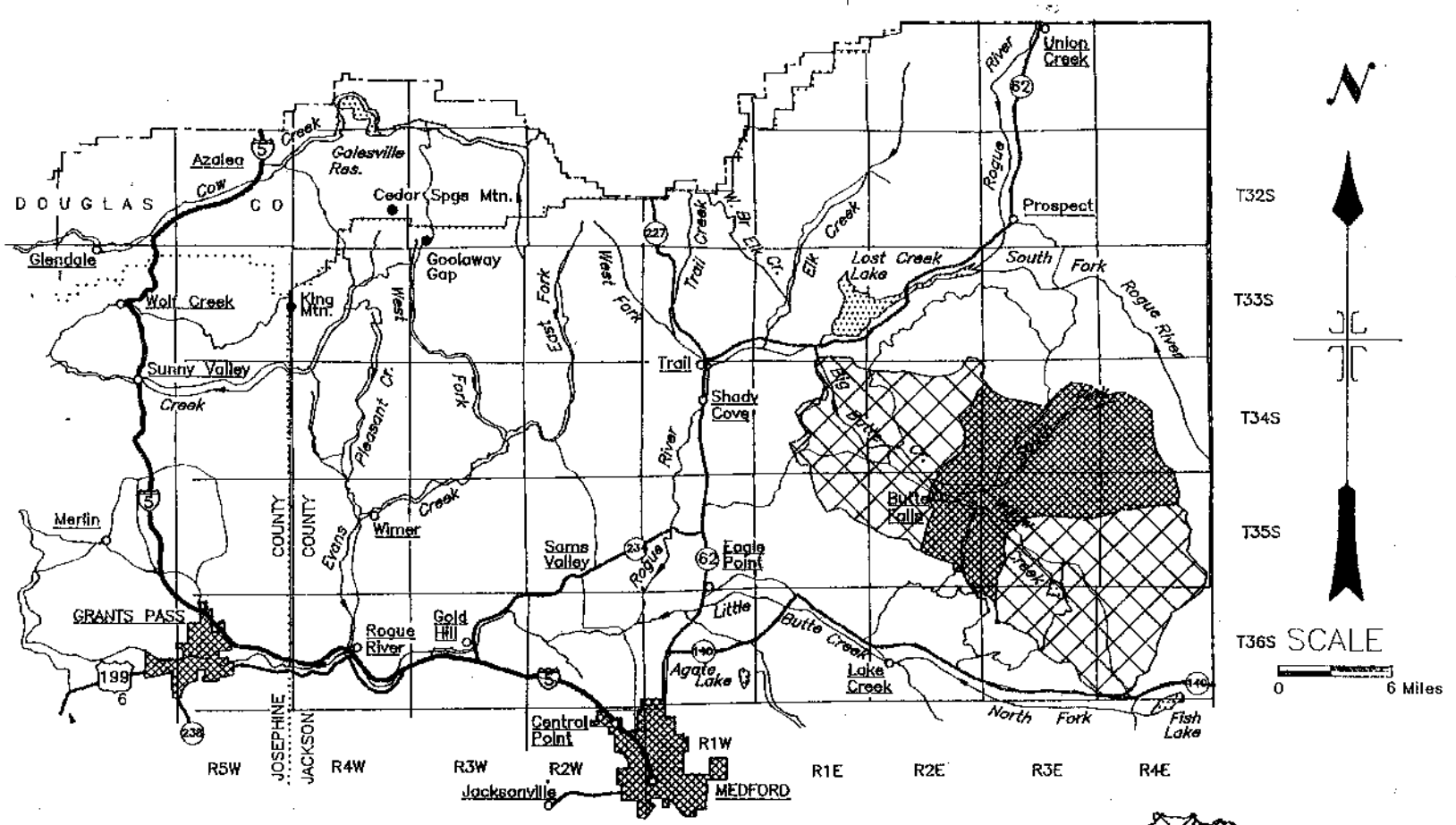
BUREAU OF LAND MANAGEMENT
Butte Falls Resource Area
General Location Map



Big Butte Watershed

Central Big Butte W.A.U.

CENTRAL BIG BUTTE CREEK WATERSHED ANALYSIS

I. INTRODUCTION

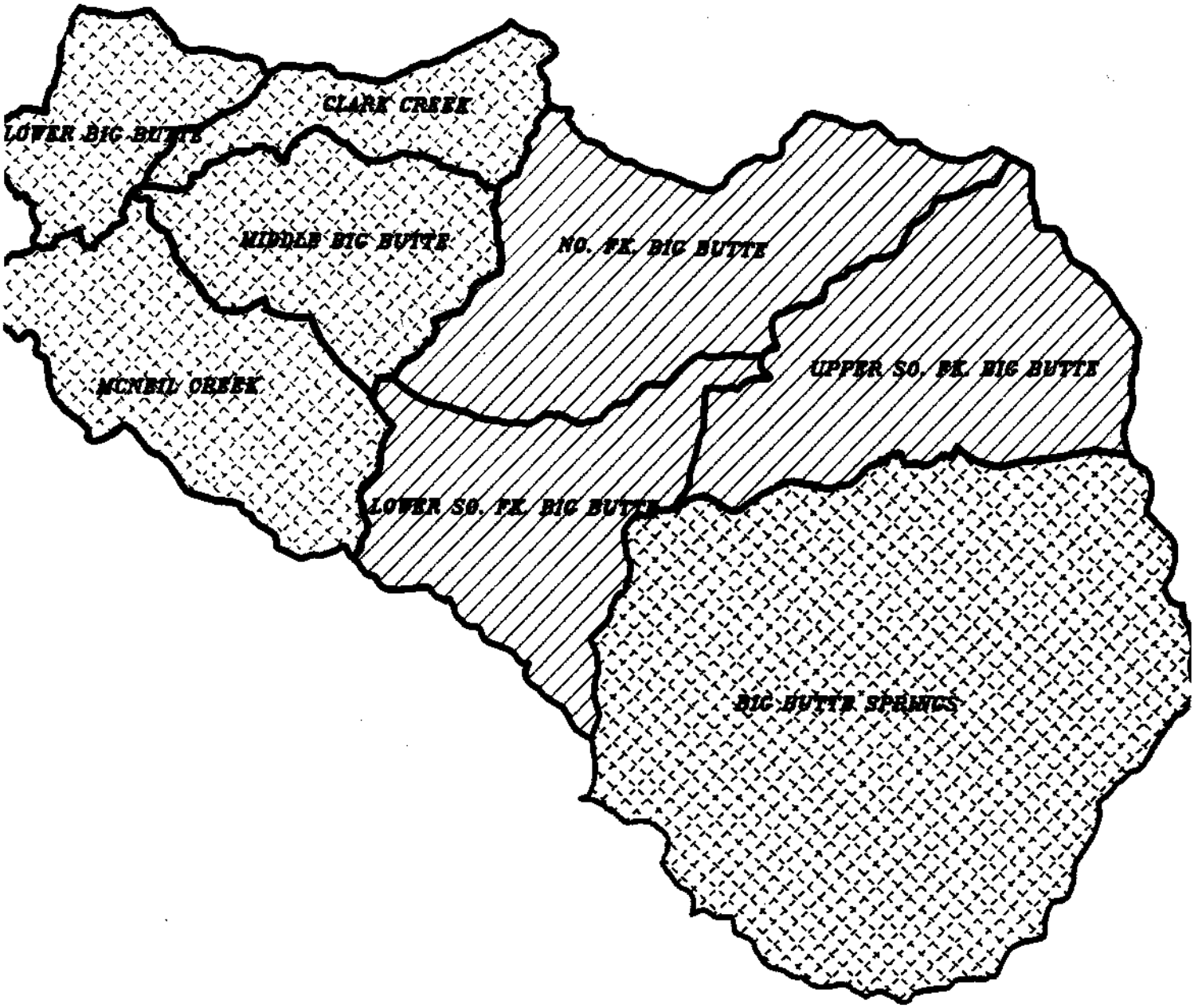
The objective of this analysis is to look at a "landscape" and describe it's "ecosystem" structures and functions. A rudimentary understanding of landscape level processes and interactions is essential in arriving at ecologically sound management decisions. This planning process requires a major shift 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 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.
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 2.1, dated March 24, 1995. This process divides the analysis into six steps: characterization, key issues and key questions, current conditions, reference conditions, interpretation, and recommendations.

II. CHARACTERIZATION (Step 1)

Briefly analyze and describe the dominant physical, biological, and human dimension features, characteristics, and uses of the watershed. Place the watershed in context within the river basin, provinces, or a broader geographic area. (See maps pages 2 & 3)

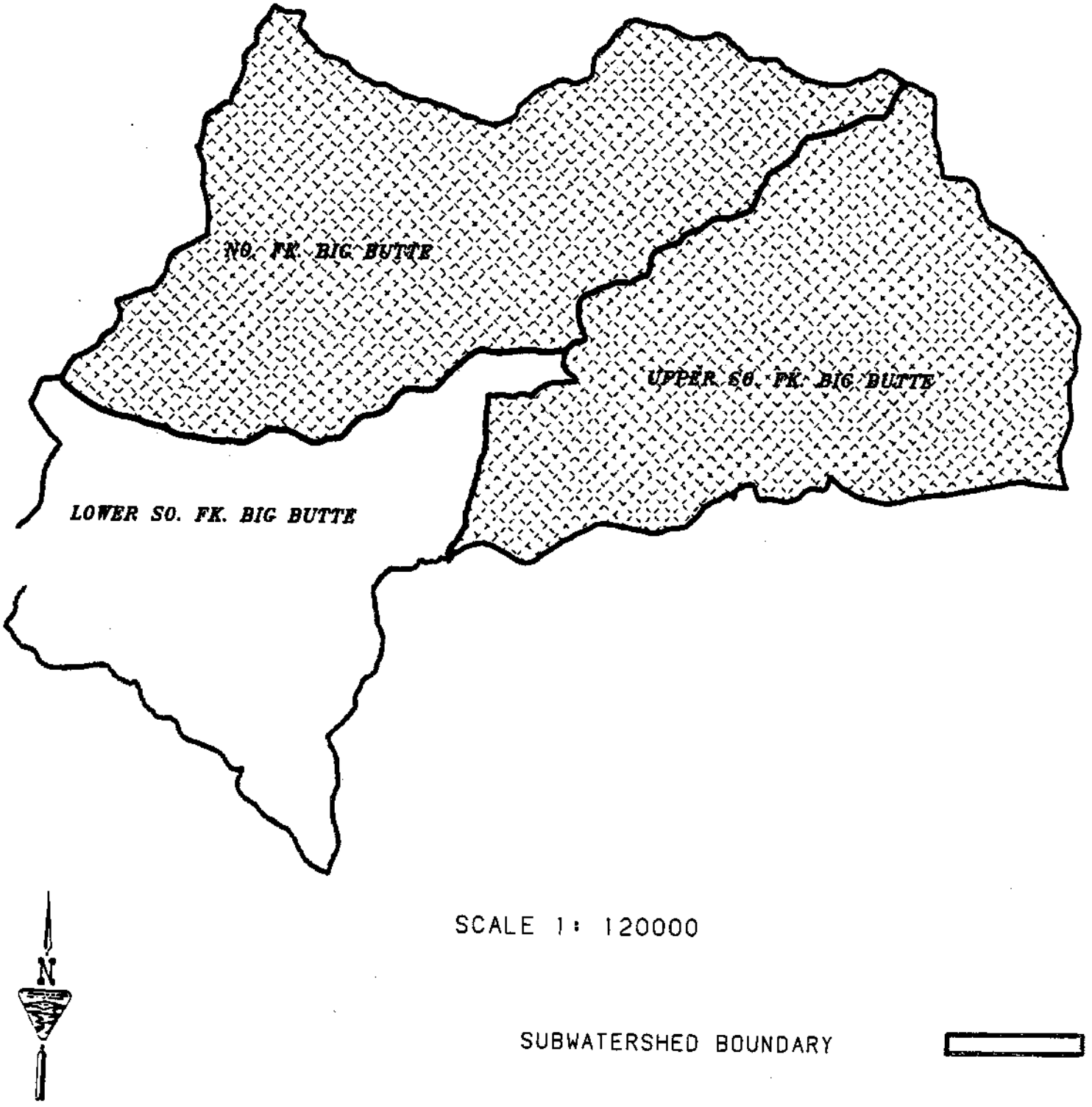
The fifth field Big Butte Creek Analytical Watershed Unit (WAU) has been divided into three parts: (See Big Butte Watershed Analysis Map) 1. **Central Big Butte WAU** (North Fork Big Butte, Upper South Fork Big Butte, and Lower South Fork Big Butte sub-compartments) which will be analyzed in this report, 2. **Big Butte Spring WAU** (Clark Fork/Forbit and Willow Creek sub-compartments) which will be analyzed by the Butte Falls Ranger District, US Forest Service (USFS), and 3. **Lower Big Butte WAU** (Clark Creek, Middle Big Butte, and McNeil Creek sub-compartments) which will be analyzed at a later date.



SCALE 1: 174000

BIG BUTTE SPRINGS
CENTRAL BIG BUTTE
LOWER BIG BUTTE
SUB-WATERSHED BOUNDARY

BIG BUTTE WATERSHED ANALYSIS UNITS



CENTRAL BIG BUTTE SUBWATERSHEDS

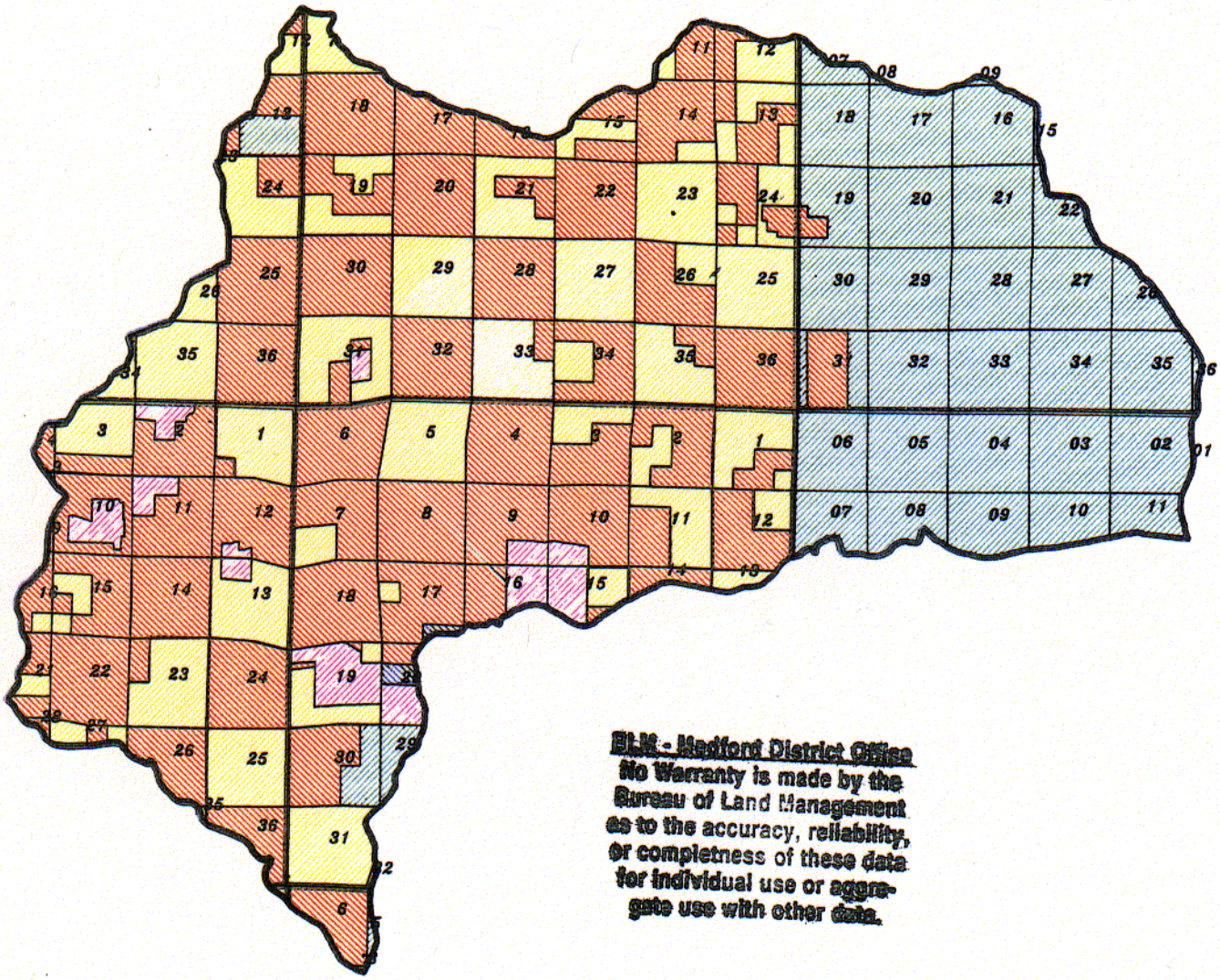
Land ownership - Central Big Butte Watershed - 58054 acres			
BLM	Forest Service	Medite	Private
26%	27%	43%	3%
15237 acres	15776 acres	25135 acres	1879 acres (includes 665 acres agricultural and 232 acres Butte Falls townsite)

NOTE: ACRES SHOWN ARE APPROXIMATE

Central Big Butte Watershed - 58054 acres									
Drainage	Acres	BLM	%	Forest Service	%	Medite	%	Private	%
North Fork Big Butte	22075	8719	39%	2011	9%	11196	51%	60	1
Lower North Fork Big Butte	15856	4036	25%	426	3%	10179	64%	1126	7
Upper South Fork Big Butte	20123	2482	12%	13339	66%	3760	19%	693	3
Totals	58054	15237	XX	15776	XX	25135	XX	1879	X

NOTE: ACRES SHOWN ARE APPROXIMATE

REFER TO MAP NEXT PAGE (Central Big Butte Land Owners)



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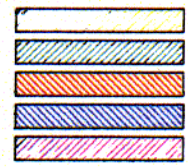
US BLM 15237 AC
USFS 15776 AC
MEDITE 25135 AC
CITY OF MEDFORD 109 AC
OTHER PRIVATE 1770 AC



CENTRAL BIG BUTTE LAND OWNERS

The analysis area is located northeast of Medford, in the Rogue River Basin and is within the Western Cascade Geological Province. It covers approximately 58,054 acres (92 square miles). This includes portions of Townships 34, 35, and 36 South, Ranges 2, 3, and 4 East. The WAU lies within the Butte Falls Resource Area of the Bureau of Land Management and the Butte Falls Ranger District, U.S. Forest Service (USFS). USFS lands are present in the eastern one third of the WAU. Two scattered, isolated parcels of USFS lands are present within the WAU, surrounded by BLM and private ownership. The topography within this landscape varies from moderate slope (<35%) to flat terrain. The BLM lands (the western portion of this watershed unit) typically have flat to gently sloping terrain with broad low gradient drainage ways. Sideslopes are typically less than 35%. The transient snow zone (TSZ) ranges in elevation from 3500 to 4500 feet in this area. This is the elevation zone where rain on accumulated snow pack is most likely to occur and create flooding conditions.

