CHAPTER 5 – HUMAN USES & LAND MANAGEMENT

CULTURAL HERITAGE

FIRST INHABITANTS

American Indians lived in southwest Oregon and helped shape the local landscape for thousands of years before the arrival of European and American explorers and traders in the 18th and 19th centuries. Radiocarbon dating documents human presence along the North Umpqua River by 8,400 BC (D. Barner, personal comm.). A fragment of a large, fluted, stone projectile point found along the North Umpqua River indicates that these early inhabitants may have hunted big game such as mastodon, mammoths and saber-toothed tigers (Beckham 1986). Changing climates at the end of the glacial period meant extinction for some of these animals, requiring expanded subsistence patterns by the human inhabitants. Tools found at sites of this Archaic Period include knives, scrapers, and chopping tools of people who were gatherers as well as hunters and fishers. Several of the sites along on the North Umpqua River occur beneath a layer of ash formed 7,600 years ago by the explosive eruption of Mount Mazama, which created Crater Lake (Beckham 1986, D. Barner, written comm.). During the next few thousand years, new styles of projectile points appeared, including small narrow-necked points up to 2,000 years old which indicate the introduction of the bow and arrow.

The limited amount of ethnographic information available attributes use of the area to the Southern Molalla (Berreman 1937 and Beckham 1986). They resided along the North Umpqua River, Little River, and the South Umpqua River deep into the Western Cascades (Beckham and Minor 1992). In 1854, Indian Agent William J. Martin described 15 bands in the Umpqua River basin. The "Mountain Band" is assumed to be Southern Molalla with a population of 54 people. In 1856 during the signing of the treaty with the United States, Joel Palmer numbered 28 Southern Molalla and estimated 30 more resided in the mountains (Beckham and Minor 1992). The total Southern and Northern Molalla population was reduced to less than forty people by 1891 (Powell 1891 and Toepel 1987).

Subsistence and settlement patterns practiced by the Southern Molallas is speculative, but has been generally substantiated by archaeological investigations in the area. Throughout the summer, wild camas, various seeds and insects were probably collected. In the fall, acorns and hazelnuts were harvested (Toepel 1987). During the winter months, deer and elk were hunted intensively. Recent excavations at a site located on a terrace above the North Umpqua River discovered salmonid remains and bone fishing implements. Non-anadromous fish and lampreys would

have been available in the upper reaches of larger streams. They probably wintered in sites located along the river or streams in the lower elevations. Houses were constructed large enough to hold a small family group and may have been similar to the semi-subterranean earth lodges constructed by the Klamath. These were circular houses with conical roofs and radiating poles, measuring 12 to 30 feet or more in diameter (Toepel 1987). Task specific sites and hunting base camps are found in the uplands.

Archaeological investigations in the analysis area have been the result of federally mandated measures designed to reduce project impacts on heritage resources. To date, over 83 prehistoric archaeological sites have been recorded. Three general types of sites have been recorded and are described in the following:

Cairn sites - Usually a pile or mound of piled rocks. May have been built for a number of reasons (e.g., trail markers or spirit quests). Sites are usually associated with a ridge crest or vista.

Rock shelters - Overhangs or shallow caves. Openings may have been covered with woven mats, bark, or boughs. Stone tools, flakes, and faunal remains are often found. Data recovery excavations at one site containing three rock shelters showed that the larger shelter served as a seasonal base camp approximately 400 years ago. Deer was the primary target of hunters from the base camp; however, bear, rabbit, mountain beaver, porcupine, rodents, and a small number of fish and bird were exploited as well.

Lithic scatters/Ground stones – Lithic scatter refers to chipped stone tools and waste flakes. Ground stone includes manos, metates, bowls, hopper mortars, pestles, and grinding slabs. These sites may be temporary campsites associated with hunting and processing of game. Lithic scatters associated with ground stone indicate a broader range of activities including manufacture and repair of chipped stone tools and food processing. Sites found on stream terraces and benches often contain denser deposits then those associated with ridges. Many of these sites are recorded as having ground stone associated with the deposits and may have been occupied as seasonal base camps or even winter villages. Sites on ridges represent short-term hunting camps and are often located along travel routes.

Records from early explorers and settlers indicate that the southwest Oregon tribes in the Umpqua Valley frequently set fire to meadows and hillsides to encourage food plants (such as tarweed, bracken fern and berries) and basketry materials (hazel and beargrass). They burned underbrush in the forests to make them more open for hunting (Beckham 1986, Boyd 1986, LaLande 1991). Fire was used as a tool to collect insects for food, and as a defense against enemies. Oak trees were underburned to encourage acorn production and to clear the ground to make collection of acorns easier

(Boyd 1986, Agee 1993). In the dry summer climate of this area, large fires could have burned over a period of weeks or months (Agee 1993).

EURO-AMERICAN SETTLEMENT AND IMPACTS ON NATIVE AMERICAN INDIANS

Sailing ships began visiting the coast of southwest Oregon in the 1700s to explore and trade for furs. After 1820, parties of Hudson Bay fur traders from Fort Vancouver established overland trade routes with the Umpqua Valley, erecting remote outposts along the river. A series of epidemics, estimated to have killed 90% of the American Indian population in Oregon, followed these early encounters with the traders (Beckham 1986, Boyd 1986). Even prior to this, there is some archeological evidence of epidemic outbreaks beginning approximately 500 years ago (D. Barner, writ. comm.).

From 1818 until 1846, Oregon was occupied primarily by both Americans and British. An 1846 treaty settled the boundary between the United States and Canada, and gave the Oregon region to the United States. During the 1840s most newcomers to Oregon settled in the Willamette Valley (O'Donnell 1996). In 1846, an emigrant wagon and supply road into southwest Oregon was opened (the Applegate Trail) and brought new settlers to the Umpqua Valley. The Glide area began being settled around 1852and Honey Creek (approx. 4 miles downriver of the analysis area) by the early 1890s.

Although Native American land title was acknowledged in an 1848 act creating the official Oregon Territory, no land was ever ceded to the American Indians in southwest Oregon. Displaced American Indian families became destitute and in the winter of 1852-53, another bout of disease killed up to two-thirds of the remaining population (Beckham 1986). Beginning in 1853, a cycle of indiscriminate violence between the new settlers and the local Indians began. During this time, several attempts were made, on both sides, to reach a peaceful settlement (e.g., The Cow Creek Treaty of 1854). However, these efforts failed, and by 1856, most American Indians that chose to fight surrendered to the US Army (Beckham 1986). Shortly thereafter, the government removed over 2,000 Native Americans (including bands from the Umpqua basin who had remained peaceful) from southwestern Oregon to the Siletz and Grand Ronde Reservations (Beckham 1986). Scattered individuals and families remained in the area, although embittered settlers sought to kill them, and the Bureau of Indian Affairs contracted with bounty hunters to capture them. Some of these Native Americans, perhaps about 100 in Douglas County, survived to become a remnant Native American Indian population (Beckham 1986).

In 1956, the federal government terminated the Oregon Tribes, hoping to encourage their assimilation with the general American population (O'Donnell 1996). Even so, the Cow Creek Band continued to act as a tribe and by the early 1980s, regained their tribal status through legislation passed in Congress. Today they are the only Federally recognized tribe within the Umpqua River Basin.

Today, there are again several hundred American Indians living in Douglas County, including 1,200 members of the Cow Creek Tribe and several members of the Confederated Tribes of the Grande Ronde. The Cow Creek Tribe works closely with archaeologists from the Umpqua National Forest and the Roseburg Bureau of Land Management Office to recover and preserve their history within the area.

STATEHOOD AND LAND TRANSFERS

After statehood, southwest Oregon's population expanded rapidly. Douglas County had over 3,000 people in 1860. By 1880 there were almost 10,000 (Beckham 1986). Euro-American settlement in Oregon was greatly encouraged by the Donation Act of 1850, which legitimized the land claims of those already settled in the Oregon Territory. The act gave free land to newcomers and encouraged more people to move to Oregon, especially to the agricultural lands in the Willamette, Umpqua and Rogue River Valleys (Robbins 1974). In 1862 the Homestead Act was passed, further encouraging settlement.

