

Chapter 3

AFFECTED ENVIRONMENT



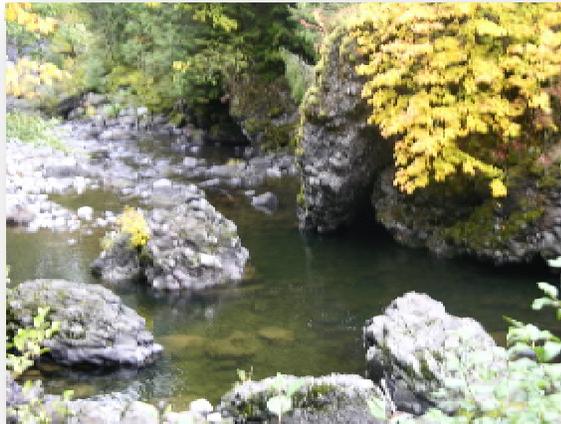
Chapter 3: Affected Environment

This chapter describes the character and resources of the BLM administered lands within the Molalla River-Table Rock planning area. It then provides an overview of the physical, biological, social, and recreation resources being analyzed. The chapter provides a basis from which to assess the environmental effects of the established management alternatives outlined in Chapter 2.

3.1 Setting and Description

The Molalla River-Table Rock SRMA lies in on the western slopes of the Cascades Mountains, southeast of the city of Molalla and entirely within Clackamas County, Oregon. The Molalla River originates nearly 4,900 feet above sea level near Table Rock and flows undammed roughly 49 miles west and north to join the Willamette River near Canby. The SRMA includes portions of its headwaters and high elevation tributaries.

Situated between the Clackamas River to the north and the North Fork of the Santiam River to the south, the Upper Molalla watershed exhibits traits typical of the western Cascades including volcanic-origin geology and dense coniferous forests. Elevations range from 4881 feet at the top of Table Rock to 800 feet near Trout Creek. Within the planning area, the river flows through coniferous forests of various age classes, composed mainly of Douglas Fir, western redcedar, western hemlock and various true fir species at higher elevations. Major tributaries include the Table Rock Fork of the Molalla River, Copper Creek, Horse Creek, Bear Creek and Trout Creek.



The temperate climate of the SRMA is typical of northwest Oregon with mild, wet winters and dry, moderately warm summers as well as narrow fluctuations in daily temperature. Higher elevations (particularly above 3000 ft) experience heavy winter snowfall and annual precipitation up to 100 inches, while lower elevations experience steady winter rain and between 40 to 60 inches of annual precipitation. The main recreational corridor is nearly always snow free and open to vehicle access year round.

Reaching the recreation area involves travelling southeast 7 miles from the city of Molalla through semi-forested and agricultural lands on Mathias, South Feyrer Park and South Dickey Prairie roads to the unincorporated community of Glen Avon. From there, the recreation area begins roughly 1.5 miles south of Glen Avon Bridge on the paved S. Molalla Forest Rd. Once

along this main access road, the field of view is mainly restricted to the river and the densely forested riparian areas, with occasional views of the high ridges and forested slopes upriver.

The recreation area is within close proximity to the Portland and Salem metropolitan areas, as well as a variety of smaller incorporated communities including Molalla, Woodburn, Canby and Estacada. A large number of smaller, unincorporated communities are within a short drive of the planning area including Mulino, Colton, and Scotts Mills.

3.2 Socioeconomics

For the purposes of this document, two scales of analysis will be used:

- *Regional*- Clackamas County includes the entirety of the SRMA, captures the bulk of the visitors and provides an adequate description of regional social and economic conditions.
- *Local* - The City of Molalla is the closest municipality to the SRMA, is directly on the main access route to the planning area and has the most direct connection with the Molalla River and its recreation opportunities.

Population

Population growth has a direct influence on the administration of public lands within the planning area. This growth translates into increased demand for recreation opportunities and potential for crowding, greater possibility of dumping and other uses and augmented interest in river and recreation management. The planning area lies adjacent to communities in Northwest Oregon and the Willamette River Valley that have seen continual population growth since 1990. The region is the most densely populated in Oregon, with eight of the state's ten most populous cities.

Clackamas County has seen significant growth in the past two decades. From a population of 278,850 in 1990, the county has grown by roughly 36% and added 100,998 residents. This total makes it the third most populous county in the state. A disproportionate amount of this growth has been concentrated within the urban areas in the northwest portion of the county in the Portland metropolitan area. Portland's urban growth boundary expanded in 2002 to include the Clackamas County communities of Boring, Damascus, Oregon City and Wilsonville increasing their potential for future economic and population growth.

On a local level, rural incorporated communities near the planning area have also seen substantial growth. Molalla is one of the four fastest growing communities within the county. Since 1990 the city has added 3,893 residents and exhibited a 4.1% annual growth rate. Recent population estimates indicate the city has a population of 7,590. Much of this growth came in the form of new subdivisions and single family housing units in the northwestern portion of the city.

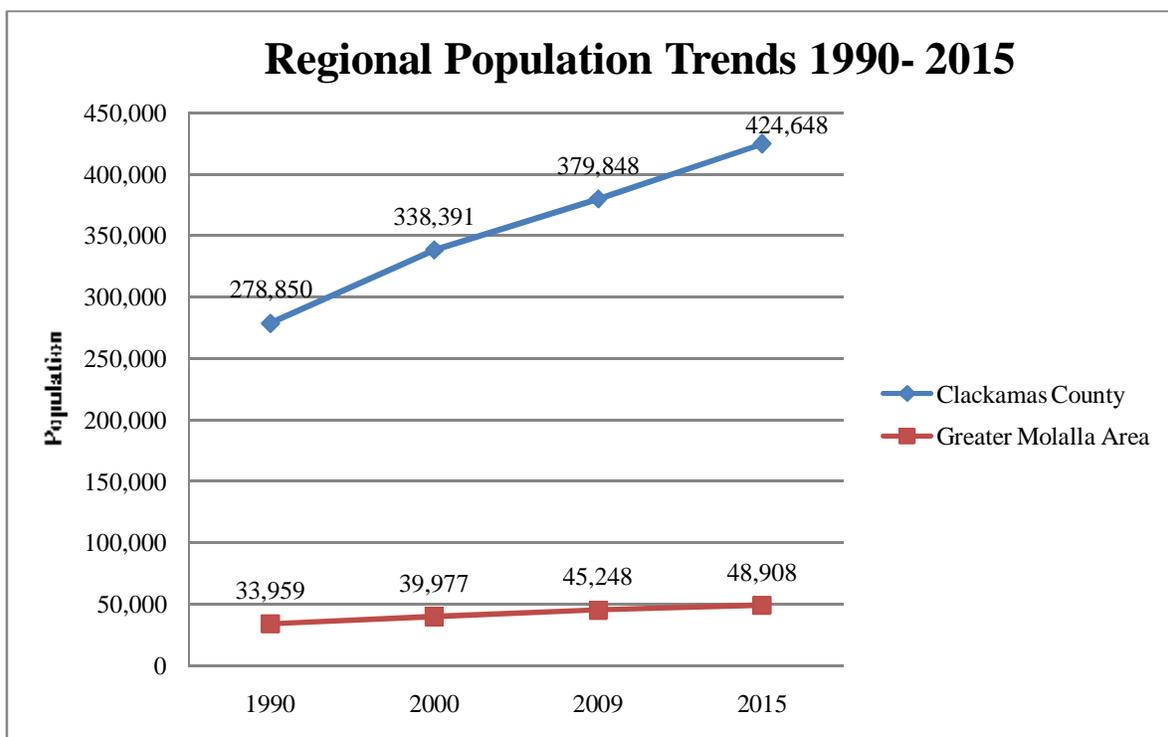
While roughly half of the county's residents live in unincorporated communities, these areas have seen a slower rate of growth. While the city of Molalla has more than doubled since the 1990 census, the greater Molalla area (within 10 miles of downtown Molalla and includes

several unincorporated communities) has grown a more moderate 17.2% overall. This is consistent with the region-wide concentration of population into urban areas as well as statewide direction provided under Oregon law.

In-migration makes up a large portion of population growth within the county. Natural increase (births minus deaths) has accounted for 35 percent of total population growth, whereas total migration (the number of residents migrating to the county vs. those leaving) accounts for the remaining 65 percent. Job availability in certain sectors, the region’s temperate climate, and high quality of life have been identified as drivers of in-migration.

Despite a slowing of growth rates due to the 2007 to 2010 economic recession, the region’s population is expected to increase in the coming decades. By 2040, Clackamas County’s population is expected to reach 480,000. Within the city of Molalla, the recent citywide Comprehensive Plan identified a range of potential growth scenarios. Under a moderate growth scenario (2.9% annual growth) Molalla’s population will reach 10,876 by 2025.

Figure 3: Regional Population Trends



Population Demographics

Population make-up and demographics have a direct role in recreation activity preferences, nature and timing of recreation use and the values members of the public attach to the Molalla River-Table Rock SRMA. Demographic information gathered during the 2000 Census indicates

the populations of Clackamas County and Molalla are less racially diverse, wealthier and better educated than the nation as a whole.

The population of the analysis area is significantly less racially diverse than the rest of the nation. Within Clackamas County, 91% of residents self-identify as white; 88.6% of Molalla residents self-identify as white. These figures are well above the national figure of 75%. Independent of race, Molalla has a higher proportion of individuals self-identifying as Hispanic (10.6%) than the county a whole (4.9%).

Available data on household income indicates a disparity between Clackamas County and Molalla, but residents within both areas have incomes higher than the rest of the nation. Household income for Clackamas residents is substantially higher (\$60,791) than residents of Molalla (\$46,915). The national medium household income in 2000 was \$41,994.

Clackamas County residents and city of Molalla residents are more likely to have a high school degree than the average United States citizen. The county (89% of residents holding a high school degree or above) and Molalla (82%) are both higher than the national average (80%).

Economy and Employment

Clackamas County as a whole exhibits a diversified economic base with over 12,600 total firms and total employment above 150,000. In terms of jobs, top industries, in order of total jobs provide are: Manufacturing (18,222), Retail (17,947) and Professional and Business Services (17,307). Historically, the county's economic base has heavily relied on agricultural and natural resource-related products. Since 1980, the county has benefited from close proximity to the Portland metropolitan area and an advantageous location for transport lending to activity in the manufacturing, wholesale and transportation industries.

Despite a recent slowdown of economic activity nation and state-wide, several sectors are expected to provide additional jobs within Clackamas County during the next 20 years. Primarily, these include healthcare and social assistance, professional and business services and retail.

Within the city of Molalla, primary sectors by employment include Agriculture and Mining (23%), Services (19.6%) and Manufacturing (14.6%). The area's largest employers include Brentwood Corporation, Molalla Communications Co, Northwest Polymers and RSG Forest Products. The local availability of highly productive timberlands has resulted in a dependence on the wood products industry by communities near the planning area including Molalla and Estacada.