The dominant soil types in this watershed are the Freezner and Geppert soil series. The Freezner soil is very deep (60+") and has formed in colluvium and residuum from andesitic rocks. This soil is well drained and has a clay loam subsoil. This is typically found on the plateau tops and gently sloping sidehills. The Geppert soil is moderately deep (20-40") and is skeletal (>35% rock fragments in the subsoil) with a extremely cobbly clay loam subsoil. This soil has formed in colluvium from andesitic rocks and is typically found on the sideslopes of ridges.

The dominant mapping unit (see Jackson County Soil Survey by the Soil Conservation Service) in this watershed is the Freezner-Geppert soil complex which is 60% Freezner soils and 35% Geppert soils with 5% inclusions. These soils are considered to be relatively stable with respect to surface erosion and landslide potential. The National Forest land in the south east portion of the watershed is flatter than the lands on the slopes of Rustler peak. The soils associated with these lands are sandy loam to loam textures and cobbly to very gravelly. They are shallow to moderately deep, generally acid to moderately acid (Ph between 5.0 and 6.5). The productivity of these soils is rated as low to moderate. Adding to this is the high elevation, causing short growing seasons, high rock content, and high water tables.

These land types are important aquifers and contribute much of the waters to local year round stream flows. Disruption of their natural state by compaction or road building activities has the potential to change the timing of runoff and peak flows in these local streams.

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

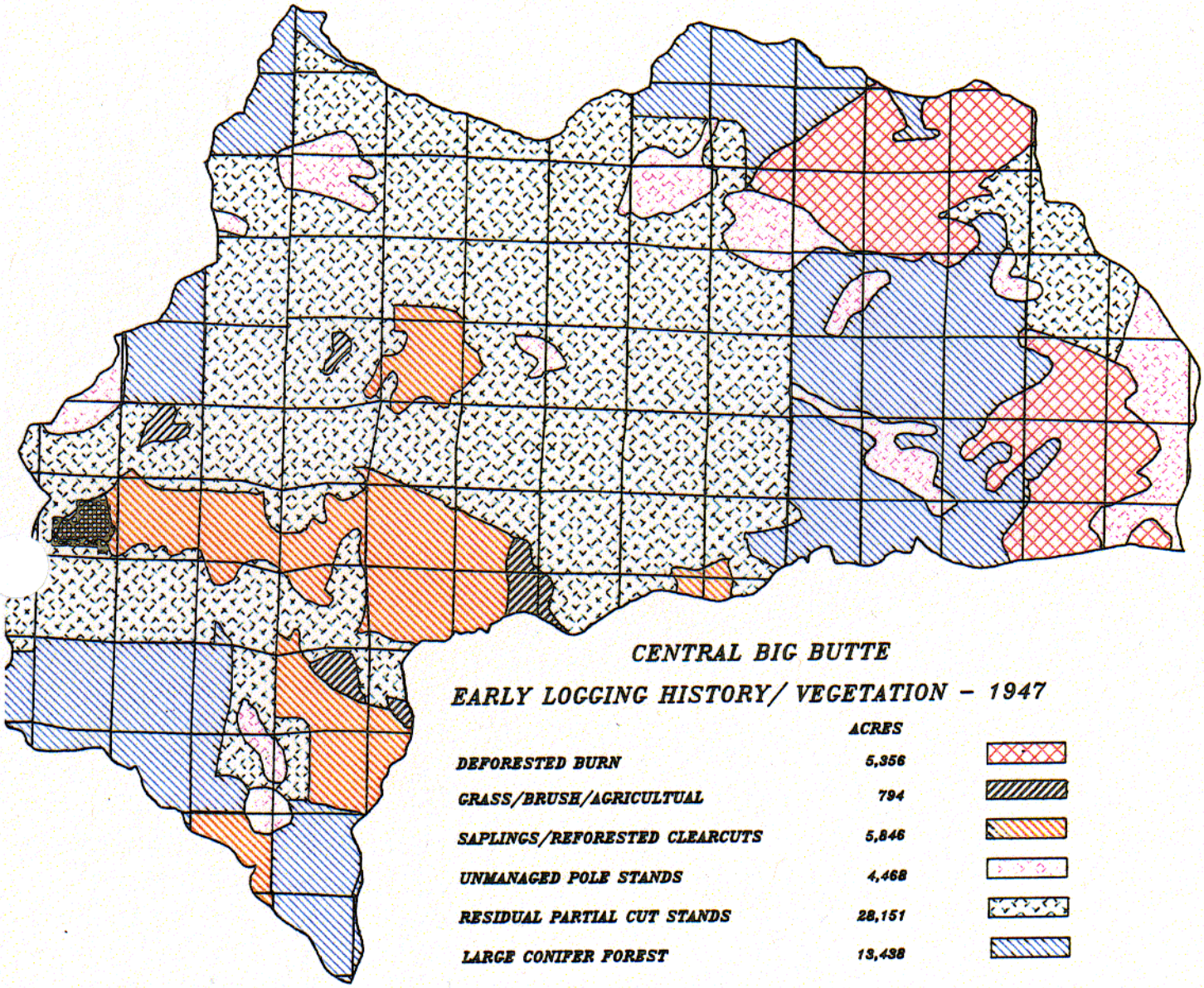
southeast portion of the watershed (National Forest land) has been managed for timber and (soil) compacted in the past. Some of the south and west slopes of Rustler, where an extensive forest fire occurred in 1910, have been windrowed (see map next page). Windrowing often removes the top soil, depositing it into the windrows and leaving soils exposed. The exposed soils include a great deal of exposed rock. Surface soils have experienced erosion, especially the fines, and have been invaded by brush, which competes with the planted trees. Recovery in some areas has taken decades.

Previous management activities in much of the National Forest lands have therefore exceeded management guidelines for compaction and displacement. Rogue River National Forest Standards call for no more than 20 percent of the ground area to be compacted. Compaction in this area is difficult to rehabilitate due to the high rock content. Displacement of the duff layers, organic matter, and top soil has further reduced the productive capacity of these naturally limited soils.

Fire was the dominant agent of change in this watershed as is the case for most of the Rogue Basin. Traditionally, these stand types would have experienced low to moderate severity underburns and occasionally a stand replacement event would have occurred. On the average the area would be expected to underburn every 20 to 45 years. When this cycle was disrupted for whatever reason the stand replacement events would come into play. The low to moderate severity underburns would have reduced the influence of true-fir in the ecosystem. In those periods of fire absence the true-fir would expand it's role in the ecosystem thereby promoting the higher severity stand replacement such as the fires that occurred in 1910 and 1915. (See map next page)

The climate is generally warm and dry with typically cool, wet winters and hot, dry summers. Summer temperatures range from the high 70s to the low 90s. Occasional daytime temperatures in the summer may reach 100° fahrenheit (F). Winter lows drop regularly to 10° to 20° F. Annual precipitation averages 35 inches. Most of the precipitation occurs between mid-October to Mid-April as rain or snow. The winter snow zone usually occurs above 4000 foot elevation. Elevation ranges between 2500 to 5500 feet. Snow accumulates on the upper ridges and many roads are impassable during the winter months.

The north/south orientation of the Cascade Mountains provides the environmental gradient that influences the extent and occurrence of varying plant associations. White fir is the most common plant series within this watershed, with shasta red fir at higher elevations and Douglas- fir and ponderosa pine series at lower elevations. Within the white fir series, seral Douglas-fir dominates the overstory of most stands before being replaced by white fir.



CENTRAL BIG BUTTE

EARLY LOGGING HISTORY/ VEGETATION – 1947

	ACRES
DEFORESTED BURN	5,356
GRASS/BRUSH/AGRICULTUAL	794
SAPLINGS/REFORESTED CLEARCUTS	5,846
UNMANAGED POLE STANDS	4,468
RESIDUAL PARTIAL CUT STANDS	28,151
LARGE CONIFER FOREST	13,438

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.

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

The major drainages in the area are North and South Forks of Big Butte Creek. Jackass, Eighty Acre, Friese, Titanic, Rancheria, and Twincheria Creeks are the important perennial tributaries which drain into Big Butte Creek in the analysis unit. The area encompasses the town of Butte Falls, and includes the Ginger Springs municipal watershed for the town of Butte Falls. The Big Butte Springs municipal watershed for the city of Medford is located adjacent to the southeast boundary. For a description of these municipal watersheds, see Big Butte Springs Watershed Geohydrologic Report, published by the Medford Water Commission and Ginger Springs Geohydrologic Study and Water System and Source Master Plan, prepared for the town of Butte Falls.

III. KEY ISSUES & KEY QUESTIONS (Step 2)

Identify the variety of uses and values associated with the watershed and focus the analysis on the key elements of the ecosystem that are most relevant to the management questions, human values, or resource conditions within the watershed.

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. Five key topics of concern were identified by the analysis team. These were human use, riparian zones (including streams), grazing, landscape function, and threatened & endangered (plant and animal) species. Key questions were designed to address the issues and focus on the elements that influence, and are influenced by humans. Refer to page 13 for Land Allocation Map.

A. Human Use

1. Recreation
    a. What are the primary recreational uses?
    b. What is the potential for future recreational development?

2. Commodities

    a. Special Forest Products
        1. What are the commodities that can be produced in the WAU, and what is the potential for development for these commodities?

2. What impacts does production & development have on the commodity?

b. Timber Sales

3. Ginger Springs municipal watershed

a. What are the management constraints?

b. What are the management opportunities in the watershed to maintain water quality?

4. Roads

a. What is the level of OHV use in the watershed?

5. Economic development for the town of Butte Falls

a. What is the BLM relationship to the Butte Falls community strategic plan?

B. Riparian Zones--includes aquatic systems

1. Fish
   a. What species are present and what are the current population trends?
   b. What are the conditions, extent, location, and trend of the riparian and aquatic habitat?

2. Water quality & quantity
   a. What influences from adjoining watersheds are affecting water quality?
   b. What is the source and significance of sedimentation levels?

3. Vegetation/structure
   a. What are the conditions and trends of riparian vegetation?
   b. What are the conditions and trends of up slope and riparian area with regard to providing large coarse woody debris to aquatic elements?

4. Sedimentation
   a. What are the sources of sedimentation?
   b. How have human activities in the watershed analysis area affected the status of soils and soil productivity?

5. Connectivity corridors
   a. What are the extent, condition, trends and importance of these areas for connectivity and habitat of terrestrial and aquatic species?

6. Roads
   a. What are the effects of road density, standards, uses, locations, and maintenance schedules on the functioning conditions of the riparian zones?
   b. How does the culvert structure affect stream channel function?

7. Riparian management opportunities
   a. Are density management opportunities appropriate to enhance riparian zones?
   b. When is it appropriate to remove large woody debris from riparian zones?
   c. What standards and guidelines must be met when an activity occurs within a riparian zone?

C. Landscape function

1. Species composition/structure (plant community)
   a. What is the distribution/trend of plant communities?
   b. What is the natural range of variability of this watershed?
   c. What are the roles and/or risk of wildfire in the watershed?

2. Landscape/ownership pattern
   a. How has human caused changes affected the landscape pattern of vegetation and structure?
   b. How does management of private lands affect the attainability of desired future conditions?

3. Alteration of wildlife habitat
   a. What activities or trends in populations or habitats affect the wildlife?
   b. What are the opportunities to enhance wildlife habitat in the watershed across federal ownership?
   c. What are special wildlife habitat designations in the WAU?

4. Roads
   a. What is the current road density for the watershed and what is considered an acceptable number of miles of roads per section?
   b. How do compacted acres affect hydrological functions?
   c. How do compacted acres affect timber productivity?

D. Grazing & Agricultural Uses

1. Agricultural practices & riparian zones
   a. How do human activities (grazing) influence water quality and sediment delivery to the aquatic system?
   b. What affect does grazing have on the riparian vegetation?
   c. What affect does grazing have on sensitive plant and wildlife species?

2. Noxious weeds
    a. Are noxious weeds a concern in the watershed?
    b. What can be done if noxious weeds are determined to be present?

E. Threatened & Endangered and sensitive species

1. Plants and animals
    a. What sensitive plants and animals are in the watershed?
    b. What are the recovery needs of T&E plants and animals in the watershed?

IV. CURRENT CONDITIONS (Step 3)

Document the current range, and distribution in condition of ecosystem elements. (See map page 23)

A. CURRENT HUMAN USE IN THE WATERSHED

1. Recreation

Recreation opportunities throughout the Central Big Butte WAU primarily involve hunting, fishing, camping and forest recreational driving. Dispersed camping sites, usually located near perennial streams or "pump chance" ponds, are used predominantly by hunters in the fall and the casual, more hardy camper. People driving the forest roads for sightseeing are becoming more common throughout the region. The Butte Falls Ranger District has recently developed the "Discovery Loop Tour" that takes the forest traveller through upper portions of the WAU. Access to the Blue Canyon Trailhead, a takeoff into the Sky Lakes Wilderness is through the watershed on F.S. road 37-3770. This is the most heavily used trailhead on the Butte Falls Ranger District. The future potential uses of the area for recreation will probably remain largely dispersed and informal. A site along South Fork Big Butte Creek that lies along the "Loop Tour" route has potential for picnic-type day use (SWSW, Sec7, T35S, R3E). The presence of the Loop Tour may increase user awareness of the diversity of this forest watershed and attract larger numbers of forest recreational users.

2. Commodities

A large variety of Special Forest Products (SFP) are harvested in the watershed by BLM and USFS agency programs. A limited amount of SFP are also sold by the major private landowner, Medite Corporation. These products include, but are not limited to: firewood, posts/poles/rails, greenery (eg. ferns, salal), boughs, edibles (mushrooms), medicinal (prince's pine, Oregon grape), hardwood burls, cones, brush sprouts and Christmas trees. Little is currently known about product inventories. The program management is predominately one of a permitting process. The SFP industry seems to be developing rapidly in a manner that

may put greater pressure for the sale and consequent "management" of these items. State Law requires the possession of a permit from the landowner for any product that is removed from the forest. Based on the last several years growth in interest of SFP, the potential for significant economic development is evident. Little is known about the long term consequences of high levels of harvesting of SFP on these products.

Timber sales on the federal forests and the removal of timber from private forests have occurred throughout the central Big Butte WAU regularly for the last seventy years. The first large timber sale in SW Oregon occurred in the Big Butte Springs watershed compartment (USFS analysis) that lasted through the decade of the twenties. Logging on private lands developed in earnest as the railroad mainline and spurs were pushed further into the forest. Expanding railroad lines reached into virtually every corner of the South and North Forks of Big Butte Creek through the 1930's and 40's. Timber sales on BLM and Forest Service lands became common after World War II. Changes in management, on both federal and private timber lands, in the last twenty years, have brought rapid change to the forest community and the people that live and work in it. The logging industry has built the town of Butte Falls and contributed to the economy of Southwest Oregon and is expected to continue to have a role in the local and regional economy.

3. Ginger Springs Municipal Watershed

The town of Butte Falls gets its household water from Ginger Springs, located about one mile south of town. The spring is considered to be a geologic underground source, i.e. not relying on surface flows. The Ginger Springs watershed is approximately 2800 acres and 29% of the area is managed by BLM. Historically BLM timber sales have occurred throughout this watershed with few constraints. The most recent timber sale activity on BLM lands occurred in the late 1980's on the south end of the watershed. Management of the private timber lands has been very intensive. For the most part the immediate square mile around the spring has never been or only very lightly harvested. There is considerable concern in the town of Butte Falls about the use of herbicides in the watershed. Generally clearcutting is not considered appropriate management by the town's water consumers. The effects of these practices on water quality are unknown.

4. Roads

The Central Big Butte watershed probably could be considered well roaded. The gentle terrain that characterizes the watershed allows for easy, and consequently frequent, road construction. Many roads remain unsurfaced and are potential contributors to sediment loading in streams. Efforts at blocking roads are often difficult because of the gentle terrain. Another impact of roads in the area is the opportunity for Off-Highway-Vehicles (OHV) gaining access to the forest for the recreational experience. When this occurs on unsurfaced roads during wet weather, usually during hunting season, significant impacts may occur. Other than casual observation of this type of use, there is little documentation of the impact of OHV use in the area.

5. Economic Development

In 1991, the Butte Falls Community Response Team, in cooperation with the Oregon Economic Development Department, prepared a Strategic Plan (on file) that was designed to plan a long term strategy for the future economy of the Butte Falls area. The plan identified goals that would develop the areas potential based on its natural resource strengths. These goals centered around the creation of local jobs through the development of unique tourism and recreation opportunities, the development of natural resource oriented work, the expansion of new cottage industries, and the creation of cultural and educational opportunities to improve livability. These efforts were intended to improve the economy without detracting from the livability of the area. The Strategic Plan listed the BLM as a collaborator/resource to accomplish these goals. There are currently three proposals in varying stages of development that, by nature of their association with BLM ownership, involve BLM.

1. Butte Falls Discovery Loop Tour has an interpretive kiosk site on BLM land at the junction of Lodgepole Road with the Prospect Highway. BLM has been involved in all aspects of the development of this program.

2. A water bottling facility, although located in Butte Falls, will rely on effective and cooperative land management by BLM to maintain water quality.

3. A proposal to reconstruct portions of the old logging railroad line, which crossed BLM land, as a tourist excursion train. This project is being organized by the local chapter of the National Historic Railroad Association, with cooperation from the town of Butte Falls.
These projects are consistent with the Strategic Plan goals of Butte Falls and will rely heavily on the BLM's willingness to participate in order to complete and to be effective towards reaching Strategic Plan goals.

B. RIPARIAN ZONES

Riparian-wetland areas are functioning properly when adequate vegetation, landform, or coarse woody debris (CWD) is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality. These zones filter sediment, capture bedload, floodplain development, improve floodwater retention and ground water recharge, develop root masses that stabilize streambanks against cutting action, develop diverse ponding and channel characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production, waterfowl, breeding, and other uses, and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

Riparian-wetland areas functioning, at risk, are those that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Non-functioning riparian-wetland areas are those that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows. These non-functioning riparian-wetland areas are not reducing erosion, improving water quality, etc., as listed above. The absence of certain physical attributes, such as having a floodplain where one should be, are indicators of nonfunctioning conditions.

Vegetation in the riparian areas on BLM lands which were harvested in the past is beginning to recover. Hardwoods (vine maple, alder, big leaf maple) and sapling conifers are growing along the creeks in most of these areas. These areas could be considered functioning, at risk, due to lack of CWD and lack of large conifers to provide future CWD. It will be decades before seedling/sapling conifers will be large enough to provide CWD to the system. The no-cut buffers required in past logging operations were much narrower than new ROD requirements. These new riparian reserves will slowly recover, but it will be decades before the conifers in the logged areas are large enough to contribute LED to the streams.