Toward the end of the 19th century, the federal government began to see a need to conserve public land rather than transferring it to private landowners (e.g., the O&C Land Transfer). In 1886 the federal government set aside land to protect Crater Lake. Congress then passed the Forest Reserve Act in 1891, which set the stage for the creation of the National Forests. The Organic Administration Act of 1897, under which most national forests were established, states that, "*No national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States…*".

Several National Forests were created under the Weeks Law of 1911 to restore forests on former private lands that had been heavily logged or cleared for agriculture. That law authorized the Secretary of Agriculture to "*…examine, locate, and purchase such forested, cutover, or denuded lands within the watersheds of navigable streams as in his judgment may be necessary to the regulation of the flow of navigable streams or for the production of timber*."

RECREATIONAL USES

The North Umpqua River was designated a recreational river in the National Wild and Scenic River System in the Omnibus Oregon Wild and Scenic Rivers Act of 1988 (PL90-542). The Oregon Rivers Initiative (1988) also designated the North Umpqua as an Oregon State Scenic Waterway. The wild and scenic corridor boundary was established using a comprehensive analysis of the land seen from the North Umpqua River and highway. Applying a limit of 320 acres per river-mile, congressional boundaries were established identifying 10,816 acres. The designation included 33.8 miles of river from Soda Springs Powerhouse downstream to the river's confluence at Rock Creek.

As a recreational river, five Outstanding Remarkable Values (ORV's) were identified: fish, water, recreation, scenery and cultural resources. The desired future condition (DFC) for all five ORV's are identified in the North Umpqua River Management Plan, completed in 1992 by the Umpqua National Forest and Roseburg District, Bureau of Land Management.

The corridor is readily accessible to a broad segment of the population and is used for a variety of river-related recreational opportunities such as fly angling, bait fishing, swimming, fisherman float tubes, cata-rafts, cat-yak, drift boats, inner tubing, boogie boarding and air mattress floating. Water recreation is an important human use in the watershed. Use of the river by private boaters began in 1972. As of the 2000 season, no limits have been imposed on the private sector. Private use has shown a steady increase since 1994.

The Umpqua National Forest and the Bureau of Land Management – Roseburg District have developed an effective partnership with outfitter guides with the whitewater boating special-use permit program. Outfitter guides began commercial use of the river in 1974. The first special use permits were issued in 1976. From that time until 1992, the number of permits have fluctuated from 2 to 20 permits issued each season.

The North Umpqua River Management Plan (1992) requires that, each season, wild & scenic river use information is collected during the peak use season (May 20 to Sept 30). Commercial boating and angling, private boating and angling uses within the corridor are recorded daily. At the end of each season information is entered into the North Umpqua River Monitoring Plan. In 1999, commercial outfitters reported 2,088 clients for the season. Private use reached 4,647 during the same period of time.

The general forest area outside of the North Umpqua River corridor receives much less recreational use. The primary use is hunting and camping. Other recreation activities that occur within the analysis area include; picnicking, driving for pleasure, viewing scenery, wildlife viewing, wildflower viewing, hiking, biking, horseback riding, motorcycling, ATV riding, and berry picking.

RECREATION SITE TYPES

There are several recreation site within the analysis area (Fig. 53). Developed sites are areas where facilities and or services are provided to the users. This may include full service campgrounds, picnic areas, trailheads, raft launch sites, reservation areas and forest camps. These areas may include facilities such as restrooms, camping sites, shelters, tables and fire rings, spurs and parking areas with services such as; garbage, law enforcement and interpretation. All of the developed sites found within the analysis area are located within the Wild & Scenic North Umpqua River Corridor. Seven developed campgrounds provide for a total of 500 persons at one time (PAOT). Four trailheads found in the North Umpqua Corridor provide 190 PAOT. Three raft launch sites provide for 250 PAOT. Two Reservation Areas also found in the North Umpqua River Corridor provide 276 PAOT. Concentrated Use Areas (formally known as dispersed recreation sites) are primitive and rustic sites that do not have facilities or services. The analysis area has 21 identified CUAs.

FISHERIES

Commercial use of the Umpqua River salmon fisheries began in the 1850s (Beckham 1986), expanding substantially in the 1870s to become an important element in the economy of Douglas County until the mid 1940s. From 1923-1946 approximately 1.5 million coho salmon (approximately 65,000 fish per year) were caught in the Umpqua River (Beckham 1986). By the late 1940s the fishery had declined considerably to the point where commercial operations ceased, but sports fishing was on the rise.

Sport fishing has long been popular on the Umpqua River. The analysis reach is world-renowned as a high-quality fly fishing stream for summer steelhead and fishing gear has been restricted to artificial flies since 1953. An estimated 19,700 anglers fished the

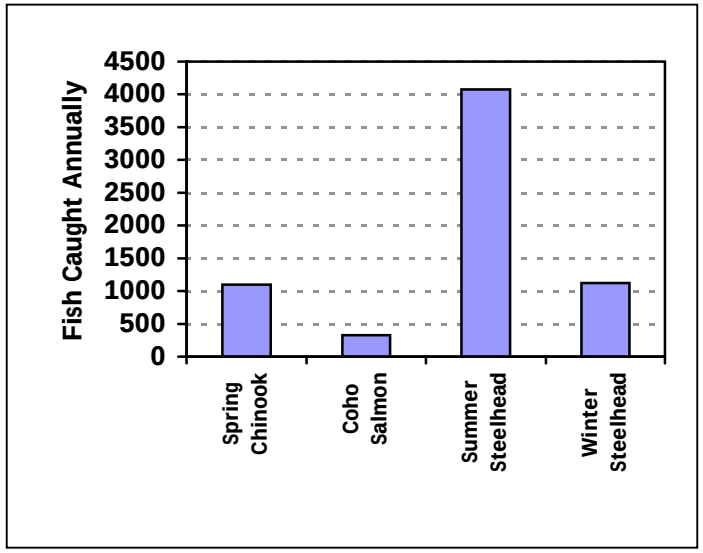

Figure 51. Average annual fish catches on the North Umpqua River between 1984-1996 (ODFW, unpublished data).

analysis reach of the North Umpqua in 1998 (USDI 1999). In addition ten commercial angling guides operate under special use permits with the Forest Service within the analysis area.

In 1988, economic value associated with consumptive use of fishery resources on the Umpqua National Forest was estimated at $35,285,720 (Tripp and Rockland 1990). Non-consumptive fishery resources were estimated at $650,000.

Average annual fish catches on the North Umpqua River from 1984-1996 are displayed in Figure 51. These numbers represent about 6.5% of all sport-caught spring chinook salmon and about 2% of the total coho catch in Oregon coastal basins for this period.

The river accounts for about 74% of all summer steelhead caught in the Oregon coastal basin sport fisheries and 15.5% of all in-river sport-caught summer steelhead in Oregon. As people come from literally all over the world to fish for North Umpqua River summer steelhead, this fishery is culturally and economically significant for the state of Oregon and is culturally important at the national level.

HUNTING & WILDLIFE VIEWING

The results of the 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation revealed that 1.3 million Oregon residents 16 years old and older engaged in fishing, hunting, or wildlife-watching activities. Of the total number of participants, 525,000 fished, 275,000 hunted, and 1.0 million participated in wildlife-watching activities, where the enjoyment of wildlife was the primary purpose of the activity. Wildlife-watching activities included observing, feeding, and photographing wildlife.

Approximately $2.2 billion was spent on wildlife-associated recreation in Oregon (Fig. 52). Of that total, trip-related expenditures were $662 million and equipment purchases totaled $1.5 billion. The remaining $105 million was spent on licenses, contributions, land ownership and leasing, and other items and services.

Figure 52. Wildlife hunting and viewing expenditures in the State of Oregon, 1996 (USFWS Data).

Hunting and wildlife viewing are increasing recreational activities within Douglas County. Both rifle and bow elk hunter numbers have almost doubled for the South Indigo Hunting Unit over the last 10 years (ODFW data).