City and county economic development strategies continue to stress agriculture and forest products industries as key economic components, but also emphasize the need to diversify their economies with development of such industries as environmental services, retail, high technology, metals fabrication, and tourism.

Economic Activity Related to the SRMA

The planning area's contributions to the local socioeconomic conditions and health is associated with its ability to supply forest and wood products, provide a municipal water source and by offering a range of recreation opportunities that appeal to both local residents and visitors from elsewhere in the region.

Ongoing timber harvest on both private and public lands within the planning area provides direct contributions to the local economic conditions through commodity production, direct employment, and associated activity including equipment purchases. This plan does not make changes to timber management practices on public lands administered by the BLM.

An increasing level of interest has been expressed in the role the recreation area could play in diversifying the local economic base. Clackamas County has seen a steady increase in travel and tourism-related income since the early 1990's. In 2008, visitor spending totaled \$428.8 million. This represents a 45.5 % increase from 1992. Spending on transportation, retail and dining makes up the bulk of this total. Regional economic analysis predicts overall growth of this spending to continue.

Recreation plays a relatively minor role in local economic conditions. While little specific information is available on the role of the Molalla River-Table Rock SRMA plays in the Molalla and greater Clackamas County economic situation, the availability of high quality recreation opportunities has been shown to be connected to increases in local property values, overall attractiveness for business development and the in-migration of retirees, local company employees and commuters to jobs elsewhere in the region. In addition, travel and tourism-related activity associated with out-of-town visitors to the SRMA includes spending on supplies, gasoline and lodging.

3.3 Land Use and Ownership

The history of public land ownership and acquisition affects land ownership patterns within and adjacent to the planning area. Public land distribution is characterized by a linear ownership pattern along the lower reaches of the Molalla River (arising from the 1992 land exchange) and a more contiguous pattern upstream along the river's tributaries and the high ridges that comprise Table Rock Wilderness (see Table 1). Planning area boundaries were drawn to closely mirror public land borders and include only a handful of small private inholdings in the main recreation corridor and portions of Weyerhaeuser ownership in the upper reaches of the watershed.

The March 1992 land exchange between the BLM and the Cavanham Forest Industries division of Hansen Industries (now Weyerhaeuser) brought 11 miles of Molalla River frontage totaling 5013 acres into public ownership, all of which are included in the planning area and form the basis for the most heavily-used portion of the SRMA.

Public land within the SRMA is in close proximity to surrounding private land, much of it owned by Weyerhaeuser, Inc and utilized for industrial timber production. These lands are located predominately to the north and east (particularly within the North Fork of the Molalla watershed) and directly to the south (along the Copper Creek Fork of the Molalla). These lands have a history of timber harvest dating back to the early 1900's with intensive periods of harvest following World War II. As a result, the land base is characterized by large blocks of young, even-aged forest and extensive transportation systems.

North and west of the planning area, land ownership is characterized by small non-industrial woodlot owners managing lands for timber and agricultural purposes, and small parcels that contain residential housing. Residential development is most widespread within the unincorporated communities of Dickey Prairie and Glen Avon to the north and northwest of the planning area.

Within the planning area, several small inholdings are present. These include several parcels owned by Weyerhaeuser along the Table Rock Fork and Cow Creek. The privately-owned Bee Ranch, located at the Table Rock Fork-mainstem Molalla confluence, is also entirely contained within the planning area. This parcel, located directly along the Molalla Forest Road, has been blocked to vehicle access and heavily signed to indicate its non-public status.

Many of the roads contained in or originating from the SRMA lead to lands under private ownership. Over the past 20 years, public access to these private lands has been increasingly restricted through the installation of gates and other traffic control measures. These closures not only block entry to private lands, but public lands accessed via private roads. Recent attempts by Weyerhaeuser, Inc to implement a permitted public access program were ended in early 2010 (see section 3.4 Recreation). Public access to the Upper Molalla watershed is now disproportionately concentrated on BLM-administered public lands, most of which are contained within the SRMA boundaries.

Outside of Table Rock Wilderness, BLM-administered lands within the SRMA have a long history of forest management either directly by the BLM or by industrial landowners prior to the 1992 exchange.

While Clackamas County has no direct jurisdiction over land use on federal lands, zoning of privately-owned adjacent areas points to a continuation of current land use patterns. The majority of privately-owned land to the north and northwest of the planning area, including those areas directly along major access routes, are zoned Exclusive Farm Use. This zoning is intended to maintain and encourage agricultural uses by placing limits on new parcel size and acceptable land uses.

3.4 Recreation

The Molalla River-Table Rock SRMA is an important recreation resource for the residents of northwest Oregon, including the Salem and Portland metropolitan areas. Few rivers in the state offer such ease of access to varied recreation opportunities so close to major urban areas.

Most recreational use occurs in close proximity to the river between Glen Avon Bridge and the confluence of the Table Rock Fork of the Molalla, an area referred to as the Molalla River Recreation Corridor.

The majority of recreation use within the SRMA takes place between May and September, coinciding with higher temperatures and rain-free days, water temperatures conducive for swimming and full access to trail systems and high elevation roads. Holiday weekends and weekend days with above average temperatures draw large numbers of visitors to the recreation area. See figure 4 for an overview of use distribution during the high use season.

Current recreation use is primarily unstructured and dispersed in nature with limited facility development. The paved, BLM-controlled Molalla Forest Road parallels the river and provides access for river-based activities. Camping, engaged in by roughly half of all visitors, is limited to 16 dispersed, designated sites along this road and other major arterials (Horse Creek Rd, Copper Creek Road and Middle Fork Road). Day use is largely unregulated and spread over 50 informal pullouts. These pullouts access swimming or fishing locations, picnic spots, recreational shooting sites or other dispersed recreation locations.

Popular activities include swimming, picnicking, camping, trail hiking, fishing, driving for pleasure, target shooting, horseback riding, non-motorized boating and mountain biking. See Table 6 for an overview of recreation activity participation.

Table 6 Recreation Area Activity Participation		
<i>Activity</i>	<i>% respondents who said they participated during their visit...</i>	<i>% respondents who said it was their primary activity...</i>
Swimming	68.1%	22.5%
Picnicking	56.3%	3.0%
Camping	50.3%	31.4%
Trail Hiking	39.8%	2.5%
Fishing	38.2%	6.8%
Driving for Pleasure	37.5%	3%
Target Shooting	19.4%	7.2%
Horseback Riding	13.8%	10.2%

Facility development is limited to three vault restrooms scattered along the Molalla Forest Road (located at Hardy Creek Trailhead, Ivor’s Wayside and Turner Creek Bridge), informational signage at various locations and the shelters and footbridges within Aquila Vista Environmental Education Site. Current management direction does not include any significant facility development.

While the setting is mostly natural in appearance, much of the planning area has been modified by timber harvest, quarrying and other land management activities.

High road densities and accompanying gates, bridges and vehicle blockages also interrupt the natural setting. Outside of Table Rock Wilderness, visitors are nearly always within 1/2 mile of a road and within sight or sound of vehicle traffic.

In order to better understand the nature of visitation to the planning area, a Visitor Survey was completed in 2007 by the BLM and staff from the School of Community Resources and Development at Arizona State University under the direction of Dr. Dave White and Dr. Randy Virden. The Survey provides an overview of visitor behavior along the Molalla River, within the Shared-Use Trail System and in the adjacent Table Rock Wilderness.

Data for the study was collected on-site during the summer of 2006 by ASU and BLM personnel utilizing self-administered surveys. In total, 351 total questionnaires were successfully completed; surveyors achieved a 93% on-site response rate. The survey provides a comprehensive picture of visitor characteristics, preferences and satisfaction. In this section, data is specific to river visitors. Wilderness visitors are profiled in the Table Rock Wilderness Plan Update, found as an appendix to this document.

Visitor Characteristics

Nearly all visitors to the Molalla River-Table Rock SRMA come from within the state, with a large majority (roughly 90%) from either the Portland metropolitan area or the rural areas of the northern Willamette Valley that are within an hour's drive.

Table 7: Primary Residence of Visitors to the Molalla River	
<i>Area of Origin</i>	<i>% of Total Visitors</i>
Portland metropolitan area (including Portland, Oregon City, Wilsonville, Gresham, West Linn, etc)	42.6%
Rural northern Willamette Valley (Molalla, Canby, Woodburn, Colton, Silverton, etc)	37.6%
Salem metropolitan area	6.4%
Elsewhere in Oregon	6.7%
Outside of Oregon	2.5%

Portland (19.1%), Molalla (14.6%), Oregon City (8.5%), Woodburn (5.6%) and Canby (5.1%) were the top five municipalities for visitor origin. The SRMA's close proximity to these urban areas plays a large part in its popularity; after the river's natural qualities and features (77%), users identified proximity to home (64%) as the top attraction of the area.

Despite a slight majority of respondents citing opportunities for solitude as an attraction to the Molalla River-Table Rock SRMA, the vast majority of visitors came in groups.

Ninety-three (93) percent of visitors were in groups of 2 or more, and 53% came in groups of 4 or more. A considerable number of these were family units; nearly 47% report travelling with one more individuals under age 16. Furthermore, roughly 81% reported that they do or would bring their children to the area.

Visitors to the Molalla River-Table Rock SRMA expressed strong feelings regarding their connection to the area and its importance to their quality of life. While responses indicate recreation opportunities at the Molalla River were available to some degree at other places (i.e. nearby rivers), over 60% strongly agreed and 24% agreed that that river ‘means a lot to them personally’. Nearly 78% agreed or strongly agreed they were ‘very attached’ to the area.

Recreationists identified numerous motives and benefits associated with their visit. Enjoyment of the natural setting, escape from everyday stresses and responsibilities and spending time with family and friends were all highly rated by survey respondents.

Demographic characteristics of recreation visitors are consistent with the rest of northwest Oregon. Race identification and level of education closely align with similar statistics from Clackamas County (See Table 8).