Harvesting on private lands is occurring at an accelerated rate in much of the WAU. Private riparian reserves designated in the "Oregon Forest Practices Act" are narrower than those required for Federal lands. Many of the private lands have had all woody vegetation removed to the edge of the stream. These riparian zones are not contributing to the properly functioning condition, as there is little-to-no mature riparian vegetation left to shade the stream and no large woody debris in the riparian zone. Due to the general flat topography, grass and willow flats occur along some of the creeks. In some of these areas, beaver are present, and have created a series of beaver dams and ponds. Beavers can be both beneficial and detrimental to a stream. In some of areas beavers are having an impact on the riparian vegetation by removing all willows along the streambanks. In areas which are impacted by logging activities and overgrazing, this can create areas with no streambank vegetation. Beaver dams raise the water table behind the dams and can provide good aquatic habitat for cutthroat, coho, and other vertebrate and invertebrate species and store water during drought times.

Cattle can impact streambanks and vegetation in riparian zones. Cattle congregate in cool, damp areas (along streams, seeps, and springs) where they remove vegetation by grazing and cause disturbance to streambanks by trampling vegetation at the edge of the stream. This reduces shade, increases sedimentation, and may destabilize the streambank. Areas where cattle congregate during long periods of time may have patches of bare, exposed soil, low willow regeneration due to grazing, and high concentrations of manure.

RIPARIAN FACTORS LIMITING FISH PRODUCTION

a. lack of shade to provide cooler water temperatures (rearing)
b. lack of large standing conifer to contribute to large woody debris (rearing)
c. lack of overhanging vegetation for macroinvertebrate production (rearing)
d. removal of riparian vegetation resulting in lower water tables, causing the seeps and springs to dry up more quickly in the summer (migration, spawning, rearing)

1. FISH/STREAMS (See maps page 18 & 19)

Mainstem Big Butte Creek begins at the confluence of North and South Fork Big Butte Creek below the town of Butte Falls. The lower reaches of this creek near the Rogue River provides important salmon spawning and rearing habitat. The importance of the upper tributary streams should be stressed, as they are a source of cold, clean water, nutrient cycling, large woody debris input, spawning gravel, and macroinvertebrates which are necessary for healthy functioning stream systems.

Tributaries to the South Fork Big Butte Creek within the Lower South Fork sub-watershed are Doubleday, Ginger, and Hukill Creek. Rancheria and Twincheria Creek flow from USFS lands into Upper South Fork Big Butte in the sub-watershed of S. Fork Big Butte Creek. Jackass, Eighty Acre, Mule, Camp, and Frieze Creek are main tributaries to the North Fork of Big Butte Creek in the sub-watershed of the same name.

Chinook, coho and steelhead are present in Big Butte Creek and move upstream into the upper reaches of South Fork of Big Butte Creek to the waterfalls below the town of Butte Falls. Some steelhead and occasional coho may pass over the falls during high flows. Steelhead and coho are found in North Fork Big Butte Creek throughout the BLM portion of the WAU and move into the upper reaches of the streams on USFS lands. Steelhead can be found in the lower reaches of Eighty Acre, Jackass and Frieze Creeks near the confluences with North Fork Big Butte Creek. Cutthroat are found in most perennial streams throughout the system which have adequate flows and are not blocked with impassable culverts. An inventory of culverts was performed in the winter of 1993-94 to determine fish passage problems (Appendix XX). The culverts which are blocking fish passage will be replaced as budgeting allows, with higher priority given to anadromous fish bearing streams.

Klamath Province steelhead are proposed for listing as a "Threatened or Endangered" (T&E) species by the National Marine Fisheries Service (NMFS). Coho have been petitioned to be proposed for T&E listing. A decision is pending on both issues.

2. Water Quality/Quantity

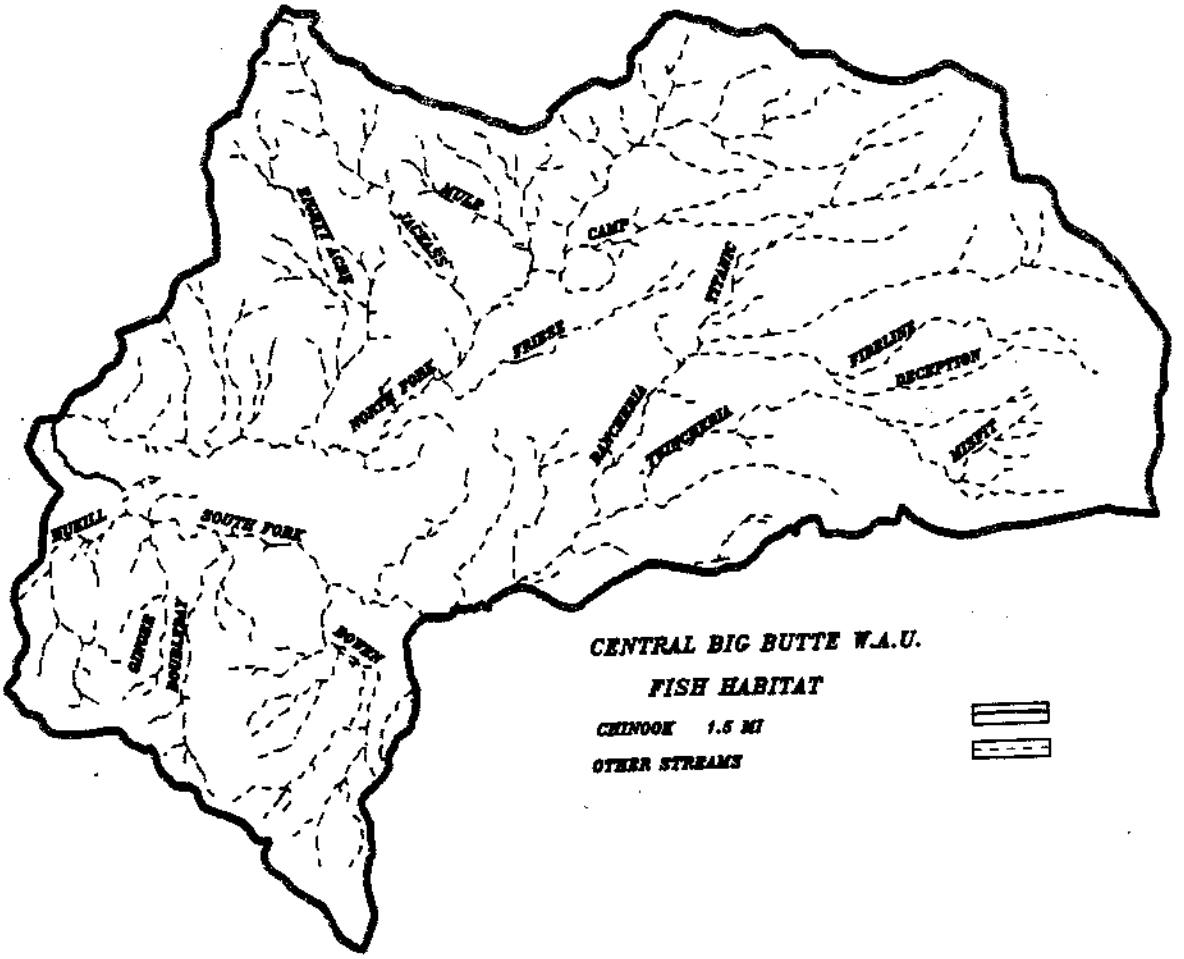
Macroinvertebrate studies in the area indicate that the streams are generally healthy with good macroinvertebrate numbers and species which indicate good water quality. However, macroinvertebrates which are sensitive to sedimentation are lower in numbers and those associated with the hyporheic zones (the subterranean substrate adjacent to and under channel and streambanks which provide habitat for some life stages of aquatic macroinvertebrates) are limited, indicating that higher levels of sediment are present. The presence of some macroinvertebrates which tolerate higher water temperatures, although low in numbers, indicates that some elevation in temperatures is also occurring. Since most of the creeks in the area are spring fed, macroinvertebrates presence should reflect cooler year round temperatures.

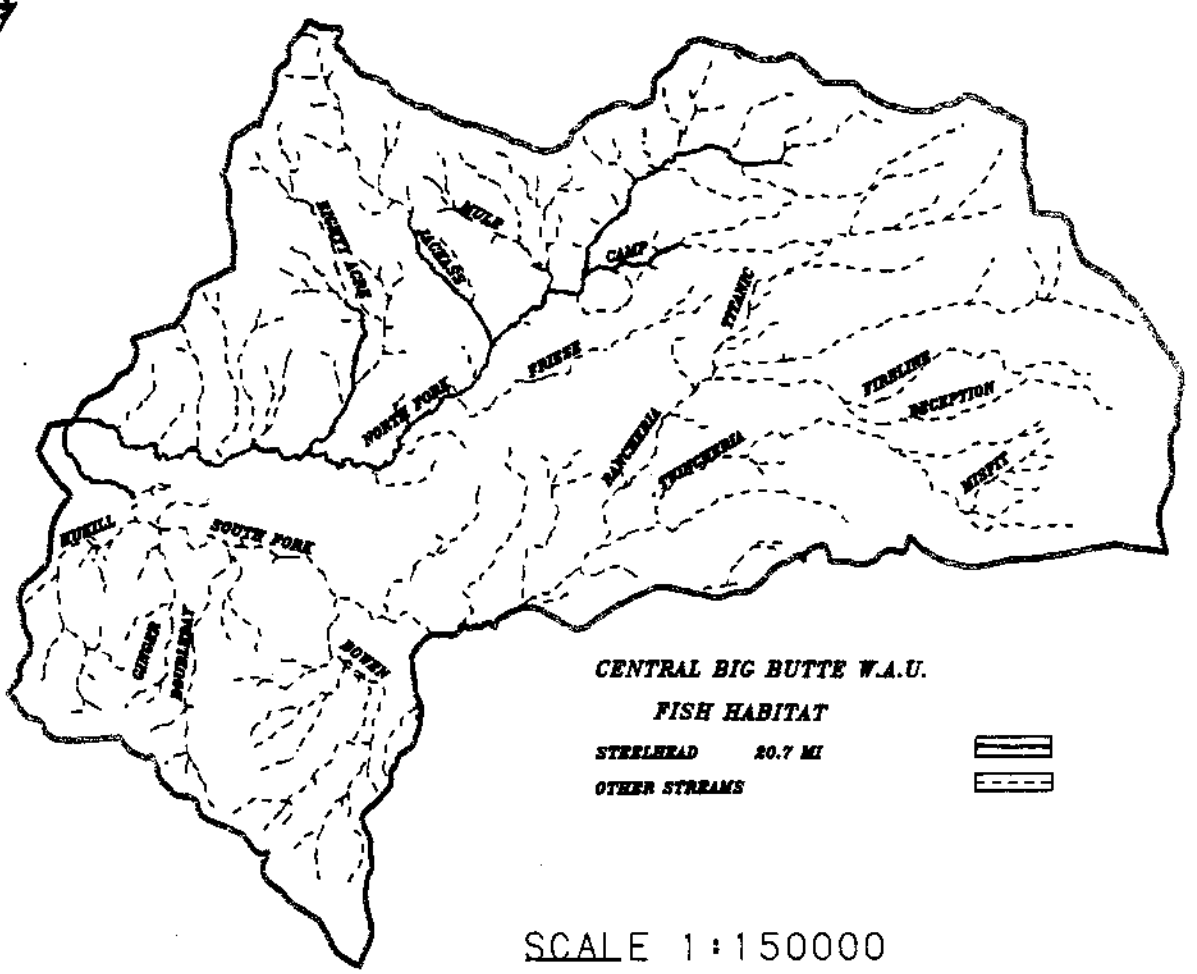
Sedimentation impacts a stream by filling the spaces around the streambed substrate, covering gravels and reducing the amount of spawning habitat available to fish. During high flows, sediment may scour invertebrates from their substrate. Macroinvertebrates also live and reproduce in the spaces under and around rocks. When these become filled with sediment, macroinvertebrate numbers decline. This can reduce the amount of food available to fish. Fish eggs also need water flowing around them to provide oxygen to the developing embryo. When sediment covers the eggs, the oxygen flow is reduced or eliminated and the eggs may fail to develop, and fish populations are reduced.

Water diversion by the Eagle Point Irrigation district from South Fork of Big Butte Creek has been occurring since 1919. This water right removes 100 cubic feet per second (cfs) from the creek throughout the year. The water from the canal is used to generate electricity at a small hydroelectric plant near Eagle Point. The district is required to leave at least 10 cfs in Butte Creek at the diversion point when irrigation season ends in order to provide fish habitat. Water from the hydroelectric plant and unused irrigation water flows into Nichols Creek, a tributary of Little Butte Creek. Butte Falls has a water right for 1½ cfs from Ginger Springs dating from 1914 shortly after the town was incorporated. In 1993/94 the water consumers of town used an average of almost 13,800 gallons per day. Discharge from the treatment plant meets DEQ standards except when high rainfall months cause higher water flows to the system. Water is diverted from South Fork Big Butte Creek to provide water to the fish hatchery just east of the town of Butte Falls. The water right, granted in 1923, allows for removing 15.5 cfs. Virtually all of this withdrawal is returned into the system via Ginger Creek. Hatchery water discharge goes through a settling pond to meet DEQ water quality standards.

INSTREAM FACTORS LIMITING FISH PRODUCTION

a. limited salmon habitat due to lack of large woody debris in the stream (rearing)
b. higher water temperatures (rearing)
c. spawning gravels sedimented (spawning)
d. pools aggraded due to fine sediment (rearing & migration)
e. lack of accessibility for juvenile and adults to migrate throughout the drainages (spawning, rearing, migration)





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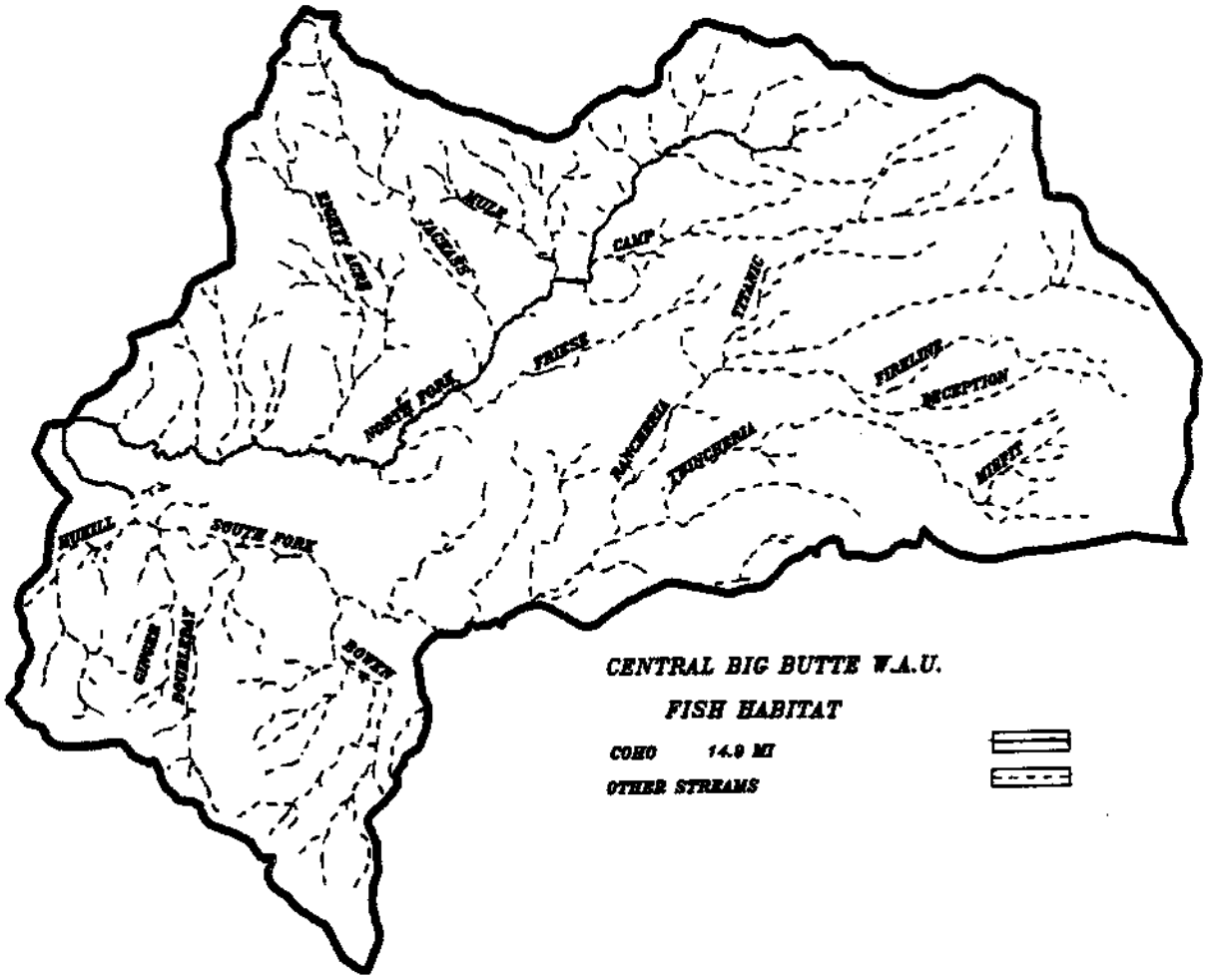

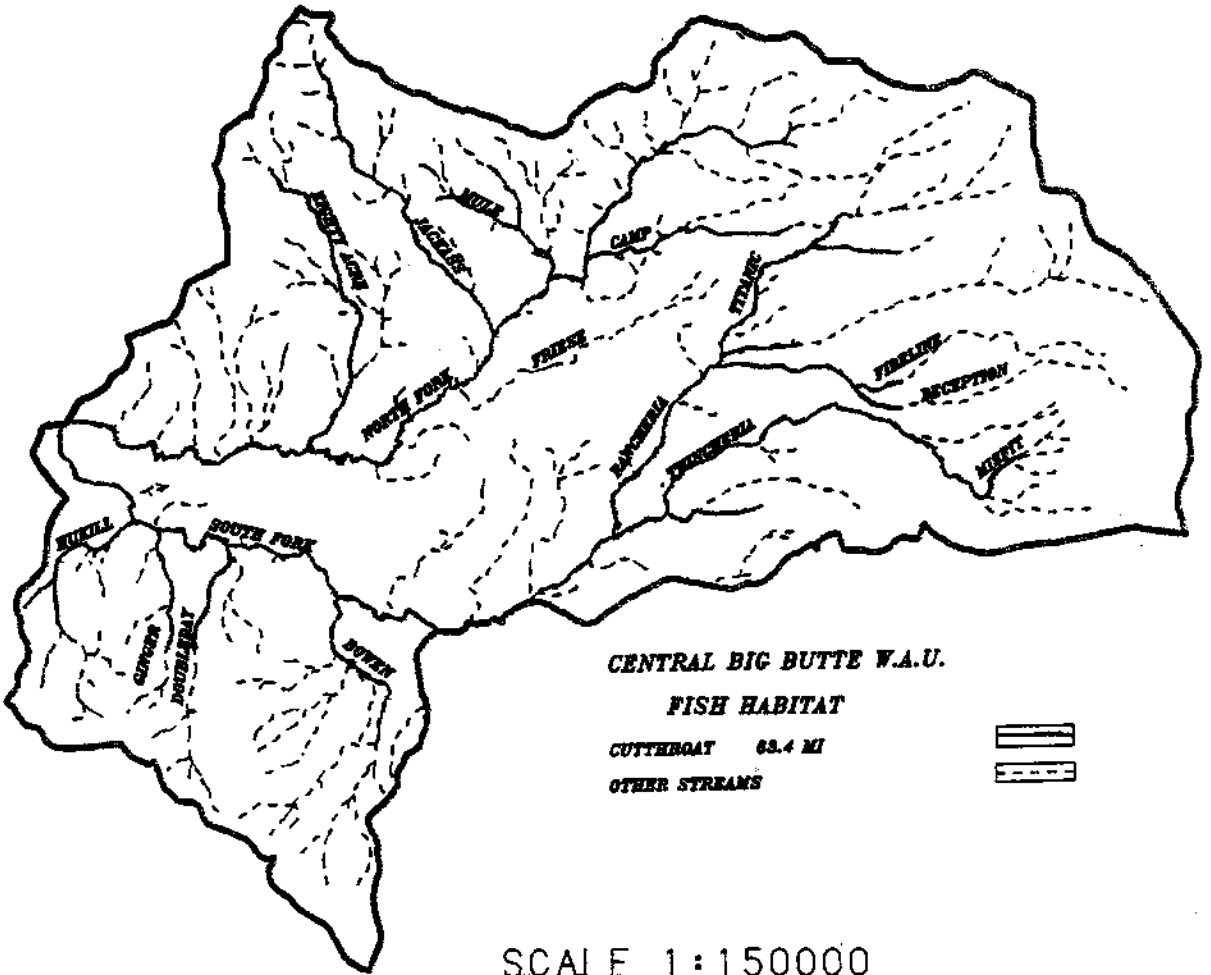

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3. Vegetation and Structure

Human activities have altered vegetative communities within the riparian zones of all of the creeks. Ownership patterns influence the presence or absence of buffer areas adjacent to the creeks. In some areas, harvesting activities have occurred down to the edge of the creeks with scattered trees less than 8 to 10" diameter at breast height (dbh) left. Early seral herbaceous and shrub species are the dominant vegetative type within these areas. In other areas, no-cut riparian buffers were left. The width of the buffer corresponds to the stream class of each of the creeks. Buffer widths range from 25 to 100 feet on each side of the stream. The resulting pattern of buffered and nonbuffered areas along each creek has led to broken, poorly connected riparian corridors.

