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Chapter I Characterization

Introduction

Location

The Blue River Watershed is a fifth field watershed of 59,000 acres located entirely within the Blue River Ranger District of the Willamette National Forest. Most of the area is administered by the Forest Service; 3% of the watershed is within private ownership. The watershed is located north of the town of Blue River and extends from a ridge above Simmonds Creek to the west up to the Gold Hill area and then runs along the ridge up to Tidbits Mountain to Bear Pass and then to Squaw Mountain. From there the boundary turns south and continues to Carpenter Mountain down the ridge to Lookout Ridge where it turns west and back to below the Blue River dam and Simmonds Creek. The Blue River Watershed is located within the McKenzie River Subbasin and represents approximately 7% of the subbasin's total acreage.

Management Direction

Management Direction for the watershed is provided by the Willamette National Forest Land and Resource Management Plan (WNF LRMP) as amended by the Northwest Forest Plan in 1994 (USDA,USDI, 1994). The Northwest Forest Plan added several land allocations, including the Adaptive Management Area (AMA) which is the major land allocation guiding management in this watershed. There are underlying management emphases from the 1990 WNF Land Allocations that will be considered in the AMA decision making processes (Table 1: Management Allocations).

The overall objective for Adaptive Management Areas is to learn how to manage on an ecosystem basis in terms of both technical and social challenges, and in a manner consistent with applicable laws. Localized, idisyncratic approaches are expected that will achieve the conservation objectives of the standards and guidelines. The Adaptive Management Area was designed to emphasize technical and social learning. The first emphasis listed for the Central Cascades Adaptive Management Area is "Intensive research on ecosystem and landscape processes and its application to forest management in experiments and demonstrations at the stand and watershed level".

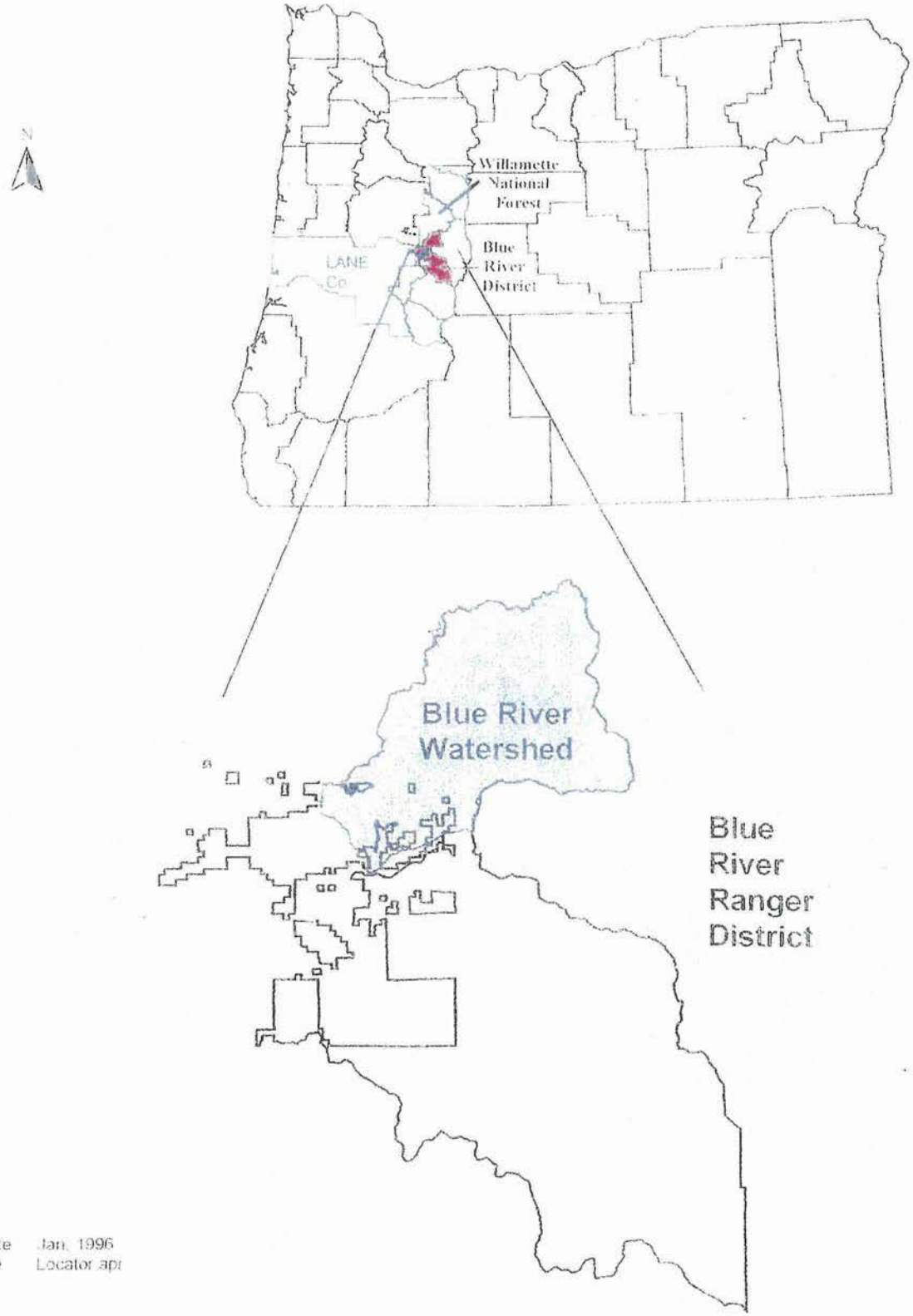
Flexibility in management and in application of Standards and Guidelines within Adaptive Management Areas provides room for innovative and experimental approaches for management activities. Management activities in the AMAs are to be conducted to acheive the objectives described in the standards and guidelines. The standards and guidelines of current plans, in this case the WNF LRMP need to be considered during planning and implementation of activities within the AMA and they may be modified based on site specific analysis.

An Adaptive Area management plan is currently being written.

