegetation along the East Fork of Evans Creek for agricultural purposes has increased the risk for undercutting of streambanks during high flows. This has the potential to produce large amounts of sediments. Riparian vegetation is critical to stabilizing stream banks and maintaining stream equilibrium within the flood plain particularly on low gradient streams such as this reach of stream. Maintaining native riparian vegetation and proper riparian widths along the East Fork of Evans Creek are critical to the proper functioning condition of this stream and in preventing further streambank erosion.

RAIN-ON-SNOW (OPENINGS IN THE TRANSIENT SNOW ZONE)

In the upper portion of this watershed (Headwaters Compartment 5440 Ac), there is a high risk level for a rain-on-snow occurrence in the Transient Snow Zone (elevation band between 3500 and 4500'). This is because 2720 acres within this elevation band, 25% (690 ac.) are currently considered to be non-recovered openings. Non-recovered openings are areas where the overstory canopy of trees has been harvested and the remaining stand of vegetation is inadequate to intercept snow and prevent the accumulation of a snow pack. These areas of collected snow pack are at risk for producing flooded conditions if a rainstorm were to occur. In this climatic regime this is most likely to occur at the 3500-4500' elevation zone. Until these areas develop an overstory canopy

sufficient enough to intercept and prevent snow accumulation on the ground, this watershed will be at a high level of risk for this potential occurrence. Maintaining adequate canopy cover for future harvest units in this elevation zone will be important to minimizing this risk.

Terrestrial Ecosystem

VEGETATION COMPOSITION

Based upon the Medford District plant grouping criteria addressed in the Medford District RMP (1994), two plant groupings are identified within the East Evans WAU analysis unit. Plant groupings are aggregations of plant associations with the same dominant late seral conifer species, and the same principal early seral species.

1. Mixed conifer/madrone-deciduous brush/salal grouping makes up approximately 30 percent of the WAU.

In the mixed conifer/madrone-deciduous brush/salal grouping, "early seral vegetation consists of grasses and forbs; however, vegetation may be sparse for at least a year following fire. Varnish leaf ceanothus (snowbrush) is locally plentiful in the early seal stage and may dominate a site within two to three years after fire occurrence. Other brush species of the mid-seral state include ocean spray, poison oak, and deer brush. Salal occupies cooler or unburned sites. In the late seral stage, the conifer overstory consists of Douglas fir. Incense cedar and ponderosa pine are prevalent in some areas. Madrone and other hardwoods exist in the stands but are less significant than in the Douglas fir/tan oak-madrone grouping. Golden chinquapin occurs as both the shrub and tree form varieties along with canyon live oak on dryer sites" (RMP, 1994). At higher elevations white fir[1] may be a stand component, while in some drainages western hemlock may make up a component of the stand.

2. Mixed conifer/interior valley/grass make up approximately 70 percent of the landscape analysis unit.

In the mixed conifer/interior valley/grass grouping, "grass, herbaceous vegetation, poison oak, and deerbrush provide severe competition for conifers during the early seral stage. Deciduous brush offers growth competition in mid-seral stages and may delay conifer establishment on hot southern aspects. Conifer species of late and mature seral stages are Douglas fir and ponderosa pine, with Douglas fir being climax. Tree-form hardwoods are present. Manzanita is locally present and may form dense stands. This group has limited areas which can be considered old

[1] White fir and grand fir are used interchangeably in this document. The species in the watershed is Abies grandis, grand fir, but is locally referred to as white fir.

growth. A high fire return frequency, coupled with the mortality patterns common to low elevation dry sites, acts to keep this plant grouping in younger age classes" (RMP, 1994).

DESCRIPTION OF VEGETATIVE ELEMENTS

Three structural elements within a forest ecosystem are critical in maintaining ecological diversity and complexity. These are:

Matrix - "The most connected portion of the landscape." (Not the same as the FEMAT "matrix" land designation.) It is generally the predominant vegetative type and therefore exerts the strongest control over the movement of living and non-living things across the landscape (fire, wind, plants, animals, people). The matrix affects the rate at which various disturbances move through the landscape.

Patches - patches are distinct areas different from the general landscape around them.

Corridors - provides routes between similar seral stages or vegetative types, corridors may include roads, riparian areas, power lines, timber.

The structure, amount, and spatial arrangement of the **matrix, patches,** and **corridors** determine the function, resiliency, and species diversity of a forest landscape.

A. MATRIX

The matrix of the East Evans WAU is defined as early successional forest. Two size classes cover approximately 59 percent of the landscape and provide the strongest influence over landscape flows (Table 2).

Table 2. East Evans Creek Size Classes--all ownerships

AG LANDS	EARLY SERAL (0-5"dbh)	MID SERAL (5"-11"dbh)	LATE SERAL (12"-21"dbh)	MATURE SERAL (22"+ dbh)	OLD GROWTH (24"+ dbh or >200 yrs. multi-layer)
1%	27%	32%	17%	11%	11%
237 ACRES	5,810 ACRES	6,832 ACRES	3,679 ACRES	2,325 ACRES	2,253 ACRES

a. **Early Seral**: Grass/forb to seedling/sapling, 0 - <5" diameter. "From Disturbance to the time when crowns close and conifers or hardwoods dominate the site. This stage may be dominated by grasses and forbs or by sprouting brush or hardwoods. Conifers develop slowly,

gradually replacing grasses, forbs or brush as the dominant vegetation. Forage may be present; hiding or thermal cover may not be present except in rapidly sprouting brush communities" (RMP, 1994). Douglas fir and ponderosa pine are the principle planted species.

b. **Mid Seral**: Pole, 5" - 11" diameter. "From the time crown closure occurs to the time when conifers would begin to die from competition. Stands are dense and dominated by conifers, hardwoods or dense brush. Grass, forbs and herbaceous vegetation is decreasing. Hiding cover for big game is usually present" (RMP, 1994).

1. **ORIGIN**

The early successional matrix was initiated through logging and to a lesser degree, fire. The composition, structure, and function of these early successional forests are somewhat different from those that would be initiated by natural causes. These differences include:

- fewer number of snags remaining, particularly larger diameter classes
- more soil disturbance from logging, road building, and site preparation affecting post disturbance plant succession
- reduction in the amount, size, and distribution of some woody debris
- planted species (8'x8') spacing grid vs. natural (random) spacing

  Douglas fir and ponderosa pine are the principal species planted. Under natural conditions, the species mix would also include hardwoods and a higher proportion of shrub species. Trees are planted all at once vs. natural regeneration which occurs over time.

- the rate of physical/structural change is more rapid due to intensive silvicultural treatments
- large fire tolerant remnant trees are not present as a scattered stand component
- some plantations have a higher component of ponderosa pine than would naturally be found on the site

2. **STABILITY**

A landscape's stability is a measure of constancy in the absence of major disturbance. Seedling/sapling and pole size stands can be categorized as unstable as the rate of structural change is relatively rapid as opposed to stable, slow changing old growth stands.

3. **PATTERN**

The matrix pattern is largely determined by the checkerboard ownership boundaries. Approximately 52% of the East Evans Creek landscape is managed by private timber industry. On these lands, the majority of merchantable overstory trees have been removed, leaving younger, unmerchantable Douglas fir with lesser amounts of ponderosa pine, incense cedar, and scattered

hardwoods. BLM managed lands (37 percent) have undergone harvest practices ranging from fire salvage to clearcuts, resulting in 59 percent of BLM ownership in seedling/sapling and pole sized stands.

B. PATCHES

Patches are areas distinctly different from the landscape around them. As a result of logging and fires, small sawtimber, large sawtimber, and old growth stands have become the "patches" within the East Evans landscape matrix. Three types of forest patches can be identified and described. The descriptions for small sawtimber, large sawtimber, and old growth stands apply to unentered/unmanaged stands. Where management has occurred stand conditions will vary.

a. **Late Seral (Small sawtimber)**, 11"-21" diameter - 17 percent of the landscape. "Stand growth slows. Forest stands are dominated by conifers and hardwoods; canopy closure approaches 100 percent with stand growth decreasing. Stand diversity is minimal; conifer mortality rates and snag formation are rapid. Big game hiding and thermal cover is present. Forage and understory vegetation is minimal except in understocked stands or in meadow inclusions" (RMP 1994).

b. **Mature Seral (Large sawtimber)**, 21"+ diameter - 11 percent of the landscape. "Forest begins to develop structural diversity. Conifer and hardwood growth gradually declines. Larger trees increase significantly in size. Stand diversity gradually increases. Big game hiding cover, thermal cover and some forage are present. With slowing growth, insect damage increases and stand breakup may begin on drier sites. Understory development is significant in response openings in the canopy created by disease, insects, and windthrow. Vertical diversity increases. Larger snags are formed" (RMP 1994).

c. **Old Growth**, generally 200 years+, multi-size classes, and multi-layered - approximately 11 percent of the landscape. "This stage represents the potential plant community capable of existing on a site given the frequency of natural disturbance events. Structure, species, composition, and age distribution is dependant upon fire frequency. As mortality occurs, stands develop greater structural diversity. Replacement of individual trees lost to fire results in the creation of a multi-layered canopy" (RMP 1994).

1. ORIGIN

The small sawtimber stands are the result of a stand replacement fire approximately 60 years ago. Scattered larger diameter ponderosa pine, Douglas fir, and incense cedar remained following the fire.

The large sawtimber and old growth stands show evidence of historic underburning and partial stand replacement fires. The frequency of underburns can be determined by the age and amount of seedling and saplings in the understory. In stands that have not experienced recent underburns,

a well established sapling-to-pole size second growth Douglas fir and white fir stand is present. In the larger canopy holes, Douglas fir has naturally regenerated.

Other agents of change such as windthrow, insects, and disease have not played a major role as stand replacing events. Insects are currently an active change agent in the lower portion of the East Evans WAU.

2. STABILITY

Compared to the landscape matrix, all three forest patch types are considered stable, with old growth stands having the highest degree of stability. The older the stand, the less likelihood that the structure and compositional elements will change significantly over time, and any change that does occur is slow.

3. PATTERN

The majority of the small sawtimber, large sawtimber, and old growth patches within the East Evans landscape are located on federally managed lands. The checkerboard ownership pattern has resulted in a highly fragmented landscape. The patches are generally square or rectangular in shape due to the checkerboard ownership patterns and rectangular shaped logging units.

The location and amount of patches within the matrix has created a high degree of contrast, porosity, and edge effect across the East Evans landscape. Edge represents the interface area between two distinctive vegetative/size classes. Environmental conditions (temperature, light, wind, and humidity) are different within this area, resulting in a drier, windier microclimate along the stand edge. Generally a 500 foot wide strip adjacent to the edge is affected. The altered microclimate in this area causes a successional change in the species mix and density of herbaceous vegetation and shrub species. Patches 25 acres or less are in effect all edge.

C. CORRIDORS

Corridors provide travel routes for plants, animals, and people between similar size classes or vegetative types. Roads, riparian areas, and streams are the primary corridors in the East Evans landscape.

LANDSCAPE FUNCTION/PROCESSES

The trend within this watershed over the past 70 years has been one of structural, habitat, and species simplification. Some of the changes from historic levels include:

- The thinning effect of fire is absent.

- A shift from early seral species such as ponderosa pine to mid to late seral species such as Douglas fir and white fir due to fire exclusion and the harvest of high value late seral overstory trees.

- Stand densities have increased, thereby increasing soil moisture and nutrient demands, resulting in increased tree stress and larger numbers of trees predisposed to insect or disease attack, thereby increasing fire hazard.

- Reduced interior habitat for species associated with late successional forests.

- A shift in abundance and species composition of soil and canopy arthropods toward those most associated with early successional stands.

- Post harvest treatments have modified the natural process of vegetative succession; the temporal and spatial occurrence of herbaceous, shrub, and hardwood species has been altered by management treatments (i.e., slashing, burning, brushing, girdling, herbicides, scalping, fertilization). The treatments are not always representative of natural processes, and their effects upon long-term ecological health and processes is unclear. The conifer species mix in plantations does not always mimic the natural species mix.

- Road construction and logging have created a landscape that is more fragmented and has greater edge and patch densities than historic levels. Large blocks of mature forests are now mosaics of young plantations, mature forests, and stands modified by varying degrees by logging.

- Vertical canopy structure has increased in existing late successional stands.

- The current landscape pattern has been shaped predominantly by logging. Historically, the landscape pattern was a result of disturbances, such as fire, windthrow, insects, and disease that were partially regulated by environmental gradients such as climate, soils, and landform.

The cumulative effects of these changes have affected the ecological processes and functions within this landscape. The extent and the degree of change can be assessed by comparing the current conditions with the "natural range of variability." Within this "natural range of variability" biological and ecological functions are sustainable. Elements and processes outside of this range, and those depending upon it, may not be sustainable.

SPECIAL STATUS PLANTS

Special status plant species are generally found in special habitat types within the watershed. Very little BLM land has been surveyed in the watershed, and the survey data does not accurately

represent a cross sample of population centers and potential species within the watershed. A total of 5 sites with 4 sensitive species have been located on BLM lands within the East Evans Creek Watershed.

A population of Umpqua mariposa lilies (Calochortus umpquaensis) is located on an eastern slope in T34S, R03W, section 13. The Umpqua mariposa lily is a federal candidate and restricted to serpentine soils. A conservation agreement has been signed between the BLM, USFS, and the U. S. Fish and Wildlife Service (USFW) that identifies activities which may pose a threat to the known populations and attempts to remove or limit threatening land management actions to the species. The agreement also identifies a range of activities which may enhance the populations of the species.

Lewisia cotyledon var. howellii is a federal candidate species found on rock outcrops. Wildfires can be catastrophic to the population. Seasonally moist open meadows are habitat for Plagiobothrys figuratus ssp. corallicarpus. Deep organic duff under closed forest canopy create an environment suitable for Cypripedium fasciculatum.

The list of Threatened and Endangered (T&E) plant species changes year to year. While the status of most plant species has not changed over the years, some new species have been added or upgraded while others have been dropped or downlisted. Plant surveys help determine the prevalence of species and the basis for status changes. Table 3 reflects the current list, as of December 1995.

Table 3. Special Status Plant Species in the East Evans WAU

SPECIES	NUMBER OF KNOWN SITES	LOCATION	STATUS
Plagiobothrys figuratus ssp. corallicarpus	1	T34S., R2W., SEC 9	Federal Candidate #2
Lewisia cotyledon var. howellii	1	T34S., R2W., SEC 7	Federal Candidate #2
Calochortus umpquaensis	1	T34S., R3W., SEC 7	Federal Candidate #1
Cypripedium fasciculatum	2	T34S., R2W., SEC 9 T34S., R3W., SEC 13	Federal Candidate #2

A total of 870 acres has been surveyed over the past 10 years. The surveys included varying levels of intensity. During the 1980's most surveys were completed by employees with botanical interests working in the resource area. More recently the level of intensity and the skill level have increased considerably. Within the last 4 years qualified botanists have been contracted to undertake the surveys.

Some of the 1994 Sprignett Butte fire is located within the WAU. A complete plant inventory was completed in 1995 on the lands affected by the fire. A resurvey of the same area is planned for 1997.

No fungi or bryophytes listed in the Standards and Guidelines (Table C-3 of the ROD) are known to exist in the East Evans Watershed. Survey and manage protocols are being developed.

The following is a list of potential special status plant species which have not been located, but which may occur in the watershed:

Calochortus umpquaensis
Perideridia howellii
Astragalus umbraticus
Camassia howellii
Linanthus bolanderi
Hesperevax sparsiflora ssp. brevifolia
Allium bolanderi ssp. mirabile
Limnanthes floccosa ssp. bellingeria
Mimulus douglasii
Montia howellii
Smilax californica
Fritillaria gentneri
Cimicifuga elata
Sanicula peckiana
Rhamnus crocea ssp. ilicifolia

NOXIOUS WEEDS AND NONNATIVE PLANTS

Noxious weed populations in the East Evans Creek WAU are poorly documented. At present, some common weeds (Klamath weed, mullen, Scotch broom, yellow star thistle) are known to be present in the area. None of the noxious weeds on the Oregon State Dept. of Agriculture "A" or "B" lists are known to occur in the WAU. Surveys are planned for the future.

Noxious and nonnative plant species are a serious threat to the natural biological community. The number of introduced plant species is increasing and their ranges are spreading rapidly as a result of increasing human activities. Most species are prolific seed producers or develop extensive root systems that out-compete and exclude native species. The list of nonnative plant species is broader than noxious weed species and exerts a more significant influence on the biological community than the species classified as noxious weeds.

The WAU team recognizes the importance of nonnative plant species invasion, vegetation community changes, and the corresponding change in animal community habitat. The geographic location and habitat condition of East Evans Creek corresponds to the seasonal growth requirements of many noxious and nonnative plant species from California, Eastern Oregon and the Great Basin area.

Human activity is widespread across the WAU and is the primary factor for the introduction and distribution of nonnative plants throughout the WAU. Human disturbance such as timber harvesting, site preparation activities, road construction, pipeline and powerline construction and fire rehabilitation projects has dramatically increased the opportunity for dispersion and establishment of nonnative plants. Mechanized equipment is the main vector of introduction and

spread of new noxious weed species. Agricultural, farm animals, and residential homes in the valley bottoms of the rural interface are other key means of introduction and spread of noxious and nonnative plants. The existence of nonnative plant populations within the WAU and the proximity of other new noxious and nonnative plant populations along with the high level of human activity in East Evans Creek WAU increases the risk of introduction and spread.

East Evans Creek watershed has numerous noxious and nonnative weed invasions, and the trend is for increased invasions and expansion of existing populations. (See Appendix B.) Many common weeds are nonnative species which have become prevalent in East Evans Creek WAU. Very little is known about the dynamics of nonnative plants and their interaction with the larger ecosystem. Most weed species are established on disturbed sites and thrive in full sunlight. As disturbed sites are reforested and sunlight reduced, some nonnative plant species populations should decline. In open or filtered sunlight conditions they persist, produce seed and expand their range. Nonnative species have had a significant impact on the native grassland ecosystem previously prevalent throughout the Rogue Valley. Very few native grasslands remain.

ROADS

Major road systems in the area are the Jackson County East Evans Creek Road, Cleveland Ridge, Morrison, Musty, East Evans Creek road systems, and Angel Camp road.

The East Evans Creek watershed is considered well roaded. Many roads remain unsurfaced and are potential contributors to sediment loading in streams. Roads contribute to higher stream sediment loads where unsurfaced roads receive high use during wet weather. Many of the private logging roads in the area are unsurfaced and receive high use during the wet fall months when hunting season occurs.

WILDLIFE

See Appendix C for sensitive species checklist and habitat requirements.

T&E SPECIES

NORTHERN SPOTTED OWL

Nine northern spotted owl sites are present within the watershed boundary, eight on BLM administered lands and one on private timber lands. The area was surveyed to U.S. Fish and Wildlife Service protocol (six times in two years) in 1993 and 1994. Late successional reserves (LSR) have been designated and mapped around the known owl sites. These LSRs are 100 acres of the best habitat near the center of activity of each pair or resident single site which was known

on January 1, 1994. These activity centers are to preserve an intensively used portion of the breeding season home range.

Section 29, T33S, R02W is a RMP/ROD designated connectivity block.

The WAU has 935 acres (4%) designated spotted owl habitat suitable for nesting, roosting, foraging) and 1959 acres (9%) designated dispersal habitat (roosting, foraging). See Appendix D for acres of suitable and dispersal habitat within the provincial radius (1.3 miles) of known owl sites within the WAU boundaries. The WAU lands are FEMAT "matrix" lands, and the owl activity centers are designed to provide 100 acres of late successional habitat which will provide connectivity across the matrix lands between the large late successional reserves. Late successional connectivity across the landscape will also be provided by riparian reserves and connectivity blocks. Low survival and productivity of the sites is the reflection of the lack of high quality spotted owl habitat within the WAU, mostly a result of forest fires and logging activities. Many of the riparian areas currently do not provide suitable owl habitat, due to past logging practices with small or nonexistent riparian buffers. These should improve over time, with the establishment and maintenance or riparian reserves.

One other historic site (Sprignett) shows in the records. This site was logged in 1981. Today, the area is in early seral stages and provides no owl habitat. Some habitat is present in the southeast corner of the section where the bird was historically located. Night surveys on occasion have located an owl in the area, which were not subsequently located in the daytime. The habitat is within the one mile of another pair of owls, and these birds are most likely using the area to forage at night.

Eight additional owl sites are present outside the watershed boundary, but within ¼ mile and may forage within the watershed.

BALD EAGLES

Bald eagles may occasionally forage along East Evans Creek during the winter months. An adult bald eagle was observed during the winter of 1994 near Meadows Road. With no lakes or large ponds, the area does not provide good year round habitat for bald eagles.

RECORD OF DECISION (ROD) SURVEY AND MANAGE SPECIES

Four bat species on the ROD "Survey and Manage" list have been found within the WAU. Long eared myotis and silver haired bat were captured in a mist net at a small headwaters pond in T32S, R02W, section 33. An adult pallid bat was captured in the Cleveland Ridge area. Townsend's big eared bats were located in an abandoned mine adit in the southern part of the WAU. This and all other sites which are located and found to contain bats will be protected with a 250 foot no-cut buffer.

Red tree voles have not been located in the WAU to date, but red tree vole skulls have been found in owl pellets collected in the Glendale Resource area to the northwest and in the West Evans Creek watershed to the west. Surveys to determine if the WAU is within the range of the red tree vole are scheduled to begin in 1996. If the WAU is determined to be within the range of red tree voles, then all ground disturbing activities planned in 1997 and beyond need to be surveyed prior to project implementation.

A pair of great gray owls has been located three miles south of the WAU boundary. None have been reported in the WAU, but the area provides good habitat in the fields and meadows in the southeast part of the WAU. Surveys will be done prior to ground disturbing activities beginning in 1996 in areas which provide suitable great gray owl habitat.

Flammulated owls have been reported along East Evans Creek. One survey was completed in 1994 along the East Evans Creek road through the middle of the WAU, with negative results.

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

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

OTHER WILDLIFE SPECIES

Northwestern salamanders have been found in ponds in the northern section of the WAU in section 33. These are breeding populations. Egg masses and larva have been found in the ponds. This is the extreme southern range of these salamanders, and they have not been found elsewhere in the Butte Falls Resource Area. These salamanders spend one full year as larvae before metamorphosis into terrestrial forms. Habitat for terrestrial adults is rotting logs, rodent burrows, and moist crevices.

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

CAVITY NESTERS

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

GAME ANIMALS

Deer, elk, bear, and cougar are present in the area. The Oregon Department of Fish & Wildlife (ODFW) has a goal of increasing elk numbers from a current estimate of 250 to 400, spread over the 6 watersheds comprising the west 1/3 of the resource area. The population is currently stable. A radiotelemetry study on deer was begun by ODFW in 1994 in the WAU to monitor demographics of the population.

Approximately 1705 acres of land designated "Big Game Winter Range and Elk Management Area" (RMP, 1994) is present in the southwest part of the WAU. RMP guidelines in designated winter range call for maintaining at least 20% of the area in thermal cover and observing a seasonal restriction to avoid disturbance from November 15 to April 1. This includes closing all roads except major collectors and arterials during the seasonal restriction and minimizing new road construction. The ODFW Cooperative Travel Management Area includes all of the designated winter range in the WAU, and the road closure is in effect from September 1 until May 31.

Introduced wild turkey are present in the watershed. One large population roosts in the forest and forages in the fields near the intersection of East Evans Creek and Antioch road. Maintaining oak-savannah woodlands and large roost trees near the meadows will help these populations maintain healthy numbers. Quail and grouse are common in the area. Band tailed pigeons may migrate through the area. Madrone and elderberry are present in the area and provide berries in the fall.

NEOTROPICAL BIRDS

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

SPECIAL OR UNIQUE HABITATS

Fields and meadows occur in the south of the WAU along the creek and in the southwest of the WAU. On private farmlands, large pastures are present along East Evans Creek below intersection of Evans Creek County road and BLM road #33-2-33. These special habitats provide forage habitat for a variety of species, including elk, deer, turkeys, raptors, small mammals, etc. Great gray owls use meadows to forage, and if they are present in the WAU, they will most likely to be found in this area.

Some small meadows are present on BLM lands in the southwestern part of the WAU. These meadows need to be surveyed for encroachment of conifers and ceanothus, and management activities such as burning could be implemented to maintain the habitat. Some larger natural meadow on adjoining private lands are present in the southeastern part of the WAU.

Approximately 130 acres of white oak woodland are present in the WAU, in T34S., R02W., sections 3, 4, and 9. Inclusions of small white oak stands may be present in lower elevations of

the WAU. RMP direction is to maintain or enhance values for biological diversity. These need to be inventoried and managed to maintain the stands.

Scattered patches of ponderosa pine, oak, ceanothus, and grasses on rocky grounds are located in the south and southwest part of the WAU. These areas are mostly located in the transition zone between the meadows along the creek and the forested canyons in the uplands.

There are 7 ponds (heliponds/pump chances) in the WAU, and one in T33S, R03W, section 1 in the section to the northwest of the WAU which is a tributary to the Cow Creek WAU and was not addressed the USFS Cow Creek WAU. Beaver sign is present in the Railroad Gap pond in 32S., 02W., section 33. Beaver ponds are located in the headwaters of East Evans Creek.

T33S, R02W, Section 29 is a designated connectivity block. ROD requirements are that 25-30% of the connectivity block be maintained in late successional stages. Approximately 207 acres of the section (32%) is currently providing late successional habitat.

Aerial photo interpretation inventory has delineated 925 acres of habitat suitable for nesting, roosting, foraging, for northern spotted owls. 1959 acres have been identified as roosting, foraging habitat. This is 13% of the total watershed acres and 37% of the BLM administered lands. The watershed is outside the large LSR, but functions as connectivity between Elk Creek LSR #0224 and the South Douglas/Galesville LSR #0223 in the Glendale resource area.

Numbers of snags and amounts of coarse woody debris (CWD) per acre in the WAU is a data gap. This information is lacking.

IMPACT OF MANAGEMENT ACTIVITIES ON WILDLIFE

Land management activities within the WAU have impacted wildlife in a variety of ways. Increased road building, loss of old growth and mature forest habitat, fragmentation of forest old growth patches, removal of riparian vegetation, and soil compaction are the major impacts. These activities may have a positive impact on species which forage in clearcuts and benefit from increased edge habitat, but have a negative impact on species which depend on old growth interior habitats.

Wildlife habitat within the WAU is severely fragmented, with 37% BLM ownership intermingled with 52% private logging industry ownership. Fragmentation tends to create small islands of habitat within a "sea" of unsuitable habitat. Lack of connectivity between these islands causes many wildlife species to be more susceptible to inclement weather conditions, exploitation, predation, and starvation. Individuals and/or young of some species may be prevented from moving or dispersing into adjacent suitable mature timber habitats, or they may be subject to predation as they disperse. As a result, genetic interchange becomes limited and isolation can occur. Changes in the habitat may also favor predators. For example, great horned owls which

hunt in clearcuts may predate on spotted owls. Steller's jays, which may nest in trees as small as 8 feet, predate on the eggs and nestlings of other birds.

With harvesting old growth timber, habitat for old growth dependent wildlife species has rapidly declined. Density and demographic studies of the northern spotted owl indicates that population numbers are declining. Spotted owl habitat has been reduced in the WAU within the last two decades, to the point where none of the existing spotted owl sites have >40% nesting, roosting, foraging habitat within the provincial radius of the province (1.3 miles). Weak population connectivity within the provinces because of poor habitat conditions in areas of checkerboard ownership is a serious threat to owl populations.