Central Big Butte - Estimated Riparian Corridor Structure by Percent and Miles	
Early Successional	Late Successional
42%	58%
84 miles	111 miles

NOTES: Estimates are based upon GIS data base of stream classes 1 & 2, Oregon Forest Practices Act. Field verification may change percentages and miles. The width of the corridor on either side of the stream is variable.

4. Sedimentation

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. Roads and skid trails lead to compaction of the soils and result in increased sediments reaching the streams due to poor infiltration rates. The roads and compacted areas contribute to higher sediment loads reaching the streams during the rainy season, and may have a negative impact on fish and macroinvertebrates in the stream. In some places, roads were built in the riparian areas. Due to the flat terrain, much of the area has been cat logged, which results in higher densities of roads and skid trails than other systems. Twenty miles of roads are present in the riparian reserves on BLM and USFS lands in the WAU.

5. Connectivity Corridors

Roads, streams, and riparian areas are major corridors which provide travel routes for animals and people in the WAU. These corridors also provide for lichen and plant dispersal. The streams provide an important migration route for sensitive stocks of anadromous salmonids and resident fish, as well as salamanders, frogs, insects, and other macroinvertebrates. Nutrient recharging, steady water supply, macroinvertebrates, and large woody debris enter the system through the riparian and aquatic system in the uplands and help stabilize the systems within the WAU, as well as the lower parts of the stream.

Riparian areas provide connectivity between remaining old growth patches and other habitat types in the area. Riparian reserves will continue to provide higher levels of cavity nesting habitat, as snag densities will remain at more natural levels in the areas which have not been harvested or still retain natural characteristics. This will help mitigate the loss of snags in the uplands due to harvest activities. Large and small mammal and bird populations also depend upon the riparian corridors for cover, forage, denning, nesting, and travel routes. Land ownership patterns and harvest activities in the area have resulted in broken patterns of riparian connectivity.

6. Roads

Improperly placed culverts can block fish movement and increase disturbances to the stream. High densities of unsurfaced roads contribute higher levels of sediment to streams. Roads built in the riparian areas allow more disturbance along the creek through access for fishing in previously undisturbed areas, camping, waste disposal near streams, as well as loss of riparian vegetation and more opportunity for runoff to reach the stream. Cattle also use the roads to move throughout the area and may spend more time near the pump chances which are built beside the roads, creating more waste and trampling of the bank vegetation, due to the ease of access. Noxious weeds and non-native plants can be introduced into an area through road corridors. Road density in the WAU averages 4.9 miles of BLM roads per section and 4.1 miles of Forest Service roads per section.

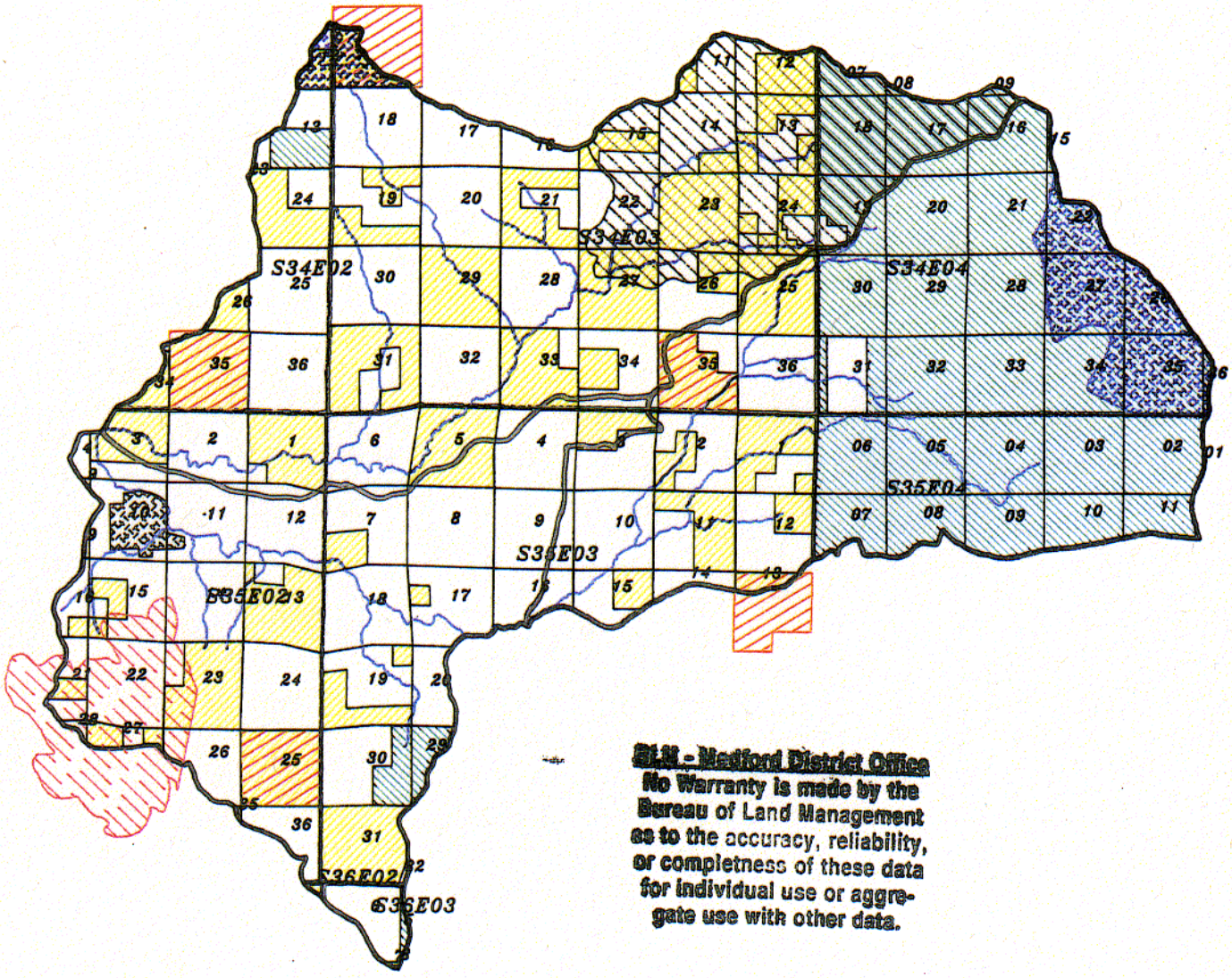
7. Riparian Reserves and Management Activities

Riparian areas - Due to logging activities, early seral conifer, vine maple and shrubs, and other hardwoods are the dominant vegetative type within these areas. In other areas, no-cut riparian buffers were left. Riparian buffers in the area are generally less than the new requirements of the ROD. The resulting pattern of buffered and nonbuffered areas along each creek has led to broken, poorly connected riparian corridors in the part of the WAU with BLM lands. The USFS lands have contiguous ownership along the streams, and the result is less broken connectivity along the riparian areas.

Large woody debris is generally lacking in most of the intensively managed riparian areas. Projects in the riparian areas may occur in the riparian buffer zone which will lead to short term disturbances, but will be designed to enhance and increase the growth rate of conifers to return the buffer to a proper functioning condition. These projects may include (but are not limited to) thinning of densely stocked stands to encourage development of large conifers, releasing young conifers from overstory hardwoods, reforesting shrub and hardwood stands with conifers, scarification of existing roads, etc. A site specific recommendation and Environmental Assessment will be completed before any activity occurs in the riparian buffer. Riparian Reserve boundaries may be variable, and will be determined in a site specific analysis of hydrological, geological, biological, and ecological processes before an action occurs. Slope and soil stability, hydrological processes, wildlife dispersal corridor needs, natural disturbance processes, and endemic species considerations are some of the processes which are taken into account in making recommendations to determine riparian buffer widths.

Hazard trees may be salvaged from Riparian Reserves only when present and future LED amounts are met (ROD pg C-32) and the action will not adversely affect the area. Currently, the minimum amounts are 20 pieces greater than 16" per mile of stream. This amount is based on studies in Eastern Oregon and may not reflect the Western Oregon streams. Oregon Department of Fish & Wildlife (ODFW) has completed several years of stream surveys and are in the process of reviewing the data and will be determining minimum amounts of LED for streams and riparian areas in Western Oregon. This figure will be adjusted when the ODFW recommendations are published. Sites not meeting the down/woody criteria will have hazard trees felled and left in place.

New road locations and landings in riparian reserves and stream crossings will be avoided whenever possible. These actions will only be allowed after soil and rock conditions in riparian zone and stream have been analyzed to determine that there will be no long term negative impacts on the system and no other alternatives exist. The action will be designed to minimize disruption of natural hydrological flow paths, including diversion of stream flow and interception of surface and subsurface flow, and restricting sidecasting as necessary to prevent the introduction of sediment into the stream. The action will only be allowed if it is determined that the action will not reduce the ability to attain aquatic conservation strategy and riparian reserve objectives as outlined in the ROD and will follow management action direction outlined in the RMP, pg 2-53 & 54.



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US BLM LAND
USFS LAND
BUTTE FALLS
RESTRICTED WATERSHED
GINGER SPRINGS MUNI. W-SHED
CONNECTIVITY BLOCK
CRITICAL HABITAT UNIT
CUTTHROAT STREAMS

CENTRAL BIG BUTTE LAND ALLOCATIONS

C. LANDSCAPE FUNCTION

Species Composition and Structure

Distribution/trend of plant communities

Two plant groupings are present within the Central Big Butte watershed. Plant groupings are aggregations of plant associations with similar management potential, the same dominant late seral conifer species, and the same principal early seral species.

1. Shasta red fir/shrub/herbaceous (shasta red fir series), approximately 5% percent of the watershed.
2. Douglas-fir/ponderosa pine/Ceanothus/herbaceous (white fir series), approximately 95 percent of the watershed.

Shasta red fir/shrub/herbaceous - Shrub and herbaceous vegetation develop slowly in the early seral stage and are sparsely distributed in the understory of undisturbed stands or lightly entered partial cuts of later seral stages. These species would occupy the site if the mature or old growth stand were clearcut. Natural stands in the late seral stage are dense Shasta red fir communities with chinquapin as the primary hardwood shrub. Depending on elevation, Douglas-fir, western white pine, white fir and mountain hemlock are present. Shasta red fir may succeed itself in natural stands following disturbance events such as windthrow or fire. Fire occurrence is infrequent. Disturbance appears to be necessary for regeneration to occur. (Medford PRMP, 1994). This plant grouping is similar to the Shasta red fir series described in the plant association guide for national forest lands in southwest Oregon (Atzet and McCrimmons, 1990),

Douglas-fir/ponderosa pine/ceanothus/herbaceous - Grass, forbs, and shrub species such as snowbrush, varnishleaf, deerbrush, manzanita, and vine maple are common early seral species. Meadows or ponderosa pine stands may occupy flatter slopes due to local frost severity or soil and drainage variations. Inclusions of white oak-ponderosa pine/manzanita/grass communities represent local soil variations. Frost prone areas within this grouping follow a successional pattern in which ponderosa pine provides frost protection for the subsequent development of Douglas-fir or white fir in the late seral stage. Severe grass competition in the early life of the stand may reduce conifer seedling survival, thereby prolonging the early or mid-seral stages (Medford PRMP, 1994). This plant grouping is similar to the white fir series described in the plant association guide for national forest lands in southwest Oregon (Atzet and McCrimmons, 1990),

The elevational gradient of the watershed provides the environmental conditions that influence where the plant groupings occur. The Douglas-fir/ponderosa pine/ceanothus/herbaceous grouping occupies the elevational zone of approximately 2400 to 5000 feet. The Shasta red fir/shrub/herbaceous grouping occupies the highest elevations within this watershed, primarily above 5000 feet.

This watershed is currently characterized by highly fragmented stand types and age. The federal ground has significantly different characteristics than that of the private ground. (When we examine risk and hazard from wildfire we must take into account these differences. The primary difference is that of understory vegetation or ladder fuels. The private ground is primarily a two story stand with little coarse woody debris present to contribute to fire severity or duration. Because most of this land is flat there have been intensive efforts to tractor pile and burn slash from the multiple entries. As a direct result, the lower vegetation is maintained in an early seral state of grass and forbs which, although contributing to high spread rates have little long term fire impacts on the site; in addition these fine fuels are highly influenced by minor changes in environmental conditions such as higher humidities or rain showers from thunder storms. This situation, coupled with high road densities, makes for an ideal fire suppression situation.

The federal ground has had some slash abatement activities on those acres which have been entered for harvest purposes. A large portion, however, is in a multi-storied stand condition with an influx of true firs. This portion of the watershed is at risk from severe wildfire. True-firs are unique in their ability to promote larger and higher severity fires. Because they are shade tolerant they tend to have fuller crowns that grow all the way to the ground; in addition, as they mature and die, their rapid rate of decay creates snags which are prolific in the production of fire brands and make prime receptors for these brands and other brands.

Lightning is the primary ignition source in this watershed. Prevention efforts have little effect on fire starts in this environment. The only way to affect fire occurrence is to modify the fuel profile; this does not change fire starts but does have the potential to change fire size and severity.

LANDSCAPE ELEMENTS

Three structural elements within a forest ecosystem are critical in maintaining ecological diversity and complexity. These elements are matrix, patches, and corridors. The structure, amount, and spatial arrangement of the matrix, patches, and corridors determine the function, resiliency, and species diversity of a forest landscape. The following text describes each element in detail.

Matrix

The matrix is 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.

The matrix of the Central Big Butte watershed is defined as early successional forest. Forest development stages that include grass/forb, seedling, sapling and pole size trees are considered early successional. Stands in these classes cover approximately 45% percent of the watershed and provide the strongest influence over landscape flows.

1. Grass/forb to seedling/sapling size class, 0 - 5" diameter. From disturbance to the time when crowns close and conifers or hardwoods dominate the site. This stage may be initially 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 (PRMP, 1994).

2. Pole size class, 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 (PRMP 1994).

Matrix origin

The early successional matrix was initiated primarily through logging over a relatively short time span (<70 years). The composition, structure, and function of these early successional forests are somewhat different from those that would be initiated by coarse filter disturbances, such as stand replacement fires, or fine filter disturbances, such as, insect, disease or windthrow. These differences include:

* fewer number of snags remain in early successional stands.
* more soil disturbance (i.e. compaction, soil displacement) from logging, road building, and site preparation.
* altered plant successional patterns
* reduction in the amount, size, and distribution of down woody debris.
* vegetative and structural change is more rapid due to intensive silvicultural treatments.
* large fire tolerant remnant trees are not present as a scattered stand component.

Matrix 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 late successional stands.

Matrix pattern

The matrix pattern is largely determined by the checkerboard ownership boundaries. Approximately 44% of the Central Big Butte watershed is managed by private timber industry. Approximately 60% of these lands contain early successional forests. Within these early successional forests, the majority of merchantable overstory trees have been removed, leaving younger, unmerchantable white fir, Douglas-fir, and with lesser amounts of ponderosa pine, incense cedar and scattered hardwoods. BLM managed lands (26% of the watershed) have about 29% in seedling/sapling and pole sized stands, a result of previous harvest activities. Harvested areas on BLM managed lands have more natural shapes as they typically follow stand type boundaries. Lands managed by the Forest Service (27% of the watershed) have approximately 40% of early successional stands. These stands have originated from fires and even-aged regeneration harvests.

Patches

Patches are areas distinctly different from the landscape around them. As a result of logging throughout this watershed, small conifer and large conifer stands have become the "patches" within this landscape. Two types of forest patches and several small nonforested patches can be identified and described. The descriptions for small conifer and large conifer stands apply to unentered/unmanaged stands. Where management has occurred stand conditions will vary from the conditions described below. On many areas of private industrial ownership, logging has altered stand features to the point that they may no longer function as older forests.

1. Small conifer, 11"-21" diameter at breast height (dbh) - approximately 30% 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 (PRMP 1994).

2. Large conifer, 21"+ dbh - approximately 21 percent of the landscape. The forest stands within this class begin 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 to openings in the canopy created by disease, insects and windthrow. Vertical diversity increases. Larger snags are formed (PRMP 1994).

3. Non-forested patches - 2% of the landscape. These patches include, pastures, farms, non-stocked forest lands, non-vegetated land, brushfields, and the Butte Falls townsite.