WHITEWATER BOATING

The river contains Class I to Class V rapids, ranging from mild water to moderately short, but raging rapids. Difficulty levels vary throughout the season and are dependent on water flow levels. Most rafting occurs from May to July, depending on weather. Later in the summer, kayaking use increases. Whitewater boating has steadily increased over the last two decades. Commercial whitewater guiding has been permitted since 1976. Currently 15 permitted whitewater boating guides serve up to 2,300 clients each year. The numbers of whitewater users is monitored annually and the total number of whitewater recreationists (private and commercial) was approximately 6,735 people in 1999. This equates to a 33% increase in use over the last 5 years. This upward trend is mainly attributed to the increase in non-commercial boaters. For a more complete description of the potential influences that recreational whitewater floating may have on the mainstem North Umpqua refer to the USFS/BLM, Environmental Assessment for the North Umpqua River Outfitter Guide Non-motorized Watercraft Special Use Permit Renewal, 2000.

TRAILS

Historically, there were approximately 125 miles of trails throughout the analysis area. Many of these followed prominent ridges and old American Indian trails. These “way trails” were constructed and used by the Forest Service for fire prevention and suppression efforts. Eventually, they were replaced by roads, abandoned or converted into recreational trails. Today there are 46 miles of trails within the analysis area maintained for recreation, including 17.5 miles of the 79-mile popular North Umpqua Trail. This trail parallels the river and enters its Riparian Reserve for 13.2 miles. The remaining 28.5 miles of trails within the analysis area include the Mace Mountain, Williams Creek, McDonalds, Cougar, River View and Fall Creek Trails. The Fall Creek, Mott and Tioga sections of the North Umpqua trail are designated as National Recreation Trails.

Hiking on the North Umpqua Trail increased from 6,495 user-days in 1995 to 7,761 user-days in 1998. Equestrian use averaged from 175 to 208 user-days over the last 5 years. Bicyclists are increasingly finding the North Umpqua River corridor attractive for touring and mountain biking. Mountain biking on the North Umpqua trail has increased from an estimated 687 user days in 1995 to 820 user days in 1998. For further discussion on recreational issues and activities within the North Umpqua River corridor refer to the USFS/BLM, North Umpqua River Analysis (1999).

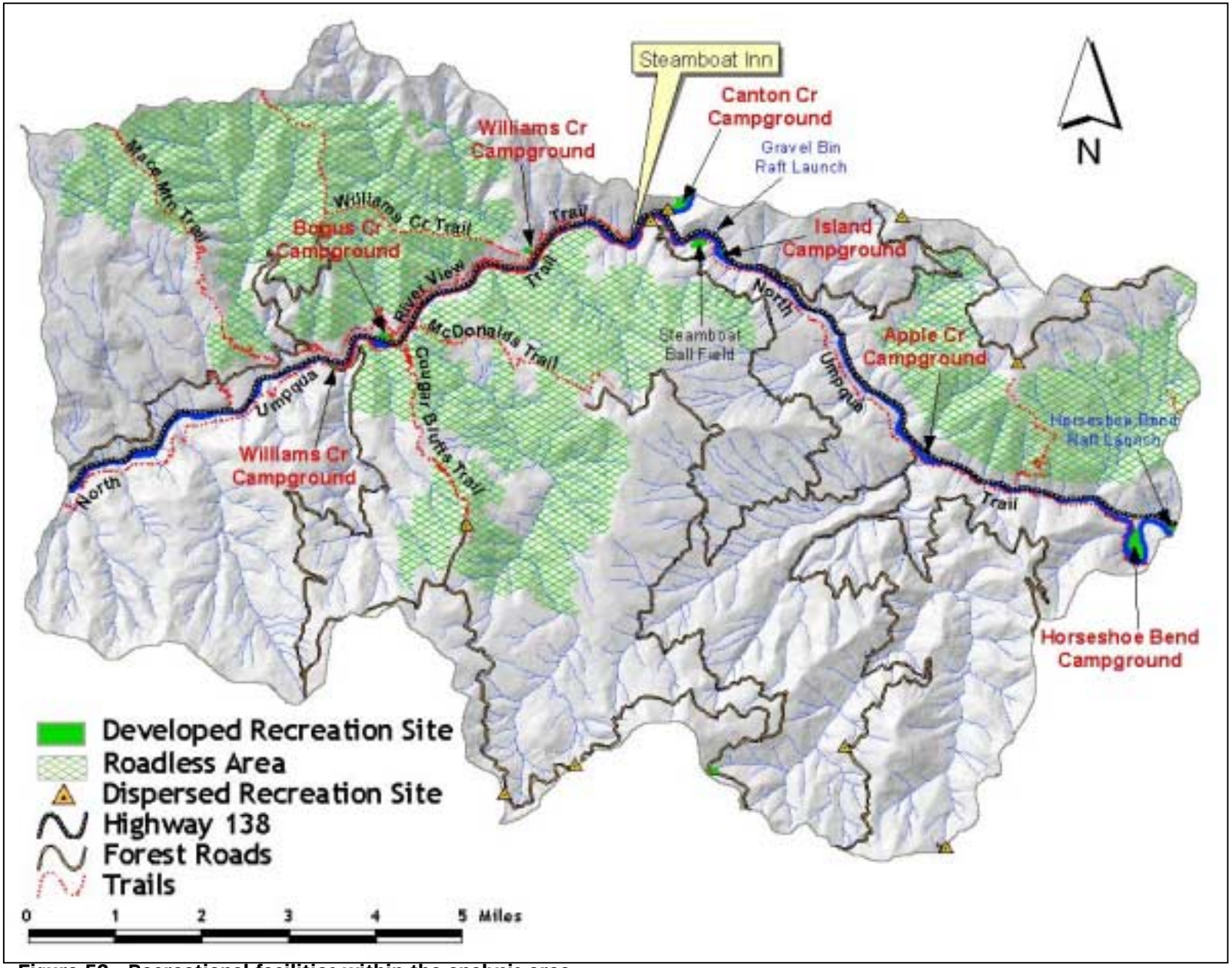

Figure 53. Recreational facilities within the analysis area.

LANDS AND MINERALS

When the boundary to the Umpqua National Forest (then a Forest Reserve) was formed in the early 1900s, there were numerous in-holdings and homesteads. In 1976, the homestead laws were repealed by the passage of the Federal Land Policy and Management Act. The Umpqua National Forest purchased or traded lands as they became available and as they met management goals and objectives. The most recent purchase of land occurred in the year 2000, with the purchase of a 10-acre parcel located adjacent to Bogus Creek Campground.

Today, there are 1,627 acres of private land held within the Middle North Umpqua Watershed Analysis area. Of this, individuals who maintain residences along the North Umpqua Highway own 120 acres. Approximately 40% of the land held by these individuals has been clearcut harvested within the last two decades. Private timber companies own the remaining 1,507 acres. Eighty-two percent of the land owned by timber companies (1,227 acres) has been clearcut harvested within the last 1-30 years.

PRIVATE LAND ACCESS

Most of the private land is accessed via the North Umpqua Highway (HWY 138) or by one of the many Forest System roads that branch off of it. The Forest Service utilizes two methods to grant access to landowners, road use permits and road easements. In general, road use permits are required when a landowner wants to remove a commercial product from their land (e.g., timber). Easements are legal agreements for use between the Forest Service and the landowner, and are more long-term in nature. A landowner most often requests an easement when they need to connect a driveway to a Forest System road, or when their lender (or the County) requires them to have an easement prior to development. Very few landowners have easements at this time; road use permits are requested as needed by individual landowners.

Two parcels, totaling 280 acres, are located within the Cougar Bluffs Roadless Area and are held by private timber companies. Access exists via the old McDonald trail, a side trail that connects to the Mott Segment of the North Umpqua Trail, just east of the Cougar Creek stream crossing. No road access currently exists as road building in that area would be treacherous. According to Jake O'Dowd, Program Manager for Real Estate and Minerals Resources at the UNF SO, one landowner has investigated obtaining road access to their land; however, they determined that road construction was infeasible at the time, because of the steep and dissected terrain.