Table 1: Management Allocations

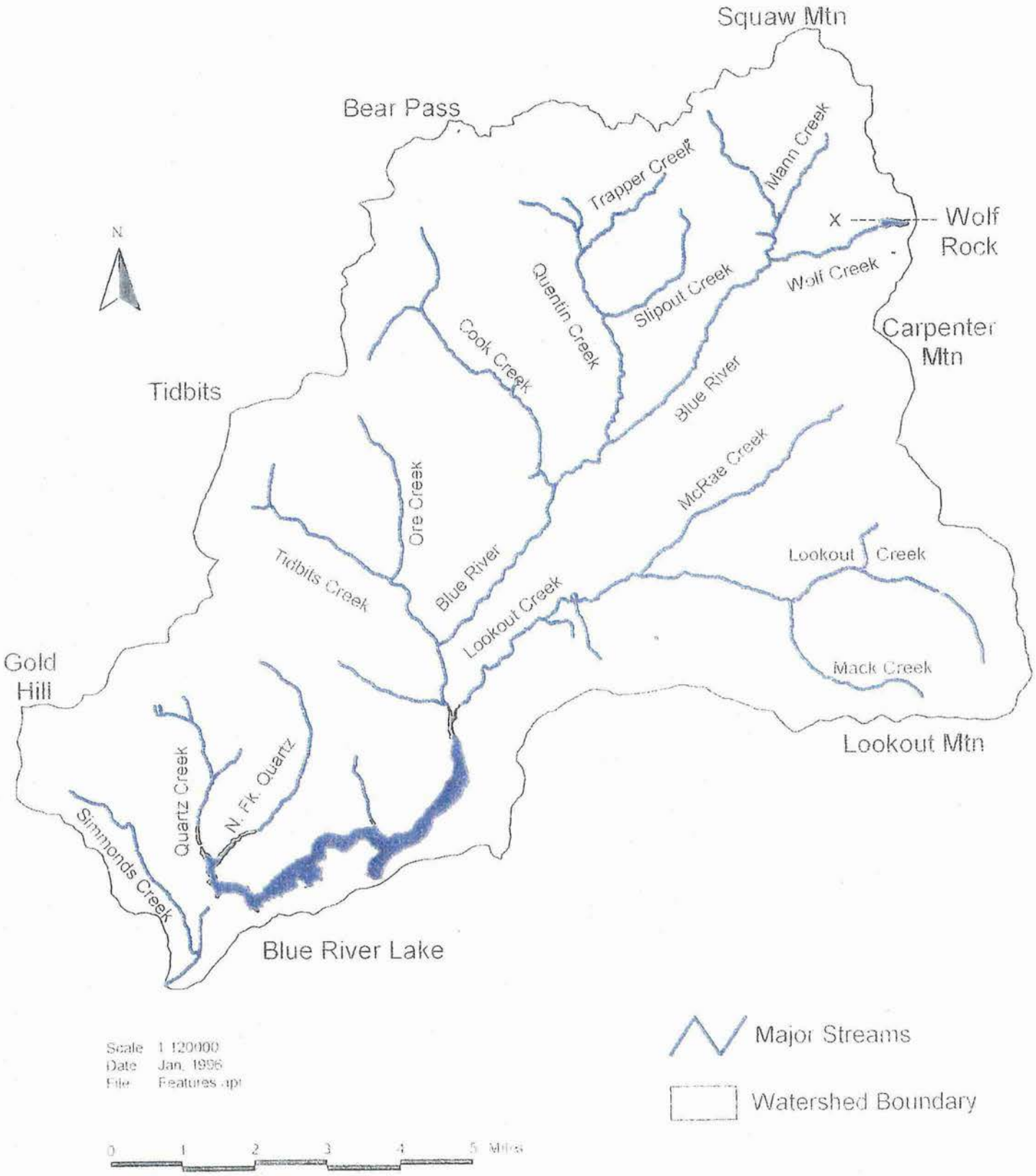
Amended Forest Plan Land Allocations	Acres
Adaptive Management Area	50,761
Late Succesional Reserve	1,748
LSR 100 acres	3,238
Underlying Land Allocations from the 1990 Willamette National Forest Plan	
Scenic	6006
General Forest	32,284
Research (HJ Andrews Experimental Forest)	15,727
Special Interest Area	1,125
Special Wildlife Habitat Area	715