Patch origin

The small conifer stands are the result of natural and human disturbances. Some of these stands originated from high intensity fires approximately 80 years ago, these stands are even-aged with a widely scattered overstory component of large fire remnant conifers, generally less than 5 trees per acre. Other stands are the result of logging. Larger overstory trees were removed leaving a residual stand of small conifers 11-21" dbh.

The large conifer stands have been free of intense fires, but show evidence of underburning. The frequency of the underburns can be determined by the amount and age of fire intolerant white fir in the understory. In stands that have not experienced recent underburns, a well established sapling to pole size second growth white fir stand is present. On BLM managed lands, a light logging entry has occurred in many of these stands within the past 30 years. Individual trees were removed, representing approximately 20 percent of the basal area per acre. In the larger canopy holes (>.25 acres), Douglas-fir has naturally regenerated, white fir has dominated elsewhere.

Other disturbance events such as insects, windthrow, flood, and disease, have not played a major role in shaping or altering stand development patterns.

Patch stability

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

Patch pattern

The majority of the small and large conifer patches within the watershed are located on federally managed lands. The checkerboard ownership pattern has resulted in a highly fragmented landscape, particularly in the western three-quarters of the watershed. Because of the ownership pattern, patch shape is generally square or rectangular, a result of cutting unit boundaries following ownership/section lines.

The location and amount of patches within the matrix has created a high degree of contrast, porosity, and edge effect across the watershed. 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 effectively all edge.

Central Big Butte Matrix & Patch elements by percent and total acres				
Matrix		Patches		
Grass/Forb Seedling/Sapling 0-5" Dbh	Pole 5"-11" Dbh	Small Conifer 11"- 21" Dbh	Large Conifer 21"+ dbh	Non-Forested
23%	22%	30%	21%	2%
13433 acres	12516 acres	17594 acres	12143 acres	1465 acres

Note: Percent and acres shown are approximate, aerial photos were used to estimate stand conditions on private lands, a geographical information system (GIS) was used to determined conditions on lands managed by the BLM and Forest Service.

CORRIDORS

Corridors provide travel routes for plants, animals and people between similar size classes or vegetative types. Roads, riparian areas, powerlines, and streams are the primary corridors in the Central Big Butte watershed.

Roads

Road access is readily available throughout the watershed. The road system is the result of years of logging access. The roads vary from narrow, natural surface roads, wide graveled system roads, to paved county and state roads.

Irrigation Canals

Two irrigation canals are authorized within the WAU in addition to the Eagle Point Irrigation District canal. They remove water from the creeks and may divert resources from the creeks into the canals and fields. Fish screens on the canals need to be kept in good repair in order to prevent the loss of fish into the canals.

Streams (see riparian)

D. GRAZING & AGRICULTURAL USES

Livestock are licensed to graze in several allotments, portions of which fall within the boundary of the WAU. Exclosures have been constructed around several sections of the North Fork Big Butte Creek to prevent livestock from grazing during certain periods of the year. A protective exclosure was also constructed around Camp Four meadow to manage the forage for big game. Streambanks are one of the more sensitive areas impacted by livestock and big game use. Trampling of streambanks usually occurs when livestock and elk water in the creeks, ponds, and pump chances. If trampling by livestock, is extensive enough, heavy sedimentation can occur. A study on the impacts of grazing, conducted by the USFS, is expected to be completed in June, 1995.

There are two grazing allotments, Summit Prairie and Big Butte allotments, which overlap the Central Big Butte Creek WAU. Summit Prairie allotment is 92,006 acres and Big Butte allotment is 43,959 acres. Number of cows may vary on the two allotments depending on the time of the year, spring or summer. During the time of April 16 to May 31, 1,377 cows could be on the two allotments, June 1 to June 30 up to 2,044 cows, July 1 to July 15, 1,188 cows, and August 1 to September 30, 766 cows. The number of cows in the WAU may vary from year to year, and this is considered open range, which means the cows are not all concentrated into one area.

Noxious Weeds

Noxious weed populations in the WAU are poorly documented. At present, some common weeks (Klamath weed, mullen, etc.) are known to be present in the area. None of the noxious weeks on the Oregon State Dept. of Agriculture "A" or "B" list are known to occur in the WAU. Surveys are planned for the future.

SPECIAL STATUS PLANTS & ANIMALS

SPECIAL STATUS PLANTS

Special status plant species are found throughout the watershed in a variety of habitats. Examples include rock bluffs with water seepage which are habitat for Mimulus pygmaeus. Deep organic duff under closed canopy create an environment suitable for Cypripedium fasciculatum. Only 3% of BLM lands within the Central Big Butte Watershed have been surveyed for sensitive plant species. Only one site has been located on BLM lands within the Big Butte Watershed.

A total of 814 acres have been surveyed over the past 5 years. The surveys included varying levels of intensity . During the 1980's most of the surveys were completed by BLM employees with limited botanical skills, working in the resource area. Within the last 4 years qualified botanists have been contracted to undertake the surveys.

The list of threatened and endangered plant species is revised each year based on the current trend of the species and updated sighting information. New plant species have been added, others upgraded. Some species have been delisted or downlisted. However, the status of many plant species has not changed over the years.

CENTRAL BIG BUTTE WAU			
SPECIES	NO. OF KNOWN SITES	LOCATION	STATUS
Nemacladus capillaris	1	T34S., R1E., Sec 14	Bureau Assessment

The following is a list of potential special status plant species that may occur in the watershed:

Astragalus umbraticus
Chlorogalium angustifollium
Fritillaria gentneri
Limnanthes floccosa ssp bellingeriana
Lithophragma heterophyllum
Plagiobothrys figuratus ssp. corallicarpa
Ranunculus austro-oreganus
Camassia howellii
Cypripedium fasciculatum
Lewisia cotyledon
Mimulus pygmaeus

No fungi or bryophytes listed in the Standards and Guidelines (Table C-3) of the ROD are known to exist in the Central Big Butte Watershed LAU. However, no intensive surveys have been completed. Survey and management protocols are being developed.

Sensitive plant surveys will be undertaken in 1995.

T&E AND SENSITIVE WILDLIFE

1. USFW SPECIAL STATUS SPECIES

For a list of USFWS T&E, Special Status, and ODFW Special Status Species present in the WAU, and a discussion of habitat requirements, see Appendix XX.

A. Threatened & Endangered Species:

Northern Spotted Owl

Eight northern spotted owl sites are present in the BLM administered portion of the WAU, one is present on Medite lands. Five additional sites occur on USFS lands in the WAU.

Eight spotted owl activity centers are outside the WAU boundary but the provincial radius (1.2 miles) of these sites overlap into the WAU boundaries. All of the BLM sites have had 100 acre "cores" (100 acres of the best habitat near the activity center) designated. The USFS is in the process of designating 100 acre core areas around established resident single and pair centers. A 70 acre core has been established around the nest site core on Medite lands. These 70 and 100 acre activity centers will be managed as late successional reserves (LSR). Suitable habitat within the provincial radius of each of these sites is below 40% suitable (nesting, roosting, foraging).

The extreme eastern boundary of the WAU overlaps the northern spotted owl late successional reserve #R0226 on USFS lands in the Upper S. Fork Big Butte sub-watershed. Approximately 1920 acres are present within the WAU boundary. This LSR has 49,797 acres of federal lands, 123 acres of non-federal lands. Sixteen owl pairs and 2 resident single pairs are present in the LSR, which have $\geq$40% nesting/roosting/foraging (NRF) habitat within the 1.2 mile provincial radius of the center of activity. Eleven pair and one resident single have less than 40% NRF habitat within the 1.2 mile radius of the center of activity within the large LSR. Designated critical habitat in the BLM lands is present in T34S, R02E, section 12 and T34S, R03E, section 7.

Ownership	Suitable Habitat acres (nesting/roosting/foraging)	Dispersal Habitat acres (roosting/foraging)
USFS	5994	Not available
BLM	2706	4495

Three designated northern spotted owl connectivity blocks are present within the WAU boundary. These are located in T34S, R02E, Section 35, T35S, R02E, section 25 and T34S, R03E, section 35. Three other connectivity blocks overlap the WAU boundary. These are located in T34S, R02E, section 12, T34S, R03E, Section 7 and T35S, R03E, section 13. These blocks are designed to provide connectivity for old growth dependent species across the landscape and will be maintained in 25-30% old growth habitat.

Bald Eagles

Eagles are occasionally observed in the WAU, but fish numbers in Big Butte Creek and tributaries probably are not high enough to provide adequate forage for a nesting pair. Stands of large trees which are required for nesting eagles are not abundant in the area. Eagles need large Douglas fir or ponderosa pine trees to provide large sturdy branches to support their bulky nests. An eagle nest near Parsnip Creek north of this WAU has been successful in producing young. Managing for future eagle nesting habitat will require leaving clumps of large old growth conifers.

B. Other USFW Special Status Species:

Cascade frog habitat is known to be present in three pump chances in the western part of the WAU. These frogs commonly are found in small pools adjacent to streams which flow through or near meadows or near marshy areas which remain damp all summer. These areas are also areas preferred by cattle in the late summer. These ponds will be surveyed to determine if cattle grazing or removing the vegetation along the banks is occurring, and fencing will be recommended where this is identified as a problem.

Northern goshawk, great gray owl, fisher, and **wolverine** have all been reported in the area. These animals depend on late successional forest habitat types, which are declining in the area. A nesting pair of great grey owls and a nesting pair of goshawks are known to be present on USFS lands in the eastern part of the WAU. Spotted owl activity center (100 acre LSRs) will provide old growth habitat for these species, dispersed among the matrix lands. Riparian corridors may help mitigate the loss of habitat as they recover, but a decline in these species is expected to occur as the matrix lands are harvested.

Oregon State special status species:

Cavity dependent species, such as white headed, three toed, pileated, and black backed woodpeckers, western bluebirds, flammulated, pygmy, and northern saw-whet owls, pygmy nuthatch, and forest bat species are dependent upon hard and/or soft snags. Population levels and trends are unknown as cavity nester surveys have not been done. Habitat is poor within the WAU due to the lack of snags. A fisher/pine martin study has been ongoing for two years on USFS lands in part of the WAU.

Neotropical bird species

Neotropical bird populations in the WAU are poorly documented. Their population numbers and habitat needs are not well understood. One breeding bird survey route ends near the northeast boundary of the WAU. One neotropical bird point count survey route was established in May, 1995 near the Twincheria Creek at the eastern BLM boundary.

Game species

The WAU provides habitat for elk, deer, cougar, and bear, and receives heavy hunting pressure in the fall. Saturation turkey releases by Oregon Dept. of Fish & Wildlife occurred in the past year. Quail and grouse are present. The WAU does not have BLM designated crucial elk or deer winter range, but the lands within the WAU are classified by ODFW as critical deer and elk winter range with special zoning requirements, such as setbacks away from roads for new buildings, etc. USFS lands contain both big game summer range and have a block of critical winter range to the west of USFS road 3260 and north of roads 34 and 3450. The amount of thermal cover within critical winter range is already far below the

minimum management objective of 50% thermal cover. No optimal thermal cover exists within this area. Forage areas already exceed the minimum management objective of 20%.

In addition to important wintering areas, the WAU also provides important migration routes between the high elevation summer ranges and the lower elevation wintering areas for elk and deer. Major travel routes occur along Big Butte, Camp, Titanic, Rancheria, Misfit, and Timberline Creeks. Deer and elk also winter in the WAU in the lower elevations on the west side.

The USFS land in the WAU consists of a large block of land that is moderately roaded. The summer range has an open road density of 2.4 miles per square mile of habitat. The critical winter range has an open road density of 3.5 miles per square mile of habitat. Management objective for open road density within designated winter range is 1.5 miles per square mile of habitat. Within the western BLM/private part of the WAU, the road density is 4.9 miles per square mile of habitat.

Special habitats

The area has several pumpchances, ponds, springs, and meadows which provide special wildlife habitats. These unique habitats are important to the survival and reproductive success of some species. Cascade frogs and other sensitive herptiles depend on the springs and ponds with adjacent meadows to provide habitat. The damp, cool meadows provide calving areas for elk in the spring, overwintering sites for turtles, nesting for sandhill cranes which are occasionally present along the North and South fork of Big Butte Creeks as well as providing high quality forage.

More information needs to be collected and special habitats mapped.

V. REFERENCE CONDITIONS (Step 4)

Defining the known or inferred historical conditions of the ecosystem may give clues as to what was sustainable in the past and an understanding of what changes have occurred to affect sustainability of the ecosystem functions today. The conditions and values of ecosystem elements are dynamic and may change over time and space.

A. HUMAN USE HISTORY

Little is known of the Indian inhabitants in the area around Butte Falls prior to the first white settlers. Recollections of long time residents lead us to believe that Indian camps existed in the Cobleigh, Fredenburg, Rancheria and Willow Lake areas. The earliest settlers left little account of Native presence or interaction. When the area was surveyed by the government in the 1850's no mention was made of encounters with Indians. Certainly Indians must have fished local streams, hunted in the surrounding forest, and gathered roots, berries, etc. with the changing seasons.

The first white settlers came into the area in the 1860's, settling homesteads under the Preemption Claim Act, principally in the large open meadows but also throughout the forest, usually along perennial streams. Access into the area was over the Obenchain Road, a military road linking Fort Klamath to Jacksonville. It was a steep and rugged road rising out of Brownsboro that was virtually impassable in the winter months. Most early settlers made a living by raising cattle and by hunting, trapping, and making shakes or shingles to sell in the growing Rogue River and Bear Creek Valley.

In 1905 the Butte Falls Sugar Pine Lumber Company surveyed a townsite above Butte Creek and cleared the area of trees to build the town of Butte Falls. The early town boasted a population of several hundred people with many businesses. The town thrived in the early days with the presence of the new mill built on Butte Creek by the falls. Employment was high with good jobs in the woods and mill. In November of 1910, the Pacific and Eastern Railroad was built into the area in an effort to connect the Rogue Valley with the Klamath Basin by rail. With the existence of the Pacific and Eastern Railroad terminating in the town, valley residents travelled to the Big Butte area to fish, hunt, or just breathe fresh air. Due to economic difficulties the line was never completed past Butte Falls but a Michigan lumberman saw the opportunity to harvest timber and economically move lumber to the valley. Much of the land that was to be logged by the early lumber companies was bought from homesteaders. Typical to the lumber business, prosperity was cyclical. The mill by the falls was shut down and logs were hauled by rail to Medford by 1922. During periods of lumber bust the local residents worked in the woods cutting railroad ties and cord wood for the valley.

By 1911 the town was incorporated and a water right on Ginger Springs was requested for 1.5cfs to supply the town with water. Until this time water had been obtained from shallow hand dug wells located throughout town.

The State Fish Hatchery was established on Ginger Creek in 1915. The early hatchery impounded water from Ginger Creek for native trout fish rearing. This practice was changed when fish tanks were built and water was supplied from the South Fork Big Butte Creek in 1923

B. VEGETATION REFERENCE CONDITIONS (See maps pages 38, 39, & 40)

Forest ecosystems are complex, dynamic and always changing. Changes occur as elements and processes are altered by both coarse filter (i.e. stand replacement fires) and fine filter (i.e. individual tree mortality) events. Ecosystems can adapt to these changes and can function well under a range of conditions. Within this "natural range of variability" biological and ecological functions are sustainable. When an element or process is outside of this range, that element and those depending upon it may not be sustainable (USDA, Forest Service, 1993).

Utilizing fire history information, existing age-class distribution and forest survey documents, a general re-creation of vegetative conditions prior to logging can be made. From this baseline information, assumptions and inferences can be made specific to individual elements, processes or components and how they may have functioned under historic conditions.

In the Rogue River basin, it has been estimated that prior to industrial logging, approximately 71% of the forest land contained large size forests. This estimate is based upon detailed forest surveys completed during the 1930's. The pre-logging time frame includes the period prior to late 19th century and early 20th century logging. Large-size class is defined as Douglas-fir >20" dbh, ponderosa pine >22" dbh and white fir >16" dbh. Furthermore, approximately 89% of the large size class was in one large connected patch extending throughout most of western Oregon, refer to figure 5. Mean patch size for deforested burn patches in the Rogue River basin was approximately 9,500 acres (Ripple, 1994). Specific to the Central Big Butte watershed, a 1944 forest survey map was used to approximate 1910 conditions. Current, 1995 conditions are also shown, figure 6.

The natural range of variability is further defined in a Forest Service study titled " A First Approximation of Ecosystem Health" (USDA-USFS, 1993). The Central Big Butte watershed is part of the Upper Rogue River sub-basin that was analyzed. Although the analysis was focused only on lands administered by the Forest Service, the vegetative composition, climate and landform characteristics of BLM managed lands are very similar to the adjacent Rogue River National forest lands.

The analysis addressed the historic range, current range, and current mode of aquatic, riparian and terrestrial elements. The historic range was defined as the conditions that existed before timber harvesting began in the early 1900's. Because of the same general geographic location, BLM and Forest Service managed lands probably had similar historic conditions as cited in the study. This does not hold true for the information provided for the current range and current mode conditions. The study did not focus on the portion of the Upper Rogue sub-basin that included BLM and Medite lands. Because of the checkerboard ownership pattern and intensive harvesting activities on private industrial lands it is probable that there would be a greater decline in historic conditions than estimated in the study. Therefore, that information may not be valid for this watershed.

A summary of the historic range of conditions are as follows:

AQUATIC
Pools per mile - 25-60
Maximum stream temperature - 5-18 degrees centigrade.