Increased acreage of early seral stages has benefitted foraging species such as deer and elk. Big game habitat on the private lands often provides extensive forage areas, but little-to-no cover. Adjoining stands of mature timber provide hiding and thermal cover. The WAU is predominantly a mix of cut over timber lands, second growth timber stands, mature timber stands, and some old growth stands. Cumulative impacts to big game are of concern when timber management activities within adjacent areas are considered. Potential impacts to big game include loss of thermal cover, loss of contiguous travel routes, disturbance of calving/fawning areas, and increased disturbance due to new roads which may be built to access the timber.

Disturbance elements

FIRE

HISTORICAL ROLE OF FIRE

To gain a perspective on the role of fire in this watershed a series of brief fire history surveys were conducted. These surveys consisted of reviewing available records and field checking fire scars on a limited number of stumps in clearcuts in the WAU. The stumps were surveyed from a variety of topographic locations including ridgelines, midslopes, and draws and several aspects. The greatest evidence of fire history was found on ridgetops and on south slopes, particularly in the low and mid-range elevations.

Lightning strike information for the last ten years for this area indicated that no area was immune from strikes during the summer months when it would be most likely to start fires. Traditionally lightning would have been a fire starter with anthropogenic (human caused) burning being a large contributor at all elevations.

The major ridge between East and West Evans Creek drainages seems to have a 30-40 year fire return interval. On the south slopes few fire scars on the stumps were observed. There did,

however, appear to be a change in the growth ring pattern. Based on this observation, it appears that a series of low intensity fires had occurred that did not burn with enough intensity to create a fire scar. These produced a short term pulse of nutrients and a reduction in vegetative competition that allowed increased conifer growth. It appears that this occurred about every 15-20 years and the resulting increased growth lasted 4-5 years.

The significance of these low intensity events is extremely important. Although the large scale events are more dramatic, it is the smaller scale events that truly shape the vegetation and provide the minor reductions to the natural fuels buildup that occurs over time. These reductions are necessary to prevent the large scale catastrophic events that are occurring with increasing frequency today.

At the higher elevations the fire return interval appears to have been about 40 years. The large hardwood stands in this watershed were all caused by fire disturbances at some point in time. To get an accurate picture of fire patterns, it would be necessary to date these stands to determine stand birthdates which should then roughly correspond to fire event dates.

The large hardwood stand around Roundtop lookout was created by a fire that was started by a lightning strike in 1938. This fire burned about 10,000 acres before being controlled. The northern boundary of this fire was the Umpqua divide (also the southern most boundary of the Angel Camp Fire of 1987 as these fires overlapped somewhat). The southern boundary was on Sprignett Butte, in the same vicinity as the northern edge of the Sprignett fire of 1994. The west boundary burned into the Rock and Salt Creek drainages of West Evans Creek. The eastern boundary roughly followed the East Evans Creek road. The ridges and the area south of Round Top burned at near stand replacement intensities. The area south of Roundtop burned with enough intensity to kill 50"-60" trees. These trees were salvage logged by Timber Products in 1964 & 1965. The fire burned by spotting and running up south slopes, the draws were largely untouched. The midslopes received moderate to light underburns (Bill Davis, Personal communication 1995).

This would fit well with available information which suggests that this watershed was subject to periodic large scale fires interspersed with periodic light to moderate intensity underburns. These underburns were more frequent and of much less obvious impact. It is important to recognize that even the stand replacement fires burned in a mosaic that often burned large portions of the fire at varying intensities - from light to moderate - with only minor adjustments to the live and dead fuel loads. Based on today's increasing live fuel loadings we are seeing a larger percentage of the fire area burned at higher intensities than in the past. There is also a corresponding decrease in the areas that burn at the lower intensities. Based on the 1938 fire as well as fires that have occurred in adjacent watersheds (East Evans, Hull mtn.) it is reasonable to assume that an average worst case scenario fire in this fuel type and topography will fall into the 10,000 acre range.

MANAGEMENT INFLUENCE ON FIRE AND LANDSCAPE PATTERN

Fire traditionally impacts the vegetation component. At lower intensities, fire primarily thins conifer and hardwood stands and reduces understory vegetation. At the more severe end of the scale it will top kill most understory vegetation and will kill the majority of all but the most fire resistant species, thus opening the site for recolonization of invader and survivor species. These species of plants make up the majority of the watershed vegetation. It may also affect nutrient availability and soil stability.

Hardwood and brush species such as big leaf maple, madrone, oceanspray, and chinquapin are well adapted to fire disturbance. All have relatively thin bark which is susceptible to top kill but the root systems vigorously resprout following fires. It appears that burning increases the palatability of oceanspray to foraging big game. In addition, oceanspray requires heat from fires to break the seed coat and end dormancy of the seed.

On warmer Douglas fir sites post-burn recovery is relatively rapid and will maintain for about 26 years and then begin to decrease stem numbers. Under a normal fire regime some overstory remains when underburns occur. This may not be true in today's worst case scenario. Many of the fire dependent species are intolerant to shade and do not regenerate well under partial canopies. This information should be incorporated into present management strategies.

When fires burn in natural cycles, fire dependent species such as ceanothus spp. are held within the natural range of variability. Disruption of the natural cycle can have dramatic consequences. These species tend to entirely occupy sites with the reintroduction of fire, or other disturbances such as logging. Indiscriminate use of fire or practices such as clearcutting may actually encourage these species by providing the necessary site conditions such as full sun light and high soil temperatures necessary for seedling establishment.

Fire frequency and intensity information can also be interpreted by the type of vegetation present on the site. In the WAU, there is evidence of ceanothus species (such as Ceanothus intergerrimis) on the south slopes at the lower and mid range elevations. The species is indicative of a higher fire frequency, somewhere on the order of 15-30 years. As with all ceanothus species, the more intense the burn the higher the germination rate of the stored seedbank. On the north slopes at higher elevations in clearcuts that have been burned, ceanothus species such as Ceanothus velutinous are present. This species is somewhat more long lived than the integerrimus species, somewhere on the order of 10 - 75 years, and will occupy the site until overtopped by conifers.

Ceanothus species are shade intolerant. When they completely occupy a site, it is not uncommon for the site to be recolonized by shade tolerant species such as white fir and at higher elevations hemlock rather than pine and Douglas fir. Because both species have occupied a large portion of the watershed in the past, large stores of seed in the soil are waiting for a fire to burn through to scarify the seed and allow it to germinate.

In addition to Ceanothus integerrimus, manzanita sp. (Arctostaphylos sp.) are present in the area. In the southern portion of the watershed these plants form almost pure stands often crowding out meadows. These species contribute greatly to live fuel loading. During drought periods, the plant undergoes branch die-back; in addition the surface to volume ratio of leaves and twigs are at the optimum for combustion. Twigs and leaves contain flammable oils and terpenes which contribute to rapid combustion. These plants regenerate by root resprouting and through seed stored in the soil. These seeds are heat scarified when a fire occurs. Once the initial seed source is sprouted it takes about ten years for the plants to reach sexual maturity and begin to set seed again.

Elimination of fire from the ecosystem has created a potentially harmful situation that will take planning to avoid. If and when fire is reintroduced, it needs to occur in a well planned out exercise that takes into account canopy cover and desired future condition. If burning occurs under a relatively closed canopy, the ceanothus seed would sprout in a low light intensity situation that would greatly reduce the seedling's chances of survival. Removal of the canopy could significantly increase splash erosion and reduce soil stability. The increased live fuel on the site has the potential to increase fire intensities and duration and the randomness of burn patterns may be difficult to simulate.

Comparing aerial photos from 1953 and 1966, it is evident that biomass is on the increase. When the site capacity is reached, increased vegetation competition and corresponding forest health problems occur as well as increased potential for fire activity, and damage. In addition to the potential increase a shift in species composition occurs. The fire tolerant species are being shaded out and replaced with chinquapin, salal, hazel, oceanspray, and associated species. In the overstory we are seeing white fir and hemlock in greater numbers and at lower elevations than normal. As these species become prevalent they crowd out fire species such as ponderosa and sugar pine.

Ponderosa pine is not regenerating on south slopes outside of timber sale units. On the north slopes large populations of large old growth sugar pine are present. However there is little natural regeneration occurring because of competition from the shade tolerant species. Because younger sugar pine has thin bark this would indicate that fires that burned were of lower intensities. Sugar pine needs bare mineral soil for seedling germination. Sugar pine is also characterized as an off site colonizer for the first several years following fires, because of it's seed dispersal patterns. If the ongoing shift in vegetation is not interrupted fires of increasing size and magnitude in the WAU can be expected in the future.

Over the last century timber harvest has replaced fire as the dominant disturbance of this watershed. The processes are very dissimilar. Harvest patterns often go deeper into draws and more heavily affect vegetation than lower intensity underburns. Fire would normally leave a greater mixture of species and variety of age classes than logging.

HIGH FIRE RISK VEGETATION

Disturbance by logging has traditionally produced even aged monoculture type stands. These stands typically are not resistant to large fast moving fires and actually contribute to the fire spread and intensity. The even age stand types are at the highest risk from catastrophic fires. A large portion of this watershed (55%) is owned by private timber companies and the majority falls into this high hazard category.

Of the federally owned portion approximately 3700 acres (37% of the WAU) fall into the high hazard category. About 44% of the federal lands are in mature or old growth condition. This vegetation type would traditionally be relatively fire safe. However since it is such a small portion of the total watershed acres, it is also at risk based on surrounding fuel types. Another contributing risk factor is the shift in species composition to more shade tolerant, fire susceptible species. Based on current vegetation types we can expect large fires to continue to occur in this watershed on a frequent basis.

TIMBER HARVEST

Since the 1940's logging has been the greatest disturbance on the landscape. Early logging activity consisted of selectively harvesting the larger and higher quality trees in accessible areas. As demand for wood products within the region became stronger, logging activity became more intensive. Roads were constructed to access all timbered stands and intensive harvesting treatments occurred on much of the public and private lands. The resulting landscape from these practices is a less diverse landscape with a higher level of early and mid seral stages and lower levels of late and mature stages. The influence of logging as a disturbance factor on the landscape is addressed within each elements discussion within this document.

GRAZING

Portions of two grazing allotments exist within the WAU (Table 4). These allotments both extend outside the WAU boundary. Allotment #10006, on the west side of the WAU has been canceled. The second (#10004) is grazed from April 16 until May 15, and only a small part of the total allotment is used. This portion of the allotment that is used for grazing is located outside the WAU boundary. No authorized cattle grazing is currently occurring on BLM lands within the WAU boundaries.

Table 4. Grazing allotment acreage

Allotment number	Allotment name	Acres in WAU	% in WAU	Total Acres
10004	Long Branch	4612	17%	27,477
10006	Roundtop Evans	9763	20%	47,739

Riparian Ecosystem

The riparian zone is a unique ecosystem that is dependent upon hydrology. Many plant and animal species are dependent upon riparian zones for key life cycle stages. Certain plant species are obvious indicators of the quantity and quality of the water source. Interpretation of plant species can determine the extent of the hydrologic influence.

The riparian reserve system acts as an important biological network across the landscape which is particularly important on matrix lands with fragmented ownership, such as the East Evans WAU. The riparian reserve area established under the Northwest Forest Plan ROD is intended to protect a variety of species, endemic to wetland habitat or those which are associated with the riparian zone. Generally, the minimum protection for any intermittent or perennial non-fishbearing stream is one site tree distance and two site tree distances for fishbearing streams (ROD, Page C-30).

The riparian zone becomes more important as latitude and altitude decrease, summer temperatures rise and precipitation decreases. The canopy layer protects streams from direct solar radiation and large diurnal temperature changes. The riparian canopy also acts as an insulator between hot, dry air mass above and cooler, moist air mass underneath.

Riparian vegetation regulates stream flows by storing and slowly releasing water during deficit times and reducing the velocity of stream energy during flood events while protecting the integrity and stability of stream banks.

Coarse wood in streams provide a variety of physical and biological functions. The importance of the coarse wood component in stream systems is just beginning to become clear and is probably one of the most deficient components. Large wood creates diversity and complexity with the system. Hiding and foraging habitat is created for many aquatic species from fish to macro-invertebrates. Hydrologic processes are changed. Energy is dissipated during flood events onto the flood plain or redirected in a direction which may change channel characteristics or create debris jams.

Many rare and unusual species are associated only with riparian or wetland habitats such as Globe mallow (Iliamna latibracteata), numerous Monkey-flowers (Mimulus sp.) or Howell's false caraway (Perideridia howellii). Yew tree (Taxus brevifolia) is mostly found in riparian areas in East Evans Creek. Grand fir and western hemlock extends from higher elevations downward along streams which provide cool, moist and shady conditions for growth.

The riparian reserves act as buffers in protecting riparian vegetation from upland environmental extremes. The edge effect of clearcutting that influences old-growth characteristics also effects

the composition and structure of the riparian zone vegetation. Mortality of trees in the riparian zone is 50% to 100% higher than in the uplands. Temperature and humidity variations have been shown to influence the life-cycle processes of both plant and animal species. In addition riparian reserves are intended to act as a travel corridor and transition zone between the uplands and the lowlands for a wide variety of vertebrate and invertebrate animal species. Travel between the aquatic zone and the uplands is particularly important for some species of reptiles and amphibians during specific periods of their life-cycle.

RIPARIAN CONDITION AND FUNCTION ASSESSMENT

Riparian stream surveys were undertaken on East Evans Creek WAU from October through December 1995 on all BLM lands except for four sections. The objectives are to evaluate the current riparian condition, collect baseline data for long term trend assessment, verify GIS hydrologic data and utilize the information collected for watershed analysis and management actions. ODFW is scheduled to complete surveys on all fishbearing streams in the watershed in 1996. The report is expected in the spring of 1996. Riparian surveys on the remaining tributaries of BLM lands are planned for the spring of 1996.

Riparian surveys were completed on 104 reaches of approximately 30.1 miles of the tributaries of East Evans Creek. The data provides a descriptive snapshot of the current condition and identifies areas of concern related to critical biological and physical processes. Not all the data have been analyzed at this time.

Two sections of East Evans Creek watershed (T33S., R3W., Section 7 and T33S., R3W., Section 17) were selected to determine the amount of actual acres within riparian reserves after field verification as compared to data generated from the Geographic Information System (GIS) Hydrology theme. All first order streams and higher were plotted for the two sections. GIS analysis showed the total area of both sections was 1240 acres with 19 miles of "streams" and 707 acres of riparian reserves. After ground truthing and retaining only the intermittent and perennial streams verified on the ground on GIS hydro map and buffered at 150 feet for nonfish bearing and 300 feet for fishbearing streams, 10 miles of stream miles remained and 461 acres of riparian reserve. This represents a 35% reduction in riparian reserves but more significantly 37% of the land base is represented by riparian reserves (which is very close to the percent of riparian reserve estimated across all BLM lands in OR/WA). On a watershed basis of 7868 acres of BLM ownership in East Evans Creek watershed, approximately 2911 acres of land will be within riparian reserve areas.

Other Preliminary Findings:

- There are no reaches classified as " Nonfunctioning Condition" in the East Evans Creek Watershed. Stream miles by functioning condition have been calculated for all reaches surveyed as of December 5, 1995 with only four sections of ownership unsurveyed. There are

17.2 (57%) miles of streams in "Properly Functioning Condition" comprising 57 reaches, and 12.9 (43%) miles of stream in "Functioning at Risk" comprising 47 reaches.

- Woody debris in the large, medium and small classes is relatively low in many of the major tributaries such as Morrison and Wolf Creeks. Threshold conditions for west side forests is 80 pieces per mile (House 1993).

- One reach of Wolf Creek has an exceptionally large debris dam totaling approximately 300 ft. in length. The debris dam has captured large amounts of sediments and other woody material which has created a broad flood plain characterized by a main channel with numerous braided side channels. This debris dam acts as a significant water storage reservoir in the headwaters of Evans Creek. Red Alder is the predominant hardwood species on the flood plain with old growth Douglas fir and western hemlock anchoring the banks and side slopes. This debris dam probably represents what historically would occur in many of the upper headwater stream systems in the area.

- Generally, riparian buffers of varying widths have been retained along many of the upper tributaries on BLM lands and provide adequate shading, bank stability and a long term source of coarse woody debris.

- Overall, channel banks are relatively stable. The vegetation in the riparian zone is generally intact and provides sufficient protection with an intact canopy and roots of trees and other vegetation anchoring stream banks.

- Generally, there is limited evidence of recent stream downcutting. The substrate is generally composed of cobbles and gravel over bedrock and provides adequate energy dissipation. The topography is characterized by deep "V" shaped draws and tributaries with steep side slopes often in excess of 70%. However, the surface slumping potential along stream channel banks is generally low as long as riparian vegetative cover is retained. Deep seated slumping risk is relatively low considering other disturbances in the watershed. If the forest canopy or understory vegetation such as mats of salal or sword fern is lost, the risk of slumping and mass wasting will increase dramatically.

- Most tributaries in the East Evans Creek Watershed show low to moderate amounts of sediment inputs. Sediments and sand inputs are heavy in the Sprignett Creek drainage as a result of the 1994 wildfire and subsequent timber harvesting activities in the upland area. Wolf Creek has notably high amounts of sediments probably due to recent harvest activities. Embeddedness is correspondingly high in these two tributaries.

- Management activities and projects aimed at improving "Functioning at Risk" reaches to "Properly Functioning Condition" should focus on reducing sediment input, importing coarse woody debris and maintaining riparian zone vegetation and stream buffers.

- GIS data is relatively accurate for intermittent and perennial streams in East Evans Creek watershed when second order streams and greater are plotted.

- In a relatively undisturbed tributary of Sprignett Creek (34S-3W-13), a sample from 8 sites produced an average of 185 pieces of woody debris per mile with a range of 5 to 10 pieces of varying length per 200 feet length. Fine sediment embeddedness ranged from 5% to 10% compared to other tributaries with a range of 25% to 50%.

RIPARIAN VEGETATION

The riparian vegetation is an indicator of the physical environment modified by soil type, temperature, and moisture variation. The physical environment is additionally modified by landform features expressed across the landscape by changes in slope, aspect, and elevation. The riparian vegetation in East Evans Creek watershed is rather unique because all these factors influence the structure and composition of the riparian plant community.

The riparian vegetative community in the East Evans WAU is dominated by Douglas fir with some incense cedar in the upper canopy component at lower elevations and on southern and western aspects. The understory canopy layer is comprised of madrone, suppressed incense cedar, alder, willows, bigleaf maple, oceanspray, and other species. Generally, a narrow distinct ecotone characterizes the riparian zone species with the arid upland species.

Riparian zone openings in the vegetation are usually the result of land management activities or natural disturbances. They recover rapidly with fast growing hardwood invaders and are later overtopped with taller and long lived conifers. Cottonwood become the tallest species, with alders becoming the most dominant and abundant where the forest canopy opens. Willow, dogwood, Oregon ash, vine maple, Oregon grape, and other species are commonly dispersed along the riparian zone.

More northerly aspects in the headwaters tributaries replace incense cedar with western hemlock and grand fir. However, more often they comprise the dominant species in the emerging second story canopy layer. Northern aspects at lower elevations have Douglas fir and grand fir overstory, with bigleaf maple, red alder, Oregon ash, and madrone in the hardwood understory and in openings. Ninebark, oceanspray, dogwood, a variety of ferns, mosses, lichen, and liverworts occur in understory vegetative levels.

Riparian vegetation in early to mid seral stages, characterized by red alder is generally the result of two principal disturbances. Catastrophic flood events in 1964 and 1974 sluiced out major portions of streams in East Evans Creek. Repeated logging operations from the '40's through the '90's created a patchwork of young seral stage vegetation. Roads were constructed along stream systems within the riparian zone and provided easy access for repeated harvest activities.

Repeated salvage logging along road systems over the past 40 years has depleted the amount of down logs that would naturally accumulate in the riparian zone.

Riparian zones on private timberlands have been heavily impacted by logging activities. Streams buffers have not been adequately managed to provide protection for a wide range of biological and physical process. As a result observations of impacts resulting in increased sedimentation, reduced shading, and loss of large woody debris are common. Due to these activities, the systems have been simplified and are more susceptible to degradation during catastrophic events.

A significant portion of the private flatland along the main stem of Evans Creek in the lower reaches is managed pasturelands. Only remnant corridors of riparian vegetation comprised mostly of cottonwood, alder, willow, and bigleaf maple remain along the stream bank. A wide range of hardwood tree sizes and species occur. The corridors appear to provide adequate stream bank protection during storm events, dissipate stream flow velocity and energy, contribute a range of woody material to the system, and provide some shade. Evans Creek retains access to the flood plain during high flow events, so that energy is dissipated during high water events.

A large number of cattle are raised on the pastures year-round, especially during the winter. Generally, they have continuous access to the streams, and trample and browse many new seedling recruits and sprouts in the pasture and along Evans Creek. From a distance the riparian zone within the pastures appears to be gradually reducing in size from over-utilization and constant browsing and grazing.

Table 5 shows ownership and miles of stream by seral stages. Forest types of BLM lands were derived from GIS/Micro-Storms information. For analysis purposes, all riparian timberlands on private property were placed in the pole size category except for 8.5 miles of stream which are pasture lands. Stream reaches with two different seral ages on opposing banks were placed in the youngest age group.

Table 5. Riparian Stream Ownership and Habitat Type

	MILES OF STREAM BY SERAL STAGE			
	Seedling Sapling	Pole Size	Small Saw Size	Large Saw Size
BLM Ownership	8.75	1.75	2.0	11.5
Private Lands		46.75		
Total Miles	8.75	48.5	2.0	11.5

Riparian buffer distances of 150 feet for intermittent and perennial nonfish bearing streams and 300 feet f or fishbearing streams were mapped and analyzed. Stream orders of 2 through 6 were mapped.

RIPARIAN RESERVES AND MANAGEMENT ACTIVITIES

The Aquatic Conservation Strategy (ACS) in the ROD defines the objectives and goals of the strategy for riparian dependent species (see ROD page B-9 to B-34). Riparian Reserves Standards and Guidelines are outlined in the ROD on page C-31 to C-38. Management actions within East Evans creek must be developed with the Aquatic Conservation Strategy in mind. Currently, no specific riparian reserves have been identified for widening or narrowing based upon biological or physical features.

The intent of this section is to provide an outline which defines the planning process for management activities which are necessary within the Riparian Reserve Areas and do not maintain or enhance objectives of the ACS. The following process will be followed and included in the Environmental Assessment document when site specific actions that degrade the riparian reserve are necessary and do not meet the Aquatic Conservation Strategy:

1. Evaluate the site, current condition relative to the ACS.
2. Develop a site specific prescription for the proposed activity.
3. Consider logical alternatives which would meet or enhance the goals of the ACS.
4. Minimize all activities which do not meet or enhance attainment of the ACS.
5. When other alternatives are not available and the action is detrimental to the ACS, consider restoration projects as mitigation.

WETLANDS, LAKES, PONDS, AND RESERVOIRS

There are no known wetlands greater than one acre in size in this watershed. No detailed inventory of smaller wetlands has been conducted. Most likely these smaller wetlands would occur locally along East Evans Creek and tributaries within the riparian area.

There are no significant lakes, ponds or reservoirs. Several pump chances and heliponds are present in the WAU (Appendix E).

RESTORATION OPPORTUNITIES

Watershed and Riparian Restoration:

- Import medium and coarse woody debris on reaches identified as deficient to improve the functioning condition from Functioning at Risk to Proper Functioning Condition to meet multiple biological and physical needs.

- Design riparian silviculture projects to promote increased growth rates of conifer trees in areas where long term recruitment is deficient.

- Initiate erosion control (instream and road cutbanks).

- Protect known beaver areas and promote colonization of beaver, except where their activities adversely affect culverts or roads.

Aquatic Ecosystem

East Evans Creek is a sixth order (Strahler 1957) tributary to Evans Creek which flows into the mainstem Rogue River. There are numerous tributaries to the East Fork of Evans Creek ranging from first to fifth order in size (Table 6). Of these, the largest are Sprignett Creek, Musty Creek and Morrison Creek (See map of stream orders).

Table 6. Stream Miles By Order and Ownership in the East Fork Evans Creek WAU.

Stream Order	Watershed	BLM	Private
First	174.6 mi.	61.3 mi.	113.3 mi.
Second	64.6 mi.	24.9 mi.	39.7 mi.
Third	25.7 mi.	10.8 mi.	14.9 mi.
Fourth	14.1 mi.	5.7 mi.	8.4 mi.
Fifth	12.0 mi.	4.3 mi.	7.7 mi.
Sixth	2.6 mi.	0.1 mi.	2.5 mi.
Totals	293.6 mi.	107.1 mi.	186.5 mi.

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

Confinement of the stream channel by roads often results in simplification of aquatic habitat by the down-cutting of the stream and the loss of the stream's ability to regularly access its floodplain. In general, encroachment upon streams by roads in this watershed is not seen as a primary influence in confining large portions of the stream channel but can, at certain locations, be a dominant factor in confining the channel (Roads and Streams Map). One measure of the magnitude of channel confinement is to use the amount of roads which have been constructed within the Riparian Reserve (Table 7). Of the approximate total of 234.9 miles of road within the East Evans Creek WAU, 101.3 miles (44%) have been constructed within the Riparian Reserve. Of this total 33.9 miles (15%) are located on BLM lands and 13.1 miles (6%) are found adjacent to major streams[2]. Although the magnitude of problems associated with these roads has not been determined, these would be roads which should be considered priority for decommissioning, closure, or upgrade.

Table 7. Estimated Miles of Roads by Ownership in the Riparian Reserve in East Fork Evans Creek WAU.

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

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

WATER RIGHTS

There is no municipal watershed within the West fork Evans Creek Watershed. Domestic use of springs or subsurface water for drinking within the watershed is low. Most residences are located below the intersection of the East Evans Creek Road and BLM road 33-2-33.

BLM has filed with the State on several water developments (Appendix E) for both reservoir permits and surface water permits during the last two years. Water right permits are pending. Most of these reservoirs will require some sort of reconstruction or repair before a water right will be issued by the Oregon Water Resources Department.

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

DOMESTIC WATER SUPPLY

Water of agricultural uses in the lower portion of the basin is important during the irrigation season, which generally runs from June through October. Water is diverted at key locations by diversion dams or small, portable or stationary pumping units and used to irrigate pasture lands or for watering stock

WATER QUALITY

The Clean Water Act, as amended, directs federal agencies to comply with state water quality requirements to maintain and restore water quality necessary to protect identified beneficial uses (RMP, 1994, pg. 2-23). The state of Oregon has identified beneficial uses and applicable water quality criteria for the Rogue basin (OAR-340-41 pgs. 24-28).

The two priority water quality parameters used in this analysis are water temperature and non-point source (NPS) pollution The present Oregon Department of Environmental Quality (ODEQ) standard for temperature in the Rogue Basin is a 2° F allowable increase in water temperature at 56° F or less, a 0.5 F increase at 57.5 F or less, and a 0 F increase at 58 F and above. Oregon's NPS management plan requires the BLM to continue coordination with ODEQ for implementation of Best Management Practices (BMP's) which are intended to protect the beneficial uses of water (RMP, 1994, App. F, pg. 31-55). The current ODEQ standard for turbidity is that no more than a 10 percent minimum cumulative increase in natural stream turbidities shall be allowed, as measured to a control point immediately upstream of the turbidity causing activity (OAR-340-41 pgs. 24-28).

Changes in state water quality standards have been proposed. One change, which is not a current standard but is a major revision to state water quality regulations, is that the allowable increase in stream temperature will now be based on a 7-day running average of maximum temperatures rather than the current annual maximum. This will provide a much more biologically sound standard and will be used for determination of temperature sensitive areas within the watershed.

In general, there is very little existing information on the historic or existing condition of water quality in small, Oregon streams. Limited information is currently available for stream temperatures in the East Fork Evans Creek WAU.