Map 1: General Locator

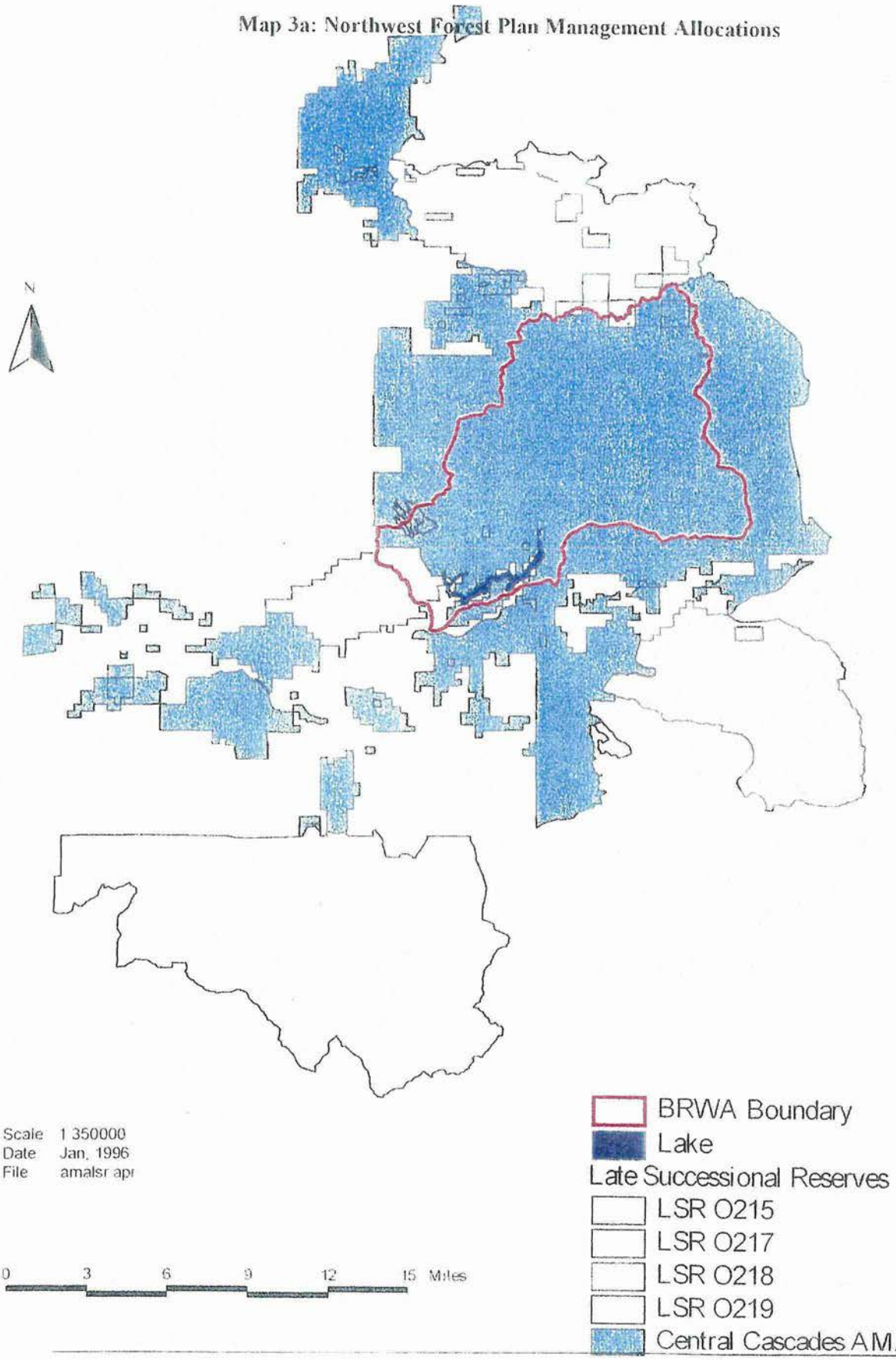


Date Jan. 1996
File Locator.apr

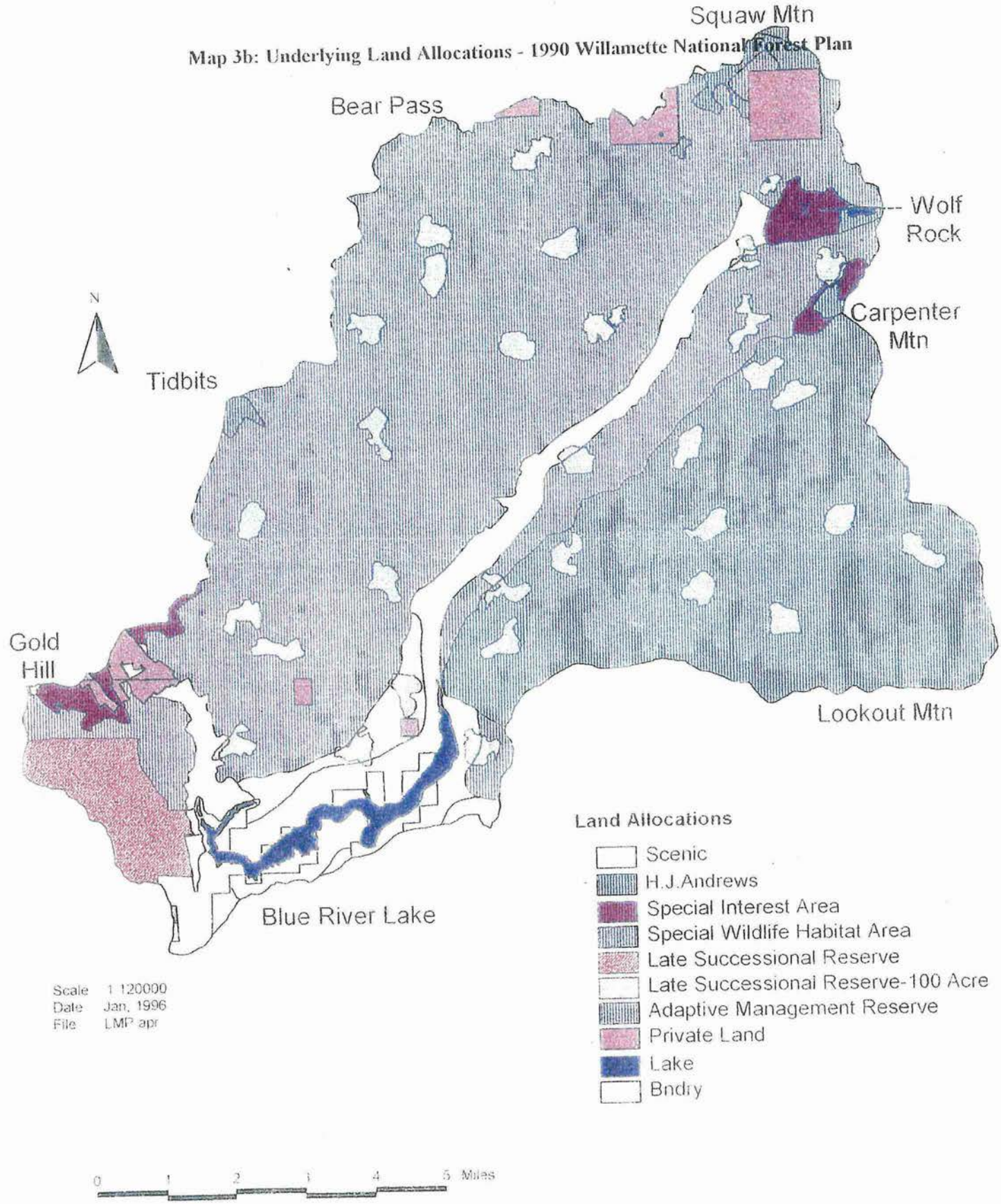
Map 2: Major Features



Map 3a: Northwest Forest Plan Management Allocations



Map 3b: Underlying Land Allocations - 1990 Willamette National Forest Plan



Physical

Geology

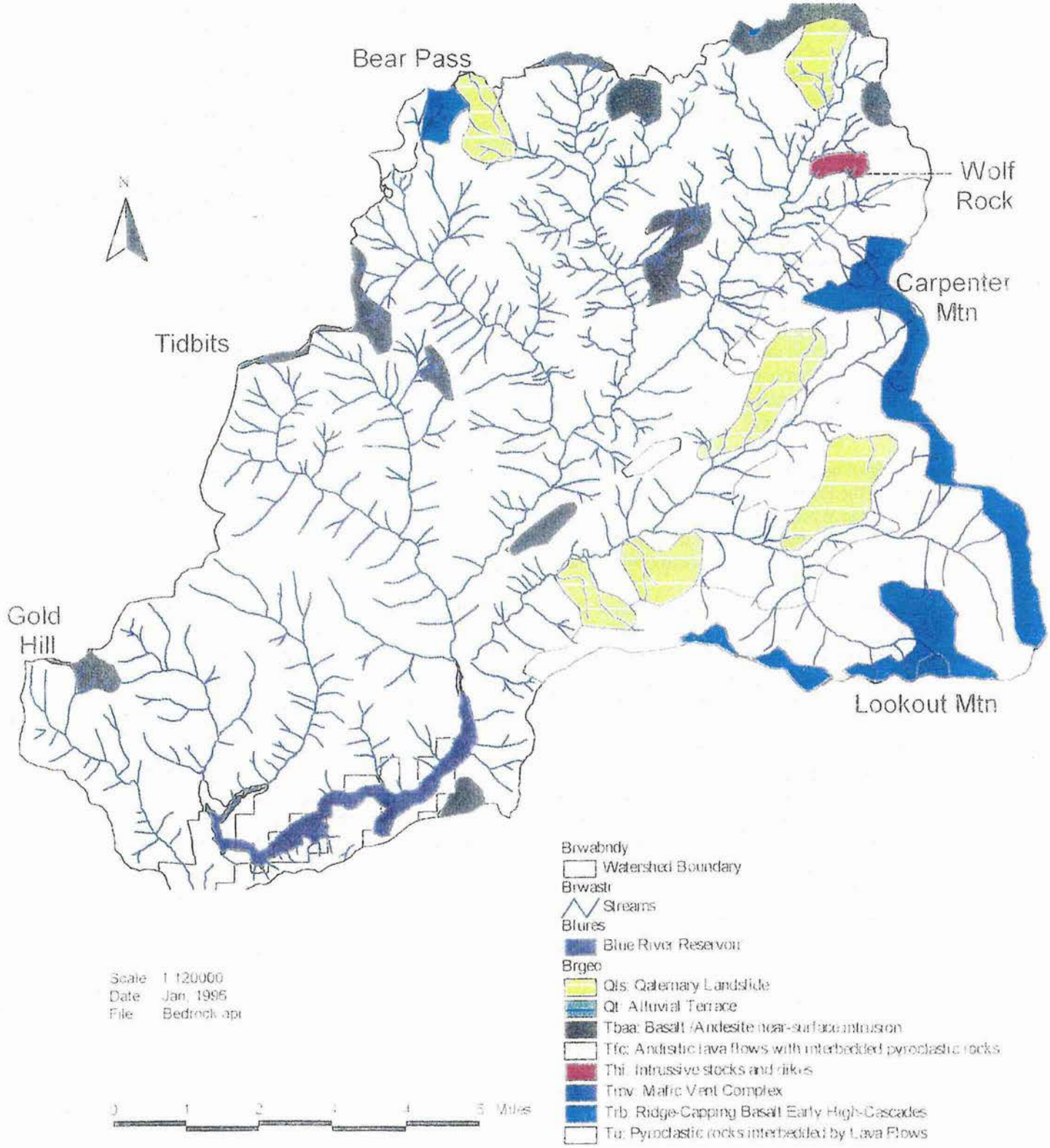
The Blue River Watershed reflects a landscape formed by volcanic eruptions, uplift of the land surface as a result of oceanic and continental plate collisions, glacial scour and fluvial erosion, and massive down-slope movements of material due to these processes. The watershed is located in an area of volcanic terrain on the west side of the Cascade Range. This is an area where two distinct physiographic provinces overlap; the Western Cascades (9-40 million years old) and the younger Early High Cascade volcanic flows (9-4 million years old) which are ridge-capping basalts in the highest elevations of the Western Cascades. The Blue River watershed is located on the eastern edge of the Western Cascades and is connected to the mainstem of the McKenzie River at the confluence of Blue and McKenzie Rivers. The watershed is confined in the south by glacial-remnant, east-west trending ridge-capping basalts of Lookout Ridge and in the east by north-south trending ridges of Frissell, Carpenter, and Squaw Mountain lavas. The northern and western boundaries are composed of ridges that were developed in older Western Cascade rocks of undifferentiated tuff interbedded by minor basalt and andesite lava flows. Approximately 13 million years ago, these older rocks at the head of Quartz and Simmonds Creeks were intruded by several small plutons of granodiorite and quartz diorite. This was accompanied by ore-bearing hydrothermal fluids deposited in northwest-trending shear zones in the Gold Hill area. This is the area which was mined for gold, silver, copper and lead between 1887 and 1913 (Power, 84). Another volcanic intrusion that is prominent on the landscape is Wolf Rock which has been interpreted to be a micro-norite (fine grained gabbro) plug of late Pliocene age, 2-4 million years old (Avramenko, 81) see "Map 4: Bedrock Geology".