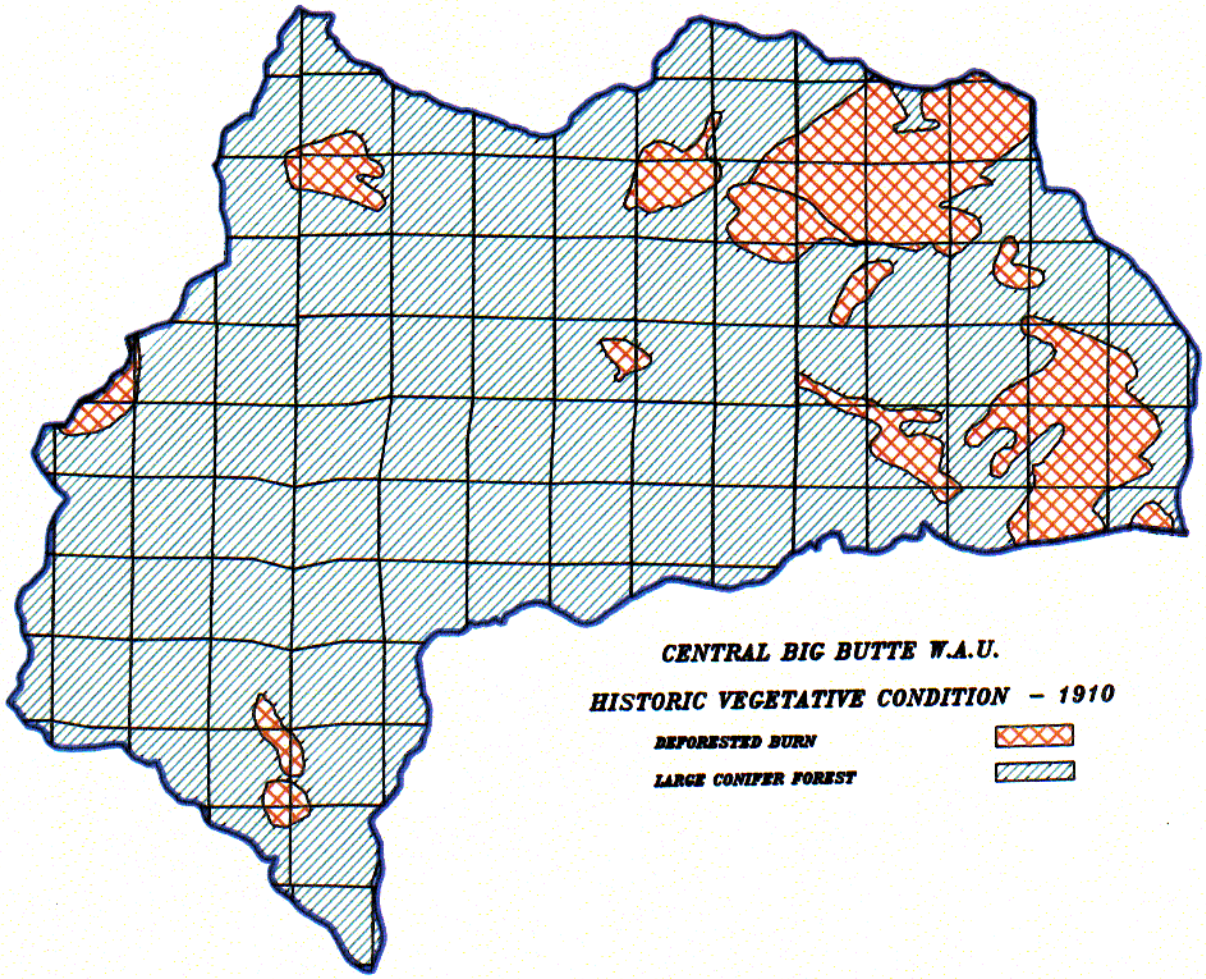
RIPARIAN
Early successional conditions - 10-40%
Late successional conditions - 45-75%

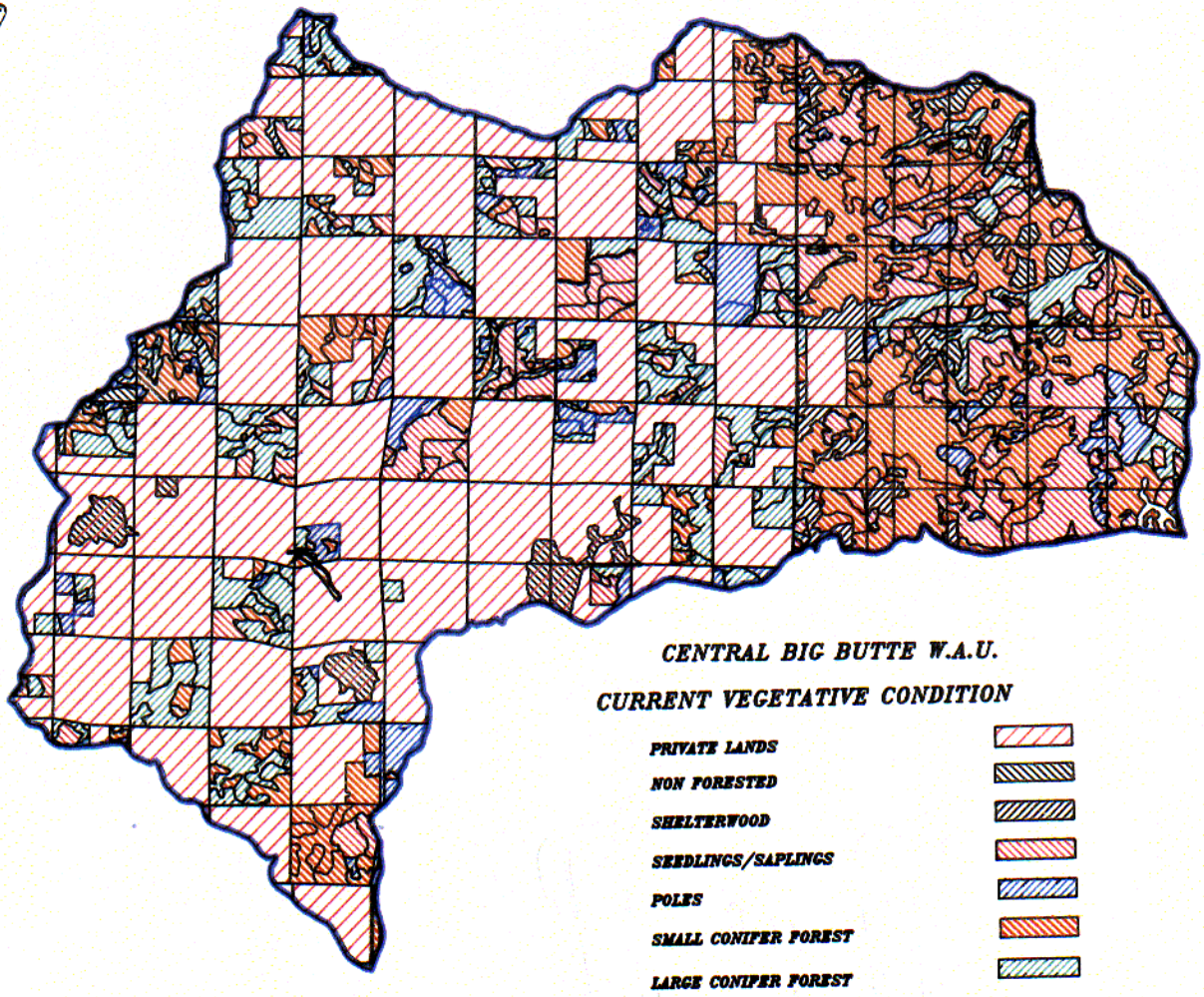
TERRESTRIAL
Early successional/ no snags - <2%
Early successional/with snags - 10-40%
Late successional-/single layer - <2%
Late successional- Multilayered - 45-75%

(Early successional - forest development stages that includes seedlings, saplings and pole sized trees, 0-11". Late successional - stands greater than 80 years old, trees >11")

Figure 1. 1933 forest patterns of western Oregon. The Rogue Valley and the Central Big Butte analysis area are in the lower southeastern corner of the map.

"Reprinted with permission from the Western Journal of Applied Forestry (Vol. 9, no. 2), Historic Spatial Patterns of Old Forests in Western Oregon by W.J. Ripple, 1994, published by the Society of American Foresters, 5400 Grosvenor Lane, Bethesda MD 20814-2198. Not for further reproduction."





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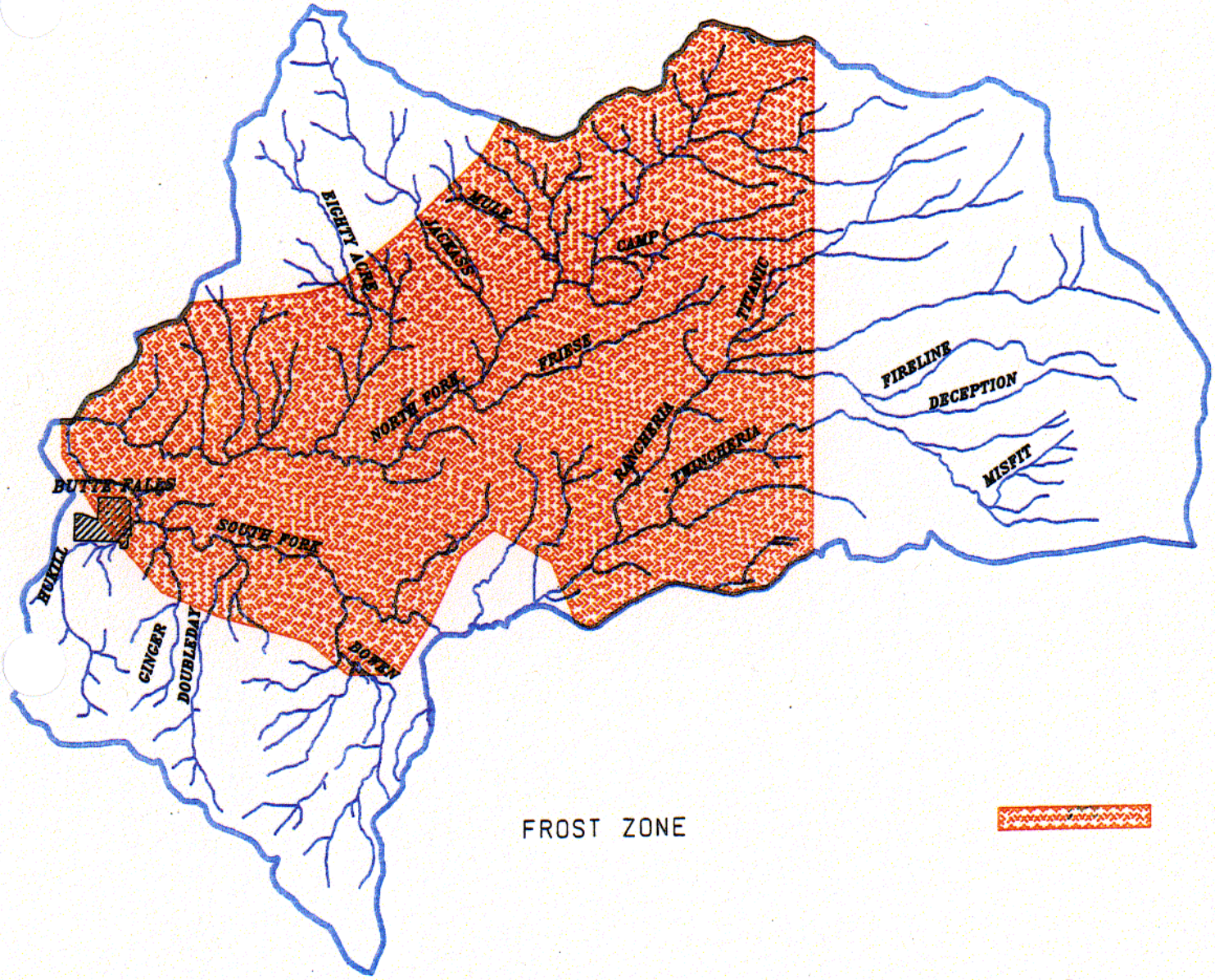

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REFORESTATION HAZARD – CENTRAL BIG BUTTE

INSECT & DISEASE

The amount and extent of insects and disease within a forest landscape is an indicator of forest ecosystem health. Widespread mortality from insects and disease indicates poor forest health, whereas, the mortality of individual or small groups of trees represents a "natural" component of a healthy ecosystem. This low level of mortality maintains and/or creates structural, habitat, and species diversity.

In the pre-European landscape, widespread vegetative changes due to insects and/or diseases were most likely minimal. Mortality was probably limited to individual trees or small groups of trees. Some insect populations may have increased to moderate levels following fires due to fire induced stress (cambial damage and/or crown scorch) or during long periods of drought. Root diseases were present and provided small gaps in the forest canopy. Large areas of root rot were probably minimal due to periodic underburns which maintained disease resistant seral species. Dwarf mistletoe, specifically in the Douglas-fir overstory, was likely common but with minimal intensification. Periodic underburning maintained open stands of mixed conifers and hardwoods. Mistletoe brooms on smaller Douglas-fir trees probably increased torching and tree mortality, thereby regulating mistletoe severity and spread in the understory.

VI. INTERPRETATION (Step 5)

Compare existing, historical, and reference conditions of specific ecosystem elements, and explain significant differences, similarities, or trends and their causes.

RECREATION

Shortly after the town of Butte Falls was established it became known around the Rogue Valley as a place to find recreation and solace. Access out of the valley for residents seeking relaxation was often made difficult by bad weather and poor roads. Travelling by wagon or horse was time consuming, tiring, and either dusty or wet or cold. With the construction of the Pacific and Eastern Rail Line that terminated in Butte Falls, opportunities to escape the hot weather or bad air in the valley were created. Recreation opportunities developed slowly in the Big Butte area as the Forest Service began developing campsites on the forest in the 1930's and 40's. Post war development brought increased recreation opportunities to southern Oregonians and other travelers from around the nation as mobility, income and improvement in the nations highways. This trend has continued, with remarkable increases in demand for opportunities to visit the forest to relax and sightsee, camp, fish, or hunt. It is likely that the recreational use of the forest will continue to have heavy demands placed upon it.

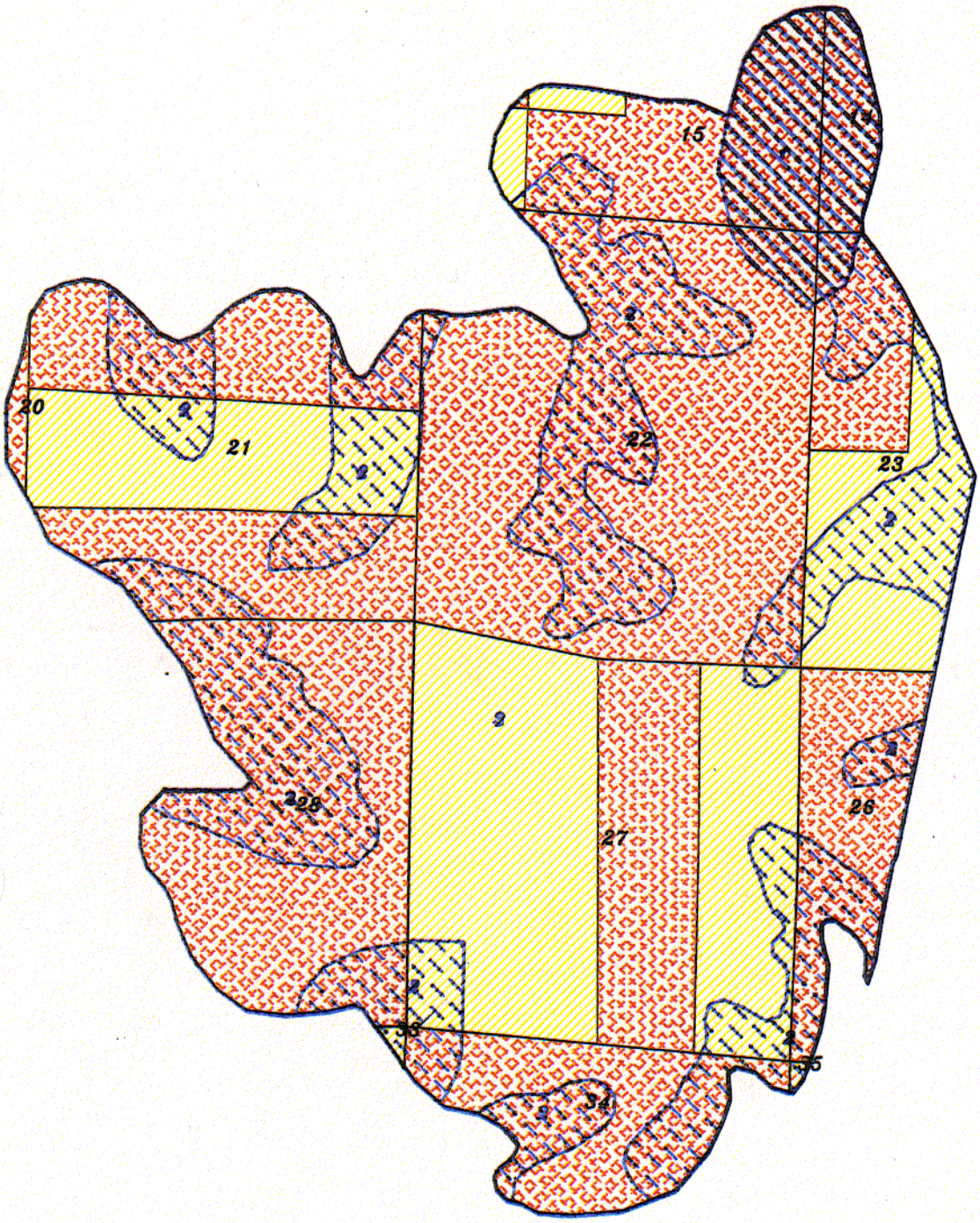
COMMODITIES

The harvesting of timber has played a crucial role in the development of the Big Butte area and the town that lies in its midst. The town and its residents endured the cycles of boom and bust that were common to the timber and lumber industry. Born as a timber town it has remained as such until recent years. Changes in private timber land ownership, economic practices and federal land management direction have had significant impacts on the economic health of the town and the surrounding community. Although significantly diminished compared to years past the timber industry remains a significant part of the communities residents, if not actually then certainly spiritually. There is still a sense of connection of the forest and natural resources to the people in the area. This is what has kept many people in the area and what draws others to the area.

The development of the Special Forest Products (SFP) industry in recent years has placed increasing demands on the forest to provide economic opportunities to the areas residents and others that seek employment in the forest. As awareness of the benefits and uses of these "other forest products" becomes more widespread, understanding the management implications will become critical to the successful and sustained management of these commodities.

GINGER SPRINGS (See Map Next Page)

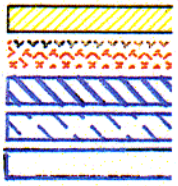
The development of the Ginger Springs water system in 1914 for the town of Butte Falls played an important role in the early health of the community. No longer relying on carrying water from hand dug wells made life in town not only easier, but put an end to what was referred to as "the summer sickness", perhaps related to the barnyard animals kept in town. The system was improved through the years by better protection for the spring source and improvements and enlarging of the holding reservoirs. Severe infrastructure problems exist in the aging delivery system. Water meters are slowly being installed to better utilize the water resource. The underground water is considered to be of very high quality. There is a proposal to develop a water bottling plant in town to create jobs and revenue for the town. Revenue would be used to offset taxes, fund infrastructure improvements and fund other local employment opportunities. Concerns about the use of herbicides and their effect on water quality make residents fearful of implications to meet proposed Clean Water Act guidelines. Under proposed future regulations, testing water to resolve contamination problems would put additional burdens on the tax base. Uncertainty of the effect of timber harvest practices on timberlands, especially private industrial lands, to the quality and quantity of water from Ginger Springs remains high on the minds of local government officials.