SPECIAL USES

Within the analysis area, several special land uses are currently under permit. They are:

Pacific Power And Light (PP&L) Distribution Lines - In 1948, PP&L began building distribution lines parallel to the river and highway. Currently there are 20.3 miles of distribution lines in the analysis area. PP&L has road access to these lines. The Forest Service and PP&L are currently undergoing negotiations to determine which roads are needed for their operation and which can be eliminated in order to mitigate impacts to the environment.

CenturyTel Phone Lines - Over the last several years, CenturyTel has upgraded phone lines along the highway. These lines are buried in the ditch line and it is likely that CenturyTel will continue to upgrade them as technology changes.

Ramcell Cellular Communications Tower - In 2000, a special use permit was issued to locate a cellular communications tower on a ridge located in T26S, R01E, Sec. 8. The tower, located on an old spur road approximately 200 feet inside of the Late-Successional Reserve, will facilitate cellular communications along the river corridor. . Approximately 0.65 miles of existing road will be decommissioned in the LSR as a mitigation measure associated with the permits issuance.

Steamboat Inn - Located along the North Umpqua River, just downstream of from its confluence with Steamboat Creek, the Steamboat Inn was established as a fishing lodge in the early 1950's by Frank Moore. Currently, it serves as a fine-dining/lodging establishment. The Forest Service receives a percentage of the income grossed by the Inn each year for special use fees. The Inn is currently on a 30-year lease that expires in March of 2021. It is assumed that Steamboat Inn will continue to be used as a restaurant/lodge at least through the lease period.

Steamboat Compound - Once a Forest Service Ranger Station (until 1986), the Oregon Department of Transportation (ODOT) now operates it under a special use permit. ODOT moved into the facility in 1986, and currently operates the facility as a maintenance station under a 10-year permit that expires in June of 2007. The Forest Service maintains two bunkhouses and two warehouses on the site, while the Steamboat Inn "sub-leases" several of the residences from ODOT. The Forest Service receives special use fees based on the value of the housing and any improvements that are completed to the property. It is assumed that ODOT will continue to occupy the site at least through the lease period.

MINING

Mining within the analysis area began in the late 1850s. The earliest mining activity consisted of exploration using picks, shovels and dynamite or placer mines along the river and its tributaries. The 1990 Umpqua National Forest Land and Resource Management Plan fosters and encourages the prospecting, discovery, exploration, development and extraction of locatable minerals, gas, oil and geothermal leases, and common variety minerals within the limits of applicable laws (LRMP Chapter IV 74-78). Public Land Order (PLO) 1867, dated On May 28, 1959, withdrew 3,270 acres of land in legal subdivisions from mineral entry under the mining laws along Steamboat Creek.

Under the Wild and Scenic River Act, rivers designated as "recreational" are not withdrawn from mineral entry. However, the North Umpqua River has a duel designation, a Federal Wild & Scenic River with a recreational classification and an Oregon State Scenic Waterway with a scenic classification on the south bank and a recreational classification on the north bank. Placer mining is prohibited within State Scenic Waterways; however, recreational mining is allowed with a permit. A permit is also required for any kind of mining on tributaries leading to Oregon State Scenic Waterways (outside of other withdrawn areas).

Mining is considered recreational mining when a person uses a four inch dredge or less, a sluice box, or a gold pan. The permit must be filed with the Department of State Lands (DSL) and the expected turn-around is about three weeks. Recreational mining must take place within the wet perimeter of a creek or stream and turbidity must not be detectible 300 feet downstream from the activity. Recreational mining has occurred within the analysis area.

Other mineral withdrawals within the analysis area include one to protect the roadbed of the North Umpqua Highway, within 330 feet from each side of its centerline and one within the powerline corridor. Mining within the Limpy Rock RNA should be considered for withdrawal (USDA 1990). No surface entry for saleable or leasable minerals is allowed and no extraction of common variety minerals is allowed unless their extraction contributes to the RNAs objectives (USDA 1990).

Currently, there are only two active mining claims within the analysis area. These are hard rock mines located near Dog Creek. Old, abandoned mine adits and exploratory pits do occur throughout the analysis area (e.g., the headwaters of Fox Creek).

ROAD SYSTEM

Thoughts for a road from Roseburg to Eastern Oregon began in the 1860s, shortly after the Umpqua Valley was settled. Construction of a wagon road that followed the old Dixon's cattle trail up the North Umpqua River was considered in 1892. It wasn't, however, until 1922 when the Forest Service, working with the County, Bureau of Public Roads and the North Umpqua Special Road District began construction of a one-lane dirt road that extended from Rock Creek to the Steamboat Ranger station. At that time, plans for a series of hydroelectric dams along the North Umpqua River by the California-Oregon Power Company (COPCO) kept road construction out of the river's flood plain and well up the north bank. The road was finished in 1926 and later was extended to Diamond Lake by the CCC from 1933-1939. By this time, COPCO had agreed to not build any dams below Soda Springs, so the road closely paralleled the river on its north bank and extended through the flood plain in areas.

In 1947, the Bureau of Public Roads began to relocate the road between Rock Creek and Steamboat Creek (now the River View trail) down to water grade (closer to the river channel). This marked the beginning of the construction of Highway 138. Widening and paving of the road was done as funds became available. Eventually, the highway was completed in 1964. Concurrent with construction of Highway 138, the Forest Service began constructing roads up the river's tributaries in 1947 to facilitate the implementation of the North Umpqua Ranger District's Timber Sale Program.

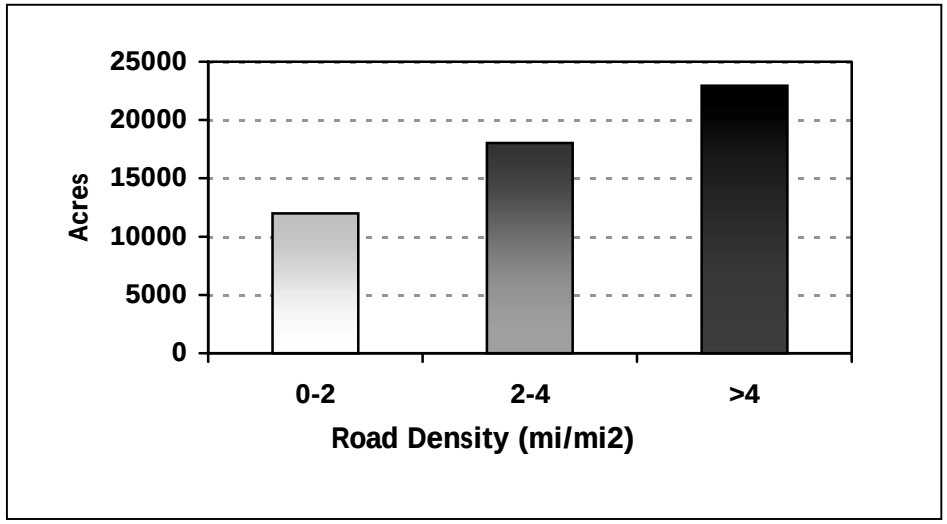

Figure 54. Bar graph of road densities within the analysis area.

The earliest roads extended into the watershed along the ridge that divides the North Umpqua from the Little River watershed. These roads extended to Lookout Mountain by 1953 and into the headwaters of Bachelor and Limpy Creeks by 1955. Bridges over the North Umpqua river were constructed by 1956 allowing access to timber within the lower reaches of Panther and Fairy Creeks. Today there are 292 miles of road within the watershed (including Highway 138). These roads are concentrated in areas where old growth forests occurred, producing high road densities. Road densities vary, with approximately 42% of the watershed exceeding road densities of 4 miles/mi² (Fig. 54).