Two periods of major faulting took place in the area 8-10 million, and 4-5 million years ago as a result of extension of the Earth's crust. These major northwest-trending fault systems developed near the present boundary of the Western and High Cascades. These fault systems control the north-south direction of flow of many of the upper reaches of Cascade rivers including the McKenzie, South Fork of the McKenzie, Smith, and North Santiam (Priest et. al., 83).

Approximately 3-5 million years ago, regional uplift began taking place at the rate of approximately 20 centimeters per 1,000 years, which produced an increase in elevation of approximately 500 meters. This increase in elevation was associated with an increase in stream gradient, some of which were more than twice their norm (Sherrod, 86). The increased stream gradients produced deeply dissected valleys, increased relief, and drainage patterns which are now present in the Western and Early High Cascades.

The Western and Early High Cascades were subsequently eroded by at least three periods of alpine glacial advance down-valley as far as Blue River (Long & Leverton, 84, Scott, 77, Van Dusen, 62). Glacial floods and lower mean sea levels produced further valley scouring, however, subsequent outwash, still water, and landslide deposits to depths of over 100 feet refilled the valleys to the base stream level that matches the existing sea level. Valley fills have been drilled to 146 feet in the Blue River area and up to 175 feet in the McKenzie Bridge area (Williamson, 61).

Map 4: Bedrock Geology



This sudden increase in relief also pushed the Early High Cascade lava flows to the highest elevations in the watershed. The subsequent erosion and stream incision left them stranded in the positions seen today as "ridge capping" basalts that can be seen in the upper reaches of Cook, Mann, Wolf, Mcrae, Mack and Lookout Creeks. The contact between these younger, more resistant basalt flows and the older, more altered underlying Western Cascade volcanics is characteristic of other layered rock sequences such as sandstone and shale beds where differential erosion takes place. As the older rocks are exposed in the valley sidewalls, they chemically and physically degrade faster than the overlying rocks. This can result in valley sideslope collapse and subsequent overloading of lower elevation alluvial and colluvial slopes which can trigger earthflows. This landscape is more typical of the Eastern-half of the watershed, especially Lookout Creek and Blue River.

The Western half of the watershed is situated further from the volcanic center of the High Cascades and thus lacks the ridge capping basalts and associated large-scale differential weathering processes that typify the Eastern half. This area was also located further west of the High Cascade platform ice masses during the Pleistocene, which reduced, to some extent, the amount of glacial scour and subsequent mass wasting that has taken place in comparison to the eastern half of the watershed. This is especially true of Simmonds, Quartz, and Tidbits Creeks.

There are over 60 road related areas of cut and fill slope failures documented within the watershed (Dyrness (67), Swanson and Swanston (77), Marion, (81) and over 100 localized failures within clearcut units and forested areas. Sidecast ravel from roads, road surface erosion from plugged culverts are other processes that contribute to the sediment budget. Rockfall as a result of mechanical weathering of rock outcrops and rock cutslopes are a continual problem for road ditch maintenance as well as being a source for debris avalanche potential in higher elevations of Lookout Creek. Other erosional mechanisms include localized snow avalanches, periodic floods of varying frequency and magnitude, surface erosion and historical mining activities.

Hydrology and Stream Channels

Blue River Watershed represents 7% of the McKenzie River Subbasin. The McKenzie River, with a basin area of approximately 873,000 acres, is a major tributary to the Willamette River. The water of the McKenzie River is one of the most cherished resources of the subbasin. In addition to providing habitat for fish and other aquatic species, the McKenzie River provides drinking water for over 200,000 people.

Five major dams lie within the McKenzie River Subbasin; three on the mainstem, and two on tributaries. One of the tributary dams is Blue River Dam, on Blue River. There are eight additional major dams in the Willamette Basin for a total of thirteen. These dams were constructed for flood control purposes in the Willamette Valley. During the season of major floods which extends from November through early February, a maximum of flood control storage space is provided. Starting in February as the storm activity begins to decrease in intensity and frequency, the space reserved for flood control storage can be gradually filled. Flood control regulation is based primarily on downstream channel capacities and reservoir storage space available (U.S. Army Corps. of Engineers, 1989). Many of the dams also supply hydroelectric power which is sold to the Bonneville Power Administration and is incorporated into the Pacific Northwest power grid. Blue River Dam does not currently have the facilities for power generation, although initial plans and discussions about the possibility of establishing power generation at Blue River Dam occurred in 1994 and 1995. The project has been postponed by EWEB at this time.

Wet, cool winters and dry, warm summers typify the Pacific Maritime climate here. Seasonal snowpacks usually develop above 3500 ft. elevation, with the lower elevations dominated by rain, or rain-on-snow from November through May. Elevations range from 5,349 ft. at Carpenter Mountain, to 1,040 ft. at the confluence with the McKenzie River.

Blue River is a 6th order tributary to the McKenzie River that flows south-southwest from its headwaters in the Western Cascades Province. The headwater streams of Blue River are Mann Creek and Wolf Creek which originate in the earthflow terrain of glacially carved valleys with relatively low gradients and moderately incised channels. Below the confluence of Mann Creek and Wolf Creek, Blue River quickly becomes incised as the gradient increases and downcuts through pyroclastic rocks. Between the Wolf Creek/Mann Creek Junction and Quentin Creek, Blue River flows through an old glacial terrace which is subject to mass wasting in the form of streamside slides. Further downstream, interbedded lava flows provide stable bedrock substrate and banks, at some points forming bedrock gorges. The river then enters Blue River Reservoir, a 975 acre, 6.4 mile long reservoir (at full pool) formed when Blue River Dam began operation in 1968. Flows below the dam are regulated by the Army Corps of Engineers, affecting the final 1.5 miles of streamflow prior to entering the McKenzie River. The dam has altered the river's hydrologic regime, channel and floodplain morphology, riparian vegetation, transport of sediment and wood, and natural temperature fluctuations.