Use Patterns

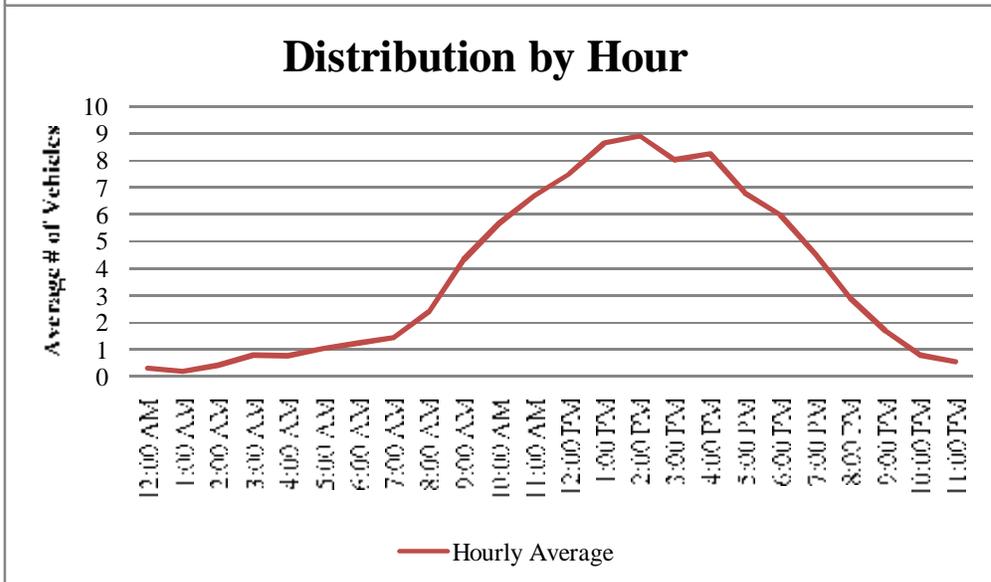
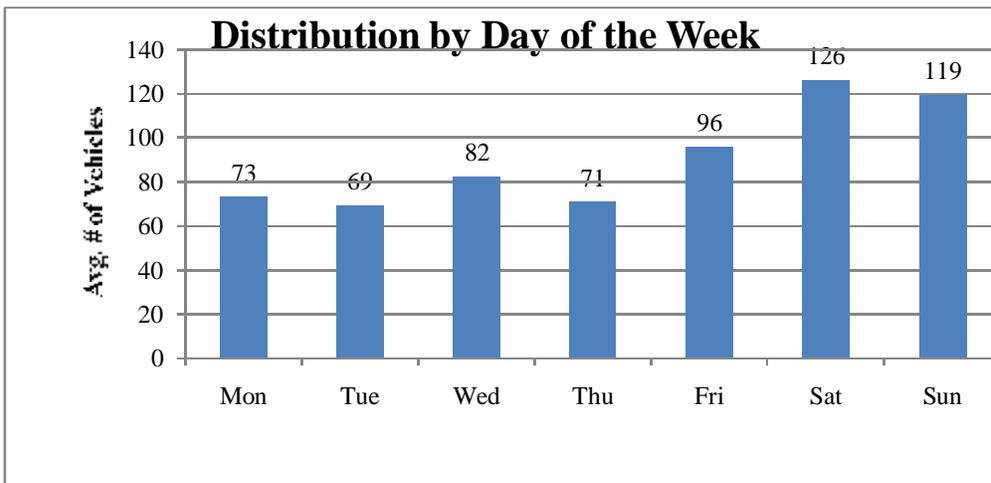
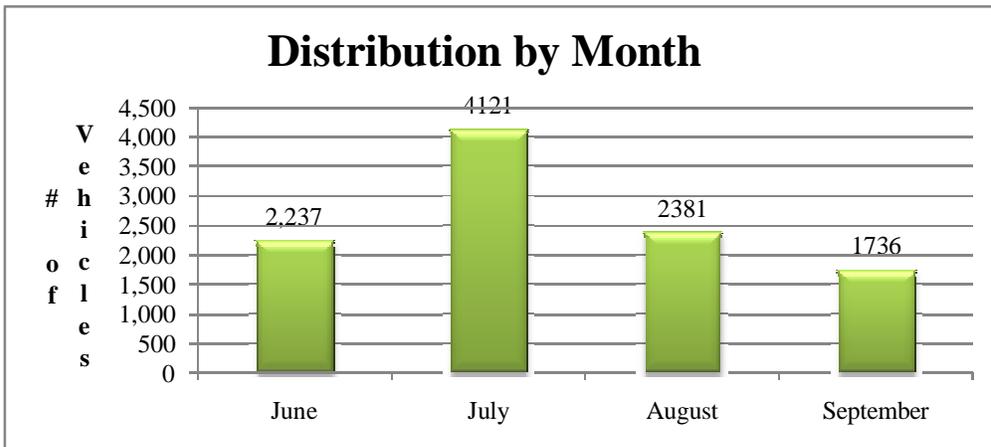
The constricted transportation network in the SRMA, with the majority of access coming on a single road that provides little to no thoroughfare, makes accurate visitor and traffic monitoring possible. During the summer of 2009, a traffic counter was installed roughly 2 miles south of Glen Avon Bridge; it gathered data from May 29th through September 30th. The highest number of vehicles recorded during the summer of 2009 was 278 and came on Sunday, July 26 (the high temperature was 95 degrees F).

During the May to September period, entrances to the SRMA totaled 10,475 vehicles, for an average of 90 vehicles per day. Assuming 2.5 individuals per vehicle, the count calculates total visitation from July to September at 26,187. The proportion of this traffic made up of administrative visits (from BLM personnel and the private sector) is unknown but estimated at 8 to 10%. Previous BLM reports of overall visitation ranged from 55,000 to 65,000 annually, based on historic traffic counts and personal observation. Given this new data and acknowledging that other routes to access the SRMA exist, it’s estimated at this time that annual visitation to the planning area is roughly 50,000 visitors.

Table 8: Selected Visitor Characteristics

94.5% of visitors to the river have a high school degree or above
94.4% self-identify their race as white
78.7% identify the river as their main destination
93% visit in groups of 2 or more
46.8% have one or more individuals under 16 years old in their group
77.4% report feeling ‘very attached’ to the recreation area

Figure 4: Traffic Distribution within the planning area



Traffic is sustained throughout the week and heaviest on the weekend. Nearly 40% of traffic is concentrated on Saturday and Sunday. By hour, traffic is highest in the early to mid afternoon from noon to 4 pm. Not surprisingly, the lowest levels of traffic come during the overnight hours from 11 PM to 7 AM.

Visitor Perception and Satisfaction

The majority of visitors to the Molalla River Recreation Corridor report high satisfaction rates with the Molalla River-Table Rock SRMA. River visitors surveyed reported positive feelings, with 38% indicating they are 'satisfied' and 50% indicating they are 'very satisfied'. Only 8% reported being 'dissatisfied' or 'very dissatisfied'.

The 2007 survey asked visitors to rate their satisfaction with particular programs, facilities and services offered within the recreation area. No particular item received clear dissatisfaction ratings, although visitors indicated neutral feelings on the cleanliness and availability of restrooms. A majority of visitors reported at least moderate satisfaction with the area's trails, trailhead, day use areas, camping areas and levels of administrative presence.

Visitors were also asked to identify their perception of certain recreation-related impacts to the recreation area. Despite the identification of ecological damage (particularly in the riparian areas) and water quality issues as a primary issue by the public during scoping, many respondents indicated the current level of impacts was not a concern. For instance, only 11% of visitors identified stream bank disturbance as a serious or very serious problem; only slightly more (13%) reported trampling of vegetation as a serious or very serious problem.

Litter and dumping were rated as the items of most concern. Over 60% of visitors reported these were moderate, serious or very serious problems.

Crowding and user conflict were not identified by visitors as problems during their visit to the recreation area. Over 70% of respondents reported that conflict with other users was 'not a problem'.

Recreation Activities

Day Use Swimming and Picnicking:

Picnicking, swimming and general river-related recreation make up a large portion of the recreation activity. During hot summer months, the river is the primary draw for visitors.



Nearly 70% of visitors engage in swimming or water play at some point during their visit with over 22% reporting swimming as their primary activity. The average length of stay for day use visitors is 5.3 hours.

These activities take place at dispersed, roadside pullouts that access the river or other locations of interest. All of these areas have been identified informally, with little to no infrastructure or amenities. Management at these locations is limited to signage that identifies the site is closed to overnight camping and that visitors should practice Leave No Trace ethics.

Camping: Camping is a popular use of the recreation area; 45 to 50% respondents indicate camping is part of their visit. These stays averaged 4.25 nights; however, this figure may be skewed based on a relatively small number of long-term occupants.

Current rules limit camping to 16 dispersed, designated campsites located along major access routes: 11 are located within the main recreation corridor from Glen Avon Bridge to Copper Creek Bridge, 2 are found along the Middle Fork Road and 3 are located along Copper Creek Road. Dispersed, designated sites were chosen from among the existing, informal locations due to their location between the river and adjacent roads, limiting the potential for the spread of fire. In order to further reduce this threat, each site includes a fire ring. During certain high use summer weekends, virtually all of these campsites are taken and capacity is reached.

Each site offers varying proximity to other camping or day use sites, access to the river and parking capacity offering users a wide selection of recreational settings and experiences. However, several campsites are in the proximity of high-value river access points. Occupancy by campers prevents access by other visitors for extended periods of time.

Boating: The Molalla River and Table Rock Fork offer excellent whitewater opportunities for intermediate to advanced boaters. The primary run on the mainstem Molalla extends from Copper Creek Bridge downstream to Glen Avon Bridge and travels through constricted gorges and canyons with Class III rapids. This segment is widely recognized as a convenient day trip from the Willamette Valley. Easy scouting and the ability to vary trip distances and difficulty levels make it a valuable resource for boaters from many different ability levels. The lower several miles of the Table Rock Fork of the Molalla are utilized by more experienced boaters. Use of both rivers is concentrated in the winter and spring (from November through April) to take advantage of appropriate river flows. The only gauge on the Molalla is located near Canby.

Commercial use of both rivers is limited; a single Special Recreation Permit is currently issued to Blue Sky Rafting. Currently, no improved river access points or boating-specific information is present within the SRMA. The potential exists to delineate and improve boat launches, information kiosks and other boating-related amenities.

Target Shooting: Recreational target shooting is an established use within the planning area. Of all area visitors, 19.4% report shooting during the visit; nearly 7% report it as their primary activity. Shooting is concentrated at various locations with desirable site distances, easy access and potential backstops including gravel stockpiles and former quarries.

Within the planning area, several areas experience heavy recreational shooting use: along Pinecrest Road (particularly a gravel stockpile in T6S R3E, Section 5) and at various turnoffs in the Horse Creek Road system. Due to the nature of the main recreation corridor, the use along Pinecrest Road can be heard both across the drainage and along the river. Annual clean-ups by staff, host volunteers and during special events are required to remove the substantial amount of trash that accumulates at these locations. Loss of numerous trees and some ground cover has also resulted from this activity.

Fishing: Fishing is a popular use of the Molalla River and its tributaries; 40% of survey respondents report fishing during their visit and 6.8% identify it as their primary activity. Changes in fisheries management policies, overseen by the Oregon Department of Fish and Wildlife (ODFW), have a direct influence on the type and distribution of fishing within the SRMA.