GINGER SPRING WATERSHED AREA

SCALE 1: 26000

BLM LAND
MEDITE LAND
ROUTE 1
ROUTE 2
ROUTE 3



INFLUENCE ZONES FOR LAND USE ACTIVITIES

ROADS

The last twenty years have seen an increase in the use of four-wheel-drive and OHV's on forest roads throughout forest environments. The impacts to resources are most common during the winter wet months and especially during the general hunting seasons, when unsurfaced roads are used to gain easier access to the forest. Attempts have been made with clubs or organizations that sponsor these uses to try and educate the public as to the proper use of these vehicles to minimize impacts on roads and stream courses. The effects of these educational programs are not known. Use of off-road vehicles by local residents or others that travel into the Big Butte area appear to be increasing but little data is available to quantify the actual extent of road damage or stream sedimentation. The probability is that this use will continue to increase as the OHV industry continues to be successful in marketing their products and as long as there are forest roads to explore.

ECONOMIC DEVELOPMENT

The townsite of Butte Falls was surveyed by a Michigan lumberman in 1905 to create a place for people to live that would work in the new mill on Butte Creek and to supply logs to feed this new mill. For nearly eighty years the good times and not so good times of the town came and went with the booms and busts of the timbering business. Ten years ago, changes in the management of the private timber land ownership and the beginning of changes in how federal forests were managed set in motion changes that have been hard to recover from. In 1991, recognizing that there can be a life after a single resource based economy, Butte Falls developed a Strategic Plan that outlined how it was going to diversify its economy, keep the existing businesses healthy, while maintaining a small town liveability, while keeping its roots in the resources of the forest. Plans have been made to sell bottled water, develop a unique tourism program that highlights the natural beauty of the Big Butte watershed, and encourage cottage industries that are developed on other forest products that grow in the area. The community has had a long standing relationship with the U.S. Forest Service due to their immediate presence in the neighborhood. The BLM, whose lands surround the town, has the opportunity to develop a relationship with the community to assure its long term survivability by providing access to BLM resources.

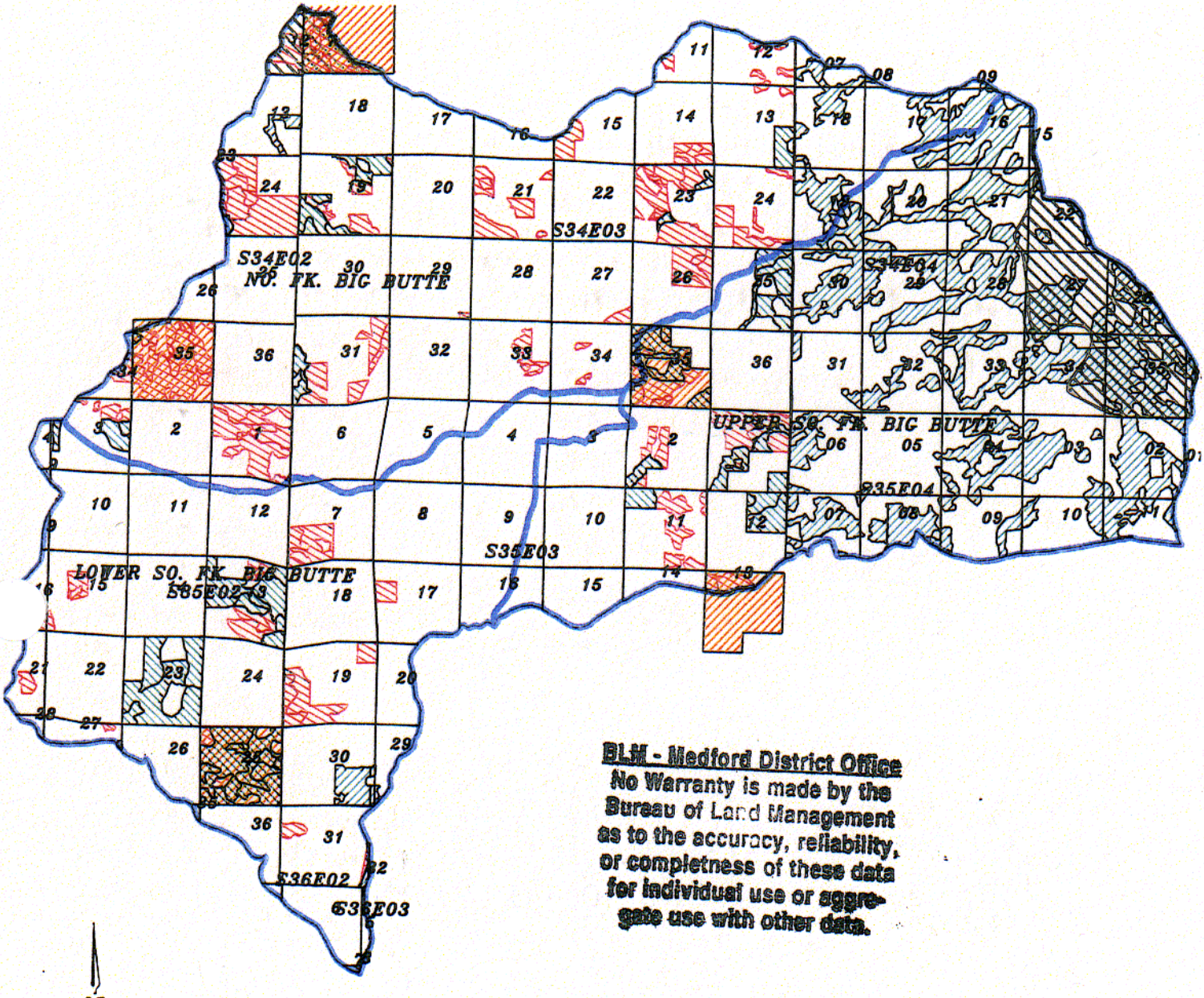
WILDLIFE (See Map Next Page)

Land management activities within the WAU have impacted wildlife and fisheries in a variety of ways. Increased road building, loss of old growth and mature tree habitat, fragmentation of forest old growth patches, removal of riparian vegetation, and soil compaction are the major impacts.

Wildlife habitat within the western portion of the WAU is severely fragmented, with 26% BLM ownership intermingled with 44% Medite ownership. Because of USFS contiguous land ownership, the eastern 25% is less fragmented. 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 timbered 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 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 (1.2 miles). Weak population connectivity within the provinces because of poor habitat conditions in areas of checkerboard ownership is a serious threat to owl populations. Population declines in pine martin, fisher, and wolverine can also be attributed to the loss and fragmentation of old growth habitat.

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.



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.

SCALE 1: 120000

SUBWATERSHED BOUNDARY
CONNECTIVITY BLOCK
CRITICAL HABITAT UNIT
USFS-FULLY SUITABLE 5994 AC
BLM-MCKELV 1 2706AC
BLM-MCKELV 2 4495 AC

CENTRAL BIG BUTTE OWL HABITAT

RIPARIAN/FISH/AQUATIC

Anadromous fish population numbers have declined in the past 25 years. This can, in part, be attributed to landscape management practices. Loss of riparian vegetation leads to higher stream temperatures, and loss of CWD in the streams. Past management practices included removing CWD from streams, as CWD at that time was considered to have a negative impact on the stream channel, a practice which was discontinued in the late 1970's. Increased harvesting activities has led to a greater number of roads, more compacted soils, and less vegetation in the clear cuts in the uplands to hold soils in place during storm events and periods of high runoff. This increases the amount of sediment reaching the streams, and can result in the loss of spawning habitat and macroinvertebrate prey species for juvenile and resident fish. Inadequate culverts which block fish passage for resident and anadromous fish may also impact migration and genetic diversity of fish populations.

Interruption and fragmentation of the riparian corridors can result in disruption of a dispersal or migration route for other terrestrial animal species, such as salamanders and frogs. Sensitive fungi, lichens, bryophytes, and plants can all be affected by fragmentation of the riparian corridors.

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:

1. The low thinning effect of fire is absent.

2. 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 seral overstory trees.

3. 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.

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

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

6. 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.

7. 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.

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

9. 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.

TERRESTRIAL CONDITION	HISTORIC RANGE	CURRENT MODE
EARLY SUCCESSIONAL/NO SNAGS	< 2%	40%
EARLY SUCCESSIONAL/WITH SNAGS	10-40%	5%
LATE-SUCCESSIONAL/SINGLE LAYER	< 2%	10%
LATE SUCCESSIONAL/MULTI-LAYERED	45-75%	35%

Note: Data gaps exist, the current mode is an estimate only.

Insects and Disease

Simplification of forest landscape pattern, structure and diversity may lead to increases in pest populations and pathogen occurrence. Homogenizing forest landscapes reduces natural controls and barriers that regulate the kind and extent of insects and disease. Older stands with their complex array of tree and predator species, stand size, and high structural/age diversity, are less favorable to pest outbreaks than are simplified forests created through past regeneration practices (Schowalter et al, 1988).

The pattern of forest communities and age classes influences the habitat of natural predators, distribution of food sources for insects and pathogens, and the ability of insects or diseases to survive and spread. Larger areas of uniform early successional stands are present today than historically occurred. These stands have limited structural and species diversity and, if stressed, may be more susceptible to insect and disease outbreaks.

RECOMMENDATIONS - (Step 6)

Identify those management activities that could move the system towards reference conditions or management objectives as appropriate.

HUMAN USE

Recreation

CONCERN: Increasing recreational use in the watershed will lead to overuse and damage to resources.

SUGGESTED ACTION: Improve recreational opportunities in the watershed by conducting an inventory of existing and potential sites that might accommodate dispersed recreational opportunities. Write management plan for site development.

Commodities/Special Forest Products

CONCERN: Harvesting of some SFP will/may have unknown effects on ecosystem balance and forest health.

SUGGESTED ACTION: Develop a management plan for harvest of native plants prior to widespread removal of SFP's. Set up monitoring plots to observe regeneration in harvested areas that involve materials which have little information on natural regeneration.

Ginger Springs Municipal Watershed

CONCERN: Protection of quality and quantity of water produced by Ginger Springs.

SUGGESTED ACTION: Prior to implementation of any management activity prepare a Watershed Management Plan for the Ginger Springs watershed compartment. Plan will:

1. Develop protection/enhancement strategy for riparian areas (Route 2 Influence Zones).
2. Identify areas needing cutbank stabilization and road surfacing to reduce erosion, sedimentation and runoff.

3. Develop fire hazard and risk assessment to minimize the effects of catastrophic fire.

4. Manage BLM forests to maintain a stable and healthy forest.

5. Explore the alternative of a land exchange that would place the Ginger Springs watershed under a single federal ownership.

Economic Development

CONCERN: Town of Butte Falls Strategic Plan implementation can not be successful without the active participation of the BLM with the towns projects.

SUGGESTED ACTION: Maintain close relationship with the communities economic development programs until the community has accomplished their economic strategic goals.

LANDSCAPE MANAGEMENT OBJECTIVES--Wildlife

CONCERN: Inadequate or improperly functioning riparian buffers. Lack of connectivity along riparian areas.

SUGGESTED ACTION:

1. Create and maintain diverse vegetation component in RMA:

   a. thin dense riparian hardwood overstory to release understory conifers;

   b. plant conifer, hardwoods, willow in areas which are lacking diversity or have no conifer recruitment.

2. Reduce the number of miles of road within the RMA.

3. Identify areas where grazing is impacting stream banks and riparian vegetation. Establish exclosures, repair existing exclosures, or modify grazing to reduce and eliminate negative impacts.

4. Increase riparian buffer widths to meet ROD standards. Some adjustments and activities may occur within the riparian buffers to improve riparian functioning conditions.

MEASUREMENT/MONITORING: Fish population census, redd counts, stream survey and riparian data collection, macroinvertebrate sampling

SUCCESS: Increased pool/riffle ratio. Less embeddedness in gravels. Improved amounts of CWD in stream and in RMA. Increased numbers of salmon, steelhead, and trout in North Fork Big Butte Creek and tributaries. Increase number of native trout in South Fork Big Butte Creek and tributaries.

Streams/Fish

CONCERN: Fish population declines. Proposed listing of steelhead and coho as a "Threatened and Endangered" species

SUGGESTED ACTION: Improve/increase fish habitat in creeks in the WAU by:

1. Increasing amount of CWD in stream to minimum of 20 pieces ($\geq$ 21") per mile of stream where lacking (this amount is based on eastern Oregon surveys). ODFW is in the process of compiling data from stream surveys in southwestern Oregon. The amount of CWD will be changed to meet ODFW recommendations if it is different from the above.

2. Stabilizing unstable streambanks through planting willows, shrubs, placing CWD, etc.

3. Removing or modifying barriers (culverts, etc.) and screening to prevent fish from being diverted into irrigation ditches

4. Reducing sediment loading from adjacent watersheds and tributaries by reducing compaction to increase infiltration and reduce runoff.

5. Improving stream structure (pool/riffle ratio improved, larger, deeper pools, instream large woody debris adequate, instream cover improved, etc.) possibly with the addition of large boulders or CWD to stream channel, and through improved riparian diversity.

6. Identify roads which are contributing to sediment loads and close or surface roads to reduce erosion.

7. Minimize new road construction and rip skid trails to reduce compaction and increase filtration and reduce runoff.

T&E and special status species

CONCERN: Lack of connectivity for old growth dependent species between LSR and existing old growth patches. Checkerboard ownership patterns on western 2/3 of the WAU. Snag numbers low in many areas due to past and current management practices.

SUGGESTED ACTION: On matrix lands, create and maintain connectivity between LSR and provide refuge/habitat for a variety of organisms associated with late successional forests:

1. Maintain 15% of WAU in late successional condition, with emphasis on creating connectivity with USFS on eastern part of WAU near BLM-USFS boundary and increasing connectivity between spotted owl LSR #0224 and #0226.

2. Increase riparian buffer widths to meet ROD requirements.

3. Identify areas within the connectivity blocks which can provide late successional habitat (25-30% outside riparian areas). Identify potential projects to improve late successional habitat in connectivity blocks which are deficit in late successional habitat.

4. In upland areas, identify late successional patches (>150 years and at least 30 acres in size) that are suitable to maintain or enhance for interior forest conditions to function as "connectivity nodes".

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

6. Develop surveys for lichens, arthropods, etc., to determine habitat requirements.

7. Maintain plant species diversity and multi-layered stands when activities occur, to provide forage and habitat for a variety of organisms (both plant and animal.)

8. Identify areas which are deficient in snag numbers and coarse woody debris and design management activities to leave higher numbers to mitigate.

9. Minimize new road construction.

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.

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.

Big game

CONCERN: Designated big game critical winter range located west of USFS road 3260 and north of USFS roads 34 and 3450. The amount of thermal cover within critical winter range is below the minimum management objective of 50%. No optimal thermal cover exists in the area. Forage areas already exceed the minimum management objective of 20%. Open road density 3.5 miles per square mile of habitat exceeds management objective of 1.5 miles per square mile of habitat. SEE PG. 45 OF RMP!

SUGGESTED ACTION:

1. Design activities on USFS lands to maintain the following cover/forage values: Summer range thermal cover 20%, hiding cover 60%, forage areas 20%.

2. Thermal cover units should be minimum 30 acres in size

3. Cover and forage units evenly distributed throughout the planning area.

4. To the extent possible, timber harvest should provide hiding and thermal cover between treatment areas and along roads with continuous vehicle use. Gaps between these cover screens should not exceed ¼ mile.

5. Thermal cover units can be substituted for hiding cover, but the reverse is not true.

6. Adequate escape cover should be provided adjacent to existing or planned forage areas.

7. Contiguous travel corridors should be maintained throughout the planning area. These travel corridors should coincide with existing travel routes located within adjacent areas (Private, BLM, USFS lands)

8. Calving/fawning areas should be provided in the planning area by observing riparian buffers. A seasonal restriction during the calving/fawning season (April 1-June 30) is recommended for any units which are adjacent to these areas.

9. Limit the amount of area treated by thinning. Thinning a stand to less than 70% canopy will reduce ability to provide thermal cover. Thinned stands can be classified as "potential thermal" until canopy closes to exceed 70%.

10. Minimize new road construction within the planning area to reduce the potential for poaching and big game harassment. All new roads or reconstructed roads should be considered for closure. A road closure period from October 15 to June 30 during hunting and calving/fawning season is recommended.

11. On BLM lands, identify late successional patches (>150 years and at least 30 acres in size) that are suitable to maintain or enhance for interior forest conditions to function as elk thermal and hiding cover and migration corridors.

MEASUREMENT/MONITORING: Identifiable 70% thermal cover in 50% of area within designated critical winter range area. Riparian corridors that provide late successional forest conditions. Dispersal and travel routes between adjacent landscapes are evident.

SUCCESS: Meet big game management habitat criteria as outlined in the Rogue River National Forest Management Plan. Riparian corridors in late successional condition and providing connectivity with adjoining lands.

LANDSCAPE MANAGEMENT OBJECTIVES -- Landscape function (See map page 57)

CONCERN: Simplification of forest structure and pattern has reduced biological diversity, connectivity, and landscape function. Ecological processes inherent to the landscape have been altered to levels different than the historic range of natural variability. The kind, amount, and spatial distribution of plants, animals, and forest organisms across the landscape may affect long-term landscape health and sustainability.

ASSUMPTIONS:

1. Intensive harvest practices on private industrial lands will likely continue to shift these lands towards earlier successional conditions. The amount of late successional forests on private lands is expected to decrease from existing levels.

2. Older, structurally diverse stands within this watershed will predominantly occur on federally managed lands.

3. Ownership patterns and differing management objectives, past and present, have and will continue to dictate landscape pattern and condition.

4. Maintaining landscape processes and functions will require the participation of all land owners.

SUGGESTED ACTION:

1. Maintain a diversity of age/size classes throughout the landscape. Utilize historic range of natural variability to determine target acres. Early successional stands should not exceed present levels. The level of late successional stands within this watershed should be at least 45%, including riparian reserves, owl core areas, and connectivity blocks. Late successional stands should be defined by structural and species composition rather than by age.

2. Management activities should be focused towards pre-commercial and commercial thinning, unevenaged regeneration harvests, and salvage opportunities. Thinning opportunities should be targeted at dense conifer stands that are less than 150 years old with relative densities greater than 50 percent. Utilize underburning to thin and or treat accumulations of slash that occur from thinning operations where residual diameters are great enough to withstand the effects of the underburn.

3. In the short term, on BLM managed lands, even-aged regeneration harvesting that creates early successional stands should be limited to insect, disease or fire salvage areas. On harvested areas, maintain long-term site productivity and biological legacies by retaining coarse woody debris, snags, and green trees.

4. Promote and improve species diversity by encouraging natural levels of diversity found in native plant communities. Utilize plant association principles to describe and define desired levels of species diversity. Historic agents of disturbance such as fire and its frequency should be incorporated to promote species diversity.

5. Improve horizontal and vertical diversity in even-aged plantations, create canopy gaps, encourage species diversity, and maintain unthinned clumps. Thin to differing residual densities, dependant upon site class and conifer species targeted.

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

7. Maintain pine species as a seral stand component, create openings large enough for natural pine regeneration when a healthy pine overstory is present. Traditionally, fire has played a significant role in the creation and maintenance of these pine stands; in addition to creating openings and creating areas of bare mineral soil to ensure natural regeneration, it causes changes in soil chemistry such as increases in soil ph.