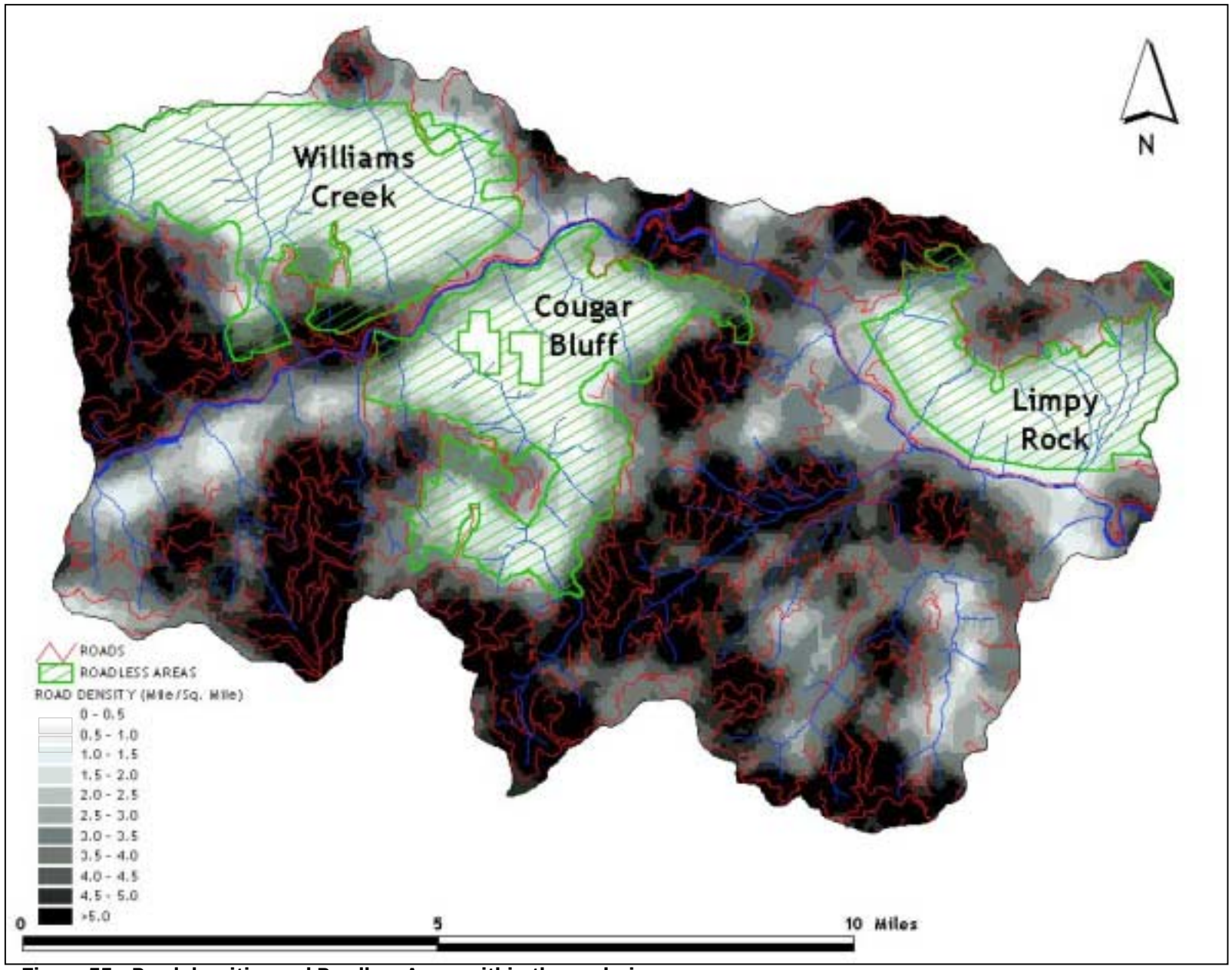

Figure 55. Road densities and Roadless Areas within the analysis area.

ROADLESS AREAS

Inventoried roadless areas are public lands typically exceeding 5,000 acres that met the minimum criteria for wilderness consideration under the Wilderness Act of 1964. They provide opportunities for dispersed recreation and large undisturbed landscapes that provide privacy and seclusion. In addition, these areas serve as bulwarks against the spread of invasive species and often provide important habitat for rare plant and animal species, support the diversity of native species, and provide opportunities for monitoring and research. There are 3 roadless areas within the watershed (Fig. 55), totaling 14,616 acres (28% of the watershed). These roadless areas were delineated over large blocks of forest that experienced high-severity, stand replacement fires in the early 1900s. The roadless condition within these areas is due to the lack of old-growth forests within them, which lowered the incentive to construct roads to support the timber sale program.

In 1972, a roadless area review was initiated and an Environmental Impact Statement (EIS) was submitted to the Council on Environmental Quality in 1973. Williams Creek and Cougar Bluff roadless areas were included in this EIS. The recommendations of the EIS were not implemented due to deficiencies in the analysis. In 1974, a second roadless area evaluation (termed RARE II) was conducted to correct the deficiencies of the original analysis. However, Williams Creek and Cougar Bluffs were not included in this analysis. The RARE II EIS was submitted in 1979 and also found to be inadequate. In 1984, the Oregon Wilderness Act designated three of the roadless areas on the Umpqua into wilderness areas. The act mandated that all other roadless areas be managed for multiple-use in accordance with existing land management plans. The roadless area inventory was updated again in the 1980s. This inventory required that roadless areas had to be at least 5,000 acres or an appendage to a Wilderness Area. Activities in roadless areas that alter roadless characteristics create public controversy, appeals, and lawsuits. In a court case involving roadless area entry on the Rogue River National Forest in 1989, the courts found that entry into these areas was a significant impact and that an EIS was required. This became Forest Service policy.

Areas without roads have inherent values and characteristics that are becoming scarce in an increasingly developed landscape (USDA 2000). Due to loss of open space on private lands across the country and an estimated 8.4 billion dollar backlog on road maintenance and reconstruction on the current 380,000-mile road system, the Forest Service is undertaking a national Roadless Area initiative. This initiative prohibits new road construction or reconstruction in roadless areas and establishes procedures requiring land managers to evaluate the quality and importance of roadless characteristics to determine whether and how to protect roadless characteristics in the context of multiple-use objectives when Forest Plan revisions occur.

FIRE SUPPRESSION

The first Oregon forestry law, passed in 1864, outlawed malicious setting of fires or allowing them to escape. The first fire regulations for the Cascades were published in 1897, incurring a $1,000 fine for starting forest fires (Bakken 1970). Forest Rangers began patrolling the Umpqua National Forest for fires in 1899. After severe forest fires in 1902 in almost every Washington and Oregon county west of the Cascades, organizations to suppress wildfires began to be formed (Agee 1993). During this century, fire suppression and prevention has become so effective that it has transformed the forests. In 1927, a total of 1,522 forest fires were reported within the State of Oregon. Of these, only 4% exceeded 10 acres in size. Seventy-eight percent were contained to less than ¼ acre (News Review 1927).

Based on News Review articles dating back to the 1920s, fire suppression has been very effective within the analysis for approximately 80 years. Airplanes were used as early as 1927 for reconnaissance and movement of fire fighters. The Forest Service became even more effective at fire suppression as road construction allowed quicker access to wildfires. As a result of this effective suppression, an important ecological process has been almost entirely lost, fuels have built up and shade tolerant, less fire-resistant tree species have proliferated. Now, fires that escape initial suppression efforts are much more likely to be extensive and stand-replacing, presenting fire managers with significant challenges.

There are several fire-suppression facilities within the analysis area, including water sumps and helispots. The high road densities within the analysis area allow quicker response times for initial attack of wildfires but also can lead to more to human-caused fires. When considering roadless areas, presently 98 percent of all wildfires in roadless areas are effectively suppressed while still small. Fire occurrence data across the Nation, shows that densely roaded areas have a higher potential for catastrophic wildfires than inventoried roadless areas (USDA 2000). Regardless of the cause, wildfire is nearly twice as likely to occur outside of inventoried roadless areas and human-ignited fire is nearly four times as likely to occur outside inventoried roadless areas (USDA 2000).

Fire suppression is often necessary to protect certain resources, lives and/or property. However, it is extremely costly, puts firefighters in hazardous situations and can sometimes cause greater resource damage than the wildfires they suppress. Negative effects caused by fire suppression include short-term (e.g., dozer lines, chemical retardants) and long-term impacts (e.g., fuels reduction and elimination of a natural ecosystem process). Recent fires (1970-1996) that have been suppressed are shown in figure 56.