Winter Steelhead has historically been the primary recreational fishery along the Molalla River. During the 1980's, when the river system was stocked with hatchery fish, tags returned to ODFW for this species averaged 1163 annually. Current ODFW policy mandates catch and release of wild (non-clipped) Winter Steelhead. Rule changes in 2009 moved the fishing deadline downstream to Pine Creek Bridge to protect important spawning locations.

While the wild run of Spring Chinook has declined (see section 3.8 Fisheries), the Molalla River is currently stocked with nearly 100,000 South-Santiam stock annually. This serves as the basis for a moderately popular fishery; since 2000, tags returned to ODFW for this species have averaged 131 annually.

Public lands within the SRMA provide important access to fishable rivers and streams. The BLM works with ODFW to encourage public knowledge of relevant fishing rules and regulations through signage and other public information.

Recreational Mining: The SRMA provides opportunities for recreational mining, primarily gold panning. Operation of dredges, sluices and other mining-related equipment is permitted by the State of Oregon. The Recreation and Public Purposes Lease described in Chapter 1 has established a recreational mining area where establishment of new claims is prohibited and recreational mining activities can take place.

Trail Systems

Trail-based recreation is provided for within the Molalla River Trail Systems (the 20-mile Table Rock trail system also provides additional opportunities, see Appendix A). The Molalla Shared-Use system, accessible from 5 trailheads along the Molalla Forest Rd, contains nearly 25 miles of closed forest roads and singletrack trail open to hikers, mountain bikers and equestrians. The Trail System is popular with equestrian users and to a lesser degree, mountain bikers. Hikers make up a small segment of users within the system.

To prevent trail damage and erosion, a seasonal closure of singletrack trails (typically from mid-October through mid-April) is in effect for mountain bikers and equestrians.

The Trail System was constructed in 1995 and 1996 with a combination of volunteer labor and youth crews employed by the BLM. It provides for a range of difficulties, with a variety of short and medium loop options. Due to the pattern of BLM ownership, trail densities are extremely high.

Sustainability Assessment

In order to evaluate the current condition and long-term potential of the trail system, BLM personnel worked with the International Mountain Biking Association's Trail Solutions team to complete a sustainability analysis.

The assessment looked at both social sustainability (patterns of user behavior and potential conflict) and environmental sustainability (the ability of the trail to handle current and expected use without intensive maintenance attention).

The assessment concluded that due to its location and existing use patterns, levels of direct user conflict are low. The overall expectation for users within the system is that other types of users will be encountered. This expectation, tied to the concept of "Shared Use" trails, has been built through public information and special events geared towards promoting the trail system for multiple user groups. In addition, trailhead facilities and desired trail experiences have led to use patterns that separate users, with equestrian users primarily in the southern half of the system and cyclists more often in the northern area. The tendency for regular horse trail riding to create trail conditions that are not desired by cyclists has at times pushed their use to the northern portion of the trail system.

Evaluating environmental sustainability of trails is based on several factors including:

- Prevailing slope to trail grade alignment ratio
- Absolute trail grade
- Canopy cover and adjacent vegetation
- Soil type and rock content
- Current tread condition (widening, muddiness, etc)
- Level of anticipated use

Applying these factors, the assessment found numerous segments unsustainable. Poor alignment and lack of proper drainage were found to be the primary drivers of undesirable trail conditions. The Trail Sustainability Assessment is available for review at the Salem District Office.

Administrative and Law Enforcement Presence

The presence of administrative (BLM) personnel and law enforcement officers has a potentially considerable impact on the type and frequency of certain activities taking place within the SRMA. This presence also has a direct impact on visitor experience by altering the managerial setting and perception towards the safety and desirability of recreating within the Molalla-Table Rock area.

Concerns over public safety were consistently identified by the public during scoping efforts for this plan. The SRMA has a history of illegal and undesirable activities including dumping, vandalism, theft, drug production and long term occupancy which has negatively impacted the perception of the area by visitors and local residents. It should be acknowledged that these activities not only reduce the quality of the on-site visitor experience, but also prevent some individuals from visiting the recreation area entirely.

Administrative and law enforcement presence has seen a marked increase over the past several years. The BLM stations two volunteer host couples within a short drive of the recreation area at the Molalla Maintenance Shop. During the high use season (May through September), hosts conduct daily patrols and trash cleanups.

The area is also patrolled by paid BLM staff and seasonal volunteers originating from the Wildwood Recreation Site on Highway 26 and the Salem District Office. Visitors during this period are likely to see at least one BLM vehicle during their visit. During the off-season (October through April), BLM presence is reduced in conjunction with lower visitor numbers and averages one to two days per week.

Currently, law enforcement is provided cooperatively by three agencies: BLM law enforcement officers originating from Salem, the city of Molalla Police Department and Clackamas County Sheriff's Department. Through supplemental funding, Clackamas County and the Molalla PD have been able to extend their patrols to federal public lands. During June, July and August, these agencies provide consistent coverage; in 2009, Molalla PD officers patrolled the SRMA an average 60 hours per month, BLM provided coverage an average of one day per week and County deputies were present as available, and typically patrol on weekends during the May through September high use seasons.

During 2008 and 2009, Molalla PD officers issued 298 traffic citations, 4 MIP's (minor in possession of either alcohol or tobacco), 6 other miscellaneous crimes, 2 animal complains and 1 non-injury vehicular accident. Current levels of law enforcement presence should not be considered standard and may not continue based on available funding.

Personal observation and public comment indicate elevated levels of law enforcement and administrative presence have resulted in a considerable decrease of undesirable and illegal activity. This includes a decrease in the number of serious vehicular accidents, reduction in large-scale dumping and a decline in violation of the 14-day stay limit.

Regional Recreation Opportunities

Northwest Oregon is blessed with a large supply of high-quality recreation opportunities. Federal, state and local governments as well as private suppliers offer a wide variety of locations, settings and activities for outdoor recreation. The Molalla River-Table Rock SRMA is managed within a regional context and offers opportunities that complement the offerings of other recreation providers.

Clackamas County Parks: Clackamas County offers two parks in the vicinity of the planning area and several others within a half an hour drive. Feyrer Park is located southeast of the Molalla's city center and directly on the access route to the Molalla River-Table Rock SRMA. It provides complementary opportunities to those offered on BLM public lands, including sites for developed camping (electricity and potable water) and a boat ramp that allows for driftboat access to a popular segment of the mainstem Molalla River. Picnicking and swimming are also popular activities at Feyrer Park.

Wilhoit Springs County Park is located south of Molalla and provides day use opportunities for hiking and historical interpretation at the site of a former resort centered on a set of mineral springs. The Park is surrounded by a low elevation stand of old growth forest on BLM lands that is unique in the local area. Clackamas County operates several other parks within a short drive of the planning area, most notable McIver Park near Estacada.

Nearby River Corridors: Several river corridors comparable to the Molalla in their location and setting are present in northwest Oregon. The Clackamas River, draining the watershed to the north of the Molalla, is managed by the Mount Hood National Forest and offers extensive camping, fishing, swimming, picnicking and hiking opportunities. Its similar distance to the Portland metropolitan area and rural Willamette Valley communities make it an important consideration in the context of managing the Molalla River-Table Rock SRMA.

Additional regional recreation areas that offer complementary opportunities include the BLM and Forest Service land along the Sandy and Salmon Rivers as well as Tillamook State Forest, managed by the Oregon Department of Forestry and located west of the Portland metropolitan area in the Oregon Coast Range.

Weyerhaeuser Public Access Program: From 2008 to January 2010, Weyerhaeuser, Inc implemented a permitted public access program on their Molalla Tree Farm, directly adjacent to public lands within the planning area. For an annual fee, visitors were provided a permit that allowed them daytime access to the Weyerhaeuser's gated road system during a restricted time period (no overnight use). Public access originated on Dickey Prairie Rd, adjacent to Glen Avon Bridge and the entrance to the Molalla River Recreation Corridor. The program was discontinued by the company in January of 2010 due to decreased demand. This development has the potential to place additional pressure on adjacent public lands.

Anticipated Trends

Overall demand for recreation opportunities within the SRMA is expected to increase at a rate comparable or slightly higher to population growth, consistent with several demographic trends.

The Oregon Statewide Comprehensive Outdoor Recreation Plan (referred to as SCORP) for 2008-2012, produced by the Oregon Parks and Recreation Department, identifies Oregon's aging population and increasing diversity as important trends in addressing the future needs and demands for outdoor recreation. Clackamas County is identified as a "high-priority" county for both of these trends. Increasing numbers of over 60 residents combined with increases in the minority population is likely to increase the demand for specific activities.

For instance, survey data shows the elderly population engages regularly in walking, picnicking and sightseeing. Locations that provide these opportunities are likely to see usage rise in relation to recreation areas that have limited options for this age group. Refer to the 2008-2012 SCORP for a detailed discussion of these trends and their possible impacts on recreation demand and management.

3.5 Visual Resources

The Molalla River-Table Rock SRMA exhibits a variety of scenic qualities ranging from large intact stands of Douglas-fir in the Table Rock Wilderness Area to scattered blocks of recently harvested mixed forest stands. The scenic qualities that exist within the Molalla River-Table Rock SRMA are managed through the assignment of Visual Resource Management Classifications.



All BLM managed lands within the SRMA been assigned a Visual Resource Management (VRM) class to set guidelines for projects that could change the appearance of the landscape or structures. This chapter will provide an overview of scenic qualities, provide background on the VRM classification system, and identify the VRM management classes assigned within the planning area.

Scenic Qualities

Molalla River: Several significant scenic attributes distinguish the Molalla from other rivers in the area. The river's clear water and cascade and pool character add significantly to the overall visual experience. The numerous vertical and near vertical cliffs descending to the river, a constricted canyon near the middle of the segment, large moss-covered boulders, and diverse stream-side vegetation provide a variety of stream-side and foreground views. Accessibility from the Portland area also enhances the value of the overall scenic quality and potential of the SRMA. From the river, the scene is one of a large canyon with moderately steep walls covered by a blanket of primarily second-growth (60-90 year old) Douglas-fir. In some areas, stream-side vegetation or geologic features restrict the "seen" area to only a few hundred feet on either side of the river. In many other areas, the adjacent hillsides are clearly visible behind the narrow strip of riparian vegetation.

Table Rock Wilderness: The Table Rock Wilderness (TRW) area is the last large block of undeveloped forest within the planning area. The area is characterized by steep, rugged terrain, high relief features and notable vegetative variety. This combination of scenic qualities creates a unique natural setting in an otherwise heavily manipulated forest environment. Further adding to the areas diverse scenery are exposed bedrock, talus, slide scarps, sheer cliffs, basaltic rock outcrops and numerous crags. The presence of four distinct vegetation zones within a relatively short vertical sequence of geologic features accounts for TRW's great diversity of plant species. Within each zone (alpine, subalpine, montane and foothills), both biotic and topographical plant succession patterns occur, representing unique plan community life cycles and adding to the vegetative diversity that provides dramatic scenery for recreationists.