WATER TEMPERATURE[3]

The Federal Water Pollution Control Administration in 1967 called temperature "a catalyst, a depressant, an activator, a restrictor, a stimulator, a controller, a killer, one of the most important and most influential water quality characteristics to life in water" (U.S. EPA 1986). Current EPA criterion for protection of freshwater aquatic resources as related to temperature is based on "the important sensitive species" present during the time of concern. This is based on two extreme upper temperature limits, with one based on a weekly maximum average temperature, which changes with season, reproductive stage, maintenance of species diversity, or prevention of nuisance growths of organisms, and the other being a short-term exposure (i.e. minutes) (U.S. EPA 1986). The calculated values for maximum weekly average temperatures for growth and short-term maxima for survival of both juvenile and adult coho salmon are 64° F and 75° F. For rainbow trout these values are 66° F and 75° F respectively (U.S. EPA 1986, Table 11). A summary of reported values for maximum weekly average temperature for spawning and short-term maxima for embryo survival during the spawning season for coho salmon are 50° F and 55° F. For rainbow trout these values are 48° F and 55° F (U.S. EPA 1986, Table 12.)

Water temperatures were collected at one site, below Sprignett Creek, in the East Fork Evans Creek watershed from June 15, 1994 to June 26, 1994 using a miniature temperature data logger. Temperatures were measured at twenty-four minute intervals and the unit was factory calibrated to within $\pm 0.4°$ F.

Analysis of the temperature data used seven-day average maximums as the values for comparison with established EPA temperature criteria and subsequent determination of temperature sensitive reaches within the watershed. For the purpose of this analysis, it was assumed that coho salmon juveniles (fingerlings) were the most sensitive organism and life stage in this watershed during the extreme high temperature period. The EPA calculated 64° F seven-day average maximum temperature for growth and rearing of coho salmon juveniles was used as the value for determination of temperature sensitive areas within the watershed.

Because a limited number of sampling sites and data points are available for analysis, it is difficult to identify the extent of temperature sensitive reaches within the watershed or draw definitive conclusions about the role of extreme water temperatures within this watershed. However, at the Sprignett Creek site, the seven-day average maximum stream temperature was found to be 69.4° F. This value is outside the EPA calculated criteria. This would result in stream reaches from the mouth of East Fork Evans Creek to Sprignett Creek being sensitive to impacts from land management activities with respect to water temperature and salmonid survival. Impacts which

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[3] **The current ODEQ standard for water temperature was not used because it uses an average annual temperature instead of seven-day average maximums. If temperatures were calculated under today's standards there would be no temperature sensitive reaches. Because of this, it is felt that an accurate representation of a watersheds condition with respect to stream temperature during critical temperature conditions is not achieved and should be based on EPA calculated criteria until basin specific standards are established.**

would be considered to alter stream temperatures are removal of streamside vegetation and water withdrawals. The latter would have an even greater impact during drought conditions.

ROAD SEDIMENT POTENTIAL

Non-point source sedimentation as a result of land management activities is difficult to quantify. Deposition of fine sediment can acutely affect survival of salmonids (1) during intragravel incubation of eggs and embryos; (2) as fingerlings; and (3) throughout the winter (Chapman and MacLeod 1987). Increasing proportions of fine sediment in substrates have been associated with reduced intragravel survival of embryonic cutthroat trout (Irving and Bjornn 1984) and steelhead trout (Tappel and Bjornn 1983).

Although the amount of sediment being delivered to stream channels from BLM roads is currently unknown, it is known what types of roads are the greatest contributors and have the greatest risk of delivering sediment to streams. Roads found within the Riparian Reserve would be considered to have the greatest risk of delivering sediment to the stream, though the surface type of the road would characterize the type and quantity of sediment which would be delivered to the stream.

ROADS AND THE AQUATIC ENVIRONMENT

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

Table Table Table 8. Miles of Roads by Surface Type and Ownership in the Riparian Reserve in the East Fork Evans Creek WAU.

Surface Type	Roads in BLM 3rd Order and Greater Riparian Reserve	Roads in PVT 3rd Order and Greater Riparian Reserve	WAU Totals	Roads in BLM 1st and 2nd Order Riparian Reserve	Roads in PVT 1st and 2nd Order Riparian Reserve	WAU Totals
BST	2.2 mi.	3.1 mi.	5.3 mi.	0.0 mi.	1.5 mi.	1.5 mi.
Rock	7.4 mi.	3.8 mi.	11.2 mi.	14.6 mi.	6.1 mi.	20.7 mi.
Natural	2.9 mi.	1.6 mi.	3.6 mi.	4.3 mi.	3.9 mi.	8.2 mi.
Non-attributed[1]	1.5 mi.	21.2 mi.	22.7 mi.	1.9 mi.	26.2 mi.	28.1 mi.
Totals	13.1 mi.	29.7 mi.	42.8 mi.	20.8 mi.	37.7 mi.	58.5 mi.

Of the 103.3 total miles of road in the Riparian Reserve for the WAU, 33.9 miles of road are located within BLM Riparian Reserve. Of these 31.7 miles of rock, natural surface and non-attributed roads would be considered to have moderately high-to-high risk of delivering sediment to streams and would be considered priority areas for consideration for decommissioning, closure, or upgrade (Table 8 and streams and road maps).

Of the 31.7 miles of road within the Riparian Reserve, 2.1 miles are located within Timber Production Capability Classification (TPCC) fragile slope gradient[4] areas. These areas are considered to have a very high potential for delivering sediment to streams and considered highest priority for decommissioning, closure or upgrade (Table 9). Map of TPCC, Roads and Streams).

Table 9. Miles of Road by Surface Type in BLM TPCC Fragile Slope Gradient Areas.

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

STREAM FLOWS

Base and Peak Flow Levels

Currently Unavailable.

FISHERIES

Distribution/ Occurrence

There are a variety of anadromous, and resident fish which occur within the East Fork Evans Creek watershed (Appendix F). Anadromous fish species that would directly utilize East Fork Evans Creek and its tributaries for spawning and/or rearing are coho salmon and winter and summer steelhead trout. Pacific lamprey may use this tributary, though their distribution in this watershed is currently unknown.

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

Coho and winter and summer steelhead penetrate deep into the smaller tributaries with steelhead being able to access higher gradient areas that are unattainable to coho. They generally spawn in lower gradient or flat areas of high gradient streams. Coho generally rear for approximately one year in fresh water before migrating to the ocean, while steelhead rear for between one and four years, with four years being relatively uncommon. For coho, it appears that deep pools with cover and side channels are critical for over-wintering (ODFW Sensitive Vertebrates of Oregon, 1992). Both coho and steelhead adults and juveniles, historically and currently have extensive access and distribution throughout the East Fork Evans Creek watershed and can be found in all the major tributaries. This represents approximately 8.3 miles of coho habitat and 10 miles of steelhead habitat within the East Fork Evans Creek watershed. Of this total, approximately 2.4 miles of coho habitat and 2.1 miles of steelhead habitat are on BLM lands.

There has been no recorded information about Pacific lamprey runs in the East Fork Evans Creek watershed and their historic and current distribution in the watershed is unavailable at this time.

Resident fish, as their name implies, are species which spend their entire life cycle in fresh water. There is little information about the full distribution of resident fish species that occur within this watershed. Cutthroat trout have a wide distribution throughout the Rogue basin and can be found year-round in virtually any tributary with perennial flow. Within the watershed, cutthroat (3"-6") have been found throughout all the major tributaries and in numerous small tributaries which are inaccessible to anadromous fish use. This represents approximately 17.2 miles of cutthroat trout habitat within the watershed, of which about 6.4 miles is on BLM lands. The current map of cutthroat distribution within the watershed is suspected to underestimate the distribution of cutthroat trout within the watershed by as much as 34 miles (see map). On BLM lands this could be underestimated by as much as 14.5 miles. Project level verification of fish presence will be used to update the current data source. Squawfish, largescale suckers, and red-sided shiners, if present within the watershed, would be limited to the lower mainstem of East Fork Evans Creek. Speckled dace, and sculpin species (primarily prickly and reticulate) occur throughout the East Fork Evans Creek watershed.

The full extent of the interactions of these fish with the salmonids, and their relationship to the entire ecosystem is not fully understood. Squawfish are known to prey on a variety of fish species including salmonids, but the extent of this predation is not known (Umpqua Basin Biological Assessment Team, 1994). Some of these species also compete for the same basic life sustaining resources (e.g. food, space). Red-sided shiners, speckled dace and largescale suckers can all be in competition with juvenile salmonids for these resources. In addition, shiners and suckers are more tolerant of degraded water quality situations (e.g. elevated temperatures and turbidity) than salmonids. In an already degraded situation like simplified aquatic habitats and poor water quality, this could create an overly competitive environment for salmonid species and potentially reduce salmonid survival even further.

Status

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

Of the 175 "at-risk" anadromous fish stocks that occur in Oregon which are listed in FEMAT (FEMAT 1993, Table V-C-3), three occur within this watershed (Table 10). The reasons for these stocks becoming "at-risk" are numerous, with many being out of the hands of Federal land managers. These include ocean harvest, hydroelectric dams and water diversions, and hatchery management. (PACFISH 1993). Loss and degradation of freshwater habitats, however, are the most frequently cited factors responsible for this decline (FEMAT 1993, V-11). As Federal land managers our greatest concern is with timber harvest, its associated activities, and how this can influence the alteration or degradation of freshwater habitats.

Table 10. At-risk Anadromous Salmonid Stocks Occurring Within the East Fork Evans Creek WAU.

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

Because of concern over the rapid decrease in numbers of anadromous salmonids across their entire Pacific Northwest range, numerous groups have submitted petitions to list several of these species under the Endangered Species Act. These include; coho salmon petitioned for listing by Oregon Trout, the Pacific Rivers Council, and others in August, 1993 across their entire range in Washington, Oregon and California; and steelhead trout petitioned for listing by the Oregon Natural Resources Council in February, 1994 across their entire range in Washington, Oregon, Idaho, and California under a variety of alternatives. Currently the National Marine Fisheries Service has proposed coastal coho and Klamath Mountains Province steelhead (summer and winter) for listing as threatened under the Endangered Species Act of 1974. Both species occur in the Rogue River basin and its tributaries, including East Fork Evans Creek. Final rulings for both species are expected sometime in the summer of 1996.

It is critical to realize that all of these fish species (petitioned or not) at various stages in their life cycles will either utilize the stream corridors in this watershed at different times of the year for varying lengths of time, or only under certain environmental conditions. All anadromous fish species will be found throughout the year in the watershed in either adult or juvenile form. What

this can result in is the potential of having numerous species during different life stages being affected by the same set of external physical variables, impacts or actions regardless of their origin. These can vary in timing, duration or magnitude but could potentially impact generations of fish.

POPULATION TRENDS

There are no data related to fish population trends for the East Fork Evans Creek watershed.

HATCHERIES

The Cole Rivers and Butte Falls hatcheries are the only fish propagation facilities in the Rogue basin. This Cole Rivers facility was built in 1974 to mitigate for the loss of habitat resulting from the construction of Lost Creek Dam.

Hatchery released fish have been identified as contributing to the decline of native anadromous salmonids through competition with wild fish, genetic introgression, residualism, disease, and creating a mixed stock fishery (FEMAT, 1993).

PASSAGE BARRIERS

The primary barriers for adult and juvenile fish in the watershed are culverts and diversion dams. The seasonal effects of these range from delayed to complete obstruction of upstream migration for either adult or juvenile fish species. Within the East Fork Evans Creek watershed there are seven irrigation diversion dams, with three occurring within this WAU (Table 11). Removal of these structures would be considered a priority for restoration of aquatic habitat connectivity.

Table 11. Names and Locations of Diversion Dams Within the East Evans Creek WAU.

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

In addition to human created barriers to fish migration, there are also barriers which occur naturally, such as beaver dams and falls. Although, beaver dams may present seasonal barriers, they generally do not result in complete obstruction of fish passage and function as critical winter-rearing habitat for coho salmon (Nickleson et. al.1994, Draft). Nickleson et. al. found that although beaver dams formed a small percentage of the total number of habitats used by coho

juveniles during the winter months, a large percentage of coho individuals within a watershed were using them. In addition, to serving as coho refuge during the winter, beaver dams also maintain base water flows during the summer months.

While most falls above ten feet are generally considered barriers to anadromous fish migration, they generally act as isolation mechanisms for resident fish populations and other aquatic species. This prevents competition by species from below the falls and provides species above with greater access to available aquatic resources (e.g. habitat and food). With this isolation, there are advantages for resident fish populations and other aquatic species and depending upon the length of isolation may result in some genetic variation. Both falls and beaver dams are naturally occurring barriers which play an important role in overall watershed processes and should not be modified from their original form, unless they are blocking culverts and/or threatening roads.

AQUATIC HABITAT

Recorded stream surveys were conducted in the East Fork Evans Creek watershed in 1969 and 1995 (currently unavailable) to assess aquatic condition based on key aquatic features as they were defined for those time periods. The use of the 1969 survey in this analysis is limited to determining historic key spawning and rearing areas, as well as, mapping historic large wood accumulations and beaver dams. The importance of large wood in creating diverse and stable aquatic habitats has been well documented (USFS 1990). This exercise provides some limited insight as to locations and to some degree, routing of large wood in this system. This helps in assessing how land management activities may have effected aquatic habitat over time and in identifying areas where potential restoration efforts may be targeted.

1969 AQUATIC SURVEY

The survey was conducted on December 3, and focused on spawning areas, quality of spawning substrate, stream cover and the identification of limiting factors, primarily log jams and falls which were considered obstructions or passage barriers. The survey was most likely initiated as a result of the 1964 flood event that produced numerous slides throughout Western Oregon.

East Fork Evans Creek

The survey was completed between roughly mile 6.0 to 12.5 within the WAU. The survey revealed that the area was dominated by riffle habitat (roughly 73% of the area) and had substrate which was dominated by large and small gravels, cobbles, and small boulders.

Overall, there was considered to be marginal spawning gravel intermixed with good spawning gravels. Although this survey is very qualitive and does not give standards for habitat quality it does point to this area as being important for coho and steelhead spawning within this watershed.

1995 AQUATIC SURVEY

Currently Unavailable.

LARGE WOOD ROUTING

Currently Unavailable.

KEY AQUATIC HABITATS

Due to the relatively high amount of managed landscape within this watershed, there are little if any intact portions remaining. However, in general, the Federal sections do contain some of the best remaining aquatic habitats, especially T33S, R02W, Section 17. This section, however, may not represent reference conditions due to the high level of management adjacent to the section. Further survey information is needed to accurately identify the key aquatic habitats in the WAU.

Although the upper reaches of the East Fork Evans Creek are not accessible to anadromous fish use, these areas are critical because of the large, active beaver areas that provide crucial water storage for maintaining stream flows and cool water temperatures during low flow conditions. Although these beaver areas are not accessible to anadromous salmonids, they do provide important habitat to a variety of aquatic (including resident fish species) and terrestrial species, in addition to regulating physical stream processes critical to the rest of the watershed.

INSTREAM ENHANCEMENT PROJECTS

Instream enhancement projects have been done in the watershed to improve instream structure over the short-term (i.e. 25-50 years) by using log weirs These were constructed in 1987 on BLM lands in T33S., R02E., Section 17 and covers approximately 0.5 miles and T33S., R02E., Section 29 and covers approximately 0.25 miles.

AQUATIC INVERTEBRATES

Aquatic Mollusks

There have been no recorded surveys for aquatic mollusks in the East Fork Evans Creek WAU. Current information shows no known sites of sensitive species of aquatic mollusks on the Medford District occurring within this watershed. Surveys for these species are needed.

Aquatic Benthic Macroinvertebrates

Currently Unavailable.

Cultural/Social Elements

SOCIAL

Some of the most significant social influences in recent time on the East Evans watershed has been a combination of fire prevention/suppression, logging, road building, agriculture and development.

Prior to Euro-American settlement, Native Americans frequently burned off the hillsides to provide food, supplies and ease of passage. This frequent burning resulted in a landscape with hillsides dominated by native grasses.

In the early 1900's following Euro-American settlement the public became increasingly concerned about the need for fire prevention and suppression. The first fire lookouts were constructed by the Civilian Conservation Corps (CCC) in the 1930's, including the lookout on Roundtop Mountain within this watershed. The increased prevention and protection from fire has been successful on many of these lands resulting in a shift of the grasslands of pre Euro-American settlement into dense brush/hardwood stands or DF sapling/pole size stands.

These denser stands present a greater risk of more intensive fires within the watershed along with the associated impacts of these types of fires such as: increased erosion potential, increased sediment within the streams, loss of spawning habitat, decrease in riparian and wildlife habitat and loss of timber values.

Logging on private and public land has replaced fire as being the most significant social impact since World War II. The impact of logging has been the greatest as a result of the harvesting of the mature and old growth forest along with the accompanying road building needed to access the harvest units.

The harvesting of the mature and old-growth forest stands has shifted these stands to early or mid-seral stages reducing the diversity within the watershed and contributing to moving the watershed closer to a monoculture. Reduction in the balanced mix of diverse ecosystems within the watershed reduces the habitat for a wider range of plant and animal species dependant on these diverse systems. The higher level of early and mid-seral stands increases the risk of intensive stand replacement type fires occurring and the associated impacts of these types of fires.

Road building associated with logging, has provided access not only for timber harvesting but also aided in fire suppression and increased recreation opportunities. The more negative impacts on

the other ecosystems within the watershed includes increased harassment of wildlife, blockage of fish passage, confining of stream channel reducing the streams access to its flood plain, increased soil compaction resulting in channelization of water, soil erosion and sedimentation.

Early settlement within the watershed consisted of farmers and miners. While mining may not be as impacting as it was in the past it has impacted the streams in the lower elevation areas of the watershed. Land clearing down to the stream and work within the stream channels has removed riparian vegetation contributing to higher stream temperatures and degraded stream conditions.

Agricultural activities have also contributed to the reduced riparian areas because of land clearing and grazing down to the stream channels resulting in a loss of riparian vegetation and destablizing of stream banks. The diversion of water out of the streams for irrigation purposes also contributes to higher stream temperatures and degraded stream conditions.

Agriculture will continue to be an influence in the low lands of this watershed but in recent years increased residential development of this area has and most likely will continue to replace agricultural and forested land. While moving out to the rural areas may improve the quality of life for some, it will also add to the pressure on the ecosystems within the watershed. More people moving into the watershed may provide for more "eyes" to spot any fires in the area. There is also added risk of more human caused fires, along with added cost and risk in protecting these properties. Increased development in the areas wildlife habitat will reduce wildlife habitat because of increased encroachment on meadows, forest lands, and white oak stands along with increasing the risk of harassment to wildlife. Availability of ground and surface water may also be effected with increased development.

In recent years there has been a noticeable increase in the amounts of trash dumped on public and private forest land. This has included household trash, abandoned vehicles and waste from illegal drug manufacturing labs. These dump sites are not only aesthetically unappealing to view but are potential pollution problems, fire hazards and costly to the public to clean up.

Society will continue to need products from private and public lands and one can assume East Evans watershed will continue to be a contributor to meeting these needs. Current trends towards harvesting smaller size trees for fiber may result in much of the landscape remaining in the younger stand and size classes.

Changes in the State Forest Practice Act and implementation of the President's Forest Plan is intended to increase protection of streams, riparian areas, and old growth stands along with a greater emphasis on protecting and maintaining a diversity of species and resources within the watershed.

RECREATION

There currently are no designated or maintained recreation sites in the East Evans Watershed. Recreational use of the watershed is predominantly during the fall and primarily by hunters. There are no established or repeatedly used campsites in this area. Hunters do camp in tents and trailers, but use is not heavy and is transitory in nature. Campsites, whether used by hunters or others, are usually located close to water; either near a stream or at a pump chance.

Because of the dispersed and occasional long term camping, small garbage dumps or garbage left by campers have been found. These sites have a minimal impact on the watershed. The majority of the sites are easy to clean up. Recreational use has not been so heavy as to demand regular patrols of the watershed.

The watershed is also used by off highway vehicles (OHVs), though not heavily. There is no collected data on the amount of use nor are there plans to develop any OHV trails or recreation sites.

In the eastern part of the watershed, horseback riding takes place on private land. BLM does not own much land which would be favorable for riding.

Butte Falls Resource Area is participating in the Jackson County Cooperative Travel Management Area (TMA) program with Oregon Department of Fish and Wildlife (ODFW) and Boise Cascade Corporation. This restriction affects travel in the eastern portion of the watershed. The TMA is in effect September 1 through May 31 and prohibits unauthorized vehicular travel on secondary roads inside the boundary of this area. The TMA restricts vehicle travel to one loop on the Jackson county East Evans Creek road through section 33, 28 and BLM road 33-2-21.1 back to road 33-2-33. The Cleveland Ridge road is the west boundary of the TMA and remains open to vehicular traffic. A map of the TMA is available from ODFW or at the Medford BLM office.

The road closure affects the recreation patterns in this part of the WAU mostly during hunting season, when use is higher. All BLM lands within the TMA remain open for public access, although through non-vehicular access only. Roads on Boise Cascade lands within the TMA are also closed to general public vehicular traffic.

Historically, trails have existed in the watershed. These trails are plotted on various maps from the 1940s and 1950s. None of these trails have been maintained by BLM and it is questionable whether they could be identified, certainly not from the ground. There are no plans to resurrect any of these trails at this time.

Overall, recreational activity in the Watershed is light and the impact of users is at a minimum.

REALTY

- There are eight (8) acquired timber access roads easements covering 115.97 acres within the watershed.
- There are four (4) road use agreements covering 2,427 acres within the watershed.
- There is one (1) O&C Act reciprocal road use acquisition covering 3,318.11 acres within the watershed.
- There was one (1) Federal Land Management Act purchase of 4.3 acres from Chevron Resources within the watershed.
- The Medford District has established two (2) community pits covering 23.75 acres within the watershed. This amounts to a de facto withdrawal from mining for these areas.
- The United States has granted two (2) Federal Land Management Act permits to various individuals involving 42 acres within the watershed.
- There are thirty-seven (37) Bureau of Land Management and three (3) Forest Service roads situated within the watershed.
- The Bureau of Land Management has acquired fourteen (14) road access easements within the watershed.
- There are presently four (4) identified unauthorized uses covering 2.081 acres within the watershed. These are either haying fields or trash sites.
- There are no mining claims within the watershed. There has been some oil and gas leasing in the past along with a few mining claims, but they are now closed.

V. DESIRED FUTURE CONDITION

VEGETATION, BIOLOGICAL DIVERSITY, AND LATE SUCCESSIONAL SPECIES

Simplification of forest structure and pattern has reduced biological diversity, connectivity, and landscape function. Activities will be designed to promote and improve species diversity by encouraging natural levels of diversity found in native plant communities. Project design will utilize plant association principles to describe and define desired levels of species diversity. Historic agents of disturbance such as fire and its frequency will be incorporated to promote species diversity. Levels of coarse woody debris and snags will remain on the landscape to provide adequate habitat for various species.

Late successional forest patches in the uplands and in riparian reserve areas will provide a variety of benefits, including: buffering of microclimates during seasonal climate extremes, nutrient retention, carbon storage, and nutrient recycling. They also will be a source of arthropods, salamanders, lichen, mosses, and other organisms beneficial to ecosystem functions. Late successional forests stabilize soil and provide habitat for late successional dependent species, especially for those with limited dispersal capabilities.

Horizontal and vertical diversity in even-aged plantations in uplands and in riparian reserves will be improved, with canopy gaps, encouraging species diversity, and some unthinned clumps remaining. Thinning to differing residual densities, dependant upon site class and conifer species targeted, will occur and activities will be designed to reduce detrimental impacts to important invertebrates, fungi, mosses, and lichens by minimizing litter and topsoil disturbance during management activities across the landscape.

FIRE

Risk is the probability of a fire occurring. Other than current fire prevention activities, little can be done that will reduce the probability of a fire occurring. This means that the fuel profile must be modified so that when fires do occur, they cause little long term damage. Wise use of density management, underburning and pre-commercial thinning can reduce fuel profiles. Modifying large blocks of even aged stands particularly on south slopes at low to mid-range elevations can reduce the potential for crown fires.

When thinning large acreages, activity slash needs to be treated to create fuel breaks to reduce the potential for large fires. Underburning in both natural and commercial harvest stands will provide reduced fuel profiles that will in turn reduce fire size and intensities when fires do occur. By treating areas adjacent to high value areas such as connectivity blocks, we can increase the probability of those sites surviving large scale fire events. When ground fuels are treated we will target the 3 inch diameter and less material in order to remove those fuels that would normally provide the heat source necessary to ignite large coarse woody debris.

For fuels treatment, snags would best be located in riparian reserves and interior islands of treated areas, thus giving them the greatest probability of surviving fire events. The goal is not to treat every acre but prioritze those acres that will be most beneficial realizing that fires do play a role in these ecosystems and money for fuels treatment is limited.

WILDLIFE

SPOTTED OWL ACTIVITY CENTERS AND OTHER LATE SUCCESSIONAL PATCHES (connectivity blocks, connectivity nodes)

Demographic studies of the northern spotted owl indicate that population numbers are declining. Spotted owl habitat has been reduced in the WAU within the last two decades, to the point where none of the existing spotted owl sites have >40% nesting, roosting, foraging habitat within the provincial radius (1.3 miles). Weak population connectivity within the provinces because of poor habitat conditions in areas of checkerboard ownership is a serious threat to owl populations.

Desired future condition for WAU is that spotted owl activity centers (100 acre LSRs) will provide old growth habitat for late successional species by providing 100 acre patches of old growth forest scattered across the landscape. This will create dispersal opportunities and provide gene flow across matrix lands and between the large regional late successional reserves. These patches will provide late successional habitat for spotted owls, other raptors, neotropical and residential birds, elk, deer, small mammals, reptiles, amphibians, lichens, plants, etc.

Section 29, T33S, R02W is a designated connectivity block (ROD, C-42) and will have 25-30% late successional habitat. The connectivity blocks are sections of lands which are designated matrix lands and will be managed to function to maintain connectivity value across the landscape for spotted owls and other late successional dependent species. Two connectivity nodes in T33S, R02W, section 7 and T34S, R03W, section 1 will be managed to provide functional patches of 60-80 acres of mature and late successional habitat to enhance connectivity across the landscape. These nodes can be located in different places within the section over time, but will provide functional patches of mature habitat.

Properly functioning riparian corridors will help mitigate the loss of late successional habitat and improve connectivity for the late successional dependent species.

DESIGNATED BIG GAME WINTER RANGE

Within the designated "big game winter range and elk management area", RMP guidelines are to close all roads except major collectors and arterials between November 15 to April 1, minimize new road construction, and maintain at least 20% of the area in thermal cover (70% crown closure and minimum 40 feet tall, in 30-60 acre patches). This is the desired future condition of the lands in section 3 and 9 in the southeast corner of the WAU.

The remaining WAU will be predominantly a mix of cut over timber lands, second growth timber stands, with relatively few mature timber stands. The area is matrix lands outside the local owl LSR and this pattern will most likely be the future condition. Deer and elk forage will continue to be good. Desired future condition of the landscape is that patches of late successional forest will be scattered across the landscape to provide thermal cover for big game animals.

SOILS

The desired future condition for overall slope stability in this watershed would maintain the slopes that are currently stable and improve those high risk areas of instability through mitgating or protective measures (e.g. rock blankets and buttressing, revegetation, and improved drainage). To create more stable conditions there should be no net gain in road densities over the long term (> 10 years) and all roads needed for long term access should meet the 100 year flood standard

for drainage. Ultimately, this will aid the effort to improve water quality and aquatic habitat in this watershed. This will require coordination from all landowners within this watershed.

The desired future condition for reducing the impacts of a potential rain-on-snow event would reduce the amount of non-recovered openings within the TSZ to less than 20% (544 ac.) of the total acres in this zone. Currently, the TSZ has approximately 25% of the WAU (688 ac.) of the acres in a non-recovered condition. The long term goal should be to always maintain no more than the 20% level. This will give the watershed the stablility and resiliency to withstand these occurrence and recover much more quickly to a properly functioning condition. Again, this will require cooperation and coordination from all landowners within the watershed.