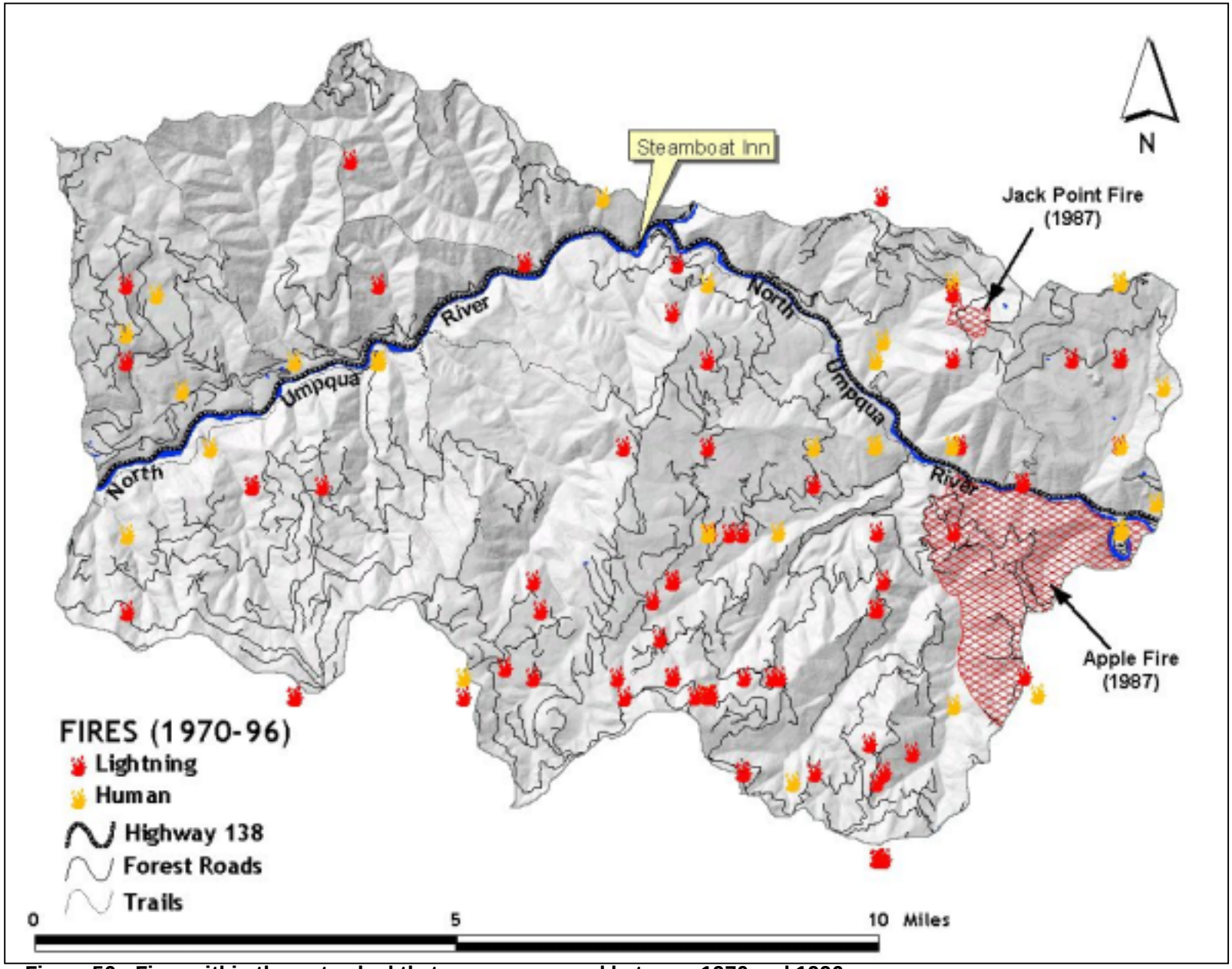

Figure 56. Fires within the watershed that were suppressed between 1970 and 1996.

TIMBER HARVESTING

Until World War II, the Forest Service primarily focused on watershed protection, forest restoration, and wildfire prevention and suppression. Since there were abundant supplies of private timber, very little logging occurred on National Forests. After World War II, the housing boom increased demand for timber and focused on the supply within National Forests, as private timberlands were rapidly being depleted. This increased demand led to widespread use of commodity oriented harvesting techniques such clearcutting. By the 1970s, timber sales on National Forests had increased to almost 12 billion board foot per year (Fig. 57).

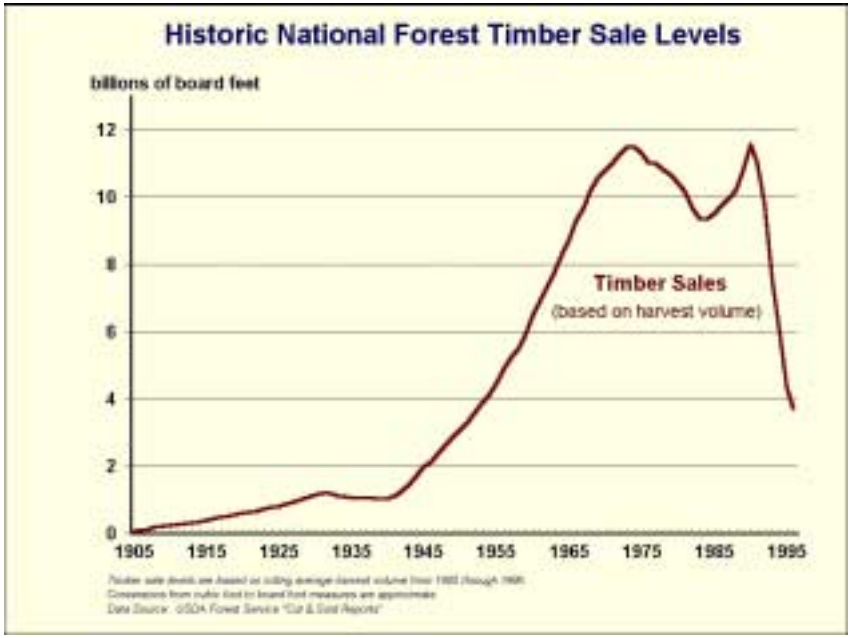

Figure 57. A historic view of National Forest timber sale levels (USDA 2000).

Concern over the clearcutting of public lands led to the enactment of several laws to protect forests. At the same time, the United States began importing more wood to help meet the increasing demand. This continues today.

Concerns about environmental impacts and conflicting land use have led to increased lawsuits and many additional environmental protection measures. As a result, the Forest Service now operates under some of the most substantial environmental protection policies in the world. Today, timber sale levels have dropped back to the pre-1950 levels, even though timber demand continues to increase at a rate of about one percent annually and clearcut harvests have been reduced by 80 percent over the last decade.

The overriding objective of the Forest Service timber program is to ensure that National Forests are managed in an ecologically sustainable manner. In the words of the Chief of the Forest Service Mike Dombeck, "Cutting off the timber supply from our National Forests would do nothing to curtail our Nation's growing appetite for wood products. It would only shift environmental problems to other lands where environmental protections are fewer. In the absence of a national consumption ethic, we must continue to meet at least part of the Nation's demand for timber".

Prior to 1940, Roseburg had a population of approximately 5,000 and was principally dependent upon agriculture. There was no timber harvesting occurring in the analysis area at that time. After World War II, a sharp growth in the timber industry occurred which boosted the population to 10,500 by 1947, with another 10,000 in the surrounding areas. Predictions were made for a doubling of the population by 1950 because of the booming industry. In 1947, seventy-five percent of the population of Roseburg was dependent upon the timber industry. The wood products industry has long been Douglas County's economic mainstay, as some the nation's largest timber stands grow here (Beckham 1986). Today, approximately 18% of the County's total labor force is directly employed in forest harvesting and production. An estimated additional 30% owe their jobs to the necessary support services (Roseburg Chamber of Commerce).