The shallow soils and very steep terrain in the west-southwest portion of the watershed cause streamflows to be relatively "flashy", with stormflows occurring rapidly. Tributary streams to Blue River located in this steep terrain with flashy flows include Quartz Creek, N. Fork Quartz Creek, Mona Creek, Tidbits Creek, and Ore Creek To the north, Cook Creek and Quentin Creek are somewhat less "flashy" due to inclusions of earthflow terrain that are characterized by deeper soils that are able to absorb and meter out water on a more regular interval. To the north and east, the subwatersheds of Mann Creek, Wolf Creek, and Lookout Creek are dominated by earthflow terrain resulting in streamflows that rise and fall less rapidly than those streams located in steep, shallow soils.

The streams within the Blue River Watershed are generally high gradient (>2%) with a step-pool morphology. Most are steeply incised with narrow valley widths. The exception is Lookout Creek where an earthflow toe has formed a constriction in the channel, causing deposition of bed material upstream of the constriction and a widening of the valley bottom within the soft, earthflow terrain. Stream channels within the watershed generally lack LWD (Large Woody Debris) as a result of past timber harvest in riparian areas, road construction in riparian areas, fire, debris flows, active removal of in-channel wood, and mining. Most of the stream channel substrates are dominated by bedrock and small to large boulders, lacking small cobble and gravels due to high gradient, "transport" type stream channels, lack of LWD, mining and debris flows. Road construction and harvest associated with mining in the headwaters of Quartz Creek have been the major contributing factors to poor channel conditions in Quartz Creek A small earthen dam located on privately owned ground collapsed in Mann Creek initiating a debris flow that sluiced Mann Creek to bedrock. North Fork Quartz Creek is sluiced to bedrock due to debris flows resulting from road failures. A USGS gauging station located on Blue River upstream of the reservoir and below the confluence with Tidbits Creek has recorded major flood events from1963 to 1995. They are displayed in Table 2.

Table 2: Major Flood Events Recorded from 1963 To 1995

DATE OF EVENT	RECURRENCE INTERVAL
December 1964	100 year event
January 1965	12 year event
January 1972	8 year event
December 1977	8 year event
Febuary 1986	4.5 year event
February 1996 *	

* The Febuary 1996 event occured during this analysis. Additional data gathering and assessments are currently underway.

Water Quality

The McKenzie River Subbasin Surface Water Classification for Blue River and its tributaries are identified for year-round use only for domestic, commercial use for customarily domestic purposes not to exceed 0.01 cForest Service, livestock and public instream uses. Blue River Dam was constructed and is managed by the U.S. Army Corps of Engineers to provide a variety of uses including flood control, irrigation, recreation, and flow enhancement for fish and water quality (Water Resources Dept., 1992). The minimum perennial streamflow sufficient to support aquatic life and minimize pollution is 30 cForest Service of natural flow as measured above the Blue River/McKenzie River confluence. In addition, up to 350 cForest Service may be released from storage to augment these natural flows (Water Resources Dept., 1994). During the month of September, a minimum of 50 cForest Service is released from Blue River Dam to maintain constant flow and to augment flow as requested by the Oregon Dept. of Fish and Wildlife. Augmented flows released from the reservoir during the months of low precipitation and streamflow maintains water quality through dilution of the Willamette River to meet DEQ standards (dissolved oxygen, temperature, dissolved solids) downstream from Corvallis to Portland. Beneficial uses of Blue River include fish, water quality (parameters include temperature and sediment), domestic water source for Springfield and Eugene, and recreation (uses include boating, fishing and swimming).

Biological

Vegetation

The watershed lies within the western hemlock and silver-fir vegetation zones. Dominant conifer species are Douglas-fir, western hemlock, western redcedar, Pacific silver fir, and noble fir. Common understory species include vine maple, rhododendron, sword fern, salal, Oregon grape, huckleberries, beargrass, and numerous species of grass and forbs.

The natural stands of trees in the drainage contain a mix of younger forest ranging in age from approximately 60-150 years and older forest of about 450 years of age. The southeast part of the drainage is dominated by older forest of approximately 400-500 years of age. These vegetation patterns were created primarily by fire.

Interspersed within these natural stands are patches of young stands resulting from harvest. Much of the formerly private land in Simmonds and Quartz Creeks as well as adjacent to what is now the reservoir were initially harvested in the 1930s and had numerous re-entries in the 1940s and 1950s. The majority of the land administered by the Forest Service began to be logged in the 1950s. The formerly private land is the land that is in close proximity to the town of Blue River

Soil productivity as demonstrated by vegetation growth varies considerably within the drainage. The south western and western portions of the watershed are dominated by rocky terrain with thin rocky soils. The eastern half of the drainage is dominated by highly productive deep soils.

Non forested areas are distributed across the watershed. Plant community types include rock outcrops; talus and talus/shrub; grass and forb meadows; sitka alder; herbaceous/shrub and hardwood riparian communities. Wolf Lake located in the northern section of the watershed has an abundance of water lilies and other aquatic vegetation. High elevation huckleberry patches are local favorite for fall picking. None of the non-forested plant communities are unique to the province, but are characteristic of the Western Cascade range.

Potential habitat for sensitive and other rare plant species exists in the watershed. Documented sighting reports exist for some of the vascular plant species, fungi, lichens, and bryophytes listed in the Northwest Forest Plan. Ongoing research in the H.J. Andrews Experimental Forest has been a major contributor of information in understanding many of these species and habitat requirements in a forest ecosystem.

Noxious weeds and other invasive non-native plants occur throughout the watershed mainly adjacent to the road system.

Species and Habitats

Aquatic Species

There are 13 fish species and 10 aquatic amphibian species that are known to inhabit Blue River Watershed (Appendix Fish). The high diversity of these species' habitat requirements indicate the diversity of habitat types that can be found within the watershed. Aquatic habitat within Blue River Watershed includes a reservoir, river, streams, and ponds. In comparison with the entire McKenzie River Sub-basin, which supports 23 species of fish, Blue River has less species diversity.