ROADS

See Transportation Management Objectives (TMO) for specific recommendations. This is available for viewing at the Medford District BLM office.

Desired future road conditions would be an overall reduction in conditions where erosion produces sediments that end up in the streams. This would be the result of road upgrading improvements, decommissioning, and obliterating roads which have been identified as a source of sediment to the streams. Travel restrictions on some unsurfaced roads would be achieved by the presence of gates and effective roadblocks.

New road construction within the RMP designated big game winter range in section 3 and 9 would be designed to meet the goal of 1.5 miles of road per section. This will be done to reduce the potential for poaching and game harassment. All new roads or reconstructed roads would be considered for closure.

AQUATIC/FISHERIES

The desired condition for the WAU is largely, if not solely, based on the Aquatic Conservation Strategy (ACS) (ROD 1994, pg B-11) objectives. This includes maintaining and restoring a variety of physical, biological and chemical processes throughout the watershed to reflect some range of historic conditions. The assumption is, that by doing this the aquatic ecosystem will be maintained at or restored to a healthy condition reflective of pre-Euro-American settlement.

Because the ACS was not intended to establish numeric goals or values for aquatic and riparian ecosystems across the region, it is difficult to know when or if the desired condition has been reached. In addition, because of the limited type and amount of data related to the aquatic ecosystem in many watersheds, including East Fork Evans WAU, only cursory or fundamental measures may be recommended.

Indicators of improved watershed conditions considered to be directly related to improved aquatic ecosystem conditions would be: 1) a major reduction in the miles of roads in the watershed, especially valley bottom and water grade roads, and roads constructed on unstable areas 2) a Riparian Reserve which is in a late-successional condition and 3) all human created barriers eliminated or modified to accommodate the passage of age 1 year and older fish. These three categories would be considered priority areas where direct short and long-term desired conditions could be achieved for the aquatic ecosystem within this WAU. Although there are other numerous measures which could be taken to achieve the desired condition for the watershed, addition information is needed before they should be implemented.

RIPARIAN

The desired future condition is to maintain riparian-wetland areas so that 75% or more are in properly functioning condition. The current objectives of the Aquatic Conservation Strategy outline adequately the desired future condition of the riparian and aquatic ecosystems over the long-term. Many of the elements described below accomplish overlapping biological goals.

The decline of anadromous fish and inadequate habitat are a concern within the Rogue River watershed. Optimum riparian conditions within East Fork of Evans creek will help increase fish populations and reduce further management restrictions within the watershed.

Additionally, riparian reserves will provide adequate habitat for riparian dependant plant and animal species so that any species or population dependent upon the riparian zone will have minimum habitat protection within the riparian reserve.

The desired future conditions for riparian reserves appropriate to East Evans Creek include:

- The existence of a riparian reserve system that is properly functioning and provides aquatic and riparian plant and animal species with necessary life-cycle habitat.

- The presence of large diameter conifers in conifer dominated plant communities within the riparian reserve which host diverse riparian biological functions.

- A range of 80 to 180 pieces of all size wood material in forest communities with particular emphasis on coarse woody debris which will enhance stream complexity and diversity.

- A minimum amount of roaded areas in riparian reserves that are necessary for access. The roads will be maintained to drain water adequately and cutbacks fully vegetated to reduce erosion and slumping. The amount of sediments entering streams during storm events will be negligible to water quality and downstream deposition.

SOCIAL

The desired future condition within the landscape is to move this landscape towards a healthy and resilient condition while providing opportunities for the public to continue to use the available resources within the watershed. The future watershed will continue to provide commodities to the public along with access and recreational opportunities on the public lands. The watershed will continue to contribute to human needs for forest products by providing timber harvesting, firewood and other Special Forest Products at a sustainable level.

The public's desire for improved water quality and fisheries habitat is recognized. Past policies and actions may have contributed to the degradation of streams and fisheries habitat, the intent here is to reverse that trend and improve the water quality and return native fish populations to their natural range.

Traditional use of this watershed has included hunting and other recreational activities. The public's desire for these activities along with the publics recognition of the importance of having a diversity of game and non-game wildlife habitat is realized. The intent is to create habitat which can be maintained for the diversity of wildlife species which naturally occurs within the watershed.

The public's increased migration into the forest lands is expected to continue resulting in greater expectation of protection of these lands from catastrophic fires. There are efforts which can be made to move the watershed towards a vegetative condition desired by the public which reduces the risk and intensity of catastrophic fires. The future watershed will have more uneven aged stands, reduced fuel loadings, and ridgetops which function as fuel breaks reducing the risk and intensity of fires across the landscape. These conditions will provide improved protection of the public and private resources within the watershed.

VI. RECOMMENDATIONS

Identification of those management activities that could move the system towards desired future conditions or management objectives as appropriate.

LANDSCAPE MANAGEMENT OBJECTIVES

An objective is defined as something towards which management effort is directed, or the desired outcome. Well written objectives should clearly state what is needed, why it's needed, where it's needed, how much or how many are needed, and how to determine when it is accomplished. These sound like easily answered questions, but the more time

spent developing objectives, the more one realizes how cumbersome these tasks can become.

The more control there is over any given situation, the quicker and easier the objective can be accomplished. With scattered land ownership patterns, such as the situation in southwest Oregon, the task becomes more complicated, more costly, more time consuming, and can be more difficult to achieve. **Even if local objectives are achieved on public lands, regional objectives may not be realized until adjacent land management objectives are fulfilled.** For example, all the human created barriers to fish migrations on BLM lands or controlled roads could be removed or modified to allow for fish passage. However, if all land owners in the watershed do not modify or remove barriers on their lands, the effectiveness of the projects on federal lands may be extremely limited. This dilemma points to several obvious, if somewhat time consuming solutions, the most widely accepted of which is partnerships with the other landowners or participants in the task of land management. With dedicated partnerships, control over the situation is increased, more broadly based decisions can be made, action plans have a wider acceptance, results are realized sooner, and more people have a sense of ownership and pride in the results.

The best written plans, objectives, or intentions have several unforseen obstacles that are difficult to mitigate. These include such things as funding constraints, natural occurrences (fire, flood, etc), political impulses, and overriding priorities outside the influence of the project team. Even with these stumbling blocks, the challenge of accomplishing proper land management objectives should be continued.

VEGETATION

OBJECTIVE: PROVIDE FOR A SUSTAINABLE HARVEST OF FOREST COMMODITIES. FOREST COMMODITIES INCLUDE TIMBER, FIREWOOD, AND SPECIAL FOREST PRODUCTS (boughs, mushrooms, burls, etc...).

RATIONALE: Provide for a sustained flow of forest products to contribute to economic stability. Maximize growth and yield of timber resources to insure sustainable harvest levels.

POSSIBLE ACTION:

1. To enhance tree vigor and growth, a variety of silvicultural treatments will be utilized, including: site preparation, tree planting, mulching, tubing, scalping, brushing, fertilization, gopher baiting, thinning, etc.

2. Identify potential timber harvest areas. Conduct stand exams to assess current stand conditions and management needs. Use exam information to prioritize treatment areas. Propose harvest areas to be compatible with landscape and management plan objectives.

3. On harvested areas, maintain long-term site productivity and biological legacies by retaining coarse woody debris, snags, and green trees.

4. Identify current and potential areas for special forest products. Manage special products to prevent excessive use or unacceptable impacts to the resource or site. Develop management plans.

MEASUREMENT/MONITORING: Utilize permanent 5-point inventory plots to monitor forest growth and to adjust or develop probable sale quantities. Develop a monitoring plan for special forest products.

SUCCESS: Maintaining a sustainable level of commodity products while maintaining resource values identified in RMP and watershed analysis.

OBJECTIVE: ON MATRIX LANDS, CREATE AND MAINTAIN CONNECTIVITY BETWEEN LATE SUCCESSIONAL RESERVES (LSR) AND PROVIDE REFUGE/HABITAT FOR A VARIETY OF ORGANISMS ASSOCIATED WITH LATE SUCCESSIONAL FORESTS.

RATIONALE: Late successional forests provide a variety of benefits, including: buffering of microclimates during seasonal climate extremes, nutrient retention, carbon storage and nutrient recycling. They also are a source of arthropods, salamanders, lichen, mosses and other organisms beneficial to ecosystem functions. Late successional forests stabilize soil and provide habitat for late successional dependent species, especially for those with limited dispersal capabilities.

POSSIBLE ACTION:

1. Identify existing and potential connectivity corridors of late successional forest in riparian and upland areas.

2. In upland areas, identify late successional patches (> 150 years and at least 50 acres in size) that are suitable to maintain or enhance for interior forest conditions.

3. Design management activities to provide edge-to-area ratios that are needed to achieve desired interior forest conditions.

4. Develop surveys for lichens, arthropods, etc., to determine habitat requirements and establish protection measures.

MEASUREMENT/MONITORING: Identifiable connectivity patches and corridors that provide late successional forest conditions. Dispersal and travel routes between adjacent landscapes are evident.

SUCCESS: Riparian corridors in late successional condition. Plant and animal diversity maintained. Diversity of forest stands with differing sizes and structures.

OBJECTIVE: IMPROVE FOREST ECOSYSTEM HEALTH, DIVERSITY, AND RESILIENCY.

RATIONALE: Improving forest ecosystem health, diversity, and resiliency increases stand resistance and tolerance of climatic extremes/fluctuations, reduces potential for major insect and disease outbreaks, reduces potential for large fires, reduces erosion, and increases soil productivity.

POSSIBLE ACTION:

1. Promote and improve species diversity by encouraging natural levels of diversity found in native plant communities.

2. Thin dense conifer stands. Prioritize stands that are less than 150 years old with relative densities greater than 50 percent. Utilize underburning to thin where appropriate.

3. Improve horizontal and vertical diversity in even-aged plantations, create canopy gaps, encourage species diversity, and maintain unthinned clumps.

4. Stabilize soil by reducing compaction and erosion.

5. Reduce detrimental impacts to important invertebrates, fungi, mosses, lichens by minimizing litter and topsoil disturbance during management activities.

6. Reduce existing populations of noxious weeds and prevent expansion of weeds from surrounding watersheds by use of native species of grasses, forbs, and shrubs whenever possible.

7. Maintain a diversity of age/size classes throughout the landscape. Utilize historic range of natural variability to determine target acres.

8. Maintain pine species as a major seral stand component, principally on ridgelines and southerly aspects.

9. Provide environmental conditions that are beneficial for insect predators (salamanders, bats, birds, etc...) by leaving woody debris, down logs and snags for habitat.

MEASUREMENT/MONITORING: Measure relative densities of managed stands to insure that the stands are between 35 to 50 percent. Stand densities 35 to 50 percent relative density result in maximizing stand vigor and growth. Utilize USFS annual insect and disease aerial surveys.

SUCCESS: The type, amount, and distribution of seral stages within landscape are within desired range. Diversity of plant and animal species is increasing. Increased stand vigor and growth rates, historic levels of insect and disease, and viable populations of a variety of plants and animals.

OBJECTIVE: INCREASE LATE SUCCESSIONAL FOREST CONDITIONS, PARTICULARLY OLD GROWTH CONDITIONS, IN THE DESIGNATED CONNECTIVITY BLOCK, SECTION 29, T33S, R2W.

RATIONALE: Connectivity blocks and late successional stands provide for movement and dispersal of plant and animal species. The blocks provide for biological and ecological flows.

POSSIBLE ACTION:

1. Manage even-age plantations to accelerate the development of stand structure. Create canopy gaps, favor development of a variety of tree species (conifer and hardwood). Thin to differing residual density levels; dependant upon topographic position and aspect. Leave clumps of un- thinned trees. Target stands on northerly aspects for initial treatments.

2. Maintain and protect stands that are currently greater than 150 years old in connectivity block to meet minimum 25-30% late successional habitat.

3. Conduct stand exams to describe existing vegetative condition and structure in pole size and larger stands.

4. Manage fuel loadings to increase or maintain late successional forest condition.

MEASUREMENT/MONITORING: Use stand exam data to compare with stand growth models.

SUCCESS: A minimum of 25 to 30 percent of the connectivity block closely resembles old growth systems in composition, structure, and function.

FIRE

OBJECTIVE: REDUCE POTENTIAL FOR LARGE HIGH INTENSITY STAND REPLACEMENT TYPE FIRES

RATIONALE: Large, high intensity fires cause long term soil and watershed damage by removing vegetative cover which increases erosion potential. High intensity fires can often create hydrophobic layers in the soil, as well as causing long term site productivity losses. Intensity of fires directly influences the seral stage and species cover that reoccupies a site following a wildfire. In rural interface areas, large fires can cause significant loss of homes, out buildings, and unfortunately, loss of human life. Fires in these areas are extremely difficult to control. Normal control points may not be available for use because of values at risk, in addition these fires are extremely expensive to fight.

POSSIBLE ACTION:

1. Create shaded fuel breaks, such as modified harvest zones, on ridges or along roads.

2. Treat activity slash and natural fuels by piling and burning or underburning.

3. Modify horizontal and vertical fuel profile by harvest techniques such as density management.

A combination of all techniques will have the highest probability of success.

MEASUREMENT/MONITORING: Vegetation surveys and stand exams using current technology and remote sensing technology as it becomes available.

SUCCESS: Short Term: Reduction in ladder fuels. Reduction in large blocks of even aged stands. Reduction in high ground fuel loadings.

Success-Long Term: increase in forest health, reduction of fire intensities, reduction in fire sizes. Decrease in fire related damages. Increase of desired fire tolerant species. Possible reduction in the need for intensive management practices such as mulching and brushing. Reduction in live fuel profiles.

WILDLIFE

OBJECTIVE: ON MATRIX LANDS, CREATE AND MAINTAIN CONNECTIVITY BETWEEN LATE SUCCESSIONAL RESERVES (LSR) AND PROVIDE REFUGE/HABITAT FOR A VARIETY OF ORGANISMS ASSOCIATED WITH LATE SUCCESSIONAL FORESTS.

RATIONALE: Late successional forests provide a variety of benefits, including: buffering of microclimates during seasonal climate extremes, nutrient retention, carbon storage and nutrient recycling. They also are a source of arthropods, salamanders, lichen, mosses and other organisms beneficial to ecosystem functions. Late successional forests stabilize soil and provide habitat for late successional dependent species, especially for those with limited dispersal capabilities.

POSSIBLE ACTION:

Also refer to vegetation recommendations.

1. Identify existing and potential connectively corridors of late successional forest in upland areas throughout the matrix in sections 5, 7, 17 in T33S, R02W. for maintaining connectivity along the Rogue-Umpqua divide between large LSR and to maintain connectivity among small 100 acre core areas.

2. Design projects in T33S, R02W, section 29 (connectivity block) to promote old growth habitat in 25-30% of the section.

MEASUREMENT/MONITORING: Identifiable connectivity patches and corridors that provide late successional forest conditions. Dispersal and travel routes between adjacent landscapes are evident.

SUCCESS: Riparian corridors in late successional condition. Plant and animal diversity maintained. Diversity of forest stands with differing sizes and structures. Continued use of bat roost, hibernacula, and maternity sites.

OBJECTIVE: MAINTAIN AND IMPROVE SPECIAL HABITATS FOR TERRESTRIAL AND AQUATIC WILDLIFE AND PLANT SPECIES IN THE WATERSHED

RATIONALE: Special habitats in the WAU include designated northern owl activity centers, bat sites (roosts, maternity colonies, and hibernacula), meadows, rock outcrops, mine adits, etc. The pump chances and heliponds in the upper part of the watershed provide a habitat type that is used as microhabitat for a variety of wildlife species, as well as providing a source of water to the areas downstream.

POSSIBLE ACTION:

1. Design management activities to provide edge-to-area ratios to achieve favorable interior forest conditions.

2. Design activities to protect and enhance habitat conditions for ROD survey and manage and RMP special status wildlife and plant species.

3. Improve drainage in pump chances and heliponds by cleaning, repairing, and/or replacing culverts and springboxes and making improvements which were identified as needed in the 1995 water rights exam inventory.

4. Design landscape patterns to maintain 15% of WAU in late successional conditions with emphasis on patches scattered across the landscape.

5. Identify existing white oak patches, meadows, and wedgeleaf patches and design projects to protect and maintain the health and stability of these habitat types.

6. Inventory to determine snag and cwd densities and design proposed activities to maintain or enhance these components where they are present in low numbers.

MEASUREMENT/MONITORING: Surveys will be conducted to determine population trends.

SUCCESS: One hundred per cent of habitat in spotted owl activity centers provide habitat 1 and 2. Known bat maternity sites and hibernaculum have 250 foot no cut buffer. Springs are flowing freely and pond habitat is maintained.

SOILS

OBJECTIVE: REDUCE THE RISK OF LANDSLIDES AND MAINTAIN AND/OR IMPROVE SLOPE STABILITY TO IMPROVE AQUATIC HABITAT AND WATER QUALITY.

RATIONALE: Landslides due to slope instability from road construction and timber harvest can produce large amounts of sediments that may be delivered to the stream channels. When this occurs stream stability, water quality, and aquatic habitat are adversely effected.

POSSIBLE ACTION:

1. Minimize future road construction. Consider alternative logging methods (i.e. helicopter, multi-span) and road decommissioning or obliteration.

2. Stabilize unstable road prisms with rock buttressing and/or revegetating. (see road inventory for potential projects)

3. Improve road drainage to meet 100 year flood standard through proper culvert sizing and spacing.

4. Provide adequate drainage through proper road maintenance. Timing of maintenance is critical to meeting this objective (prior to fall and winter rains).

5. Maintain and manage for adequate numbers of large conifers in riparian reserves to promote slope stability along stream channels.

MEASUREMENT/MONITORING: Road and culvert inventories.

SUCCESS: Culverts adequate to meet 100 year flood standard. Fewer miles of road in riparian reserve, and in other areas with high cumulative impacts.

OBJECTIVE: REDUCE THE POTENTIAL RISK OF A RAIN-ON-SNOW OCCURRENCE BY REDUCING THE SUBSTANTIAL AMOUNT OF NON-RECOVERED OPENINGS IN THE TRANSIENT SNOW ZONE (3500-4500 ft).

RATIONALE: Non-recovered openings are areas where overstory trees have been harvested and roads or meadows that have an inadequate stand of vegetation to intercept and prevent a deep accumulation of snow. These areas of collected snow pack are at risk for producing flooded conditions if a rainstorm were to occur.

POSSIBLE ACTION:

1. Maintain adequate canopy cover (approx. 70% closure) for future harvest units in this elevation zone.

2. Upgrade road drainage to meet 100 year flood standard through proper culvert sizing and spacing to reduce impacts of flooding.

MEASUREMENT/MONITORING: Remote sensing and aerial photo interpretation to access if non-recovered openings are being revegetated. Road inventory.

SUCCESS: Adequate stand of vegetation (min. 70% canopy closure) to intercept and prevent a deep accumulation of snow.

AQUATIC

OBJECTIVE: IMPLEMENT ALL FACETS OF THE AQUATIC CONSERVATION STRATEGY AS OUTLINED IN THE ROD STANDARDS AND GUIDELINES (PG. B-11).

RATIONALE: To maintain and restore the aquatic and riparian ecosystems to provide for a variety of public values including; anadromous salmonid fisheries, wildlife, clean water and other intrinsic values associated with the aquatic and riparian ecosystems.

POSSIBLE ACTION:

1. Reduce the miles of road in riparian areas and prioritize their decommissioning according to road surface type and the stability of the surrounding soils and geology on which the roads were constructed. (This will come out of the Transportation Management Objective process.)

2. Eliminate or modify human created instream structures such as culverts and diversion dams to provide passage for multiple life stages of fish species.

3. Provide more water instream during base flow conditions by working with State Agencies and private land owners to reduce or eliminate water withdrawals from the lower portion of the watershed.

4. Encourage and promote beaver re-colonization in portions of the watershed which historically supported beaver populations (except where it does not create other resource risks, e.g. flooding roads or blocking culverts).

5. Protect all streams with Riparian Reserve widths as outlined in the ROD Standards and Guidelines (pg. C-30).

6. Maintain or provide 80% of the Riparian Reserve on BLM lands in the WAU in a late seral condition (i.e. > 80 years). This would include maintaining the remaining late successional riparian areas as unmanaged stands, while concentrating riparian restoration activities on younger stands to promote late seral conditions over a shorter time period. (Could specify priority areas during landscape design discussions.)

7. Inventory aquatic habitats to determine the watershed's condition with respect to these habitats and identify appropriate instream restoration locations to place cwd, etc. Work with private land owners to coordinate projects that would provide complete or nearly complete watershed restoration.

8. Modify the existing stream enhancement structures to more accurately reflect the dynamic instream processes which create diverse and stable aquatic habitats within the watershed.

MEASUREMENT/MONITORING: ODFW stream inventories repeated at regular intervals (minimum 10 years). Road and culvert inventories. Adult and juvenile fish surveys.

SUCCESS: Net reduction in miles of road in riparian reserve. All BLM culverts adequate to pass multiple life stages for various fish species. Overall increase in base water flow levels. Minimum 80% of the Riparian Reserve on BLM lands in a late seral condition, with ultimate goal of 100%. Instream enhancement structures functioning properly.

RIPARIAN

OBJECTIVE: MAINTAIN RIPARIAN RESERVE AREAS WHICH ARE IN PROPERLY FUNCTIONING CONDITION AND IMPROVE THE CONDITION OF THOSE RIPARIAN RESERVE AREAS WHICH ARE FUNCTIONING, AT RISK.

RATIONALE: In this watershed 43% of the total riparian miles are functioning, at risk. By increasing the number of stream reaches which are classified as properly functioning, the riparian zone will be more resilient, will provide higher water quality, and improve habitat for aquatic and terrestrial plant and animal species in the riparian reserve.

POSSIBLE ACTION:

1. Retain full riparian reserve areas to protect the aquatic community and riparian vegetation especially where potential and down woody debris are inadequate.

2. Promote the development of large diameter trees where lacking within the riparian reserve through site specific prescriptions to provide a continuous source of coarse woody debris to the system.

3. Add woody debris to stream systems where lacking to enhance habitat diversity.

4. Watershed and Riparian Restoration:

   - Import woody debris to achieve a range of 80 to 180 pieces of all size material with particular emphasis on coarse woody debris which will enhance stream complexity on reaches identified as deficient to improve the functioning condition from Functioning at Risk to Proper Functioning Condition and meet multiple biological and physical objectives.

   - Implement riparian silviculture projects to promote increased growth rates of conifer trees in areas where long term recruitment is deficient.

- Decommission or obliterate old spur roads, unneeded roads and landings within the riparian reserve.

- Protect a small population of beaver.

5. Revegetate road cutbanks and other disturbed areas to reduce soil erosion, increase organic material and increase shading.

MONITORING/MEASUREMENT: Continuing stream/riparian surveys.

SUCCESS: Increase in the amount of miles that are in proper functioning condition. Reduction in the number of miles of road within riparian reserves.

SOCIAL

OBJECTIVE: Provide for a sustainable harvest of forest commodities including timber, firewood, mushrooms, burls, etc, and other social values including recreation, aesthetics, etc. to contribute to the economic stability of the local economy.

RATIONALE: Part of BLM's mission is to manage public lands by providing a balance of resource management which contribute to society's needs of a sustainable level of available forest products, contributing to a stable local economy while meeting other objectives of protecting natural resources by providing a diverse and resilient ecosystem.

POSSIBLE ACTION:

1. Areas where harvest activities will help meet other resource objectives will be given priority consideration for treatment.

Actions in these areas will be designed to:

- reduce high fire risk and intensity
- promote LSR characteristics
- improve stability within watershed by reducing early & mid-seral stages to natural levels
- protect residences by reducing fuel loading and density
- improve forest health

2. Also refer to vegetation objectives.

MONITORING/MEASUREMENT: Tracking use through permit records and contracts and other inventories.

SUCCESS: Maintaining a supply of forest commodities while meeting other resource objectives.

VII. PLANS CONFORMANCE

See Appendix G for a more complete description.

CONSISTENCY WITH NORTHWEST FOREST PLAN RECORD OF DECISION AND MEDFORD DISTRICT RESOURCE MANAGEMENT PLAN

The East Evans Creek watershed analysis conforms with the implementation of the Northwest Forest Plan ROD for the management of public lands west of the Cascades. The watershed analysis provides strategic planning for the watershed and allows for more refined planning at the project level. Other federal statutes such as the Multiple-Use Sustained-Yield Act, the Endangered Species Act, the Federal Land Policy and Management Act, the National Environmental Policy Act, the Clean Water Act and other federal statutes outline procedures and principals to follow in federal public land planning (see Page 39, ROD).

The FSEIS analyzed a broad range of environmental effects in 10 alternatives for managing the natural resources on federal lands west of the Cascade Mountains. The ROD selected alternative 9 for implementation.

CONSISTENCY WITH MEDFORD DISTRICT RMP

The East Evans Creek watershed analysis incorporates the land management planning objectives of the Medford District Resource Management Plan, Record of Decision (ROD) dated April 14, 1995.

Below is a list of notable resource values and landscapes with additional management constraints applied through the RMP process specific to the East Evans Creek watershed.

> Fragile, nonsuitable woodlands will not be available for timber harvest and other surface disturbing activities will be prohibited unless adequately mitigated to maintain site productivity and protect water quality.
>
> Surface-disturbing activities will be limited on all lands dominated by fragile granitic, schist, and pyroclastic soils to maintain site productivity, reduce soil erosion, and minimize water quality degradation. Restrictions to meet objectives could include, but are not limited to, no facility construction, shelterwood retention harvest systems, minimal impact or no road construction and minimal impact rights-of-way disturbance, no tractor yarding, seasonal restrictions on surface disturbing activities, and only broadcast burning

when cool burns could be assured. Cutslopes, ditchlines, and fill slopes will be stabilized where appropriate on roads that are to remain open for public and administrative use.

Sprignett Creek watershed is deferred from timber harvest for ten years, due to cumulative effects (RMP 2-25).

VIII. PUBLIC INVOLVEMENT SUMMARY

A letter was sent to local residents notifying them that watershed analysis was beginning in the East Evans Creek watershed and requesting input. Only one response was received, with no specific input, but a request to be kept on the mailing list.

APPENDIX

APPENDIX A. SOILS

The western half of the WAU is dominated by a metamorphosed volcanic rock, a Jurassic (154 million years) amphibolite. The amphibolite is thrust over the Jurassic aged May Creek Schist to the east. A fluvial sandstone formation occupies the eastern and southern portion of the watershed; the Eocene Payne Cliffs Formation is characterized by conglomerate, sandstone, siltstone, mudstone, and coal seams (Wiley,1993). Lower Oligocene to upper Eocene volcanic and volcano genic rocks, including mudflows, occur in the eastern and southern portion of the watershed. Isolated bodies of the lower Oligocene Tuff of Bond Creek occur in the south east corner of the watershed. Serpentinite exists near the thrust fault in the northern and southern portion of the watershed.

Tertiary dikes and intrusive bodies are locally found in the northeastern portion of the watershed. The extreme northern portion of the watershed may include Cretaceous and Jurassic intrusive rocks similar to the White Rock Pluton. Holocene and Pleistocene landslide deposits occur throughout the watershed, particularly within the Payne Cliffs Formation, and along fault zones.

A small pod of massive chromite occurs in the serpentinite in the southern potion of the watershed; a mining claim exists at this site. A uranium claim in the Bond Creek Tuff occurs in the south east corner of the watershed. Northwest of Round Top Mountain a copper and zinc claim exists in the amphibolite. Northeast of Chapman Creek an andesite claim exists.