Timber harvesting within the analysis area began in the 1930s and was greatly accelerated in the 1950s. Peak decades for clearcut harvesting were the 60s and 80s (Fig. 58). Partial cutting or thinning began in the 1970s. Based on the North Umpqua Ranger District's Timber Disposal Plan (1947), the timber sale program was "geared to road development". The focus was on old-growth and sometimes harvesting was concentrated in areas (Fig. 59) with the thought that the heavy cut would balance out as road construction allowed access to old- growth in other areas. Today, approximately 35% of the watershed has had timber harvested from it. This includes the area cleared for roads and powerlines. Most of this land has been burned, fertilized, planted with Douglas-fir, and pre-commercially thinned.

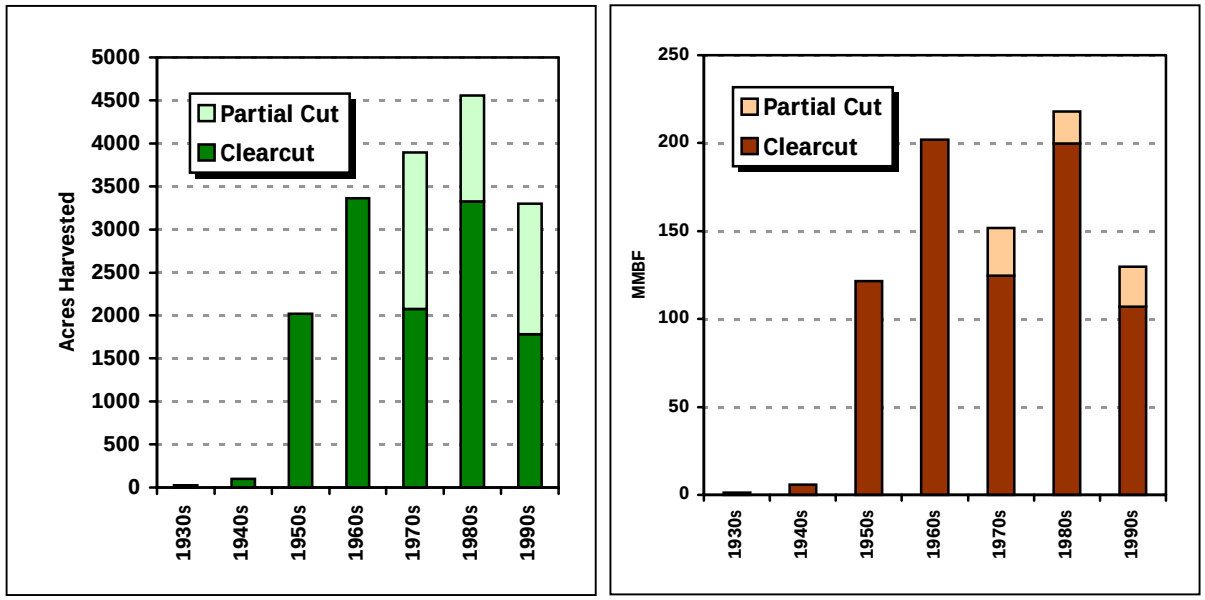

Figure 58. Summary of timber harvesting within the analysis area by both acres and volumes harvested. Trends are similar to those in Figure 57.

Current plans for harvesting within the analysis area include the Felix and Meow timber sales, which combine even and un-even –aged harvesting prescriptions, along Panther Ridge and the upper Cougar Creek drainage.

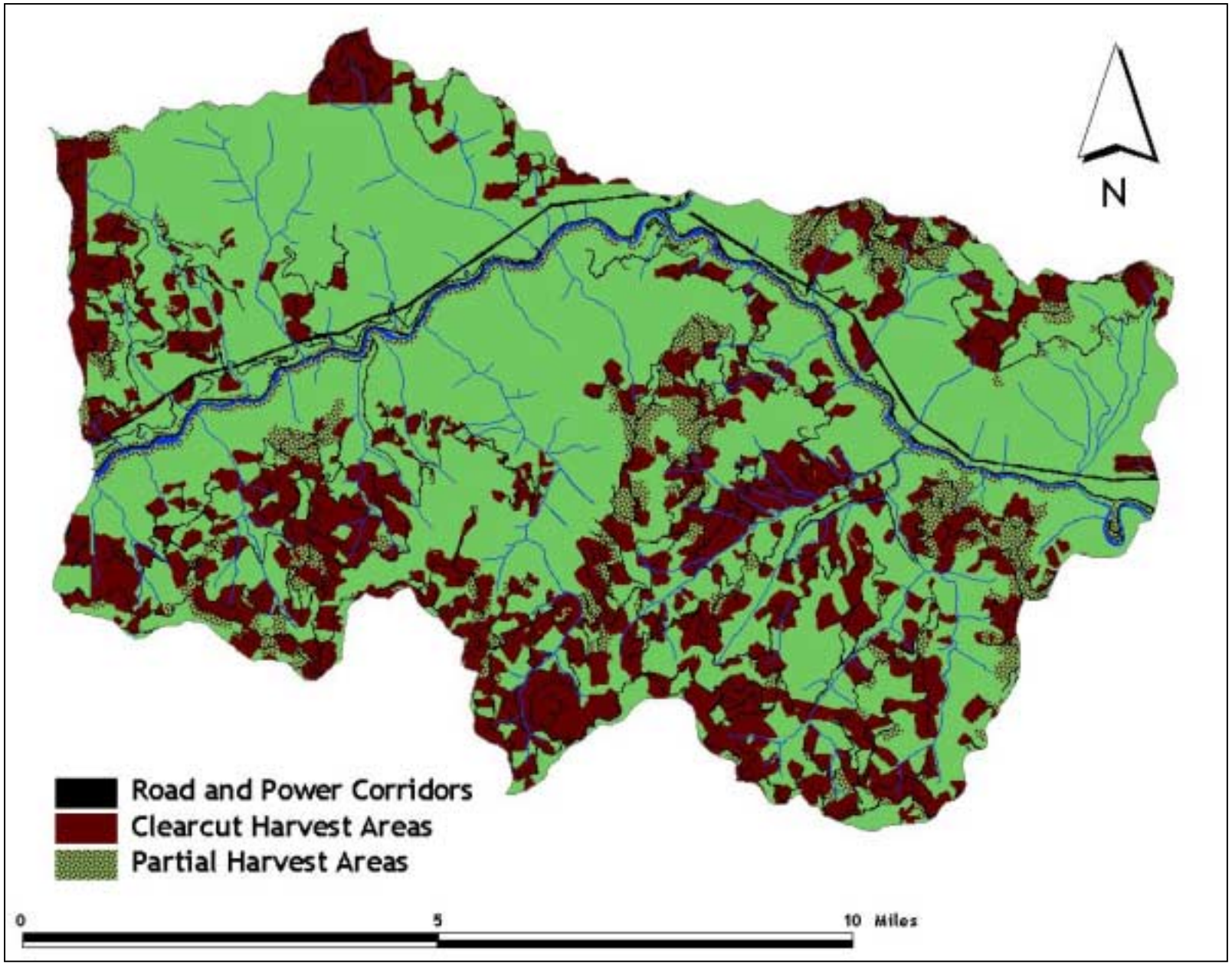

Figure 59. Timber harvest history (includes corridors cleared for roads and power lines) within the analysis area.

SILVICULTURE

In the early 1900s, concern for the future of the timber industry in the Pacific Northwest (based on the earlier events of unsustainable cutting in the eastern United States) led to the concept of sustained-yields through the use of silviculture. But, clearcutting in Oregon still outstripped the reforestation efforts until the mid-1900s. In the 1970s, laws were passed which required reforestation after timber harvesting (Cleary et al. 1978).

Silviculture in the analysis area began shortly after the initiation of the District's timber sale program in the late 1940s. The practice of pre-commercial thinning and fertilization began in the 1970s. In general, silviculture focused on reforestation techniques designed to maximize timber volume through the rapid reforestation of clearcut harvest units. This involved the establishment of a source of seeds and tree stocks with genetic characteristics determined to produce fast growth of vigorous crop trees (dominantly Douglas-fir). Clearcut units were burned and "prepared" for tree planting shortly after harvesting. The plantations were then periodically evaluated and maintained through the use of animal damage control, brush release, pre-commercial thinning release, fertilization and pruning.