Blue River Dam is an upstream migration barrier for fish, isolating fish populations upstream. Adult spring chinook return to the base of Blue River Dam on their spawning runs and some of these fish may successfully spawn in the river below. Oregon Department of Fish and Wildlife (ODFW) release 200,000 chinook juveniles per year in the reservoir to rear throughout the summer. These fish augment and diversify the fisheries in the reservoir and supplement the commercial ocean and recreational river (particularly the inner city fisheries in Portland) fisheries. They are evacuated from the reservoir during the fall reservoir drawdown. Prior to the construction of the dam, Blue River and its tributaries may have supported a small population of about 200 spawning adult chinook. In comparison, the South Fork of the McKenzie River used to support a run of 4-10,000 adult chinook, prior to the construction of Cougar Dam.

Cutthroat trout occur both upstream and downstream of the dam and can be considered the most common wild salmonid in the system. They can be found in all tributaries of Blue River where fish are present. Isolated populations in these streams are common due to natural upstream migration barriers. Cutthroat trout can be found nearly to the headwaters of most major tributaries of Blue River. Rainbow trout can be found in the reservoir, river, and the lower part of its tributaries. Both wild and hatchery rainbow trout exist in the watershed. 18,000 hatchery rainbow trout are stocked in Blue River Reservoir and 8,000 in Blue River, annually. Cutthroat and rainbow trout are common throughout most of the McKenzie Sub-basin.

Larval tailed frogs have been found during stream surveys in well aerated streams, and are used as ecological health indicators. Cascade frogs, an Oregon State listed sensitive species, occur in ponds and indicate the health of that habitat type. Rough-skinned newts are very abundant around Blue River Reservoir; they are not as common around other reservoirs on the Willamette National Forest. Presence of other amphibians and reptiles in the Blue River watershed is expected to compare to other watersheds on the Willamette National Forest.

Aquatic ecosystems have been impacted through road building, logging and salvage of instream wood.. The streams have also been impacted by floods. Recent efforts have been made to begin to restore the quantities of wood in the streams through aquatic restoration projects. Restoration projects have occurred in Blue River and Mann Creek. An impassable culvert has been removed from Mack Creek to restore upstream migration for cutthroat trout. Currently the district is working in cooperation with Oregon State University (OSU) to study aquatic vertebrate community response to the addition of various amounts of wood (complexity) to the stream channel. This project is occurring on North Fork Quartz, Tidbits and Lookout Creeks. What we learn there can be applied to future efforts to restore aquatic ecosystems through wood additions. Evaluating the responses to the Febuary 1996 event will provide useful information.

In an effort to decrease soil erosion and enhance the aquatic food chain and cover within the reservoir, portions of the drawdown zone have been planted with vegetation that can withstand being flooded for most of the summer. Structural elements such as brush bundles and erosion cloth have also been used.

Terrestrial Species

Many of the 327 species of birds, mammals, reptiles, and amphibians expected to occur on the Willamette National Forest are also expected to occur within this watershed. The distribution of species and their aggregation into communities varies with the distribution of plant communities, vegetation , and climatic conditions. Several species on the Regional Forester's sensitive species list occur in the Blue River watershed. Bald eagles have been sited numerous times but a nest has never been found. There are several potential peregrine eyrie cliff sites throughout the watershed , and there is one unverified historical peregrine falcon sighting and a more recent possible sighting.

There have been several sightings of harlequin ducks within the watershed. These ducks are also listed as Sensitive on the Regional Forester's sensitive species list Optimum harlequin duck habitat exists in several creeks including Lookout and Tidbits and Blue River. Optmum habitat is characterized by shrubby riparian vegetation along rivers and streams with fairly low gradients, and adequate loafing sites consisting of large boulders and logs. In recent years nesting has been verified within the watershed.

The Townsend's big-eared bat, a sensitive species, has been documented in the watershed. A unique cooperative study of bats at the HJ Andrews Experimental Forest has been conducted for the last three years. Several different species of bats have been identified, which may include some of those identified in the Northwest Forest Plan. Shafts created during mining activities may be used by bats for roosting.

Some of the original spotted owl radiotelemetry research was conducted in the Blue River watershed in the 1970s (Forsman). In 1987, a spotted owl density study was initiated through the Oregon Cooperative Wildlife Research Unit at Oregon State University. As a result of this research, information about owl sites in the watershed is excellent. The entire area is surveyed annually. Numerous spotted owl pairs exist within the watershed, many of which have been banded, allowing identification of individual owls through time and space. Excellent old-growth habitat exists on the HJ Andrews Experimental Forest in the Mack Creek area. Other fairly large blocks of old-growth are located in the Quentin Creek, Cook Creek, Ore Creek, North Fork Quartz Creek, and North Carpenter areas. These areas provide excellent habitat for northern spotted owls, pileated woodpecker nest groves, pine marten, and other old-growth dependent species.

The distribution of other wildlife species in the watershed is not expected to differ greatly from the species distribution in other watersheds on the Willamette of similar elevations. Beavers are known to occur in the watershed and help maintain aquatic pool habitat in some areas. Wolf Lake is a more dramatic example of this, where beavers are responsible for the creation of the lake which is used by waterfowl and aquatic amphibians.

Social

Human Uses

Native American Use of the Blue River Watershed:

The earliest artifact found in the watershed, a "Clovis" fluted projectile point, suggests that in early postglacial times nomadic hunter gatherers were working in the Blue River Area. Other than this single, isolated artifact, we have no knowledge of lifeways in that Paleoindian Period (ca. 11,500-10,000 BP).

Much more abundant are artifacts from the subsequent Archaic Period, spanning roughly 10,000 years. Numerous locations have been documented in the drainage, indicating that native people were occupied with broad spectrum hunting and gathering, exploiting available food sources on a seasonal basis. Perhaps the main staples were deer, grouse, various berries, seeds and fish. Environmental change may have brought cultural changes, but how this would be manifested can really only be reflected in the archeological record, with changes in artifact types perhaps reflecting either different cultural or ethnic groups or a shift in adaptive strategies.