APPENDIX B. NOXIOUS/NONNATIVE WEEDS - EAST FORK OF EVANS CREEK WAU

NOXIOUS WEEDS - WEST FORK OF EVANS CREEK WAU

GENUS/SPECIES	COMMON NAME	LOCATION	HABITAT	NOTES
Carthanus lanatus	Distaff Thistle	Douglas CO, Riddle		New Invader. Highest Priority
Centaura diffusa	Diffuse knapweed	Blackwell Hill/Rt 140-Greensprings Rd.	roadsides/ dry sites	High Priority. Small infestations. Manual or biological controls.
Centaurea maculosa	Spotted Knapweed	Butte Falls Progeny site.	good soils/disturbed areas	New invader. Highest priority. Herbicide control.
	Purple/Iberian Starthistle	No known locations in OR. Prevalent in Northern Cal.		New Invader.
Centaurea solstitialis	Yellow starthistle	Scattered populations/valley bottoms. Jackson, Josephine, Douglas Co.	Wide range-roadways/ dry sites. West Fork of Evans Cr. Road	High priority. Bio-control measures. Seeds.
Chondrilla juncea	Rush skeletonweed	Scattered locations. rather common. Douglas, Josephine Co.	Disturbed areas/ roadways.	Bio-control - Mite/midges/ rust. Seed & roots.
Cirsium arvense	Canada Thistle	Everywhere. Perennial	Wide range of conditions	Bio-control. Low effectiveness (Urophora carduii). Seeds/roots
Cirsium vulgare	Bull Thistle	Most clearcuts	Wide range of conditions	Bio-control (Urophora stylata) Insects available in May. Seed producer.
Cytisus sp	Spanish Broom	Rogue River and Ashland.		New Invader. No leaf. No bio-control agents.
Cytisus sp	French Broom	Cow Cr area.		New Invader. Larger leaf sp.
Cytisus scoparius	Scotch broom	West Fork of Evans Cr.	Good soils/ disturbed area	Biological control. Roadways/seed producer. 3 Million acres.

GENUS/SPECIES	COMMON NAME	LOCATION	HABITAT	NOTES
Euphorbia esula	Leafy spurge	No known sites.	Streams/ open areas	High priority. New invader. Seed producer/roots
Hypercium perferatum	Klamath Weed	ery common. All drainages.	Wide range of conditions.	Low priority. Bio-control -very effective. (Chrysallina Beetle).
Isatis tinctoria	Dyers woad	Gravel bars. Jackson/ Josephine Co.	Sandy/gravel soils.	Low priority. Seeds.
Lythrum salicaria	Purple loosestrife	No known sites. S.Umpqua/ Rogue River.	Riparian/ wetlands.	New species. Bio-control. No chemical control. Seed/rhizomes
Senecio jacobaea	Tansy ragwort	Fringe of Range. Jackson, Josephine, Douglas Co.	Wide range of soils.	Moderate priority. Effective Bio-control. (Cinnabar moths/ Flea beetle) /seeds.
Taeniatherum caput-medusae	Medusahead rye	Everywhere.	Pasture/open forest	Low priority. Seed producer.

APPENDIX C. EAST EVANS CREEK SPECIAL STATUS SPECIES OCCURRENCE & HABITAT

U.S. FISH & WILDLIFE T&E SPECIES					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Peregrine falcon	FE, SE, 1	Y	A	Absent	Limited
Bald eagle	FT, ST, 1	Y	A	Low	Limited
Northern spotted owl	FT, ST, 1	Y	P	High	Thorough

U.S. FISH & WILDLIFE SPECIES of CONCERN (SoC)					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Spotted frog	C→, SC , BS, 1	N	A	Low	None
Cascade frog	SoC, SV, 3	N	A	Low	None
Foothill yellow legged frog	SoC, SV, 3	Y	U	Meduim	None
No. red legged frog	SoC, SU, 3	Y	U	Low	None
Tailed Frog	SoC, SV, 3	Y	U	Medium	None
Northwestern pond turtle	SoC, SC, 2	Y	U	Medium	Limited
Little willow flycatcher	SoC, 1	Y	U	Los	None
Northern goshawk	SoC, SC, 3	Y	U	Meduim	None
Tricolored blackbird	SoC, SP, 2	N	A	Low	None
Western burrowing owl	SoC, SC, 3	N	A	Low	None
Fringed myotis	SoC, SV, BS, SM, 3	Y	U	Meduim	Limited
Long eared myotis	SoC, SU, SM, 3	Y	Y	Meduim	Limited
Long legged myotis	SoC, SU, SM, 3	Y	U	Meduim	Limited
Townsend's big eared bat	SoC, SC, 2	Y	Y	Low	Limited
Yuma myotis	SoC, SU, 3	Y	U	Low	Limited
Pacific fisher	SoC, SC, 2	Y	U	Low	Limited

SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
California wolverine	SoC, ST, 2	Y	U	Low	None
Coho salmon	PT, SC, 1	Y	P	Low	Thorough
Klamath Mt. steelhead trout	PT, 1	Y	P	Low	Thorough
Pacific lamprey	SoC, SV, 3	Y	U	Low	None
Burnell's False Water Penny Beetle	SoC, 4	UNK	U	Meduim	None
Denning's Agapetus caddisfly	SoC, 3	UNK	U	Meduim	None
Green springs Mt. faurlan caddisfly	SoC, 3	UNK	U	Meduim	None
Schuh's homoplectran caddisfly	SoC, 3	UNK	U	Meduim	None
Siskiyou caddisfly	SoC, 3	UNK	U	Medium	None
Siskiyou chloealtis grasshopper	SoC, 3	UNK	U	Low	None
Mardon skipper butterfly	SoC, 2	UNK	U	Low	None
Franklin's bumblebee	SoC, 4	UNK	U	Low	None

OTHER (ODFW AND BLM) SPECIAL STATUS SPECIES					
SPECIES	STATUS	RANGE	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Clouded salamander	SU, BS, 3	Y	U	High	None
Western toad	SV, 3	Y	U	Medium	Limited
California mt. kingsnake	SP, AS, 3	Y	U	Low	None
Common kingsnake	SP,AS, 3	Y	U	Low	None
Sharptail snake	SV, AS, 4	Y	U	Low	None
Black backed woodpecker	SC, AS, 3	Y	U	Medium	None
Flammulated owl	SC, AS, 4	Y	S	Low	Limited
Grasshopper sparrow	SV, 3	Y	U	Low	None
Great gray owl	SV, AS, SM, 4	Y	S	Low	None
Greater sandhill crane	SV, 4	N	A	Low	None
Lewis' woodpecker	SC, AS, 3	Y	U	Medium	None
Northern pygmy owl	SU, 4	Y	S	Medium	Incidental

SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Northern saw whet owl	AS	Y	S	Medium	Incidental
Oregon vesper sparrow (w. interior valleys only)	SC, 3	Y	U	Low	None
Pileated woodpecker	SV, AS, 4	Y	P	Meduim	Incidental
Pygmy nuthatch	SV, 4	N	A	Low	None
Red-necked grebe	SC, 2	Y	A	Low	None
Three-toed woodpecker	SC, AS, 4	Y	U	Low	None
Western bluebird	SV, AS, 4	Y	U	Low	None
White headed woodpecker	SC, 3	N	A	Low	None
Red tree vole	BS, SM	Y	U	Medium	None
Western gray squirrel	SU, 3	Y	P	Medium	None
Pacific pallid bat	SV, AS, SM, 3	Y	Y	Meduim	Limited
Silver haired bat	SU, SM, 3	Y	Y	Medium	None
American marten	SV, AS, 3	Y	U	Low	None
Ringtail	SU, 3	Y	U	Low	None

Status:

FE - USFW Endangered - in danger of extinction throughout a significant portion of its range

FT - USFW Threatened - likely to become endangered species within the foreseeable future

SoC - USFW Species of Concern (formerly Federal Candidate 1, 2, 3) -under consideration for listing, but additional information is needed to support a proposal to list under the Endangered Species Act

C- - Federal candidate which is likely to become an SoC when new USFW review is completed

PE - Proposed endangered by National Marine Fisheries Service (NMFS)

PT - Proposed threatened by NMFS

SE - State Endangered - in danger of extinction in the state of Oregon

ST - State Threatened - listed as likely to become endangered by the state of Oregon

SC - State Critical - listing is pending, or appropriate, if immediate conservation action not taken

SV - State Vulnerable - listing not imminent, and can be avoided through continued or expanded use of adequate protective measures and monitoring

SP - State Peripheral or naturally rare - populations at the edge of their geographic range, or historically low umbers due to limiting factors

SU - State Unknown - status unclear, insufficient information to document decline or vulnerability

SM - Survey & Manage - Forest plan ROD directs protection of known sites and/or survey for new sites

BS - Bureau Sensitive (BLM) - eligible for addition to Federal Notice of Review, and known in advance of official publication. Generally these species are restricted in range and have natural or human caused threats to their survival.

AS - Assessment Species (BLM) - not presently eligible for official federal or state status, but of concern which may at a minimum need protection or mitigation in BLM activities.

1 - Oregon Natural Heritage Rank, critically imperiled throughout its range

2 - Oregon Natural Heritage Rank, imperiled throughout its range

3 - Oregon Natural Heritage Rank, not rare, threatened throughout its range

4 - Oregon Natural Heritage Rank, not rare, apparently secure throughout its range

P/A Presence:

P - Present

S - Suspected

U - Uncertain

A - Absent

T - Possibly transitory

Habitat quality:

H - High

M - Medium

L - Low

A - Absent

SPECIAL STATUS WILDLIFE SPECIES–1996
HABITAT AND OCCURRENCE IN THE BUTTE FALLS RESOURCE AREA

THREATENED AND ENDANGERED SPECIES

Peregrine falcon (Falco peregrinus)

Primary habitat is tall cliffs. Two confirmed active sites occur in the Medford district. Occasional sightings are made during the winter months, but these are thought to be migrating individuals. Forest lands provide habitat for prey species for peregrine falcons. Prey is mostly birds, especially doves and pigeons. Peregrines also prey on shorebirds, waterfowl, and passerine birds.

American bald eagle (Haliaeetus leucocephalus)

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

Northern spotted owl (Strix occidentalis caurina)

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

FEDERAL SPECIES of CONCERN (SoC)

Spotted frog (Rana prettiosa)

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

Cascade frog (Rana cascade)

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

Foothill yellow legged frog (Rana Boylii)

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

Northern red legged frog (Rana aurora)

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

Tailed frog (Ascaphus truei)

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

Northwestern pond turtle (Clemmys marmorata marmorata)

Live in most types of freshwater environments with abundant aquatic vegetation, basking spots, and terrestrial surroundings for nesting and over-wintering. Some northwestern pond turtles leave water in late October to mid-November to overwinter on land. They may travel up to 1/4 mile from water, bury themselves in duff and remain dormant throughout winter. Turtles have been found to generally stay in one place in areas with heavy snowpack, but may move up to 5-6 times in a winter in areas with little or no snow. General habitat characteristics of overwintering areas appear to be broad. There may be specific microhabitat requirements, which are poorly understood at this time.

In many areas, predation on the hatchlings and competition from bullfrogs, bass, and other exotic species is limiting population levels. Adult turtles are relatively long lived, but as the adults age, recruitment is not occurring at levels which can maintain future healthy populations.

Little willow flycatcher (Empidonax trailii brewsteri)

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

Northern goshawk (Accipiter gentilis)

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

Tricolored blackbird (Agelaius tricolor)

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

Western burrowing owl (Speotyto cunicularia)

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

Fringed myotis bat (Myotis thysanodes)

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

Long eared myotis (Myotis evotis)

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

Long legged myotis (Myotis volans)

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

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

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

Yuma myotis (Myotis Yumanensis)

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

Fisher (Martes pennanti pacifica)

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

California wolverine (Gulo gulo luteus)

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

Coho salmon (Oncorhynchus kisutch)

Coho are present in most of the larger lower elevation rivers and larger perennial streams on the district.

Summer and winter steelhead trout (Oncorhynchus mykiss)

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

Pacific lamprey (Lampetra tridentata)

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

Burnell's false water penny beetle (Acneus burnelli)

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

Denning's agapetus caddisfly (Agapetus denningi)

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

Green springs Mt. farulan caddisfly (Farula davisi)

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

Schuh's homoplectran caddisfly (Homoplectra schuhi)

Larvae are found in spring-seepage habitats in forested montane areas. Homoplectra sp. are found in streams with moderate to close shading from a forest canopy with most sites having a mixed deciduous-conifer canopy. The distribution of the species appears to be limited with specimens found in the Cascade and Coast range mountains of southwestern Oregon and northern California, where suitable habitat is found.

Siskiyou caddisfly (Tinodes siskiyou)

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

Siskiyou chloealtis grasshopper (Chloealtis aspasma)

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

Mardon skipper butterfly (Polites mardon)

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

Franklin's bumblebee (Bombus franklini)

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

OREGON STATE SENSITIVE SPECIES

Clouded salamander (Aneides ferreus)

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

Western toad (Bufo boreas)

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

California mountain kingsnake (Lampropeltis zonata)

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

Common kingsnake (Lampropeltis getulus)

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

Sharptail snake (Contia tenuis)

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

Black-backed woodpecker (Picoides arcticus)

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

Flammulated owl (Otus flammeolus)

Habitat is a mosaic of open forests containing mature or old-growth ponderosa pine mixed with other tree species. In California, habitat included conifer and black oak. Nests mainly have been located in abandoned

Northern flicker or pileated woodpecker cavities. The presence of dense conifers for roosting may be a necessary habitat components. Feeds mostly on insects. May also eat other arthropods and small vertebrates.

Grasshopper sparrow (Ammodramus savannarum)

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

Great gray owl (Strix nebulosa)

Habitat preference is open forest or forest with adjoining deep-soil meadows. Nest in broken top trees, abandoned raptor nests, mistletoe clumps, and other platforms created by whorls of branches. Majority of nests in one study were in over-mature or remnant stands of Douglas fir and grand fir forest types on north facing slopes. Probably found in low densities across the district.

Greater sandhill crane (Grus canadensis tabida)

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

Lewis' woodpecker (Melanerpes lewis)

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

Northern pygmy owl (Glaucidium gnoma)

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

Northern saw-whet owl (Aegolius acadicus)

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

Oregon vesper sparrow (Pooecetes gramineus) Western Interior Valleys Only

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

Pileated woodpecker (Dryocopus pileatus)

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

Pygmy nuthatch (Sitta pygmaea)

Habitat is mature and old growth ponderosa pine, especially open stands with less than 70% canopy. The birds will forage in young ponderosa pines. It nests and roosts in cavities more than 20 feet from the ground that are located in large dead or decaying ponderosa pines which usually exceed 20 inches dbh. It excavates

its own nest cavities which are often started in a fissure in a soft snag. Found in the Cascade mountains. Pygmy nuthatch populations drop significantly with timber harvest and snag removal.

Three toed woodpecker (Picoides tridactylus)

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

Western bluebird (Sialia mexicana)

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

White headed woodpecker (Picoides albolarvatus)

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

California red tree vole (Arborimus pomo)

An arboreal vole which lives in Douglas fir, spruce, and hemlock forests. Food consists entirely of needles of the tree in which they are living. They build a bulky nest, up to the size of a half bushel measure in the branches, usually near the trunk, 15-100 feet above the ground. The nest becomes larger with age, and may be occupied by many generations.

Western gray squirrel (Sciurus griseus)

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

Pallid bat (Antrozous pallidus)

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

Silver-haired bat (Lasionycteris noctivagans)

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

American martin (Martes americana)

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

Ringtail (Bassariscus astutus)

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

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APPENDIX D. Northern spotted owl habitat within WAU boundary

*MSNO	PR/ S	Acres Hab 1 (1.3 mi)	Acres Hab 2 (1.3 mi)	Acres Hab 1 (.7 mi)	Acres Hab 2 (.7 mi)
0952	PR	302	164	58	55
1827	PR	274	142	66	37
+2356	PR	85	45	0	8
3258	PR	407	245	139	30
3261	PR	33	548	0	258
4030	PR	63	74	0	0
4031	PR	362	245	65	119
4033	S	28	247	27	27
4034	S	45	592	58	324

*Master site identification number
+Located on private lands, 70 acre activity center will be maintained
Pr = pair
S = Single
Hab 1 provides nesting, roosting, foraging habitat
Hab 2 provides roosting, foraging habitat

APPENDIX E. EAST EVANS WATER DEVELOPMENTS

NAME	LOCATION	CONDITION/ REMARKS	WATER RIGHT PENDING/NO.
Angel Camp Pump Chance	T33S, 3W, Sec 1	Good	Yes/284
Cleveland Ridge #1 (Lower pump chance)	T33S, R2W, Sec 17	Needs some reconstruction	Yes/385
Gracile Pond	T32S, R2W, Sec 33	Natural pond	No
Headwaters Pump Chance	T32S, R2W, Sec 33	Outlet needs cleaning	Yes/370
Musty Creek Road Pump Chance	T33S, R2W, Sec 29	Point of diversion needs reconstruction	Yes/211
Railroad Gap Pump Chance	T32S, R2W, Sec 33	Good	Yes/355
Round Top Helipond	T33S, R2W, Sec 19	Needs some reconstruction and road work to access site	Yes/215
South Round Top Pump Chance	T33S, R2W, Sec 29	Needs brushed around PC	Yes/354

Appendix F. Fish Species Likely to Occur Within the East Fork Evans Creek WAU

Common Name	Scientific Name
Coho Salmon	*Oncorhynchus kisutch*
Steelhead Trout	*Oncorhynchus mykiss*
Cutthroat Trout	*Oncorhynchus clarki*
Pacific Lamprey	*Lampetra tridentata*
Umpqua Squawfish	*Ptychocheilus umpquae*
Klamath Smallscale Sucker	*Catostomus rimiculus*
Prickly Sculpin	*Cottus asper*
Reticulate Sculpin	*Cottus perplexus*
Redside Shiner	*Richardsonius balteatus*
Speckled Dace	*Rhinicthys osculus*

APPENDIX G. PLANS CONFORMANCE

The following is a brief summary of some key guidelines from the Record of Decision and the Medford District Resource Management Plan that shape the analysis. These documents allow for flexibility in adjusting some parameters after a thorough watershed analysis has been completed and site specific information applied to integrated resource management objectives. Many of these points are discussed in length within the context of the resource specific discussion. The Record of Decision and the Medford District Resource Management Plan provide complete information.

1. **Riparian Reserve:** Riparian reserves parallel intermittent and perennial stream, wetlands and water bodies. The reserve area extends beyond the areas necessary for maintaining hydrologic, geomorphic, and ecological processes and is designed to accommodate the survival of riparian dependent plant and animal species and function as a biological corridor. In general the widths are defined as follows:

   A. Fish bearing streams - minimum width equal to 2 site potential tree heights, or 300 ft., whichever is greater.

   B. Permanent flowing non fish-bearing streams - 1 site tree height or 150 ft., whichever is greater.

   C. Intermittent streams - 1 site potential tree height or 100 ft., whichever is greater.

   D. Constructed ponds and reservoirs - 1 site potential tree height or 150 ft, whichever is greater.

   E. Lakes and natural ponds - 2 site potential tree height or 300 ft, whichever is greater.

   Salvage of dead trees in RMAs will only be allowed when coarse woody debris requirements are met and other riparian objectives are not adversely affected. (see C-30, Record of Decision)

2. **Owl Activity Centers:** The 100 acre core areas around owl activity centers (known and mapped in BLM Geographical Information System (GIS) as of January 1, 1994) are to be managed as Late Successional Reserves. No new owl activity centers are to be added even if new ones are discovered and no existing centers are to be deleted if owls abandon the site. In other words, these are fixed sites that are to be managed for the benefit of a variety of old-growth associated species. However, in the course of consultation with U.S. Fish and Wildlife Service, new owl cores will be protected with seasonal restrictions (see Page C-10, ROD).

3. **Green Tree Retention Guidelines:**

A. Northern General Forest Management Areas (GFMA): Leave a minimum of 6 to 8 green trees per acre in harvest units. (Frost Zones require a minimum of 12 to 25 trees per acre.) There is no spacing or clumping requirements for leave trees.

B. Connectivity/Diversity (C/D) Blocks in the Northern GFMA: C/D blocks established in 1993. Manage in 150 year old rotation, retain a minimum of 12 to 18 green trees per acre in harvest units, and 25 to 30 percent of each C/D block must be in a late successional forest condition at any point in time.

C. Southern GFMA: Leave a minimum of 16 to 25 large green trees per acre in harvest units.

4. **Snag Retention Guidelines:** Retain snags, live cull trees, and green merchantable trees to provide a minimum of approximately 40 percent of optimum primary excavator population needs. The RMP states that this generally corresponds to 180 snags greater than 16" dbh per 100 acres (see Page C-41, ROD).

Green tree retention requirements can be used to meet long term (greater than three decades) snag requirements. However, sufficient snags must be left on site at the time of harvest to meet short term (less than three decades) snag requirements.

5. **Coarse Woody Debris:** The objective is to meet the needs of species dependant upon this ecosystem niche and maintain and provide for a well distributed and continuous supply of down logs as a natural ecological function. Interim guidelines are a minimum of 120 linear feet of logs per acre, greater than 16 ft. long and 16" in diameter (see Page C-40, ROD).

6. **Protect Remaining Late Successional Stands in 5th Field Watersheds:** The definition of 5th field watersheds equals the East Evans Creek analytical watershed. This includes national forest land where appropriate. The guideline is to retain at least 15 percent of federal land within an analytical watershed in a late successional condition at any point in time. All land allocations (RMAs reserves, LSR, recreation sites, etc.) are to be used when calculating the 15 percent. Late successional stands include mature and old-growth stands which are 80+ years old.

7. **Others:** Other important management guidelines apply to operations within the watershed. Some of the main resource management guidelines include the Aquatic Conservation Strategy, survey and manage species requirements, matrix land management, protection of wildlife habitat, special status plants and animals, protection of soil and litter-dwelling organisms, mining, grazing, recreation, multiple-use activities, research, monitoring, etc. Additional information concerning management guidelines is found in the Northwest Forest Plan, Record of Decision and the Medford

District Resource Management Plan.

8. **Salvage:** Salvage must meet the guidelines and objectives for the land use allocation where the salvage activity will occur. Coarse woody debris,snags and green tree retention minimums must be met (see Page C-13, ROD).

9. **Fire:** Prescribed burning must adhere to smoke management and air quality guidelines (see Page C-48, ROD).

Appendix X.

Periodicity Chart Showing Upstream Migration Timing of Adult Anadromous Salmonids in the East Fork Evans Creek WAU

Species	January	February	March	April	May	June	July	August	September	October	November	December
Coho Salmon												
Winter Steelhead Trout												
Summer Steelhead Trout												

Adults Instream

Periodicity Chart Showing Juvenile Anadromous Salmonid Outmigration Timing in the East Fork Evans Creek WAU

Species	January	February	March	April	May	June	July	August	September	October	November	December
Coho Salmon												
Winter Steelhead Trout												
Summer Steelhead Trout												

Juveniles outmigrating

** Rearing juveniles are found throughout the year.

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GLOSSARY

GLOSSARY OF TERMS

Adit - A horizontal entrance to a mine

Analytical Watershed - For planning purposes, a drainage basin subdivision of the planning area used for analyzing cumulative impacts on resources.

Anadromous Fish - Fish that migrate as adults from the ocean into fresh water streams to reproduce young that return to the ocean to grow to maturity.

Animal Unit Month (AUM) - The amount of forage necessary for the sustenance of one cow or its equivalent for one month.

Big Game - Large mammals that are hunted, such as Roosevelt elk, black-tailed deer, and black bear.

Biological Diversity - The variety of life and its processes.

Biological Legacies - Components of the forest stand (e.g., large trees, down logs, and snags) reserved from harvest to maintain site productivity and to provide structure and ecological functions in subsequent forest stands.

Broadcast Burning - A controlled fire that burns within defined boundaries to achieve management objectives.

Bureau Assessment Species - Plant and animal species on List 2 of the Oregon Natural Heritage Data Base, or those species on the Oregon List of Sensitive Wildlife Species (OAR 635-100-040), which are identified in BLM Instruction Memo No. OR-91-57, and are not included as federal candidate, state listed, or Bureau-sensitive species.

Bureau-Sensitive Species - Plant or animal species eligible for federal listed, federal candidate, state listed, or state candidate (plant) status, or on List 1 in the Oregon Natural Heritage Data Base, or approved for this category by the State Director.

Cambial - A layer of cells in the stems and roots of vascular plants that generates phloem and xylem.

Candidate Species - Those plants and animals included in Federal Register "Notices of Review" that are being considered by the Fish and Wildlife Service (FWS) for listing as threatened or endangered. There are two categories that are of primary concern to BLM. These are:

> Category 1. Taxa for which the FWS has substantial information on hand to support proposing the species for listing as threatened or endangered. Listing proposals are either being prepared or have been delayed by higher priority listing work.
>
> Category 2. Taxa for which the FWS has information to indicate that listing is possibly appropriate. Additional information is being collected.

Cavity Dependent Species - Birds and animals dependent on snags for nesting, roosting, or foraging habitat.

Cavity Excavator - A wildlife species that digs or chips out cavities in wood to provide a nesting, roosting, or foraging site.

Cavity Nester - A wildlife species that nests in cavities.

Climax Plant Community - The theoretical, final stable, self-sustaining, and self reproducing state of plant community development that culminates plant succession on any given site. Given a long period of time between disturbances, plant associations on similar sites under similar climatic conditions would approach the same species mixture and structure.

Under natural conditions, disturbance events of various intensities and frequencies result in succession usually culminating as sub-climax with the theoretical end point occurring rarely if at all.

Commodity Resources - Goods or products of economic use or value.

Community Stability - The capacity of a community (incorporated town or county) to absorb and cope with change without major hardship to institutions or groups within the community.

Concern - A topic of management or public interest that is not well enough defined to become a planning issue, or does not involve controversy or dispute over resource management activities or land use allocations or lend itself to designating land use alternatives. A concern may be addressed in analysis, background documents, or procedures or in a noncontroversial decision.

Connectivity - Habitat that provides components of older forest characteristics for spotted owl dispersal and other species' natural habitats.

Consistency - Under the Federal Land Policy and Management Act, the adherence of BLM resource management plans to the terms, conditions, and decisions of officially approved and adopted resource related plans, or in their absence, with policies and programs of other federal agencies, state and local governments and Indian tribes, so long as the plans are also consistent with the purposes, policies, and programs of federal laws and regulations applicable to BLM-administered lands. Under the Coastal Zone Management Act, the adherence to approved state management programs to the maximum extent practicable, of federal agency activities affecting the defined coastal zone.

Core Area - That area of habitat essential in the breeding, nesting, and rearing of young up to the point of dispersal of the young.

Corridors - Provides routes between similar seral stages or vegetative types, corridors may include roads, riparian areas, powerlines, timber.

Cover - Vegetation used by wildlife for protection from predators to mitigate weather conditions or to reproduce.

Critical Habitat - (1) Specific areas within the geographic area occupied by a threatened or endangered species at the time it is listed. These areas must have physical or biological features essential to the conservation of the species and which may require special management considerations or protection. (2) Specific areas outside the geographical area occupied by a threatened or endangered species at the time it is listed determined by the Secretary to be essential for the conservation of the species.

Crucial Habitat - Habitat that is basic to maintaining viable populations of fish or wildlife during certain seasons of the year or specific reproduction periods.

Cull - A tree or log that does not meet merchantable specifications.

Cultural Resource - Any definite location of past human activity identifiable through field survey, historical documentation, or oral evidence; includes archaeological or architectural sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains.

Cumulative Effect - The impact which results from identified actions when they are added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Density Management - Cutting of trees for the primary purpose of widening their spacing so that growth of remaining trees can be accelerated. Density management harvest can also be used to improve forest health, to open the forest canopy, or to accelerate the attainment of old growth characteristics if maintenance or restoration of biological diversity is the objective.

Diameter At Breast Height (dbh) - The diameter of a tree 4.5 feet above the ground.