Molalla Viewshed: The viewshed surrounding the river and high use areas is an important resource to those visiting an area. Much of the viewshed in the Molalla SRMA has been modified by human use associated with timber management activities. While these modifications are evident, they often blend with the general characteristics of the landscape.

Geologic Features: Numerous geological features along the upper and middle portions of the Molalla River and Table Rock Wilderness add to the scenic value of the Special Recreation Management Area. The many vertical basalt cliffs and rock outcrops that descend to the river along with the narrow canyons add to the visual diversity of foreground views in several key segments within the SRMA. Constricted canyons near the model of the SRMA force the river into a deep, narrow chute that flows beneath some picturesque columnar basalt cliffs.

Visual Resource Management

The BLM uses its Visual Resource Management (VRM) system to assign appropriate VRM classes to public land within the Molalla River-Table Rock SRMA (refer to Table 8 for a description of the BLM's VRM classes). The VRM system therefore, provides a means to identify visual (scenic) values, establish objectives through the Resource Management Planning process or on a case-by-case basis for managing these values, and provides timely input into proposed surface-disturbing projects to ensure the assigned objectives are met.

Table 9 identifies the acreages assigned to each Visual Resource Management Class within the Molalla River-Table Rock SRMA:

Table 9: Visual Resource Management Classification within the Planning Area

Class I	<i>6,139 acres</i>	To preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	<i>3,969 acres</i>	To retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	<i>2,183 acres</i>	To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV	<i>15,113 acres</i>	To provide for management activities that requires major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic landscape elements.

3.6 Cultural Resources

The Molalla River-Table Rock SRMA contains a variety of prehistoric and historic cultural resources. Prehistoric sites within the planning area hold the potential for improving our understanding of regional prehistory, while the historic sites typify the historical themes present in the western Oregon Cascades.

In order to gain an idea of the extent of cultural resources in the area, class III archaeological survey and testing of previously selected high probability parcels were conducted along the mainstem Molalla River and Table Fork of the Molalla during the spring of 1992.

These sites have regional importance for interpreting prehistory. Molalla River prehistoric sites may have been inhabited by the Kalapuya people of the Willamette Valley and by the Molalla people of the western Cascades. Little is known about the origin, time depth, and culture of the Molalla people.

Additional survey and site testing in the corridor can help answer questions regarding the changes in occupation and uses over time, population density, contacts with other groups, prehistoric economy, settlement, subsistence patterns, and the use of the area by the historically known Molalla Indian people. Eligibility for the National Register of Historic Places has not been evaluated for these sites.

In addition, approximately 12 possible historic resources have been identified on historic documents or from previous field inventories, but many of them have been unable to be located on the contemporary landscape. These historic sites and features represent settlement, mining, logging, and federal activities in the corridor, but none are rare, unusual, or one-of-a-kind for the region. These types of cultural resources and historical themes are typical of most major drainages in the western Cascades. None of the sites are associated with a significant single event, although each site is representative of broader regional and national historic events and themes, such as homesteading and western settlement, development of the regional economy, depression-era federal efforts, and World War Two.

Before its removal, the historic Copper Creek Bridge was determined eligible for the National Register of Historic Places. The bridge was documented to the Historic American Engineering Record before its removal.

None of the other sites have been evaluated for eligibility for nomination to the National Register of Historic Places.

3.7 Hydrology/Water Quality

The Molalla River is a tributary to the Willamette River, draining a northeast section of the Willamette River Basin in Clackamas County. The headwaters of the 49-mile Molalla River are on the forested lower west slopes of the Cascade Mountains at elevations up to 4900 feet. From its origin in Cascade volcanic deposits of andecite, basalt, and ash, the river flows northwest where it enters the Willamette River at an elevation of 70 feet (USDA-SCS 1985). The stream gradient is mild along the entire river, with the upper 28 miles of the Molalla averaging approximately 1.2 percent, decreasing to .25 percent on the lower 21 miles.

Planning area stream flow

Average annual precipitation in the sub-basin ranges from approximately 100 inches in the mountains to 40 inches on the valley floor, with the greatest precipitation occurring November through January and the least occurring June through September (Oregon State University 1998).

There is one U.S.G.S. gaging station

(http://waterdata.usgs.gov/or/nwis/uv/?site_no=14199704&PARAMeter_cd=00065,00060) several miles downstream of the project area on the lower Molalla River near Canby City. None of the small, tributary channels in the project area have been gaged.

Stream-flow is typical of western Cascades streams where most runoff occurs during winter storm events. Base-flow or low-flow occurs during late summer and early fall when mean stream discharge drops below 20% of the mean winter flow. Many small headwater channels dry up completely during this period. Average total annual stream discharge past a USGS gaging station on the Molalla River near the Trout Creek bridge is 386,500 acre-feet, or 125 billion gallons. The lowest average monthly discharges normally occur June through October, averaging 53 to 293 cubic feet per second (cfs). The highest average discharges occur during December through February, averaging 917 to 1003 cfs. Snow pack plays a minor role in overwinter storage of precipitation in the Molalla River watershed. This is shown by the correlation of precipitation and discharge, where changes in discharge mirror changes in precipitation with little seasonal variation in the relationship.

Snow melt does play a role in the occurrence of peak flows in the Molalla watershed. Peak flows tend to occur following a rapid and substantial depletion of the snow-pack during prolonged rain-on-snow periods (ROS) in the transient snow zone (TSZ) estimated to lie between 1,500 feet and 3,000 feet elevation. The two largest peak flow events in the last century took place in 1964 and in February of 1996.

The '64 event was estimated at or above a 100 year flood return interval while the '96 was approximately a fifty year event; both were in response to substantial snow pack melt-off. The State of Oregon has estimated peak flows for most watersheds in Western Oregon, including project area watersheds. These estimates may be viewed at the following web site- http://map.wrd.state.or.us/apps/wr/wr_mapping/

No major dams or reservoirs exist in the watershed analysis area, and most of the summer flow is derived from groundwater.

Wetlands within the planning area

There are a few wetlands in the project area identified on National Wetlands Inventory maps (see <http://wetlandsfws.er.usgs.gov/wtlnds/launch.html>), most notable the wetland in the Aquila Vista Environmental Education Site. These features are also identified as wetlands in the BLM GIS Lakes theme and the BLM GIS Timber Production Capability Classification (TPCC). The BLM GIS Lakes theme, for smaller wetlands, ponds and lakes, identified additional areas adjacent to local streams as wetlands. These sites mostly coincide with high water tables (symbol- FWNW, or fragile due to high water table, non-woodland) identified in the BLM GIS Timber Production Capability Classification (TPCC). All of these inventories are based on review of aerial photographs with variable field verification and thus small (<1 acre) areas with high water tables, ponds and/or wetlands are not always mapped, particularly when situated under forest canopy. Therefore, during field review of the project area, when additional locations with high water

tables, ponds and/or wetlands are identified, where appropriate, the TPCC, hydrology, and/or lakes GIS themes are updated to reflect these features.

Water Quality

Designated Beneficial Uses and Water Rights

The State of Oregon designates the beneficial uses for which all waters of the state are utilized. Water quality standards are ultimately meant to protect these uses. Specific beneficial uses of streams within the project area include municipal drinking water for Molalla and Canby utilizing an intake below the planning area; irrigation and domestic residential drinking water; salmon rearing and spawning; and resident fish and aquatic life.

Both resident and anadromous fish are adjacent to the main Molalla channel and some of its tributaries in the project area (see Fisheries report for more information). Additional beneficial uses include: Industrial Water Supply, Wildlife & Hunting, Fishing, Boating, Anadromous Fish Passage, Water Contact Recreation, Aesthetic Quality. Designated beneficial uses for the Willamette (including the Molalla River) may be viewed on-line at:

<http://www.deq.state.or.us/wq/standards/uses.htm>.

Two municipal water providers withdraw water from the Molalla-Pudding to treat and provide city residents with drinking water.

The Canby Utility Board (PWS# 4100157) and the City of Molalla (PWS #4100534) take water from the Lower Molalla several miles downstream of the planning area. A Source Water Assessment for each provider is available on-line at: <http://www.deq.state.or.us/wq/dwp/swrpts.asp>. The Assessment identifies potential sources of contamination within the watershed. Forestry and recreational-related activities were listed as a potential source of concern. In addition to withdrawals for municipal water consumption, there are withdrawals downstream of the project area for domestic use, irrigation and livestock watering. Maps are available online at: <http://www.wrd.state.or.us/OWRD/WR/index.shtml>

Oregon Department of Environmental Quality (DEQ)

The State of Oregon has established water quality standards “not to be exceeded” for all waters of the state. These standards are provided to protect the beneficial uses of the water. For the Willamette Basin these standards are published in the Oregon Administrative Rules, Chapter 340, Division 41, 442- of the Department of Environmental Quality (DEQ).

The DEQ’s 2004/06 303d List of Water Quality Limited Streams is a compilation of streams which do not meet the state’s water quality standards (<http://www.deq.state.or.us/WO/assessment/rpt0406.htm>). The Molalla-Pudding is listed for exceeding water quality standards for summer stream temperatures and portions of both rivers for exceeding *E. coli* bacteria standards. In response, the DEQ completed a Total Maximum Daily Load (TMDL) for the Molalla-Pudding which was approved by the EPA on December 31, 2008.

All the streams in the planning area are subject to the conditions of the Molalla-Pudding TMDL (<http://www.deq.state.or.us/WQ/TMDLs/willamette.htm#mp>). The TMDL targets the recovery or maintenance of *effective shade* (as measured by a solar pathfinder or similar instrument) along all perennial streams as a surrogate measure for the achievement of heat loading goals for reductions in stream temperatures to meet state standards. *E. coli* bacteria levels are within standards for the planning area and thus no TMDL was assigned to the portion of the Molalla River considered under this plan.

According to the TMDL, effective shade is a surrogate measure for the heat load a stream receives when it is exposed to direct sunlight and thus, maintaining or recovering site potential levels of effective shade should result in reductions in stream temperatures to levels that achieve state standards. In the planning area, the site potential for effective shade is estimated by use of effective shade curves and varies from 80-95% depending on stream channel orientation with a “near stream disturbance zone” of 25-50 feet (see Figure 3.44. in the TMDL: Effective Shade Curve – Western Hemlock Potential Vegetation Zone).

Under the TMDL, the BLM as a designated management agency must submit a Water Quality Restoration Plan (WQRP) for the Molalla-Pudding Basin which details how the BLM will implement the TMDL on federal lands. The plan is currently being completed by the BLM Salem District.