Plantations were pre-commercially thinned at about 15 years of age. Initial thinning prescriptions spaced trees fairly closely on an even spacing of 9x9 feet, or 537 trees per acre (tpa). Tree spacing progressed to a 12x12 foot spacing (302 tpa), which became the norm in the 1980s. Wider spacing has been implemented since then, with 14x14 foot spacing (222 tpa) for Douglas-fir and 18x18 ft. (134 tpa) for sugar pine. Between 1975-1999, 159 sites totaling 5,292 acres were pre-commercial thinned on Forest Service lands in the analysis area.

Current stand development trends suggest that pre-commercial thinning done at narrow spacing has been of little help to young stand growth and diversity. It is hard to grow a vigorous second-growth stand that will support a viable commercial thinning entry if the stand carries more than 300-400 tpa. Today, it is preferable to limit stocking to less than 200 tpa if other objectives like accelerating large tree growth, providing for diversity of tree species and forest structure are the desired outcomes of the silvicultural treatment.

Fertilization of plantations was scheduled to occur 5-10 years after pre-commercial thinning was accomplished. Standard treatment consisted of aerial application of 440 pounds per acre of granular urea, which is equivalent to about 202 lbs. of nitrogen per acre. Gains in growth from this fertilization were anticipated to yield an additional 10-15% of growth over a decade, producing an extra 1.8 thousand board feet per acre, on average. Between 1979-1993, 97 sites totaling 3,755 acres were fertilized on Forest Service lands within the analysis area. Recently, budgets to

carry out fertilization have dropped and concerns over watershed eutrophication[4] and its cumulative effects have risen, resulting in little to no application of fertilizers within the analysis area today.

The use of silvicultural knowledge is now being applied in Matrix lands to develop timber harvesting prescriptions for older, managed plantations and unmanaged late-successional forests to achieve a wide range of land management objectives including the production of timber. Under the Northwest Forest Plan, the role of silviculture in the LSR is to develop old-growth characteristics and to prevent large-scale disturbances by fire that would destroy or limit the ability of the Reserves to sustain viable forest species populations (ROD, B-5). Acceleration of large size trees (a component of old-growth) is not as easily accomplished in commercial sized aged stands compared to influencing stand growth during pre-commercial thinning treatments. Past analysis suggests that around a 10% gain can be realized over 40 years in large tree size from thinning to a wide spacing at age 40 compared to regular thinning spacing for products.

Landscape planning plays an important role in developing silvicultural prescriptions. It considers ecosystem processes, such as natural disturbances and vegetative succession and how they are affected by geomorphology and moisture regimes. Each landscape area (see Fig. 60, Page 117) has different site productivity potential which governs the type of stand that is created and the typical length of time that stands exists on the landscape. Commercial thinning prescriptions would address these identified needs and provide for varied habitats across the landscape indicative of a healthy ecosystem, while producing wood and other commodity products.

Today, there are many tools for land managers to use in achieving land management objectives. The use of uneven-aged silviculture makes natural regeneration a viable reforestation method and may prove to be cost effective and ecologically sound in the long-term. It also retains flexibility for future management options when thinning to put stands on trajectories towards short, medium or long rotations. However, even-aged techniques might be the preferred method for modifying landscape patterns if a high-severity fire is the desired disturbance to mimic.

Within the context of a landscape plan, pre-commercial thinning to wider spacing, pine health treatments (which create small group openings around the pine and thin the surrounding stand), single tree or group selection, proportional and understory thinning as well as regeneration harvests are all intensive silvicultural tools that can be used to achieve various desired ecological objectives while providing short and long-term sustainable timber commodities.

[4] Eutrophication refers to an acceleration of aquatic productivity (e.g., algae production) as a direct result of increased nutrient loading.

SPECIAL FOREST PRODUCTS

A wide variety of products are harvested under permit in the analysis area each year. This includes firewood, boughs, pole cutting, Christmas trees, mushrooms, plants for landscaping, cone collecting, and ornamental plant cuttings (e.g., moss, ferns, salal and huckleberry). The mushroom permit, which covers this area, covers three other National Forests.

There is an expanding market for special forest products and sales of permits have increased by 44% over the last 4 years. Permit sales currently net the Forest $79,000 per year. Within the analysis area, cedar bough collecting (which occurs between September to November along Panther and Calf Creek area) is considered the most common activity. Occasionally, sugar pine cones are collected in the Wright Creek area. Overall, special use activities in the analysis area are considered to be moderate (G. Mitchell, personal comm.). As a result of increasing special forest product use, resource damage is occurring and there is a lack of personnel to fully police and manage the program on Forest (Umpqua National Forest Executive Meeting Notes). Most damage is from cedar bough cutting. Other damage is caused by road use during the wet season, collecting products in Riparian Reserves and destructive mushroom harvesting. There is also a major problem with theft of special forest products on the Umpqua National Forest.

POWER PRODUCTION

Hydroelectric power plants existed on the North Umpqua River since 1903 with Winchester Dam, which burned down in 1910 (Boyle 1977). Reconnaissance for new power sites began on the North Umpqua River in 1922, and by 1929, California-Oregon Power Company (COPCO) had plans to construct a series of dams along the North Umpqua River, including three large reservoirs within the analysis area. In fact, the construction of the North Umpqua Road, in the 1920s, was placed high above the river for this eventuality. Local opposition to the proposal eventually resulted in modifications and the construction of hydroelectric facilities at Toketee and Soda Springs, (eight miles upriver from the analysis area).

As discussed in Chapter 3, the Soda Springs Dam has many impacts on the river flowing through the analysis area. Bedload delivery has been reduced by 95-100% from reference conditions from the dam to Boulder Creek and by 15-70% between Boulder Creek and Steamboat Creek. Decreased bedload delivery has likely reduced the fraction of gravel and small-cobble bed materials in the upstream end of this reach. Water quality in the river is affected by water released from the hydroelectric project during summer, and other effects include seasonal control of streamflow,

water temperature, phosphorus concentrations, and the possible release of low, but ecologically important concentrations of organic nitrogen. A review of available data and literature suggests that the reservoirs can increase the interception of sediments and large organic debris, and promote their conversion into fine-grained particulate and dissolved organic matter for downstream transport. It is hypothesized that, in the North Umpqua River, these processes have induced a fundamental shift in the river's food web, from a detritus-based system to a system with a higher emphasis on algal production (Anderson and Carpenter 1998). The powerline corridor from the power plants parallels the river and Highway 138, and covers an area of approximately 312 acres, which is maintained in a perpetual grass-shrub/forb condition.

Revegetation Efforts

Revegetation of bare ground following ground-disturbing activities has focused on erosion control or big game forage. Recently, a third goal has been added - to inhibit the colonization of disturbed sites by noxious or aggressive non-native plants. Past efforts included species selected for their ability to aggressively colonize and dominate a site. This included the use of non-native species (Table 18). While the immediate benefit was obvious, no long-term monitoring has been conducted on the spread of these species or their effect on natural successional processes. Large-scale grass plantings following wildfire may reduce coverage of native forbs and grasses, may out-compete trees planted during reforestation efforts, and may produce future fire hazards by creating large areas of fine, flashy fuels (grass).

Table 18. Species that have been used for revegetation in the analysis area over the past two decades.

COMMON NAME	SCIENTIFIC NAME	CURRENTLY USED
Annual Rye	*Lolium multiflorum*	X
Perennial Rye	*Lolium pernne*	X
Tall Fescue	*Festuca arundinaceae*	X
New Zealand White Clover	*Trifolium repens*	X
Birdsfoot Trefoil	*Lotus corniculatus*	
Potomac Orchard Grass	*Dactylis glomerata*	
Sub- Clover	*Trifolium subterraneum*	
Colonial (Highland) Bentgrass	*Agrostis capillaris (tenuis)*	X
Common Vetch	*Vicia sativa*	X
Fall Barley	*Hordeum vulgare*	X

Under current policy, native species are to be used for revegetation whenever possible. When not feasible, non-native mixes have been formulated that contain plants selected for their ability to occupy a site with minimal impacts to native species. The District is currently moving into large-scale production and planting of native grasses, but efforts still require experimentation. Two experiments in the analysis area produced positive results. Four native revegetation efforts have been undertaken.