Dispersed Recreation - Outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are primarily for access and protection of the environment rather than comfort or convenience of the user.

Early Seral Stage - See Seral Stages.

Economically Feasible - Having costs and revenues with a present net value greater than zero.

Ecosystem - An interacting natural system including living organisms and the nonliving environment. Ecosystems may vary in size. For example, the community of microorganisms in water, the lake which contains the water, the watershed the lake resides in, and the mountain range containing the watershed.

Edge Effect - An ecologically important biological effect that occurs in the transition zone where two plant communities or successional stages meet and mix.

Endangered Species - Any species defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

Endemic - belonging to or native to.

Environmental Impact - The positive or negative effect of any action upon a given area or resource.

Environmental Impact Statement (EIS) - A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action.

Exotic Plants - Plants that are foreign to the watershed, not native.

Forest Health - A condition which expresses the forest's relative ability to remain productive, resilient, and dynamically stable over time and to withstand the effects of periodic natural or man-caused stresses such as drought, insect attack, climatic change and changes in management practice and resource demands.

Fragile Nonsuitable - A Timber Production Capability Classification indicating forestland having fragile conditions, which if harvested, would result in reduced future productivity even if special harvest or restrictive measures are applied. These fragile conditions are related to soils, geologic structure, topography, and ground water.

Green Tree Retention - A stand management practice in which live trees as well as snags and large down wood are left as biological legacies within harvest units to provide habitat components over the next management cycle.

High Level - A regeneration harvest designed to retain the highest level of live trees possible while still providing enough disturbance to allow regeneration and growth of the naturally occurring mixture of tree species. Such harvest should allow for the regeneration of intolerant and tolerant species. Harvest design would also retain cover and structural features necessary to provide foraging and dispersal habitat for mature and old growth dependant species.

Low Level - A regeneration harvest designed to retain only enough green trees and other structural components (snag, coarse woody debris, etc.) to result in the development of stands that meet old growth definitions within 100 to 120 years after harvest entry, considering overstory mortality.

Hiding Cover - Generally, any vegetation used by wildlife for security or to escape from danger. More specifically, any vegetation capable of providing concealment (e.g., hiding 90 percent of an animal) from human view at a distance of 200 feet or less.

Home Range - The area an animal traverses in the scope of normal activities; not to be confused with territory which is the area an animal defends.

Impact - A spatial or temporal change in the environment caused by human activity.

Indigenous - Living or occurring naturally in a specific area or environment.

Intermittent Stream - A stream that flows most of the time but occasionally is dry or reduced to pools.

Landscape - An area composed of interacting ecosystems that are repeated because of geology, landforms, soils, vegetation, climate, and human influences.

LEO - Landscape Analysis Unit.

Landscape Management - The application of ecosystem management practices to the specific area affected by the PRMP.

Late Seral Stage - See Seral Stages.

Late Successional Reserve - A forest in its mature and/or old growth stages that has been reserved.

Lode mining - Mining an ore vein deposit.

Long-Term - The period starting 10 years following implementation of the Resource Management Plan. For most analyses, long-term impacts are defined as those existing 100 years after implementation.

Matrix - "the most connected portion of the landscape". It is generally the predominant vegetative type and therefore exerts the strongest control over the movement of living and non-living things across the landscape (fire, wind, plants, animals, people). The matrix affects the rate at which various disturbances move through the landscape.
Mature Seral Stage - See Seral Stages.

Mid-Seral Stage - See Seral Stages.

Multi-layered Canopy - Forest stands with two or more distinct tree layers in the canopy; also called multi-storied stands.

Neotropical Migrants - A wide variety of bird species, which breed in temperate North America but migrate to tropical habitats in Central and South America during winter.

Nonsuitable Woodland - All fragile nonsuitable forestland.

Noxious Plant - A plant specified by law as being especially undesirable, troublesome, and difficult to control.

Noxious Weed - See Noxious Plant.

Oak savanna - A grassland with an open and often sparse canopy of oak trees

Off-Highway Vehicle (OHV) - Any motorized track or wheeled vehicle designed for cross country travel over natural terrain.

Off-Highway Vehicle Designation-

> Open: Designated areas and trails where off-highway vehicles may be operated subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343.
>
> Limited: Designated areas and trails where off-highway vehicles are subject to restrictions limiting the number or types of vehicles, date, and time of use; limited to existing or designated roads and trails.
>
> Closed: Areas and trails where the use of off-highway vehicles is permanently or temporarily prohibited. Emergency use is allowed.

Old-Growth Seral Stage - See Seral Stages.

Patches - Patches are distinct areas different than the general landscape around them.

Peak Flow - The highest amount of stream or river flow occurring in a year or from a single storm event.

Perennial Stream - A stream that has running water on a year round basis.

Plant Association - A plant community type based on land management potential, successional patterns, and species composition.

Plant Community - An association of plants of various species found growing together in different areas with similar site characteristics.

Prescribed Fire - Introduction of fire under controlled conditions for management purposes.

Raptor - Any of the birds of prey, which includes eagles, hawks, falcons, and owls.

Redd - The spawning ground or nest for various fishes.

Relative Stand Density- Density in trees per acre of a stand divided by the maximum density in trees per acre attainable in a the stand

Residual Habitat Area - An area about 100 acres in size of nesting, roosting and foraging habitat encompassing the known activity center for a pair of owls or a territorial single owl.

Resource Management Plan (RMP) - A land use plan prepared by the BLM under current regulations in accordance with the Federal Land Policy and Management Act.

Right-of-Way - A permit or an easement that authorizes the use of public lands for specified purposes, such as pipelines, roads, telephone lines, electric lines, reservoirs, and the lands covered by such an easement or permit.

Riparian Management Area - An area allocated in the plan primarily to protect the riparian and/or streamside zone.

Riparian Zone - Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs and wet meadows.

Rotation - The planned number of years between the regeneration of an even-aged forest stand and its final cutting.

Rural Interface Areas - Areas where BLM-administered lands are adjacent to or intermingled with privately owned lands zoned for 1 to 20-acre lots or that already have residential development.

Seral Stages - The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax stage.
There are five stages:

> Early Seral Stage - The period from disturbance to the time when crowns close and conifers or hardwoods dominate the site. Under the current forest management regime, the duration is approximately 0 to 10 years. This stage may be dominated by grasses and forbs or by sprouting brush or hardwoods. Conifers develop slowly at first and gradually replace grasses, forbs, or brush as the dominant vegetation. Forage may be present; hiding or thermal cover may not be present except in rapidly sprouting brush communities.

Mid-Seral Stage - The mid-seral stage occurs from crown closure to the time when conifers would begin to die from competition; approximately age 10 to 40. Stands are dense and dominated by conifers, hardwoods, or dense brush. Grass, forbs, and herbaceous vegetation decrease. Hiding cover for big game is usually present.

Late Seral Stage - Late seral stage occurs when conifers would begin to die from competition to the time when stand growth slows; approximately age 41 to 100. Forest stands are dominated by conifers or hardwoods; canopy closure often approaches 100 percent. Stand diversity is minimal; conifer mortality rates and snag formation are rapid. Big game hiding and thermal cover is present. Forage and understory vegetation is minimal except in understocked stands or in meadow inclusions.

Mature Seral Stage - This stage exists from the point where stand growth slows to the time when the forest develops structural diversity; approximately age 101 to 200. Conifer and hardwood growth gradually decline. Developmental change slows. Larger trees increase significantly in size. Stand diversity gradually increases. Big game hiding cover, thermal cover, and some forage are present. With slowing growth, insect damage increases and stand breakup may begin on drier sites. Understory development is significant in response to openings in the canopy created by disease, insects, and windthrow. Vertical diversity increases. Larger snags are formed.

Old-Growth - This stage constitutes the potential plant community capable of existing on a site given the frequency of natural disturbance events. For forest communities, this stage exists from approximately age 200 until when stand replacement occurs and secondary succession begins again. (Also see definitions of old-growth conifer stand and potential natural community.)

Short-Term - The period of time during which the RMP will be implemented; assumed to be 10 years.

Site Class - A measure of an area's relative capacity for producing timber or other vegetation.

Site Preparation - Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment that is favorable for survival of suitable trees during the first growing season. This environment can be created by altering ground cover, soil or microsite conditions using biological, mechanical, or manual clearing, prescribed burns, herbicides or a combination of methods.

Slope Failure - See Mass Movement.

Smoke Management - Conducting a prescribed fire under suitable fuel moisture and meteorological conditions with firing techniques that keep smoke impact on the environment within designated limits.

Snag - Any standing dead, partially-dead, or defective (cull) tree at least 10 inches in diameter at breast height (dbh) and at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

Soil Productivity - Capacity or suitability of a soil for establishment and growth of a specified crop or plant species.

Special Forest Products - Firewood, shake bolts, mushrooms, ferns, floral greens, berries, mosses, bark, grasses, and etc., that would be harvested in accordance with the objectives and guidelines in the PRMP.

Special Status Species - Plant or animal species falling in any of the following categories (see separate glossary definitions for each):

- Threatened or Endangered Species,
- Proposed Threatened or Endangered Species,
- Candidate Species,
- State Listed Species,
- Bureau Sensitive Species
- Bureau-Assessment Species.

Species Diversity - The number, different kinds, and relative abundance of species.

Spotted Owl Habitat Sites - Sites monitored by BLM for spotted owl occupancy during some or all of the years 1985 through 1988, in accordance with BLM's spotted owl monitoring guidelines. These sites are known to have been inhabited by spotted owls at some time in the last dozen years but not necessarily during the 1985-1988 period.

Stand Density - An expression of the number and size of trees on a forest site. May be expressed in terms of numbers of trees per acre, basal area, stand density index, or relative density index.

State Critical - Species for which listing as threatened or endangered is pending; or those for which listing as threatened or endangered may be appropriate if immediate conservation actions are not taken. Also considered critical are some peripheral species which are at risk throughout their range, and some disjunct populations.

State Peripheral or naturally rare - peripheral species refer to those whose Oregon populations are on the edge of this range.

State Threatened and Endangered - Plant or animal species listed by the State of Oregon as threatened or endangered pursuant to ORS 496.004, ORS 498.026, or ORS 564.040.

State Undetermined - Species for which status in unclear. They may be susceptible to population decline of significant magnitude that they could qualify for endangered, threatened, critical, or vulnerable status; but scientific study will be required before a judgment can be made.

State Vulnerable - Species for which listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring.

Stream Class - A system of stream classification established in the Oregon Forest Practices Act. Class I streams are those which are significant for: 1) domestic use, 2) angling, 3) water dependent recreation, and 4) spawning, rearing, or migration of anadromous or game fish. All other streams are Class II. Class II special protection streams are Class II streams that have a significant summertime cooling influence on downstream Class I waters, which are at or near a temperature at which production of anadromous or game fish is limited.

Stream Reach - An individual first order stream or a segment of another stream that has beginning and ending points at a stream confluence. Reach end points are normally designated where a tributary confluence changes the channel character or order. Although reaches identified by BLM are variable in length, they normally have a range of 1/2 to 1-1/2 miles in length unless channel character, confluence distribution, or management considerations require variance.

Structural Diversity - Variety in a forest stand that results from layering or tiering of the canopy and the die-back, death and ultimate decay of trees. In aquatic habitats, the presence of a variety of structural features such as logs and boulders that create a variety of habitat.

Succession - A series of dynamic changes following disturbance by which one group of plants succeeds another through stages leading to the potential natural community or to climax. The developmental series of plant communities is called a sere and defined stages are called seral stages.

Suitable Woodland - Forestland occupied by minor conifer and hardwood species not considered in the commercial forestland PSQ determination and referred to as noncommercial species. These species may be considered commercial for fuelwood, etc. under woodland management. Also included are low site and nonsuitable commercial forestland. These lands must be biologically and environmentally capable of supporting a sustained yield of forest products.

Thermal Cover - Cover used by animals to lessen the effects of weather. For elk, a stand of conifer trees that are 40 feet or more tall with an average crown closure of 70 percent or more. For deer, cover may include saplings, shrubs, or trees at least 5 feet tall with 75 percent crown closure.

Threatened Species - Any species defined through the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range and published in the Federal Register.

Timber Production Capability Classification (TPCC) - The process of partitioning forestland into major classes indicating relative suitability to produce timber on a sustained yield basis.

Transpiration - The passage of water vapor from a living body through a membrane or pores.

Travel Corridor - A route used by animals along a belt or band of suitable cover or habitat.

Viable Population - A wildlife or plant population of sufficient size to maintain its existence in spite of normal fluctuations in population levels.

Water Quality - The chemical, physical, and biological characteristics of water.

Wetlands or Wetland Habitat - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support

Wildlife Tree - A live tree retained to become future snag habitat.

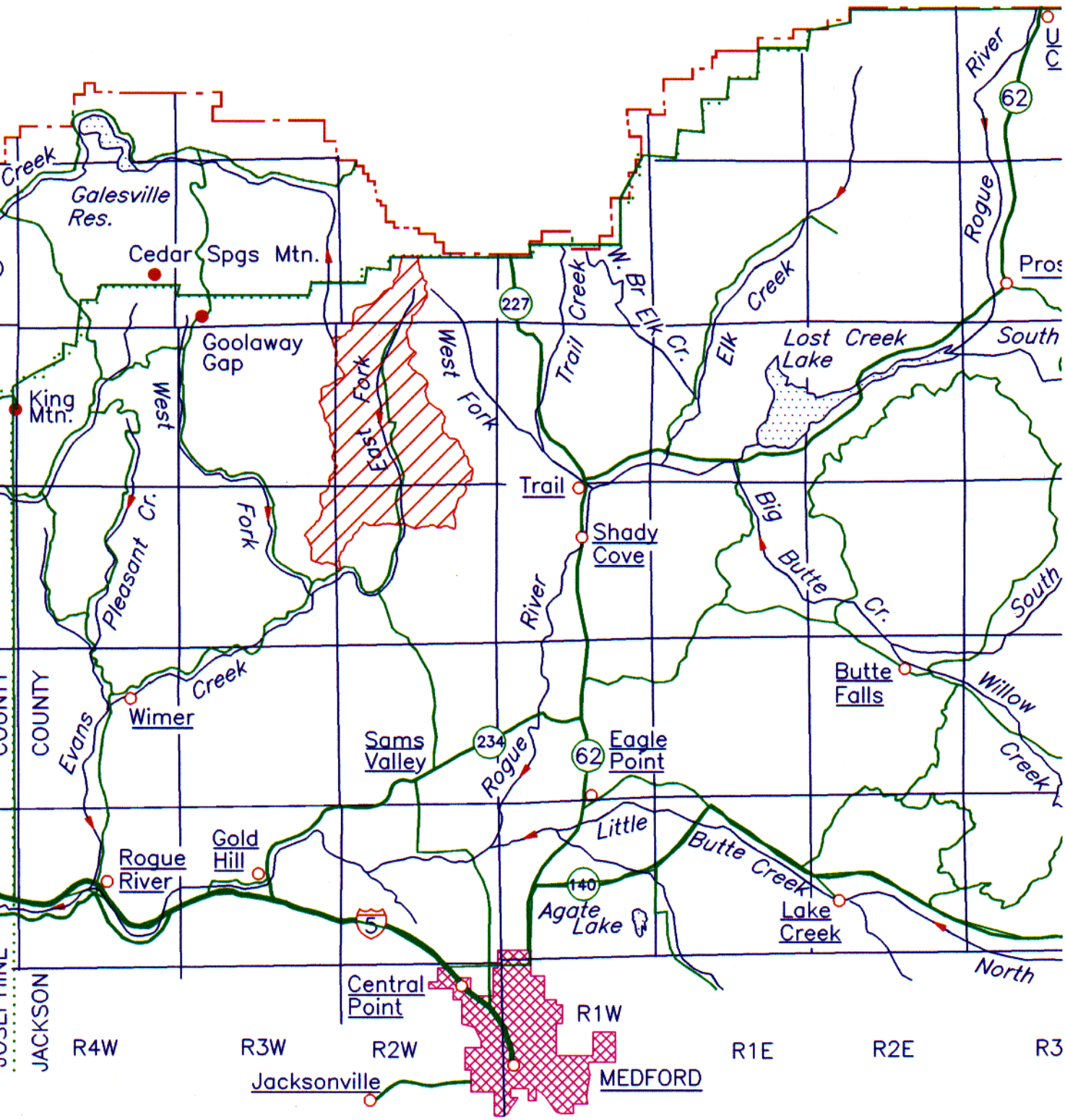
Withdrawal - A designation that restricts or closes public lands from the operation of land or mineral disposal laws.

Woodland - Forestland producing trees not typically used as saw timber products and not included in calculation of the commercial forestland PSQ.

Xeric sites - Adapted to a very dry habitat.

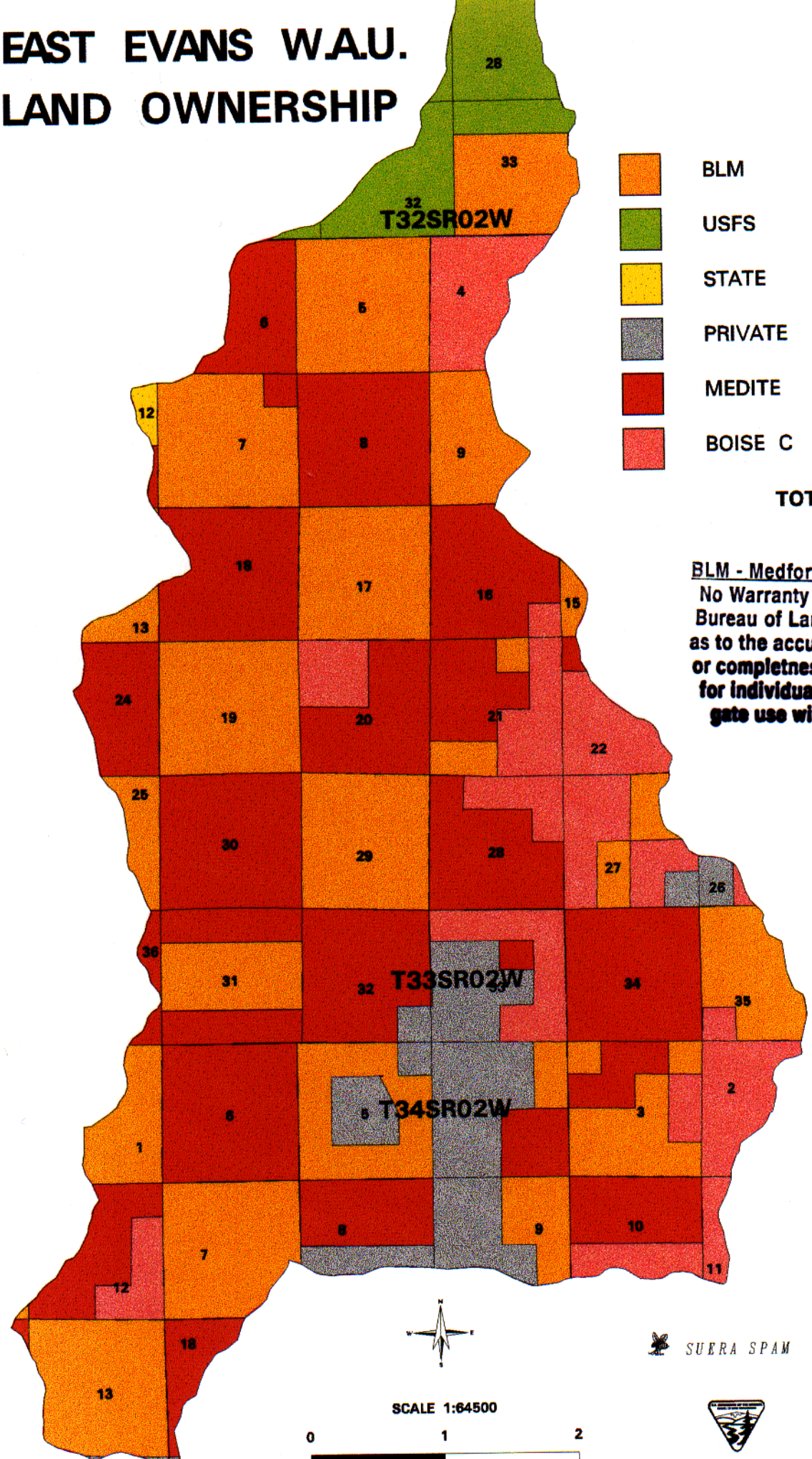
Yarding - The act or process of moving logs to a landing.

BUREAU OF LAND MANAGEMENT
Butte Falls Resource Area
General Location Map



East Evans Crk. W.A.U.

EAST EVANS W.A.U.
LAND OWNERSHIP

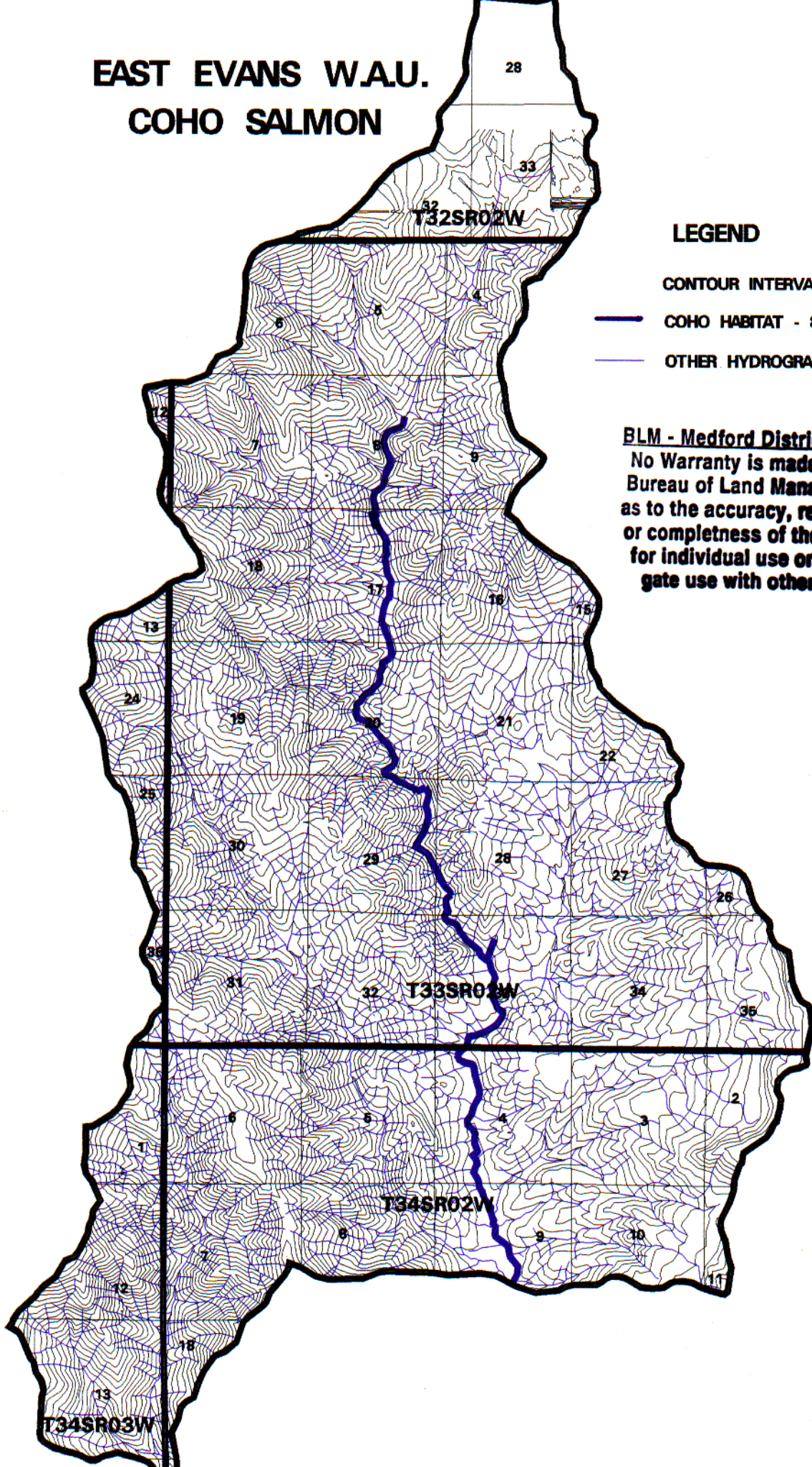


	ACRES
BLM	7,863
USFS	896
STATE	41
PRIVATE	1,436
MEDITE	8,143
BOISE C	2,757
TOTAL	21,136

BLM - Medford District Office

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completness of these data for individual use or aggregate use with other data.