Water Quality- Bacteria Levels

High density recreation use has the potential to adversely impact water quality and in particular, levels of total coliform bacteria at undeveloped sites without bathroom facilities (coliform bacteria belong to the enteric bacteria group, *Enterobacteriaceae*, and consist of various species found in the environment and in the intestinal tracts of warm blooded animals). Research on dispersed recreational use was conducted on the Greenwater River¹, a forested stream system similar in size to the Molalla and with similar patterns of urban recreational use by Seattle residents on summer holiday weekends (e.g, vehicle traffic and day use in areas little to no sanitary facilities). The authors indicated that while dispersed recreational use of the river did result in increased bacterial contamination of the stream, it was concentrated immediately adjacent to the high use areas, did not exceed Washington State standards (same as State of Oregon standards) and the bacterial levels were not sustained. Nevertheless, the authors suggested that the levels of contamination during high use periods did constitute a risk for recreational users and/or drinking water (pg 103). From Varness, Pacha and Lapen:

Fecal coliform densities in the Greenwater River watershed never exceeded the 200-fecal coliform per 100 ml limit that has been recommended for primary contact recreational waters. Based on the State of Washington Department of Ecology criteria, using total coliform standards, the Greenwater drainage meets the requirements established for general recreational use of natural waters. However, the rapid and dramatic increases in bacterial densities associated with recreational use, compounded by the isolation of salmonellae from the relatively clean waters of the drainage over holiday use periods, suggest that there were potential public health hazards associated with the surface waters

of the drainage, particularly if the water was used for drinking. Thus, the present standards for recreational waters may be inappropriate.

In addition, the authors pointed out the hazards associated with the improper disposal of human waste in soils adjacent to aquatic systems. In spite of the absence of site specific data, it is reasonable to assume (based on similar patterns of use) that similar patterns of contamination are likely on-going in the main recreation corridor of the planning area. From Varness, Pacha and Lapen:

Recreational impact was also observed in the soil of the latrine areas of the watershed. High numbers of fecal coliforms in the soil of these areas indicate that they are potential reservoirs of pathogenic enterobacteria. Records (3, 15) show that disease outbreaks have been caused by the contamination of surface waters by surface runoff. Considering the proximity of many latrine areas to the surface waters, it is likely that waterborne disease outbreaks could occur.

The BLM has collected coliform bacteria data on the Molalla River at river miles 27, 31, and 39. River mile 27 is near the lower end of the BLM ownership, river mile 31 upstream near the Pine Creek Bridge (adjacent to Ivor's Wayside), and river mile 38 is near the Horse Creek Bridge. The physical and biologic water quality data were collected from 1993 through 1996. The combined data on the Molalla showed statistically noticeable increase in total coliforms in a downstream direction. This was also true in the summer/fall grouped data but not in the spring/summer data, suggesting that winter storms and stream-flows effectively "cleanse" the system between warmer weather, high use seasons.

All samples from the Molalla River were within ODEQ's standard for contact recreation of less than 200 fecal coliform per 100 milliliter (OAR 340-41-445 (2)(e)). However, samples were not focused on high use recreational sites nor were they collected to evaluate conditions at these sites during summer high use periods. The summer/fall data at river mile 39 were statistically higher than at river mile 31 but signify a small difference. Enterococci bacteria are fecal bacteria which are short lived outside warm-blooded animals so are indicators of recent fecal contamination. During the spring/summer period, enterococci increases in a downstream direction. No additional bacterial sampling data has been completed since this time.

In conclusion, although the available information indicates that current bacteria levels do not exceed statewide standards set by ODEQ, heightened levels of coliform bacteria at certain localized locations on the river (i.e. Ivor Davies Wayside) during periods of high swimming use could present some level of public health hazard including the outbreak of waterborne disease.

Water Quality - turbidity and fine sediment

Turbidities were measured on the Molalla River in the vicinity of the project area and major tributaries during or after five storms in 1996 to look for potential sources of turbidity. Grab samples were collected and turbidities measured in the office. Samples were compared with turbidities in other tributaries and the main-stem of the Molalla downstream of the watershed analysis boundary to attempt to identify the streams providing the greatest input.

Due to time and logistic constraints, many but not all major Molalla tributaries were sampled. The tributaries that exhibited the greatest number of high turbidity readings during storms compared with the main-stem Molalla River were Pine Creek, Mining Creek, Trout Creek, and Table Rock Fork Molalla.

No data was located to indicate if recreational use of streamside areas was contributing to fine sediment pollution of the main-stem Molalla River. Most of the recreational sites reviewed for this proposal are along the main Molalla river channel in a section of the river that is constrained in resistant basalt bedrock which is not highly susceptible to surface erosion. Cascades Resource Area personnel (hydrologist, fisheries biologist and recreational specialists) conducted field reviews of streamside recreation sites and concluded, based on visual evidence, that despite disturbance by recreational users accessing the river, the banks and gravel bars immediately adjacent to the Molalla are stable and surface erosion is minimal. Soil compaction and disturbance of vegetation is focused primarily on flat surfaces (mostly terraces and benches) adjacent to the Molalla River that are not accessed by flood waters. In conclusion, recreational use of these sites is not resulting in sufficient surface erosion to have a detectable effect on turbidity, sediment supply or water quality of the river.

Trail systems on the hill-slopes adjacent to the Molalla are a separate issue. Field reviews of conditions on trails within the Shared Use Trail System (many of which are unmaintained, logging roads) on the west side of the Molalla River have been conducted by Cascades Resource Area recreational personnel and the area hydrologist. Portions of these trails are not properly maintained or drained and the trail tread at some locations is muddy and unstable. The area hydrologist found several locations where trails were moderately to severely eroded and contributing fine sediment to tributary streams. In addition, blocked and/or poorly functioning culverts along these roads have resulted in fill erosion and diversion of stream channels at several locations.

3.8 Fisheries

Fish Populations

The Molalla River supports native populations of winter steelhead trout (*Oncorhynchus mykiss*), coastal cutthroat trout (*O. clarki clarki*; Behnke 1992), mountain whitefish (*Prosopium williamsoni*), largescale suckers (*Catostomus macrocheilus*), longnose dace (*Rhinichthys cataractae*), redbelt shiner (*Richardsonius balteatus*), and northern pikeminnow (*Ptychocheilus oregonensis*; USBLM 1999). Spring chinook salmon (*O. tshawytscha*) are native to the Molalla Basin. Introduced fish found in the Molalla River include resident rainbow trout and summer steelhead trout (primarily fish straying from adjacent rivers with hatchery runs of summer steelhead). Hatchery-reared summer and winter steelhead trout were released into the Molalla River in the past, but stocking of hatchery-reared steelhead ceased in 1997.

Listed Fish Species

Upper Willamette River (UWR) winter steelhead trout and UWR spring Chinook salmon are listed as 'threatened' under the Endangered Species Act of 1973 (ESA). Steelhead are found in approximately 78 miles of streams in the watershed, primarily using accessible tributaries for spawning and rearing, and the mainstem Molalla River for rearing and migration. The Molalla River is a key area for UWR winter steelhead production, with about 20% of the Willamette Basin winter steelhead produced in the Molalla watershed. Numbers of winter steelhead spawning in the watershed ranged from 1,000 to 4,500 during the 1980s, and declined to 200 to 500 spawners/year in the 1990s. More recently winter steelhead numbers have rebounded, with the mean of 1000 winter steelhead spawning in the Molalla basin. Hatchery-reared winter steelhead were released in the river system from 1969 to 1997, using a variety of hatchery stocks from Big Creek, Eagle Creek, North Santiam River, and Alsea River. Hatchery releases of winter and summer steelhead in the Molalla River Basin were stopped due to concerns about possible competition with the native winter steelhead run.

UWR spring Chinook salmon are found in the mainstem Molalla River, the North Fork Molalla, and in the Table Rock Fork, using approximately 39 miles of stream within the watershed.

In 1941, about 1000 spring Chinook spawned in the Molalla River basin. Mattson (1948) estimated the run size to be 500 in 1947. Spring Chinook salmon numbers have declined since the 1940's. Most spring Chinook salmon (>95%) now returning to the Molalla River are of hatchery origin. The hatchery fish are derived primarily from native stocks from other portions of the Willamette Basin. Hatchery-reared spring Chinook fry and smolts have been released in the Molalla River by ODFW since 1981 to reestablish the Molalla river run of spring Chinook.

Fisheries and Aquatic Habitats

Most fisheries and riparian habitats on federal lands on the Molalla River are in fair to good condition. Large areas of riparian forest stands adjacent to the Molalla River are vegetated with young forest stands with low potential to supply large wood (LW) to aquatic habitats. Within sub-watersheds of the Molalla River, 7 to 40% of riparian stands have high potential to contribute LW to aquatic habitats. The Molalla River in the Upper Molalla, Bear Creek, and Horse Creek sub-watersheds was rated as having good pool frequencies, but LW numbers were low in these sub-watersheds.

Low numbers of in-channel LW results in less habitat complexity, cover, and availability of spawning gravels. Recommended management to improve fisheries habitat in the Molalla River included riparian stand management to promote and accelerate older-aged forest characteristics, reducing the number of roads in the Molalla River basin, adding LW to increase aquatic habitat complexity, and restoring flows to secondary channels by reconnecting floodplains. Additionally, mitigation of recreation impacts by hardening or limiting recreation access to streambanks, and designating camping areas was recommended.

3.9 Wildlife

This section describes the affected environment for wildlife on BLM lands in the Molalla River/Table Rock Special Recreation Management Area (SRMA). The information for this narrative comes from the Molalla River Watershed Analysis (1999), BLM Wildlife Observation Databases, recent Stand Exam and Forest Inventory information, and a review of the existing literature. The Molalla River/Table Rock SRMA is located in the Upper Molalla River Sub Basin of the greater Molalla River Watershed.

The Molalla River/Table Rock SRMA offers rich wildlife resources and habitat in the region. Notable mammals known to occur include elk, black-tailed deer, black bear, coyote, cougar, bobcat, river otter and beaver. Some notable breeding birds include golden eagles, Northern spotted owls, harlequin ducks, and a variety of Neotropical migratory birds.

Wildlife Special Status Species

Table 10 lists Special Status Species which are documented or suspected to occur on BLM lands in the Molalla River/Table Rock SRMA. The narrative that follows describes the species of most concern in the SRMA.

Harlequin ducks are known to occur in the Upper Molalla River tributaries. They are thought to be mostly migratory on the main stem of the Molalla, moving between their wintering grounds on the coast to breeding habitat further upstream. Extensive surveys were conducted during the 1990s, but none have been conducted in recent years.

There are no known **bald eagle** nest sites located in the upper Molalla River Watershed. There are two nest sites further downstream in the Lower Molalla. Bald eagles have been observed on rare occasions during the winter months as far upstream as the Turner Bridge.

Golden eagles have been known to nest in the Molalla River/Table Rock SRMA. There was a pair in the Bear Creek area during the 1980s and 1990s. Dispersed campsites and the Bear Creek road were closed later in the early 2000s, but no nesting pairs have been observed here since the 1990s. In recent years, there have been sightings further away from the river corridor, including a pair and single birds observed in High Camp and the Pine Rock areas.