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

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

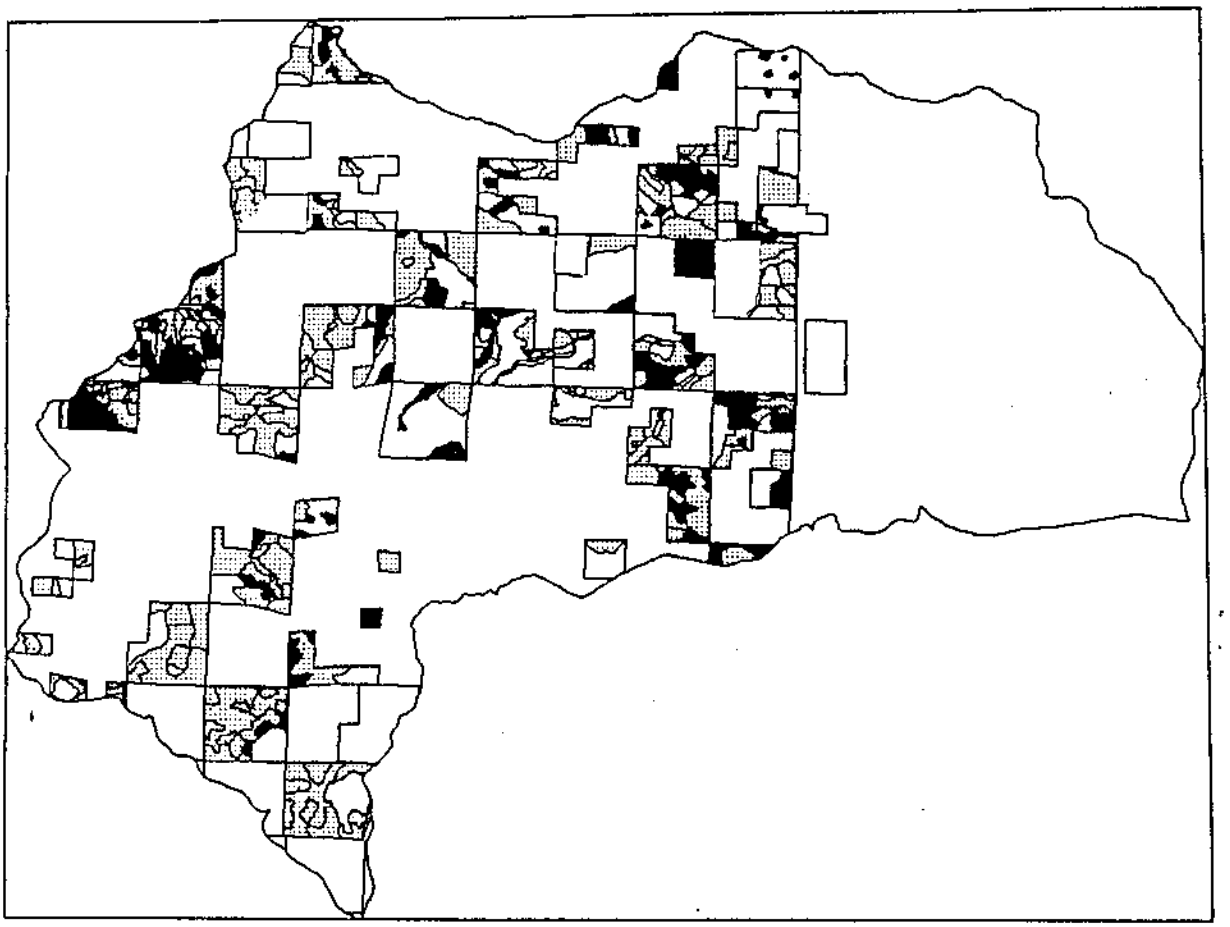
10. Stabilize soil by reducing compaction and erosion; during harvest activities use designated skidtrails to minimize impacts.

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. Reintroduction of prescribed fire can help to meet these goals in a controlled gradual fashion.

MEASUREMENT/MONITORING: Measurement of relative densities of managed stands are 35 to 50 percent (stand vigor and growth are maximized). Populations of plant and animal species associated with late successional forests are well distributed. On BLM managed lands, harvesting activities have maintained structural/species diversity and late successional characteristics.

SUCCESS: The type, amount and distribution of seral stages within landscape are within desired range. Increased stand vigor and growth rates, endemic levels of insect and disease, and viable populations of a variety of plants and animals.

BLM MANAGED LANDS



POSSIBLE COMMERCIAL THINNING AREAS

EVALUATE STAND CONDITIONS - AREAS WITH FOREST HEALTH CONCERNS (I.E. DENSITY, INSECT, DISEASE) WOULD BE IDENTIFIED FOR TREATMENT.

IX. PLANS CONFORMANCE

A. CONSISTENCY WITH FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (FSEIS)

The following is based on the FSEIS and may change when the Record of Decision (ROD) is published (and all court actions settled). Many of the guidelines presented below must be affirmed, or can be modified by the landscape analysis. This includes, among others, riparian management area (RMA) widths, coarse woody debris requirements, the role of fire, identification of species/habitats that will require survey to protect identified species.

1. **Riparian Management Area:** RMAs generally parallel the stream network, but also include areas necessary for maintaining hydrologic, geomorphic, and ecological processes. RMAs occur throughout the landscape unit. The widths are defined as follows:

A. Fish bearing streams - 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.

The landscape analysis (LA) needs to define the "site potential tree" for each site class (see FEMAT) and arrive at definite distances. The FEMAT site class distances are as follows: II=250 ft, III=210 ft, IV=170 ft, and V=140 ft. The LA may change the distance of these RMAs based upon individual area characteristics. The distances are horizontal and apply to both sides of the streams. If the above widths are changed it is still important to meet the objectives of the Aquatic Conservation Strategy in Riparian Reserves.

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.

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.

3. **Green Tree Retention Guidelines:**

A. Northern General Forest Management Areas (GFMA): Leave 6 to 8 green trees per acre in harvest units. (Frost Zones 12 to 25 trees per acre)

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

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

There is no spacing or clumping requirements for leave trees.

The green tree retention guidelines are minimums that may not be changed downward by landscape analysis.

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 will state that this generally corresponds to 180 snags greater than 16" dbh per 100 acres.

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 and provide for ecological function by providing for a renewable supply of down logs well distributed across the matrix. Interim guidelines are a minimum of 120 linear feet of logs per acre, greater than 16 ft. long and 16" in diameter. It is anticipated that landscape analysis will establish a permanent guideline.

6. **Protect Remaining Late Successional Stands in 5th Field Watersheds:** The definition of 5th field watersheds equals our analytical watersheds as mapped for the RMP. This would include national forest land where appropriate. The guideline (subject to change) is to retain at least 15 percent of federal land within analytical watersheds in a late successional condition at any point in time. There is no additional breakdown. All land allocations (RMAs reserves, LSR, recreation sites, etc.) are to be used when calculating the 15 percent. Also, the 15 percent applies to each analytical watershed, not an average across the resource area or district. Late successional stands include mature and old-growth stands which are 80+ years old.

7. **Others:** These are other pertinent guidelines that apply to operations within the matrix that are important. These include survey requirements: protection of wildlife habitat from overgrazing, bat roosting, protection of soil and litter-dwelling organisms, etc. These are detailed in the FSEIS, particularly in the "B" appendices. Also, the Aquatic Conservation Strategy contains many objectives that need to be complied with during any activity within the RMA, not just timber harvesting.

8. **Salvage:** Salvage must meet the guidelines for all land use allocations that occur within the matrix. For example, if there is an established or proposed recreation site within the area, timber management and salvage guidelines must meet the management objectives for that allocation, such as hazard tree reduction and overall site maintenance.

Salvage within owl activity centers must meet the same standards and guidelines for late successional reserves. Salvage harvest within the matrix must ensure that standards and guidelines for coarse woody debris, snags, and green tree retention guidelines are not violated.

9. **Fire:** See FSEIS appendix B-8, p. B-133, for fire management standards and guidelines for all land use and general management guidelines. Some of the major points are as follows.

One objective of ecosystem analysis and management is to identify disturbance regimes and to manage the landscape within that context. Thus, fire is inherently neither "bad" nor "good," and should be used or suppressed in the context of achieving ecosystem management objectives at the landscape level.

The goal of wildfire hazard reduction in all land allocations is to reduce the risk of large-scale, high intensity wildfires which would prevent land managers from meeting resource management objectives. The judicious use of prescribed fire (underburning) for hazard reduction has the potential to restore ecosystem processes, lower smoke emissions from wildfires, limit the size of wildfires by facilitating fire suppression (while using methods that have a lower environmental impact), and reduce the costs of wildfire suppression.

Prescribed burning must adhere to smoke management and air quality guidelines described in the FSEIS, Chapters 3 and 4, the Air Quality section, p. B-83 through B-103. The Introduction to Air Quality Analysis contains the following:

This FSEIS emphasizes incorporating ecosystem principals into forest management, where fire is valued as a natural and necessary ecosystem process. Under ecosystem management, certain types of prescribed fire, such as under burning, will be emphasized.

The goal of prescribed burning, other than hazard reduction and site preparation, is to maintain or restore ecosystem processes or structures. Natural fire and American Indian use of fire played an important role in the development of these ecosystems. Consequently, land managers should strongly consider the use of prescribed fire when developing alternatives to restore or maintain ecosystem process or structures in these areas.

Deviations from the standards and guidelines may be necessary due to local fuel-loading conditions. Also, the wide natural variability in provinces and individual stand histories may lead to fuels management prescriptions that are inconsistent with the standards and guidelines, yet necessary to achieve the overall goal of reducing the threat of large-scale fire.

The goal of wildfire hazard reduction is to modify fuel profiles in order to lower potential fire ignition and the rate of spread.

Specific standards and guidelines for each major land use allocation are discussed on page B-134.

B. CONSISTENCY WITH RMP

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.

APPENDIX:

BUTTE FALLS SPECIAL STATUS SPECIES PROJECT CHECKLIST

Central Butte Falls Watershed Analysis Unit

U.S. FISH & WILDLIFE T&E SPECIES					
SPECIES	STATUS	RANGE Y/N	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Gray wolf	FE, SE	Historic	A	M	Limited
Peregrine falcon	FE, SE	Y	A	A	Thorough
Bald eagle	FT, ST	Y	P	M	Limited
Northern spotted owl	FT, ST	Y	P	H	Thorough

U.S. FISH & WILDLIFE FEDERAL CANDIDATE SPECIES					
SPECIES	STATUS	RANGE	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Spotted frog	FC1, SC, BS	Y	U	M	Limited
Cascade frog	FC2, SC	Y	P	M	Limited
Foothill yellow legged frog	FC2	Y	U	H	Limited
Red legged frog	FC2, SU	Y	U	L	Limited
Tailed Frog	FC2, SV	Y	U	M	Limited
Northwestern pond turtle	FC2, SC	Y	P	M	Limited
Northern sagebrush lizard	FC2	Y	U	L	None
Northern goshawk	FC2, SC	Y	P	M	Limited
Tricolored blackbird	FC2, SP	N	A	M	None
Western burrowing owl	FC2, SC	N	A	L	None
Mountain quail	FC3	Y	P	H	Incidental
Fringed myotis	FC2, SV, BS	Y	S	M	Limited
Long eared myotis	FC2,	Y	S	M	Limited
Long legged myotis	FC2	Y	S	M	Limited
Townsend's big eared bat	FC2, SC	Y	S	M	Limited

Yuma myotis	FC2	Y	S	L	Limited
SPECIES	STATUS	RANGE	P/A	HABITAT QUALITY	LEVEL OF SURVEY
California red tree vole	FC2	Y	S	M	None
Fisher	FC2, SC	Y	P	M	None
California wolverine	FC2	Y	U	M	None
Coho salmon	Petitioned (T)	Y	P	H	Thorough
Steelhead trout (summer & winter)	Proposed (T)	Y	P	H	Thorough
Pacific lamprey	FC2	Y	P	H	None
Burnell's False Water Penny Beetle	FC2	Y	U	L	Limited
Denning's Agapetus caddisfly	FC2	Y	U	H	Limited
Green springs Mt. faurian caddisfly	FC2	Y	U	M	Limited
Schuh's homoplectran caddisfly	FC2	Y	U	M	Limited
Siskiyou caddisfly	FC2	Y	U	M	Limited
Siskiyou chloealtis grasshopper	FC2	Y	U	M	None
Franklin's bumblebee	FC2	Y	U	L	None

OTHER (ODFW AND BLM) SPECIAL STATUS SPECIES)					
SPECIES	STATUS	RANGE	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Clouded salamander	SC, BS	Y	S	M	Limited
California mt. kingsnake	SP, AS	Y	P	M	None
Common kingsnake	SP,AS	Y	U	M	None
Sharptail snake	SV, AS	N	U	M	None
Acorn woodpecker	SV	Y	U	L	None
Black backed woodpecker	SC,AS	Y	U	M	None
Flammulated owl	SC, AS	Y	P	M	Limited

Grasshopper sparrow	SU	N	A	L	None
Great grey owl	SV, AS	Y	P	M	None
SPECIES	STATUS	RANGE	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Greater sandhill crane	SV	Y	P	L	Incidental
Lewis' woodpecker	SC, AS	Y	U	L	None
Northern pygmy owl	SU	Y	P	M	Incidental
Northern saw-whet owl	AS	Y	P	M	Incidental
Pileated woodpecker	SC, AS	Y	P	M	Incidental
Pygmy nuthatch	SV	Y	S	M	None
Three-toed woodpecker	SC, AS	Y	U	M	None
Western bluebird	SV, AS	Y	S	M	None
White headed woodpecker	SC	Y	P	M	Incidental
Pacific pallid bat	SC, AS	Y	S	M	None
American marten	SC, AS	Y	P	M	None
Ringtail	SU	Y	P	M	Incidental

Status:
FE - Federal Endangered
FT - Federal Threatened
FC - Federal Candidate
ST - State Threatened
SC - State Critical
SV - State Vulnerable
SP - State Peripheral or naturally rare
SU - State-Status Unknown

BS - Bureau Sensitive (BLM)
AS- Assessment Species (BLM)

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

Habitat quality:
H - High
M - Medium
L - Low
A - Absent

Appendix____. Habitat and Occurrence of Special Status Wildlife Species on the Butte Falls Resource Area

THREATENED AND ENDANGERED SPECIES

Gray wolf (Canis lupis)

The gray wolf is believed to be extinct in Oregon. Purported sightings have created controversy as to whether they actually do exist in southern Oregon. Until confirmed sightings occur, they are considered to be extinct in the Medford BLM district.

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)

Five nest sites are known in the Medford BLM district, with 2 on adjoining private lands. Three 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 CANDIDATE SPECIES (C1)

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.

FEDERAL CANDIDATE SPECIES (C2)

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.

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.

Northern sagebrush lizard (Sceloporus graciosus graciosus)

Most common in sagebrush areas, but it also occurs in open forests of ponderosa and lodgepole pine that have open brushy understories. The lizards are ground dwellers, but may occasionally be seen resting on larger branches of sagebrush, but never more than a few inches above ground level.

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 which is 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 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.

California red tree vole (Arborimus pomo)

An arboreal vole which lives in Douglas fir, spruce and hemlock forests. Food consists entirely of leaves 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.

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 use 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. South Coast coho was listed as depressed by the National Marine Fisheries Service in November, 1993.

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 here. 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.

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.

FEDERAL CANDIDATE SPECIES (C3)

Mountain quail (Oreortyx pictus)

Commonly found in forests above the interior valleys in the Medford district. These quail use a variety of habitats, including open meadow, shrub fields, other openings, and forested stands. Mountain quail are more common than originally thought and unless a downward population trend is observed, will likely be removed from the USFW sensitive species list within the next two years.

OREGON STATE SENSITIVE SPECIES

*(C=critical, V=vulnerable, P=peripheral, U=undetermined)

Clouded salamander (Aneides ferreus) <U>

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.

California mountain kingsnake (Lampropeltis zonata) <P>

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) <P>

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) <V>

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

Acorn woodpecker (Melanerpes formicivorus) <V>

Found in the Rogue river valley and surrounding foothills. Preferred habitat is oak woodlands, riparian areas, and mixed conifer oak forests which have high canopy closure. Excavates nests and nest cavities in oaks and other trees. Store acorns in holes excavated in thick bark or other soft dead wood.

Black-backed woodpecker (Picoides arcticus) <C>

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) <C>

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) <U>
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) <V>
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) <V>
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) <C>
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) <U>
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) <BLM assessment>
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.

Pileated woodpecker (Dryocopus pileatus) <V>
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) <V>
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) <C>

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) <V>

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) <C>

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.

Pallid bat (Antrozous pallidus) <V>

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.

American martin (Martes americana) <C>

Martins 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 (U) (Bassariscus astutus) <U>

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.

*C = Critical-species for which listing as threatened or endangered is pending.
V = 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
P = Peripheral-species whose Oregon populations are on the edge of their range.
U = Undetermined-species whose status is unclear. They may be susceptible to decline.

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BIG BUTTE WATERSHED CULVERT INVENTORY

Priority	Stream	Road Number	Quarter-Section		Culvert Dimensions L x W X H (ft)	Percent Slope	Culvert Outfall Drop (ft.)	Passage	
								Steelhead	Cutthroat
	Hukill Crk Trib to Big Butte Crk Upstream from Medite	35-2E-15	NW	1/4	40' x 4'	5	2'	No	No
	Hukill Ck Downstrea m from Medite	35-2E-10.1 2 culverts + pond below. Road crossing Medite			40 x 24" 32 x 24"	3 3	18" 0	No	Yes

Priority	Stream	Road Number	Quarter-Section		Culvert Dimensions L x W X H (ft)	Percent Slope	Culvert Outfall Drop (ft.)	Passage	
								Steelhead	Cutthroat
	Jackass Cr	34S-3E-29	SE/NW	34S-3E-29	42' x 6'	4	1		No
	Jackass Cr	34S-3E-29.3	NE/SW		34' x 3'	4	3'		No
	Mule Creek	No #	SW/SE	34-3-21	40' x 5'	4	3		No
	N.Fk Big Butte Ck	34-3-21	SE/NW	34-3-27	Unmeasured ~45' x 8' squash	2-3	4'		?
	Camp Creek	34-3-26.0	NE/NW		30'x 2'	0	4"		No
	Titanic Ck	34-3-25 gated	NW/SE	34-3-25	48' x 4.5' Old culvert needs replaced or velocity barrier Multi-plate Bottomless ARch	5 Steep pull culvert	1'		No
	N.Fk Big Butte Ck				(2) 34' x 40" concrete (1) 34' x 18" overflow	0	6"		Good habitat
	Trib to NFork Big Butte Cr	34-3-14.1	SE/SW	34-3E-13	48' x 42"	>5	3'		No
	Mainstem NFork Big Butte Crk	34-3-14.1	SW/SE	34-3E-13	40' x 3'	0	6"		No summer passage