EAST EVANS W.A.U.
COHO SALMON



LEGEND

CONTOUR INTERVAL 80'

COHO HABITAT - 8.3 MILES

OTHER HYDROGRAPHY

BLM - Medford District Office

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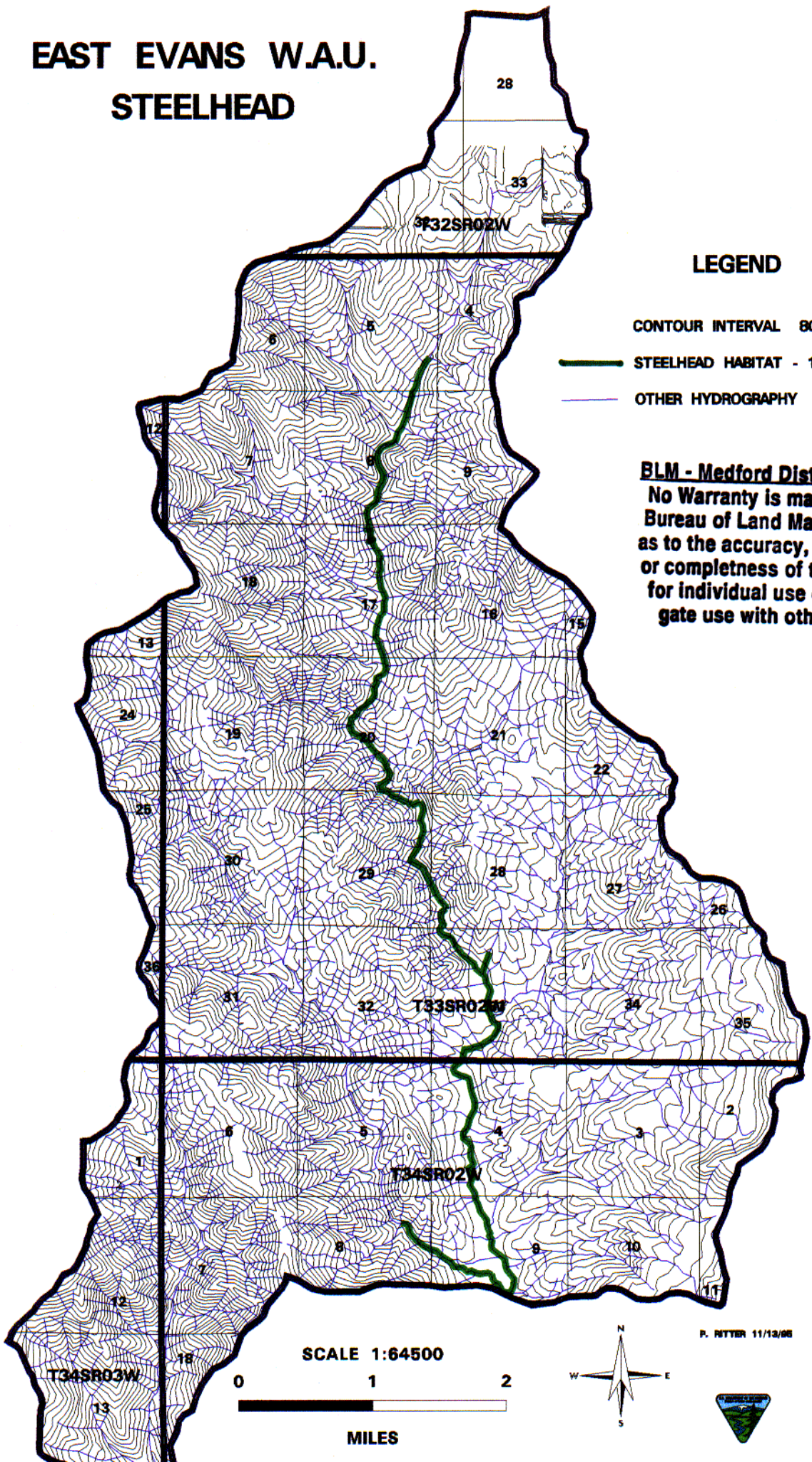
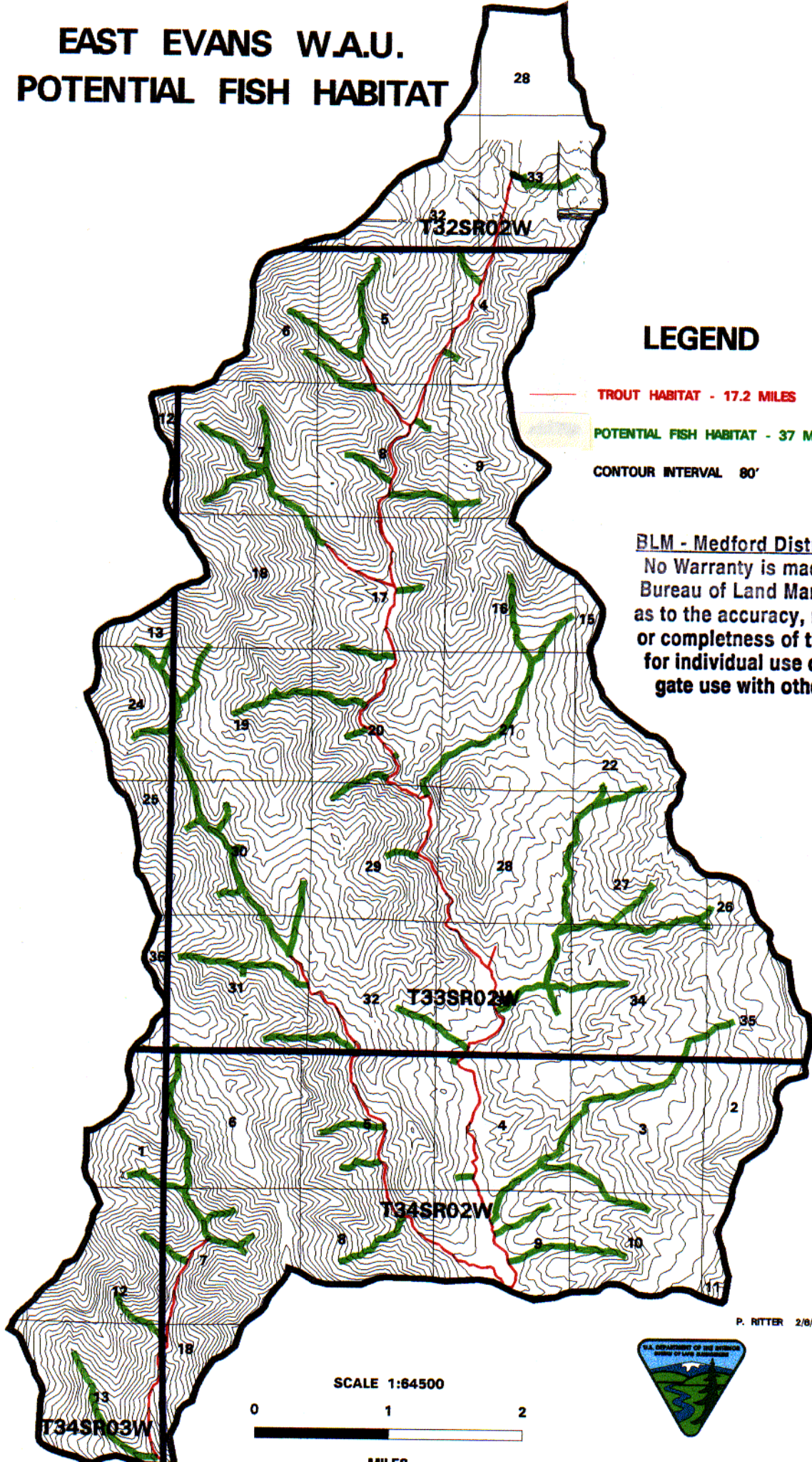
EAST EVANS W.A.U.
STEELHEAD



EAST EVANS W.A.U.
POTENTIAL FISH HABITAT



LEGEND

TROUT HABITAT - 17.2 MILES

POTENTIAL FISH HABITAT - 37 MILES

CONTOUR INTERVAL 80'

BLM - Medford District Office

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P. RITTER 2/6/96

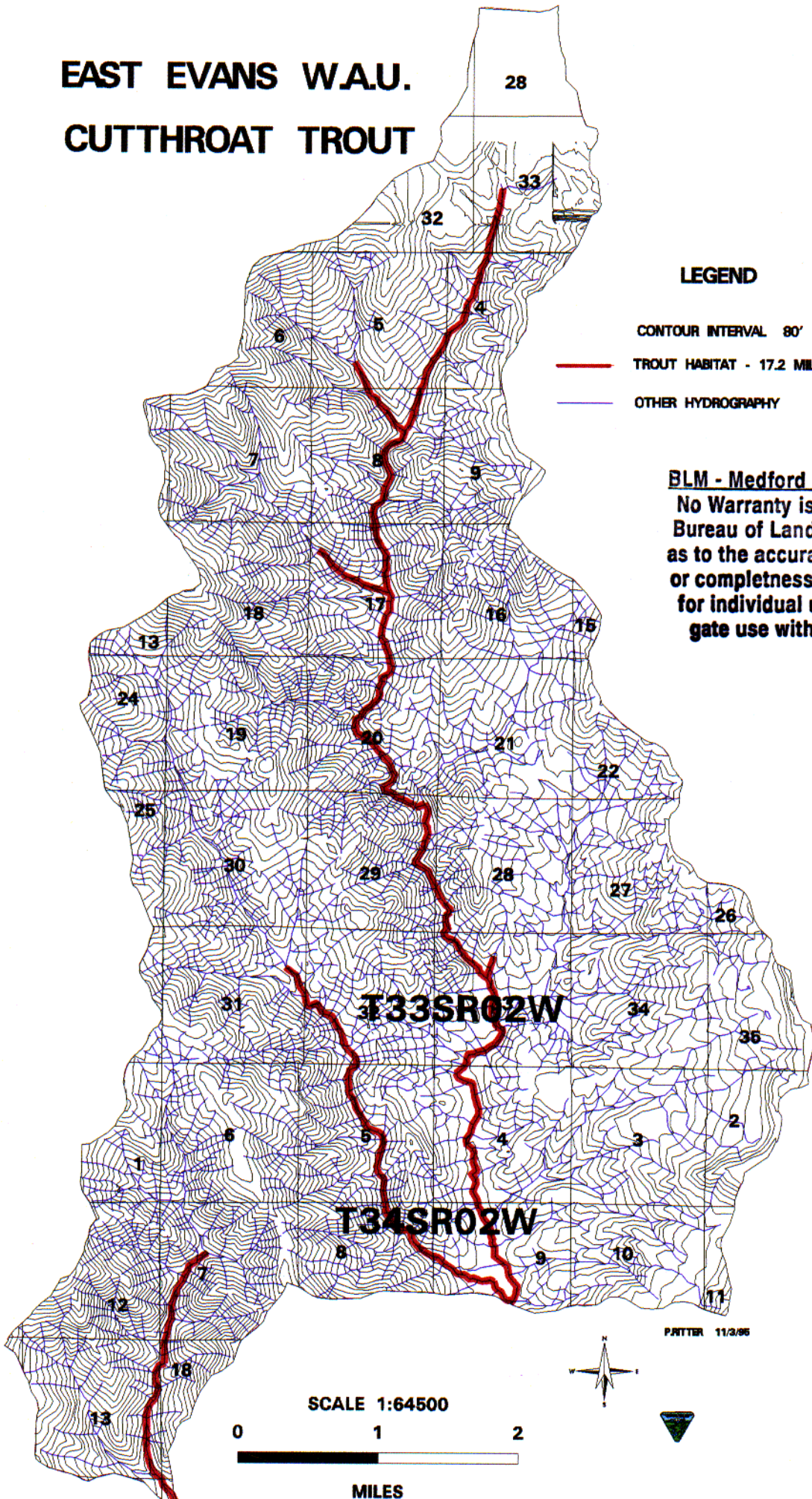
SCALE 1:64500

0 1 2

MILES

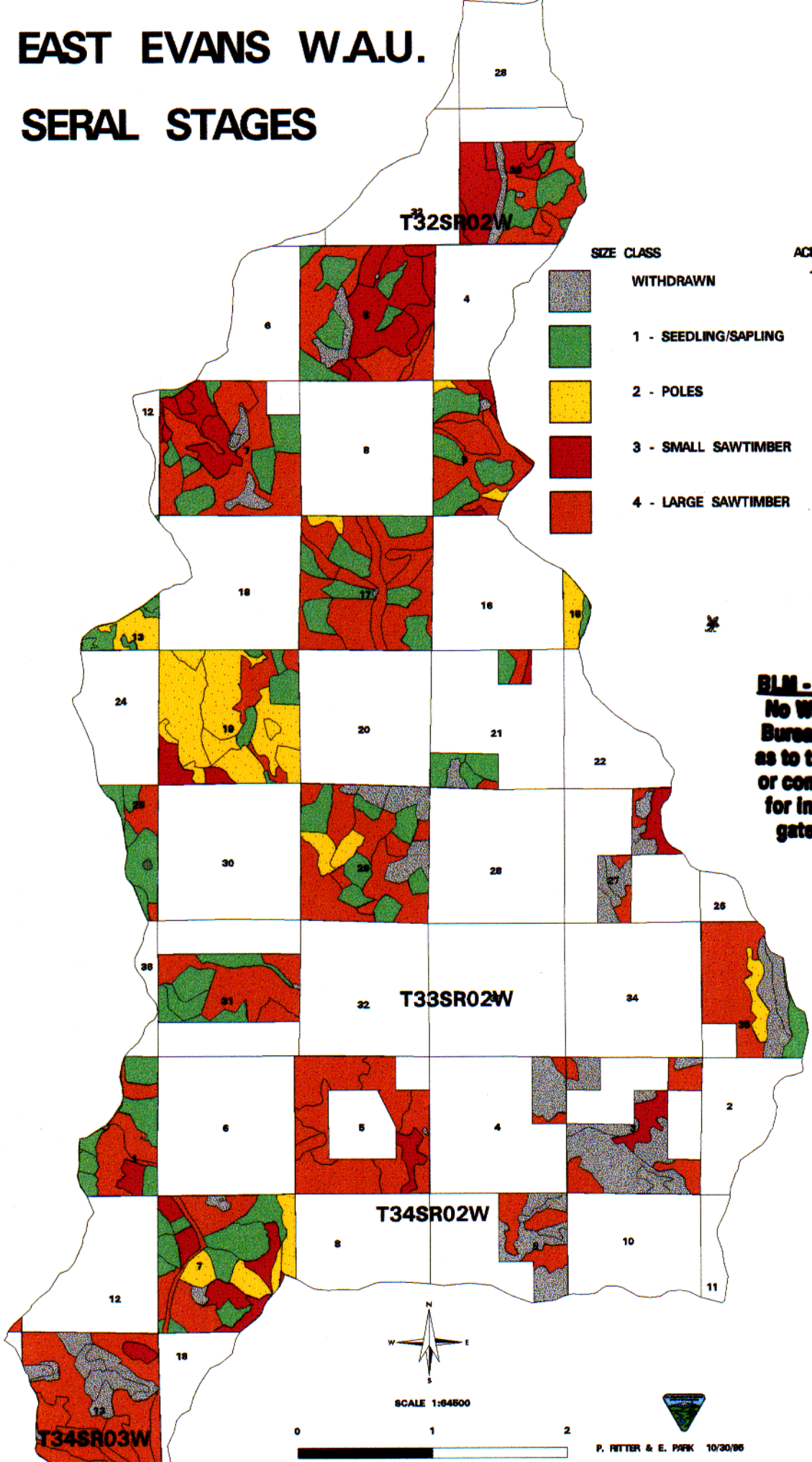
EAST EVANS W.A.U.

CUTTHROAT TROUT



EAST EVANS W.A.U.

SERAL STAGES



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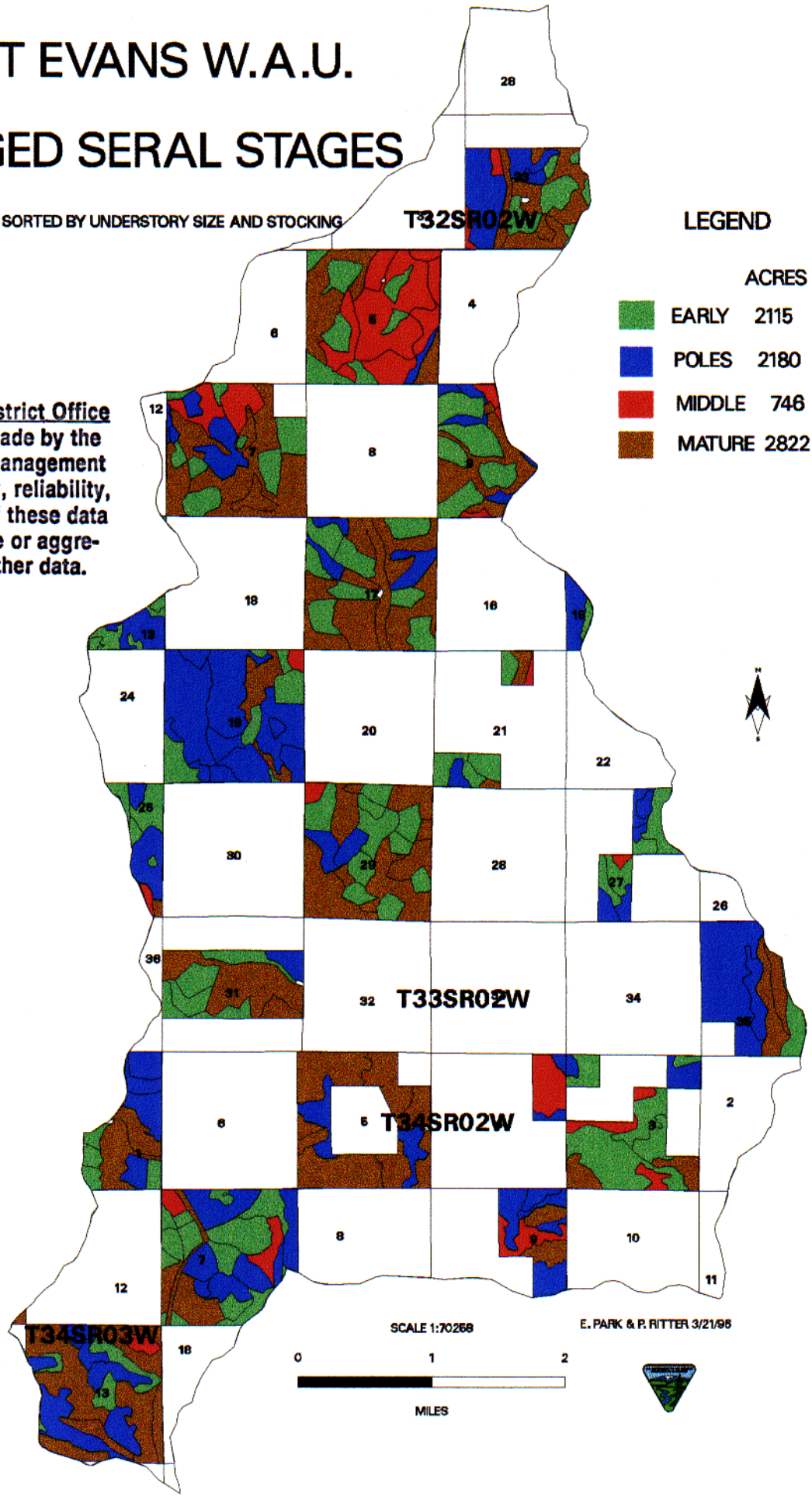
P. RITTER & E. PARK 10/30/96

EAST EVANS W.A.U.

MANAGED SERAL STAGES

DOMINANT SIZE CLASS SORTED BY UNDERSTORY SIZE AND STOCKING



BLM - Medford District Office

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EAST EVANS W.A.U.

WILDLIFE HABITAT

BLM - Medford District Office

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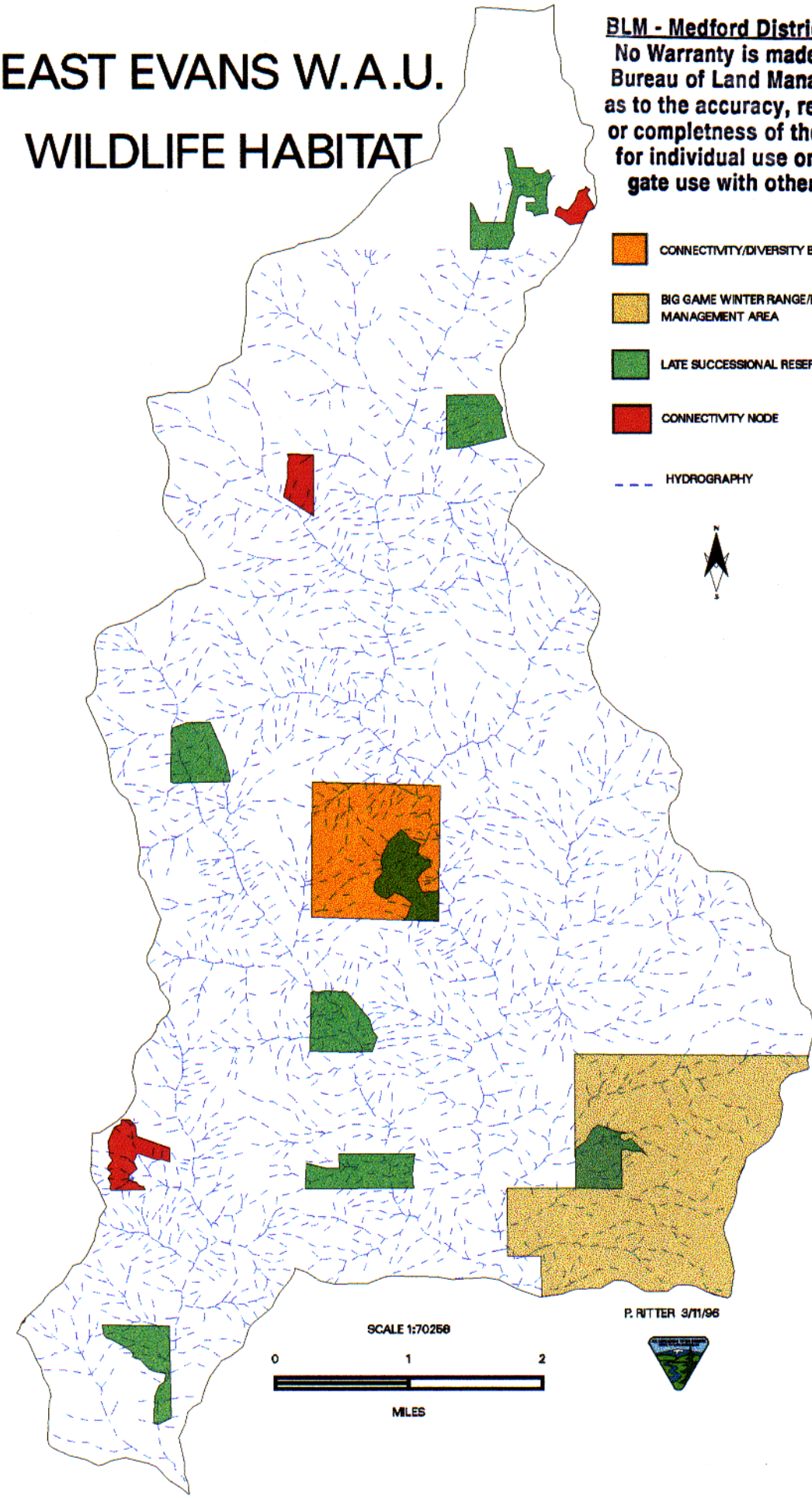
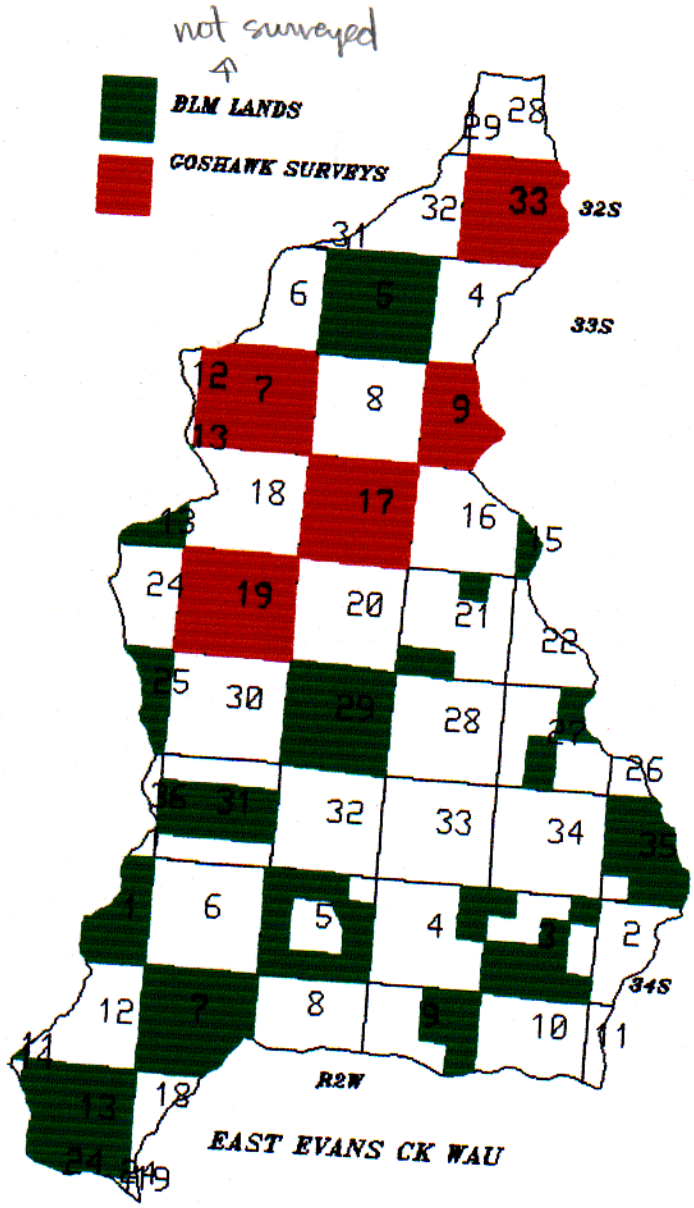
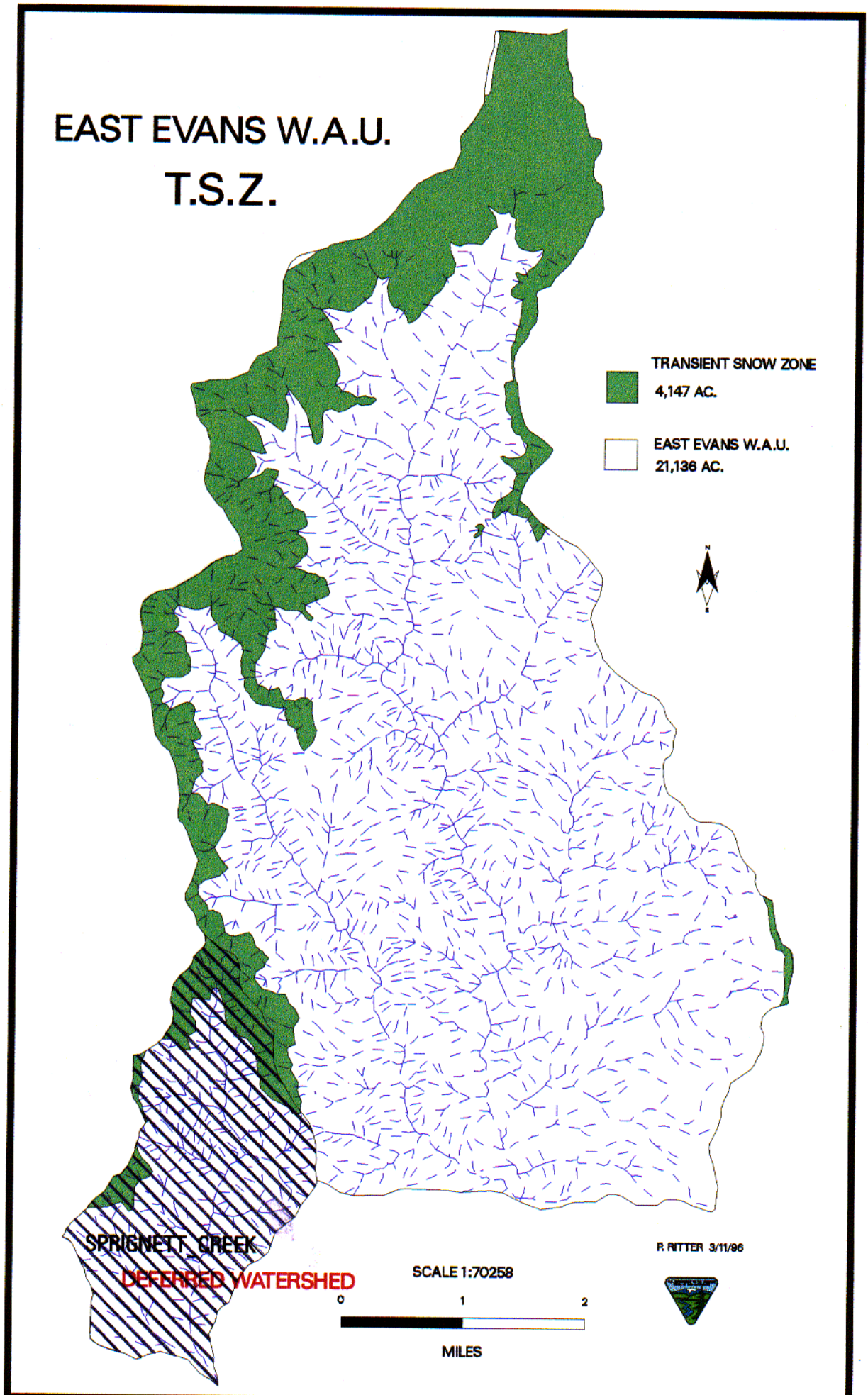
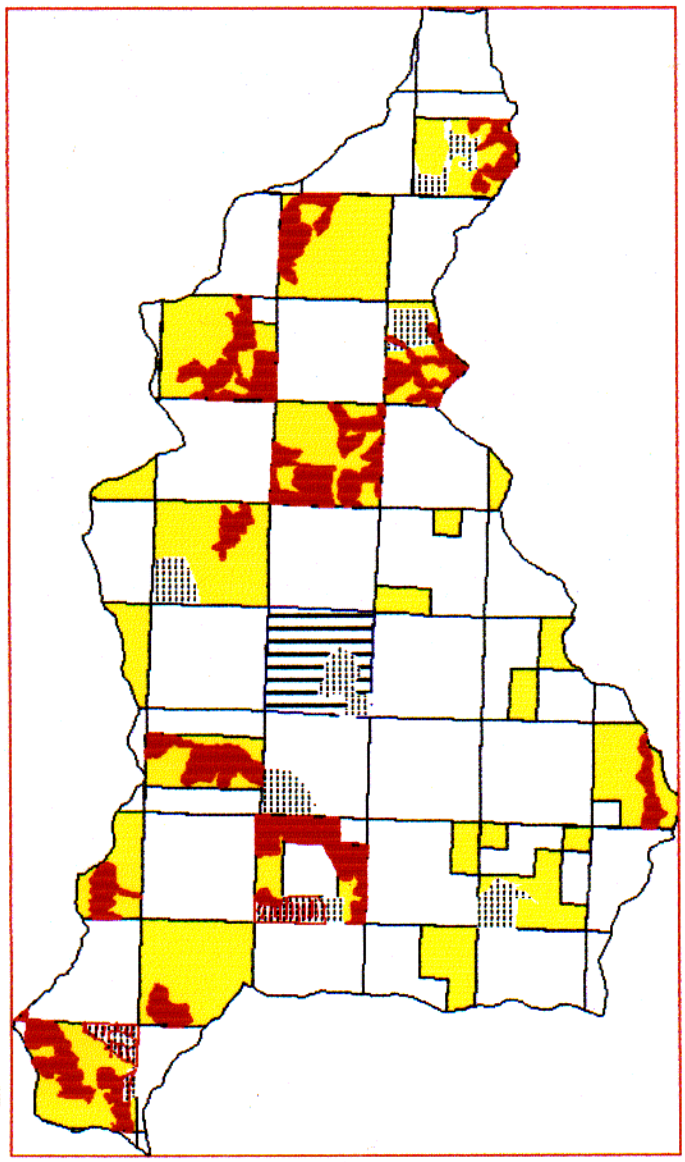



not surveyed
BLM LANDS
COSHAWK SURVEYS
29
28
32
33
32S
31
6
5
4
33S
12
7
8
9
13
18
17
16
15
24
19
20
21
22
25
30
29
28
27
26
31
32
33
34
35
1
6
5
4
3
2
34S
12
7
8
9
10
11
13
18
24
19
R2W
EAST EVANS CK WAU