The **peregrine falcon** is a Bureau Sensitive species. It is likely to occur as a rare migrant and could possibly occur during the breeding season. It has been documented in adjacent watersheds to the north and east. There are suitable nesting cliffs available in the Table Rock, High Camp, and Pine Rock areas that have not been surveyed for falcons.

The **northern goshawk** is a rare summer resident and breeder in the Western Oregon Cascades that prefers mature or old-growth forests with dense canopy cover at higher elevations. There are no known nest sites in the Molalla River/Table Rock SRMA, but they have been observed during the nesting season at Lost Creek, and Pine Rock and likely breed in the SRMA.

The **Northern spotted owl** is the only threatened or endangered terrestrial wildlife species known to occur in the Molalla River/Table Rock SRMA. As part of the Molalla River/Table Rock SRMA analysis, overall habitat conditions for northern spotted owls on BLM lands were classified as either suitable for nesting and foraging, dispersal or non-suitable habitat. Non-suitable habitat was further classified as either capable of becoming suitable habitat, or non-forest habitat not capable of becoming suitable over time. The results are shown in Table 10.

Table 10: Spotted Owl Habitat	
Habitat Type	Acres within Planning Area (percent)
<i>Non-Habitat</i>	1,059 (4%)
<i>Capable</i>	6,345 (23%)
<i>Dispersal</i>	5,810 (21%)
<i>Suitable</i>	14,191 (52%)
TOTAL	27,405 (100%)

Based on the habitat data above, and the spatial distribution of habitat, the majority of the Molalla River/Table Rock SRMA is viable for nesting and dispersing spotted owls. The one exception is the lower portion of the Molalla River Corridor north of about Bear Creek, which is not viable for nesting or dispersal due to the lack of suitable habitat and its proximity to the Willamette Valley.

There are currently 9 known spotted owl sites located on BLM lands in the Molalla River/Table Rock SRMA. The number of barred owl sightings in the Molalla River Corridor has increased in recent years. Barred owls compete directly with spotted owls for territory and to a lesser extent prey. They are more aggressive than spotted owls and broader in their habitat requirements.

There are a number of **Neotropical Migratory birds** known to occur in the Molalla River/Table Rock SRMA. Neotropical Migratory birds are those birds that breed in northern latitudes and migrate to the neotropics for the winter. They face a number of unique threats due to their migratory habits that stretch from their breeding grounds, across international boundaries as they migrate to and from their wintering grounds in the tropics. Some of these threats include loss of quality breeding and wintering habitat, pesticides and hazards presented by man made structures such as buildings, windows, towers and wind turbines.

The focal bird species for the coniferous forests of Western Oregon and Washington include band-tailed pigeon, rufous hummingbird, olive-sided flycatcher, Wilson’s warbler, and orange-crowned warbler, all of which are migratory and appear to be declining Other species known or suspected to occur in the Molalla River/Table Rock SRMA that appear to be declining include the ruffed grouse, Cooper’s hawk, red-breasted sapsucker, western wood pewee, willow flycatcher, Cassin’s vireo, golden-crowned kinglet, Western bluebird, Swainson’s thrush, Hermit thrush, Cedar waxwing, yellow warbler, MacGillivray’s warbler, red crossbill.

There are a variety of amphibian species that are known to occur in the Molalla River/Table Rock SRMA, including the **Oregon slender salamander**. The Oregon slender salamander, a Bureau Sensitive species, is found exclusively in the northern Oregon Cascades up to elevations of 4,500 feet. Its distribution appears to be limited by dry conditions at low elevations along the Willamette Valley floor, and by cold conditions at higher elevations (Dowlan, unpublished

2006). Habitat is generally described as conifer stands dominated by Douglas-fir with large amounts of down logs and woody material in more advanced stages of decay. Optimal habitat is generally described as late-successional forest conditions. However, the Oregon slender salamander has been found in stands across the full range of seral stages where suitable down logs and woody material exists.

Wildlife Habitats

Terrestrial habitats within the Molalla River/Table Rock SRMA include mixed conifer-hardwood forests and coniferous forests in all stages of succession; dry meadows, cliffs, outcrops and talus slopes. Aquatic resources include the Molalla River, major tributary streams such as Gawley, Horse, Camp and Lost Creeks; springs, wet meadows, and wetland habitats with their associated riparian vegetation.

Of the lands acquired by BLM in 1992 land exchange, the highest quality wildlife habitats are the riverine and streamside riparian habitat along the Molalla River itself.

Lands acquired from Private Industrial landowners in the uplands have been managed for timber and lack stand structure and diversity characteristics such as snags, coarse woody debris (CWD), species composition and spacing.

There are a good number of high value wet meadows and wetlands in the Molalla River/Table Rock SRMA including the Molalla Oak meadows, Lost Creek meadows, Horse Creek wetland and Aquila Vista wetland. These special habitats are critical for a large number of wildlife species which are dependent on them to meet some or all of their life history requirements. Species which are dependent on these habitats include the evening fieldslug (*Derocerus hesperium*), great blue heron, red-legged frog and various waterfowl species.

Standing dead and down CWD provide essential habitat, structure and function across Molalla River/Table Rock SRMA. CWD is an important pool of energy, carbon, and nutrients in ecosystems and has an impact on site productivity. Many vertebrate and invertebrate wildlife species find their primary habitat in standing dead snags, culls, down logs and CWD. Inventory and stand exam data for the BLM lands in the Molalla River/Table Rock SRMA show that there are very few snags in stands in the early, open or closed canopy seral stages. Standing dead snags and decadent live trees are scarce resources on in the Molalla River/Table Rock SRMA, and are most numerous and characteristic in older forest stands, which are found mostly at higher elevations of the upper reaches of the SRMA.

In general, disturbance factors in the Molalla River/Table Rock SRMA are concentrated in the Molalla River Corridor below the Table Rock/Copper Fork confluence; in some of the upland areas in Pine Rock area; and in the vicinity of the Molalla Oak Meadows potential ACEC. Some of these areas are within home ranges of spotted owls and golden eagles, and the potential ACEC contains valuable special habitats that are in need of protection. Currently, disturbance factors from human use are high in these areas. In the vast majority of the watershed, disturbance factors are fairly low, including areas with gated road systems and steep inaccessible reaches which receive little human use.

Table 11: Species of Concern and Special Status Wildlife

Occurrence	Species & Status	Habitat Description
Invertebrates		
S	CALLOPHRYX JOHNSONI BS Johnson's Hairstreak	Cool, moist, old-growth conifer forests of the Pacific Northwest, primarily west of the Cascade Mountains. In Oregon, records are from elevations over 2,000 feet. Feeds on dwarf mistletoe associated with Western hemlock. Could occur in forests that contain dwarf mistletoe, however, dwarf mistletoe is not common or widespread in the Molalla River Corridor.
D	DEROCERUS HESPERIUM BS Evening fieldslug	Occurs in wet meadows in forested situations in a variety of low vegetation, litter, debris and rocks. Known to occur in the Molalla River Watershed.
D	GLIABATES OREGONIUS BS Salamander slug	Type locality is in leaf litter under bushes in mature conifer forest at elevation of 600' in east side of the Oregon Coast Range. Specimens found in Mt. Hood and Willamette N.F. and Salem BLM that fit this description were referred to as "axe-tail" slugs. Known to occur in the Molalla River Corridor.
S	GONIDEA ANGULATA BS Western ridged mussel	Substrates of lakes, streams, and rivers that range in size from gravel to firm mud with the presence of at least some fine material (e.g. sand, silt or clay). Preferred sites generally have constant flow, rather shallow water (typically < 3 m in depth), and well-oxygenated substrates, especially when occurring in finer sediments. Could occur in the Molalla River and some of its tributaries.
D	HEMPHILLIA MALONEI SM Malone's Jumping Slug	Common in moist forested habitats over 50 years of age and 50%+ canopy cover below 4000 feet with dense sword fern, conifer coarse woody debris, exfoliated bark and large decaying stumps. It has also been found in marshy open sites with skunk cabbage, fallen logs and low vegetative cover.
D	MEGOMPHIX HEMPHILLI SM Oregon Megomphix	Common in moist conifer/hardwood forests of all ages below 3000 feet. Usually in hardwood leaf litter and under bigleaf maple. The species may be present in the absence of bigleaf maple, in moist sites with deciduous shrubs, coarse woody debris, rotten logs, stumps and sword ferns.
Herpetofauna		
D	BATRACHOSEPS WRIGHTFORUM BS/SOC/SU Oregon slender salamander	West slope of Cascades. Prefers down logs and woody material in more advanced stages of decay. Most common in mature and old-growth conifer forests. Known to occur in the Molalla River Corridor.
Birds		
D	ACCIPITER GENTILIS SOC/SC Northern goshawk	Rare Summer resident in Cascades. Prefers mature or old-growth forests with dense canopy cover at higher elevations. Winters at lower elevations.

Table 11: Species of Concern and Special Status Wildlife

Occurrence	Species & Status	Habitat Description
D	AQUILA CHRYSAETOS Golden Eagle	Typically found east of the Cascades in open areas. Very rare resident west of the Cascades. Forages in recent clearcuts, and nests on cliffs or large trees. Known to nest in the Molalla River/Table Rock SRMA.
D	CONTOPUS COOPERI SOC/SV Olive-sided flycatcher	Remnant large trees/snags in forest openings/edges and open forests, high contrast old/young edges. Migratory, arrive late May, leave late August.
D	EMPIDONAX TRAILLII BRHS/THRI SOC/SV Little willow flycatcher	Dense shrub and early seral stages, prefers the wet sites/riparian zones. Migratory, arriving in mid May 15, most leave early September.
S	FALCO PEREGRINUS ANATUM BS/SE American peregrine falcon	Rare during the nesting season. Usually occurs as a transient/migrant and winter visitor. Found in a variety of open habitats near cliffs or mountains. Prefers areas near larger bodies of water and rivers. Peregrine falcons have not been observed in the Upper Molalla River Watershed but there are suitable cliff habitats present that has not been surveyed.
D	HALIAETUS LEUCOCEPHALUS BS Bald eagle	Rare summer resident and winter visitor in Cascades. For nesting and perching, prefers large old-growth trees near major bodies of water and rivers. There are no known nest sites in the Molalla River Corridor, but they have been observed during the winter.
D	HISTRIONICUS HISTRIONICUS BS/SOC/SU Harlequin duck	An uncommon summer resident found in whitewater mountain rivers and streams during nesting season. Winters on rocky coasts. Known to occur during migration on the main stem and known to nest upstream on the major tributaries of the Molalla.
D	MELANERPES LEWIS BS/SOC/SC Lewis' woodpecker (Willamette Valley)	Formerly a common summer resident and uncommon winter visitor in Willamette Valley. Oak woodlands and hardwood forests. Transient on Salem District in fall along high divides.
D	PATAGIENAS VASCIATA SOC Band-tailed pigeon	Nests in closed-canopy forest; forages in open-canopy forest. Keys in on mineral sites and berry producing plants. Migratory, most arrive in March, leave in October.
D	STRIX OCCIDENTALIS CAURINA LT/ST Northern spotted owl	Permanent resident. Prefers mature and old-growth conifer forests with large down logs, standing snags in various stages of decay, high canopy closure and a high degree of vertical stand structure. There are 9 known spotted owl sites on BLM lands in the planning area.