The Late Prehistoric Period of roughly the last 200 years before Euroamerican settlement (ie, AD 1650-1850) saw use of the area by a band of resident Molalla-speaking people, although it is likely that Calapooya and Warm Springs bands visited the area as well. Early ranger memoirs indicate that Calapooya and Warm Springs families and bands continued to gather huckleberries and hunt game, and began grazing stock in the watershed in the mid and late 19th Century. Vision quests and other religious activities took place as well, although documentation is sparse. Descendants of the Late Prehistoric and Historic native peoples are currently enrolled in the Siletz, Grande Ronde and Warm Springs reservations.

Those people regard the living and working sites of their ancestors as historically and culturally significant, especially those in the Gold Hill area. Vision quest sites are generally regarded as "sacred sites"; it is not known if vision quest sites are currently being used for such activities, given the highly personal, private nature of the activity.

Historic Uses

Homesteading, Grazing, and the U.S. Forest Service

Before the discovery of gold in the Blue River area in the 1860's, European use of the watershed was limited to hunting and fishing parties as well as travel over the Cascade mountains. Earliest records show that Mr. Sewell Smith and John Davis had homestead claims in Blue River in the 1860's or 70's (no date given). In 1895, the Sparks family purchased two adjoining homesteads consisting of 320 acres which included the present site of the community of Blue River and the McKenzie High School. In 1900 when mining was booming the Sparks family built a sawmill, hotel, and a livery stable, and by 1911, Mr. Sparks had the town site of Blue River City laid out and plotted.

In 1893 the Cascade Range Forest Reserve was established to set aside or protect the forested area along the Cascade Range. In 1907 the Cascade Range Forest Reserve was renamed to the Cascade Forest Reserve and in 1908 renamed to the Cascade National Forest with the McKenzie Ranger District being established. In 1955 the Blue River Ranger District was formed.

From the time the Cascade National Forest was established, lookouts were constructed to provide warnings of fires. Lookout Mountain was used in the early 1900's before permanent structures were built. Tidbit and Carpenter Mountains were built in 1915, Frissell Point in 1928, Buck Mountain in 1934 and Gold Hill in 1935. During WW II Gold Hill Lookout was used as an aircraft observers lookout. All of the lookouts have been removed except Carpenter Mountain, which was reactivated in 1995.

Guard Stations were built at Wolf Rock (Buckhaven) in 1912, Blue River in 1934, and Lookout Creek in 1935. During the 1930's a CCC forest camp was located at Bear Pass.

During the late 1800's to the mid 1900's sheep bands grazed in the Cascade meadows and in the upper areas of Blue River Drainage.

A Boy Scout Camp and a few homesteads were located along Blue River before 1963, when the Army Corps. of Engineers started the construction of the Blue River Dam.

Mining:

Gold was discovered in Blue River and in the Gold Hill area along the crest of the divide between the McKenzie, South Santiam, and Calapooia River drainage's around the 1860s. The Blue River Mining District (established in the 1870s) saw most of the mining activity concentrated in the headwaters of Quartz Creek drainage and the Lucky Boy mine, although other mines were located in the North Fork Quartz and Simmonds Creek and on the north side in the Calapooia drainage.

Within the active years of 1897 to 1924 about 18 patented claims were issued averaging from 0.5 acres to 25 acres each and over 300 mining claims filed. Around the 1900s mining had developed into a booming industry in the Blue River area with many of the patent claims having well established camps consisting of saw mills, offices, equipment sheds, boarding houses, bunkhouses, kitchens, blacksmith shops, hotels, stamp mills, processing mills, and a post office. On each claim, tunnels (some with multi levels) were dug extending from 10 feet to a 1000 feet or more, and many trenches dug to expose gold bearing ore. In addition to gold, there was also silver, copper, lead, and zinc recovered from ore taken from the mines in the Blue River Mining District. Production for the Blue River Mining area between 1896 and 1924 was estimated at about 77,514 tons of crud ore, 7,727.89 oz of gold, 17,162 oz of silver, and 257 oz of copper (these figures vary depending on references).

The extensive activity in mining between 1898 and 1912 had a significant impact on the growth and development of the Blue River community. At one time more than 250 men were employed or working in various capacities in the area.

The mining activity died out in the 1920's due to the increased cost of extracting the gold from the ore. Some minor activity in the Lucky Boy mines continued into the 1960's. There are no major active operations today.

There is no information on mining activity elsewhere in the Blue River Watershed area, but many areas were prospected for gold along Blue River and other subdrainages.

Current Use of the Blue River Watershed

Most of the human use occurs in the area around Blue River Reservoir and the H.J. Andrews Experimental Forest. The H.J. Andrews Experimental Forest, established in 1948, is administered through the Forest Service and Oregon State University. It is a center dedicated to research of forest and stream ecosystems, with a commitment to communicate the results to land managers, students, and the general public. There is an administrative facility which includes housing, laboratories and offices. The facility is open all year with a full time staff, hosting tours and workshops. In conjunction with the Cascade Center for Ecosystem Management and the Blue River Ranger District, hundreds of tours are conducted each year in the Blue River Watershed for the purpose of demonstrating examples of new forest practices as well as sharing information on basic and applied research. The area within the HJ Andrews, especially the Old-Growth hiking trail and Carpenter Mt. Lookout are popular recreation destination points.

The Blue River Reservoir provides boating, swimming, fishing, and camping. The Reservoir typically is the first reservoir in a system of 13 to begin letting water out at the end of the summer. Boating, fishing, and camping occurs from April through September. There is dispersed camping and one developed campground (Mona) adjacent to the reservoir. Mona Campground has 23 spaces and averages 2800 campers each year. The number of campers is directly dependent on how long water is held in the reservoir. During the fall of 1995 Lookout Boat Ramp at the north end of the reservoir was reconstructed to extend the boating season. The entire camping area was improved and redesigned as well. There is a second boat ramp located next to Saddle Dam.

Carpenter Mountain Lookout was staffed during the 1995 fire season for the first time since the mid-sixties. Many people visited the Lookout and it is expected that visitor numbers will increase in the future. In addition to the trail to Carpenter Mountain there is a trail to Buck Mountain, as well as a trail to Tidbits Mountain.