EAST EVANS W.A.U.
T.S.Z.
TRANSIENT SNOW ZONE
4,147 AC.
EAST EVANS W.A.U.
21,136 AC.
N
SPRIGNETT CREEK
DEFERRED WATERSHED
SCALE 1:70258
0
1
2
MILES
P. RITTER 3/11/96

East Evans Creek Old Growth Patches



- ≥ 250 ac, 150 yrs, ≥ 40% canopy
- ≥ 80 yrs, ≥ 40% canopy
- owl core area
- owl core meeting ≥ 250 ac, 150 yrs ≥ 40% canopy

TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS UNIT: EAST EVANS CREEK WATERSHED

ROAD #	ATTRIBUTES	RECOMMENDED USE CONSTRAINTS			ROAD USE CONSTRAINTS									PHYSICAL DATA						IDENTIFIED ROAD USE									
		ACCESS	CONTROL	STD	WILDLIFE	WATER QUALITY	POCKET ROOT ROT	SPECIAL STATUS PLANTS	YEAR ROUND HAUL	80K LOAD LIMIT	LARGE FILL/CMPS	ACCESS TO PRIVATE LANDS		AASHO	EROSION POTENTIAL	SLOPE INSTABILITY	15% GRADE	TRIBUTARY AREA	AVERAGE DAILY TRAVEL		TIMBER	FISHERIES	WILDLIFE	REFORESTATION	FIRE	RECREATION SITE	RESIDENTIAL ACCESS	COMMUNICATION SITES	QUARRY ACCESS
32S-2W-																													
33.00A1	0.60 ASC	TEMP	M	M	N	N	N	N	N	N	N	N		A-4	M	M	N	70	L		M	N	L	H	L	L	N	N	N
33.00A2	0.24 ASC	TEMP	M	M	N	N	N	N	N	N	N	N		A-4	M	M	N	60	L		M	N	N	H	L	L	N	N	N
33.01	0.66 ASC	TEMP	M	M	N	N	N	N	N	N	Y	N		A-4	L	L	N	60	L		L	N	L	M	L	L	N	N	N
33.02	0.30 ASC	OPEN	M	M	N	N	N	N	N	N	N	Y		A-4	L	L	N	30	L		H	N	N	H	L	L	N	N	N
33.03	0.14 ASC	P	M	DEC	N	N	N	N	N	N	N	N		A-4	M	L	N	10	L		N	N	N	L	M	L	N	N	N
33.04	0.22 ASC	P	M	D	N	N	N	N	N	N	Y	N		A-4	L	L	N	20	L		N	N	N	L	M	L	N	N	N
33.05A1	0.31 ABC	O/T	M	I/D	N	N	Y	N	N	N	N	Y		A-4	M	H	N	50	L		M	N	N	H	L	L	N	N	N
33.05A2	0.49 ABC	O/P	M	I/D	N	N	N	N	N	N	N	Y		A-4	M	L	N	40	L		M	N	N	M	L	L	N	N	N
33.06	0.08 ABC	O/P	M	I	N	N	N	N	N	N	Y	N		A-4	M	L	N	10	L		H	N	N	L	L	L	N	N	N
33.07A	0.59 ASC				N	N	Y	N	N	N	N	Y		A-4	M	L	N	70	L		M	N	N	H	L	L	N	N	N
33.07B	0.59 ASC	O	M	M	N	N	N	N	N	N	N	Y		A-4	M	L	N	120	L		L	N	N	M	L	L	N	N	N
33.08	0.64 ASC	O/T	M	I/D	N	N	N	N	N	N	Y	Y		A-4	M	M	N	70	L		H	N	N	M	L	L	N	N	N
33.09	0.76 ASC	O/T	M	M	N	N	N	N	N	N	Y	Y		A-4	M	M	N	50	L		M	N	N	M	L	L	N	N	N
33.1	0.18 ASC	P	M	D	N	N	N	N	N	N	N	N		A-4	M	L	N	10	L		M	N	N	N	L	L	N	N	N
33S-2W-																													
4.00A	0.26ABC	O	M	M	N	N	N	N	N	N	Y	Y		A-4	M	M	N	220	L		H	N	N	H	H	L	N	N	N
4.00B	1.80ABC	O	M	M	N	N	N		N	N	Y	Y		A-4	M	M	N	100	L		H	N	N	H	M	L	N	N	N
4.00C	0.81	T	M	M	N	N	N	N	N	N	N	Y		A-4	M	H	N	60	L		H	N	N	H	M	L	N	N	N
5.00	0.94ABC	TEMP	M	M	N	N	N	N	N	N	Y	N		A-4	H	H	N	120	L		H	N	N	H	M	L	N	N	N
[illegible]	0.59 ABC	T	M	M	N	N	N	N	N	N	Y	Y		A-4	H	H	N	160	L		H	N	N	H	M	L	N	N	N
	0.25 ABC	T	M	M	N	N	N	N	N	N	N	N		A-4	H	M	N	40	L		M	N	N	H	L	L	N	N	N
	0.17 ABC	P	M	D	N	N	N	N	N	N	N	N		A-4	M	M	N	20	L		L	N	N	L	L	L	N	N	N
7.00A	0.42 ASC	O	M	M	N	N	N	N	N	N	Y	Y		A-4	H	M	N	150	L		M	N	L	H	M	L	N	N	N
7.00B	0.09 PRR	T	M	D	N	N	N	N	N	N	N	Y		A-4	M	M	N	110	L		M	N	L	L	M	L	N	N	N
7.00D	0.40 NAT	T	M	D	N	N	N	N	N	N	N	Y		A-4	M	M	N	70	L		M	N	N	L	M	L	N	N	N
7.01A	0.10 ASC	O	M	M	N	N	N	N	N	N	Y	Y		A-2	M	M	N	290	L		H	N	N	H	M	L	N	N	N
7.01B	2.34 ABC	O	M	M	N	N	N	N	N	N	Y	Y		A-2	M	M	N	280	L		H	N	N	H	M	L	N	N	N
7.01C	0.75 ABC	O	M	M	N	N	N	N	N	N	N	Y		A-4	M	M	N	100	L		H	N	N	H	M	L	N	N	N
7.02A	0.60ASC	O	M	M	N	N	N		N	N	Y	Y		A-4	M	M	N	230	L		H	N	N	H	H	L	N	N	N
7.04	0.27 NAT	T	M	D	N	N	N	N	N	N	N	N		A-2	H	L	N	30	L		L	N	N	N	L	L	N	N	N
8.00	0.68 NAT	T/P	M	M/D	N	N	N	N	N	N	N	Y		A-4	H	M	N	100	L		M	L	N	N	L	L	N	N	N
8.01B	0.39 NAT	T	M	M	N	N	N	N	N	N	Y	Y		A-6	H	L	N	150	L		M	N	N	N	M	L	N	N	N
9.00	0.64 ASC	O	M	I	N	N	N	N	N	N	N	Y		A-6	M	L	N	60	L		H	N	N	H	M	L	N	N	N
9.01	1.10 PRR	T	M	M	SO	N	N	N	N	N	Y	Y		A-6	L	L	N	140	L		L	N	L	L	L	L	N	N	N
9.02	0.50 PRR	P	M	D	SO	N	N	N	N	N	N	N		A-6	L	L	N	70	L		L	N	L	M	L	L	N	N	N
9.03A	0.20 PRR	T	M	M	SO	H	N	N	N	N	N	N		A-6	L	L	N	220	L		H	N	L	H	M	L	N	N	N
9.03B	1.06 NAT	T	M	M	BG	N	N	N	N	N	N	N		A-4	H	L	N	200	L		H	N	N	H	M	L	N	N	N
9.04	0.60 NAT	T	M	M	BG	N	N	N	N	N	N	Y		A-4	H	L	N	120	L		L	N	N	L	L	L	N	N	N
15	1.20 ABC	O	M	M	BG	N	N	N	N	N	Y	N		A-7	M	H	N	160	L		H	N	L	H	H	L	N	N	N
15.1A		O	M	M	BG	N	N	N	N	N	N	Y		A-7	M	H	N	240	L		H	N	L	H	M	L	N	N	N
15.1B	0.90 ABC	O	M	M	HG	N	N	N	N	N	N	Y		A-7	M	H	N	80	L		H	N	L	H	M	L	N	N	N
16.01	0.40 NAT	T	M	M	N	N	N	N	N	N	N	Y		A-2	H	L	N	40	L		N	N	N	N	L	L	N	N	N
16.02	0.24 NAT	P	M	D	N	N	N	N	N	N	N	N		A-2	H	L	N	10	L		N	N	N	N	L	L	N	N	N
17.00A	0.76 ASC	O	M	M	N	N	N	N	N	N	Y	Y		A-4	H	L	N	200	L		H	L	M	H	H	L	N	N	N
17.00C-1	0.52 ABC	O	M	M	SO	N	N	N	N	N	Y	Y		A-4	M/H	M	N	120	L		H	L	M	H	H	L	N	N	N
17.00C-2	0.34 PRR	P	M	D	N	N	N	N	N	N	Y	Y		A-2	M/H	L	N	60	L		H	N	L	M	H	L	N	N	N
17.01	0.55 PRR	T	M	M	N	N	N	N	N	N	Y	Y		A-4	M	M	N	80	L		L	N	L	L	L	L	N	N	N
17.02A	0.28 NAT	T	M	D	N	N	N	N	N	N	N	Y		A-4	M	M	N	300	L		N	N	N	L	L	L	N	N	N
17.03	1.10PRR	O	M	M	N	N	N	N	N	N	Y	Y		A-4	M	M	N	60	L		M	N	L	M	M	L	N	N	N
17.04	0.20 NAT	P	M	D	N	N	N	N	N	N	N	N		A-4	M	L	N	30	L		L	N	N	L	L	L	N	N	N
17.05	0.33 NAT	T	M	D	N	N	N	N	N	N	N	N		A-4	M	L	N	30	L		L	N	N	N	L	L	N	N	N
17.06	0.19 NAT	T	M	D	N	N	N	N	N	N	N	N		A-4	M	L	N	20	L		L	N	N	N	L	L	N	N	N
18.02	0.06 NAT	O	M	M	N	N	N	N	N	N	N	Y		A-2	M	L	N	10	L		L	N	N	L	L	L	N	N	N
	0.82 NAT	T	M	M	SO	N	N	N	N	N	N	Y		A-4	H	M	N	60	L		L	N	M	L	H	L	N	N	N
	0.25 NAT	O	M	M	N	N	N	N	N	N	N	Y		A-4	H	M	N	60	L		H	N	L	H	H	L	N	N	N
	0.65 ABC	T	M	M	SO	N	N	N	N	N	N	Y		A-4	M	M	N	80	L		M	N	M	L	L	L	N	N	N
18.03	0.64 ABC	T	M	M	N	N	N	N	N	N	N	Y		A-4	M	M	N	70	L		H	N	M	M	M	L	N	N	N
19.04	0.35 NAT	T	M	M	H	N	N	N	N	N	N	Y		A-4	H	M	N	40	L		L	N	N	L	M	L	N	N	N
20.0A	2.41 ASC	O	M	M	HG	N	N	N	Y	N	Y	Y		A-4	M	H	N	710	L		H	N	M	H	H	L	N	N	N

TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS UNIT: EAST EVANS CREEK WATERSHED

ROAD #	ATTRIBUTES	RECOMMENDED USE CONSTRAINTS			ROAD USE CONSTRAINTS								PHYSICAL DATA						IDENTIFIED ROAD USE								
		ACCESS	CONTROL	STD	WILDLIFE	WATER QUALITY	POCKET ROOT ROT	SPECIAL STATUS PLANTS	YEAR ROUND HAUL	BOK LOAD LIMIT	LARGE FILL/CMPS	ACCESS TO PRIVATE LANDS	AASHO	EROSION POTENTIAL	SLOPE INSTABILITY	15% GRADE	TRIBUTARY AREA	AVERAGE DAILY TRAVEL	TIMBER	FISHERIES	WILDLIFE	REFORESTATION	FIRE	RECREATION SITE	RESIDENTIAL ACCESS	COMMUNICATION SITES	QUARRY ACCESS
20.0B	1.49 ASC	O	M	M	BG	N	N	N	N	N	Y	Y	A-4	M	H	N	500	L	H	N	L	H	H	L	N	N	N
20.0C	0.25 ASC	O	M	M	BG	N	N	N	N	N	N	Y	A-6	L	M	N	470	L	H	N	L	H	H	L	N	N	N
20.0D	1.24 PRR	O	M	M	BG	N	N	N	N	N	Y	Y	A-2	M	L	N	310	L	H	N	L	M	H	L	N	N	N
20.0E	0.67 PRR	O	M	M	N	N	N	N	N	N	N	Y	A-4	M	L	N	80	L	H	N	N	M	H	L	N	N	N
21.00B	6.75 NAT	T	M	D	N	N	N	N	N	N	N	Y	A-6	H	L	N	100	L	L	N	L	L	M	L	N	N	N
21.02B	0.30 NAT	P	M	D	BG	N	N	N	N	N	N	N	A-4	H	L	N	40	L	L	N	N	L	M	L	N	N	N
27.00	0.91 ABC	T	M	M	SO	N	N	N	N	N	Y	Y	A-7	M	H	N	80	L	H	N	M	N	L	L	N	N	Y
28.00	0.30 NAT	T	M	D	BG	N	N	N	N	N	N	Y	A-7	MH	L	N	10	L	L	N	N	L	L	L	N	N	N
29.00	1.53 ABC	T	M	M	N	N	N	N	N	N	Y	N	A-2	MH	M	N	140	L	H	N	N	L	H	L	N	N	N
29.01A	0.25 ABC	O	M	M	SO	N	N	N	N	N	Y	N	A-2	M	M	N	100	L	H	N	M	M	L	L	N	N	N
29.01B	0.69 PRR	T	M	M	N	N	N	N	N	N	Y	N	A-2	M	M	N	60	L	H	N	M	M	L	L	N	N	N
29.02A	0.68 ABC	O	M	M	N	N	N	N	N	N	N	Y	A-7	L	L	N	100	L	H	N	M	M	M	L	N	N	N
29.02B	0.44 ABC	O	M	M	N	N	N	N	N	N	N	Y	A-7	L	L	N	60	L	L	N	M	M	M	L	N	N	N
29.03	0.70 ABC	T	M	M	N	N	N	N	N	N	N	N	A-4	M	M	N	80	L	H	N	N	L	L	L	N	N	N
29.04	0.07 ABC	T	M	D	N	N	N	N	N	N	N	N	A-4	M	M	N	10	L	L	N	N	N	L	L	N	N	N
29.05	0.12 ABC	T	M	D	SO	N	N	N	N	N	N	N	A-4	M	M	N	10	L	H	N	L	N	L	L	N	N	N
30.01B	0.25 ABC	T	M	M	N	N	N	N	N	N	Y	Y	A-4	M	M	N	280	L	H	N	M	N	M	L	N	N	N
30.02	0.78 ABC	T	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	80	L	H	N	M	L	M	L	N	N	N
31.00	0.33 PRR	P	M	D	N	N	N	N	N	N	Y	N	A-4	M	M	N	60	L	M	N	M	N	M	L	N	N	N
31.01	0.28 PRR	T	M	M	SO	N	N	N	N	N	Y	Y	A-4	M	M	N	50	L	H	N	M	L	L	L	N	N	N
[illegible]	0.85 NAT	P	M	D	SO	N	N	N	N	N	Y	N	A-4	H	L	N	80	L	M	N	M	N	L	L	N	N	N
	0.13 PRR	T	M	M	N	N	N	N	N	N	N	N	A-4	M	L	N	20	L	H	N	M	N	L	L	N	N	N
	0.06 NAT	O	M	M	N	N	N	N	N	N	Y	Y	A-7	M	M	N	1730	L	L	N	L	N	M	L	N	N	N
[illegible]1D	0.06 NAT	O	M	M	N	N	N	N	N	N	N	Y	A-7	M	M	N	1700	L	L	N	L	N	M	L	N	N	N
32.01F1	0.24 ABC	O	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	840	L	H	N	L	M	M	L	N	N	N
32.01F2	0.86 NAT	O	M	M	N	N	N	N	N	N	N	Y	A-4	H	M	N	920	L	H	N	L	L	M	L	N	N	N
33.00A	2.55BST	O	M	M	N	N	N	N	Y	N	Y	Y	A-2	L	L	N	9220	M	H	L	M	H	H	L	Y	N	N
33.00B	1.89BST	O	M	M	N	N	N	N	Y	N	Y	Y	A-4	L	M	N	6580	M	H	L	M	H	H	L	N	N	N
33.00C	1.72 ASC	O	M	M	N	N	N	N	Y	N	Y	Y	A-4	M	L	N	4740	M	H	L	M	H	H	L	N	N	N
33.00D	0.51 ASC	O	M	M	N	N	N	N	Y	N	Y	Y	A-4	M	M	N	2100	M	H	L	M	H	H	L	N	N	N
33.00E	0.84 ASC	O	M	M	N	N	N	N	Y	N	Y	Y	A-4	M	M	N	2010	M	H	L	M	H	H	L	N	N	N
33.00F	1.03 ASC	O	M	M	SO	N	N	N	Y	N	Y	Y	A-4	M	M	N	420	M	H	L	M	H	H	L	N	N	N
33.00G	0.78 ASC	O	M	M	SO	N	N	N	N	N	Y	N	A-4	M	M	N	20	L	H	L	M	H	H	L	N	N	N
34S-2W-																											
2.00B	0.54 NAT	SEA	M	M		N	N	N	N	N	N	Y	A-2	M	L	N	220	L	H	N	N	L	M	L	N	N	N
4.00A	1.01 ASC	O	M	M	N	N	N	N	N	N	Y	Y	A-7	M	L	N	1590	L	H	L	M	M	H	L	Y	N	N
4.00C1	0.95 ASC	O	M	M	N	N	N	N	N	N	Y	Y	A-4	M	M	N	740	L	H	L	L	M	H	L	N	N	N
4.00C2	1.28 PRR	O	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	240	L	H	L	L	M	H	L	N	N	N
4.00C3	0.56 PRR	O	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	120	L	L	L	L	M	H	L	N	N	N
5.00	0.20 PRR	T	M	M	N	N	N	N	N	N	N	N	A-7	M	M	N	100	L	H	N	L	L	L	L	N	N	N
6.00	1.53 ABC	T	M	M	N	N	N	N	N	N	Y	Y	A-4	M	M	N	200	L	L	N	N	L	H	L	N	N	N
7.01A	0.09 ABC	T	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	350	L	L	N	N	L	H	L	N	N	N
7.02A		T	M	M	N	N	N		N	N	N	N	A-4	M	M	N	80	L	H	N	N	H	M	L	N	N	N
7.02B	0.84 ABC	T	M	M	N	N	N	N	N	N	N	N	A-4	M	M	N	60	L	L	N	N	M	M	L	N	N	N
7.03	0.53 ABC	T	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	60	L	M	N	N	M	L	L	N	N	N
7.04	0.24 ABC	T	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	40	L	L	N	L	N	L	L	N	N	N
7.05	0.79 ABC	O	M	M	N	N	N	N	N	N	N	Y	A-4	M	M	N	200	L	M	N	L	L	M	L	N	N	N
7.06	0.25 ABC	P	M	D	N	N	N	N	N	N	N	N	A-4	M	M	N	20	L	L	N	N	N	L	L	N	N	N
9.00	0.28 NAT	O	M	M	N	N	N	N	N	N	N	Y	A-4	L	L	N	20	L	L	N	N	L	L	L	N	N	N
11.26	0.20 NAT	SEA	M	M	BG	N	N		N	N	N	Y	A-2	H	L	N	160	L	H	N	N	L	L	L	N	N	N
18.00C	1.15NAT	O	M	M	BG	N	N	N	N	N	N	Y	A-2	M	L	N	580	L	H	L	N	H	H	L	N	N	N
18.02A	0.59ABC	T		M	BG	N	N	N	N	N	Y	Y	A-6	M	M	N	240	L	H	N	N	M	M	L	N	N	N
19.02B	0.65ABC	T	M	M	N	N	N	N	N	N	Y	N	A-2	M	M	N	120	L	L	N	L	M	M	L	N	N	N
21.01	0.30 NAT	O	M	D	N	N	N		N	N	Y	Y	A-7	H	M	N	120	L	H	N	L	L	M	L	N	N	N
	0.70 NAT	O	M	D	N	N	N		N	N	N	Y	A-7	H	M	N	140	L	H	N	L	L	L	L	N	N	N
	0.10 NAT	O	M	D	N	N	N		N	N	N	Y	A-7	H	M	N	150	L	H	N	L	L	L	L	N	N	N
1	1.20ABC	TE	MN	MD	N	N	N	N	N	N	N	Y	A-4	M	L	N	15	L	H	N	N	H	M	L	N	N	N
1.01	0.10ABC				N	N	N	N	N	N	N	Y	A-4	M	L	N	80	L	H	N	N	L	L	L	N	N	N
1.02	0.10ABC				N	N	N	N	N	N	N	N	A-4	M	L	N	40	L	L	N	N	N	L	L	N	N	N

TRANSPORTATION OBJECTIVES FOR WATERSHED ANALYSIS UNIT: EAST EVANS CREEK WATERSHED

ROAD #	ATTRIBUTES	RECOMMENDED USE CONSTRAINTS			ROAD USE CONSTRAINTS									PHYSICAL DATA							IDENTIFIED ROAD USE									
		ACCESS	CONTROL	STD	WILDLIFE	WATER QUALITY	POCKET ROOT ROT	SPECIAL STATUS PLANTS	YEAR ROUND HAUL	BOK LOAD LIMIT	LARGE FILL/CMPS	ACCESS TO PRIVATE LANDS	AASHO	EROSION POTENTIAL	SLOPE INSTABILITY	15% GRADE	TRIBUTARY AREA	AVERAGE DAILY TRAVEL	TIMBER	FISHERIES	WILDLIFE	REFORESTATION	FIRE	RECREATION SITE	RESIDENTIAL ACCESS	COMMUNICATION SITES	QUARRY ACCESS
1.03	0.60ABC	T	K	O	N	N	N	N	N	N	N	Y	A-4	M	L	N	70	L	H	N	N	H	L	L	N	N	N
1.04	0.10ABC	T	M	O	N	N	N	N	N	N	N	N	A-4	M	L	N	10	L	L	N	N	N	L	L	N	N	N
1.05	0.95ABC	T	M	M	N	N	H	N	N	N	N	Y	A-4	M	L	N	100	L	H	N	N	H	M	L	N	N	N
1.06	0.10ABC	T	M	O	N	N	N	N	N	N	N	N	A-4	M	L	N	10	L	L	N	N	N	L	L	N	N	N
1.07	0.30ABC	T	M	O	N	N	N	N	N	N	N	N	A-4	M	L	N	20	L	M	N	N	L	L	L	N	N	N
1.08	0.10ABC	O	M	O	N	N	N	N	N	N	N	N	A-4	M	L	N	20	L	L	L	N	N	L	L	N	N	N
1.09	0.20ABC	T	M	O	N	N	L	N	N	N	N	N	A-4	M	L	N	20	L	L	N	N	L	L	L	N	N	N
1.10	0.20ABC	T	M	O	N	N	L	N	N	N	N	N	A-4	M	L	N	20	L	L	N	N	L	L	L	N	N	N
12.01B	0.60ABC	O	M	M	N	N	H	N	N	N	N	Y	A-4	M	L	N	700	L	H	N	N	H	H	L	N	N	N
12.02A	0.12ABC	O	"	"	N	N	H	N	N	N	N	Y	A-4	M	L	N	640	L	H	N	N	H	H	L	N	N	N
12.02B	0.67ABC	O	"	"	N	N	H	N	N	N	N	Y	A-4	M	L	N	200	L	H	N	N	H	H	L	N	N	N
12.02C	0.80ABC	O	"	"	N	N	H	N	N	N	N	Y	A-4	M	L	N	100	L	H	N	N	H	H	L	N	N	N
12.03	0.09ABC	O	"	"	N	N	L	N	N	N	N	Y	A-4	M	L	N	30	L	M	N	N	L	L	L	N	N	N

To: East Evans Watershed Analysis Team
From: Emily Hale
Subject: Recreation information for East Evans Watershed

There currently is no designated or maintained recreation in the East Evans Watershed.

Recreational use of the watershed is predominantly during the fall and primarily by hunters. There are no established or repeatedly used campsites in this area. Hunters do camp in tents and trailers, but use is not heavy and is transitory in nature. Campsites, whether used by hunters or others, are usually located close to water; either on a stream or at a pump chance.

Because of the dispersed and occasional long term camping we do find small garbage dumps or garbage left by campers. These sites have a minimal impact on the watershed. The majority of the sites are easy to pick up. Use has not been so heavy as to demand regular patrols of the watershed.

The watershed is also used by ATVs, though not heavily. We currently have no collected data on the amount of use nor do we have plans to develop any ATV trails or recreation sites.

In the eastern part of the watershed, horseback riding takes place on private land. BLM does not own much land which would be favorable for riding.

Butte Falls Resource Area is participating in the Jackson County Cooperative Travel Management Area (TMA) program with Oregon Department of Fish and Wildlife and Boise Cascade Corporation. This restriction affects travel in the eastern portion of the watershed. The TMA is in effect Sept. 1 - May 31. It prohibits vehicular travel on the majority of the roads in this area, therefore concentrating all of the vehicle use by recreationists on the one road which remains open. This does impact the recreation patterns and has generated negative reactions from users. The restricted roads remain open for non-vehicular traffic only.

Historically, trails have existed in the watershed. These trails are on various maps from the 1940s and 1950s. None of these trails have been maintained by the Bureau and it is questionable whether they could be identified, certainly not from the ground. There are no plans to resurrect any of these trails at this time.

Overall, recreational activity in the Watershed is light and the impact of users is at a minimum.