Table 11: Species of Concern and Special Status Wildlife

Occurrence	Species & Status	Habitat Description
Mammals		
D	ARBORIMUS LONGICAUDUS SOC/SM Oregon red tree vole	An arboreal canopy species thought to be associated with late seral/old-growth Douglas-fir stands to about 3,500 feet elevation. Has been found in mid seral stages in the Molalla River/Table Rock SRMA.
S	CORYNORHINUS TOWNSENDII BS/SOC/SC Townsend's big-eared bat	Feeds on flying insects in a variety of habitats in forested areas. Primary habitat is caves, rock outcrops, buildings and abandoned mines. Suspected to occur in the Molalla River Corridor.
S	LASIONYCTERIS NOCTIVAGANS SOC Silver-haired bat	Associated with snags, loose bark and cliff/cave habitat. Forages in a variety of forest habitats and riparian areas. Suspected to occur in the Molalla River/Table Rock SRMA.
S	MYOTIS EVOTIS SOC/SU Long-eared myotis	Associated with snags, loose bark, buildings and cave habitat. Prefers older forests. Forages over water and riparian areas. Suspected to occur in the Molalla River/Table Rock SRMA.
S	MYOTIS VOLANS SOC/SU Long-legged myotis	Associated with snags, loose bark and cliff/cave habitat. Prefers older forests. Forages over water and riparian areas. Suspected to occur in the Molalla River/Table Rock SRMA.
S	MYOTIS YUMANENSIS SOC Yuma myotis	Associated with snags, buildings and cliff/cave habitat. More closely associated with riparian areas than the other myotis. Prefers older forests. Forages over water and riparian areas. Suspected to occur in the Molalla River/Table Rock SRMA.

KEY

Occurrence:

S = Suspected (highly likely to occur)
D = Documented to occur

SE = State Endangered
ST = State Threatened
SC = State Critical
SV = State Vulnerable
SU = State Uncertain

Status:

LT = Federal Threatened
SOC = Species of Concern
BS = Bureau Sensitive

3.10 Invasive Non-Native Plants and Botany

3.10.1 Invasive Non-Native Plants

The Molalla River/Table Rock Special Recreation Management Area (SRMA) is very similar in its composition, abundance and distribution of invasive non-native species to other watersheds along the west slopes of the Cascades Range in northwest Oregon. With the exception of a few species within the SRMA, all identified invasive species are regionally abundant and ubiquitous in their distribution. Common invasive species are most often found within road corridors, along

trails and in areas with ground disturbance. All of the identified invasive species within the SRMA are highly dependent on high light levels and are poor competitors with native vegetation. To date the impact these species have had on the native plant community has been light and this pattern is expected to remain the same.

Distribution and spread of these species occurs by three means. These include, human, animals and environmental. The environmental (i.e. wind, natural seed dispersal) spread of invasive species is anticipated to remain at the same level regardless of the level of recreational use. Animal, when including domesticated animals, as well as the human contribution to the rate of spread is anticipated to increase as the level of recreational use increases. This spread is likely to be the greatest within the road corridors and trail systems.

Species not currently known from within the SRMA will likely be introduced from seed brought in on animal (i.e. dog, horse) fur, in horse dung, and through off-road-vehicle (i.e. mountain bikes, ATV's) use.

3.10.2 Other Botanical Resources

Diverse botanical habitats that host unique and varied botanical communities are found scattered throughout the SRMA. These habitats range from basalt rock formations that host hardy drought tolerant species to moist conifer forest and riparian areas with shade loving species, to high elevation rocky ridge tops that experience extreme weather conditions. The habitats adjacent to the Molalla River range from conifer forest and riparian areas to the moss covered basalt rock formations of the Molalla Oak Meadows.

No Threatened or Endangered species have been located or documented to date. Species with special status within the SMRA are either Survey and Manage (S&M) or Special Status Species (SSS). These species are known to exist from the lowest elevations near the Molalla River to the highest elevations atop Table Rock, in the Table Rock Wilderness and are from the vascular plant, fungi and lichen groups. Due to the diverse habitats that exist within the SMRA, many additional S&M and SSS are likely to occur throughout the area. Although some S&M and SSS sites are located close to travel corridors along trails and roads, these sites have not been negatively impacted by recreational users and this trend is anticipated to remain the same.

Molalla Oak Meadows/Potential Area of Critical Environmental Concern (ACEC)

The Molalla Oak Meadows consist of a series of intact remnant oak woodlands with thin rocky soils that supports a unique native prairie flora as well as scattered Oregon white oaks. Together the meadows and surrounding forest within the Potential ACEC total approximately 205 acres. The ecological and botanical features within these meadow areas are found scattered along the south facing slopes of the Molalla River.

These meadows represent a unique ecotype with natural systems and geologic features seldom seen in the Salem District. Many similar areas that once contained plant communities and features like those within the meadows have succumbed to successions with the removal of fire from natural process and with forestry related habitat modification and ecotype conversion from oak woodlands to conifer forest.

The Molalla Oak Meadows are a representative sample of the transition from Willamette Valley oak woodlands to the west slope Cascade Range conifer forest habitats.

3.11 Silviculture

Age class distribution and Seral Stage is an important component in describing the overall structure of the vegetation and patterns across an area. Age classes in the proposed Molalla/Table Rock SRMA in BLM ownership have been categorized into age class bands corresponding to vegetative seral stage development and size class of trees based on Diameter at Breast Height (DBH).

Information on vegetative conditions was derived from BLM Forest Operations Inventory (FOI) records updated in 2010 on BLM lands. According to FOI data, BLM forest types in the Molalla SMRA consist primarily of Douglas-fir (*Pseudotsuga menziesii*) dominated stands, with components of big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), western red-cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*), with noble fir (*Abies procera*) and Pacific silver fir (*Abies amabilis*) in the higher elevations.

Table 12: Seral Stages on BLM-administered Lands		
<i>Seral Stage</i>	<i>Acres</i>	<i>Percent of SRMA</i>
Barren/Water/ Rock Age Class: 0 Size Class (Diameter Breast Height) n/a	1,000	4%
Grass/Forb Age Class: <10 years Size Class (DBH): n/a	186	1%
Open Sapling/Brush Age Class: 10 to 39 years Size Class (DBH): less than 10"	5,205	19%
Closed Sapling Age Class: 40 to 79 years Size Class (DBH): 11 to 20"	6,751	25%
Mature Age Class: 80 to 199 years Size Class (DBH): 21 to 31"	12,266	45%
Old Growth Age Class: 200+ years Size Class (DBH): >30"	1,996	7%
TOTAL	27,405	100%

Most of the Upper Molalla watershed is in the western hemlock zone. This is characterized by forests with western hemlock in the overstory during the climax seral stage and Douglas-fir as the sub climax overstory species. Upper elevations are in the Pacific silver fir zone characterized by forest with Pacific silver fir dominated during the climax seral stage.

According to current FOI data, approximately 95 percent of the proposed Molalla/Table Rock SRMA is in conifer types; approximately 1 percent is in hardwood types, with 4 percent in non-forest types such as roads, rock quarries, rock outcrops, meadows, water, or other natural openings.

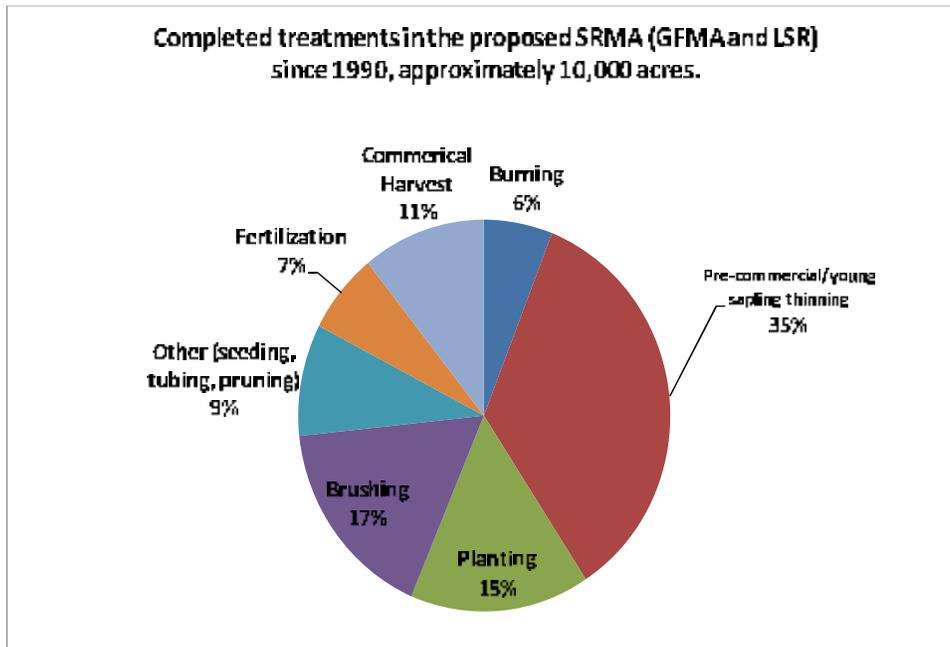
Most of the seral stage present throughout the project area on BLM ownership is divided between the Open Sapling/Brush, Closed Sapling and Mature forests. Only 5% of the project area is listed as being non-forest/grass, and only 7% was listed as being in the Old Growth forest type.

Past and Ongoing Timber Management Actions in the Planning Area

Since 1990, approximately 10,000 acres have been treated through various means throughout the GFMA and LSR land use allocations, with additional acres proposed for future treatments. Treatments include but are not limited to: commercial harvest, pre-commercial or young sapling thinning, manual brushing, girdling and tree planting. In several areas, multiple treatments have occurred: i.e. planting with tubing, manual brushing with pre-commercial thinning etc.

Table 13: Completed Silvicultural Treatments 1990 to Present (GFMA & LSR only)		
Treatment Type	Acres	%
Burning (pile burn, broadcast)	689	6%
Pre-commercial/young sapling thinning	3482	35%
Tree planting	1556	16%
Manual brushing	1690	17%
Fertilization	665	7%
Commercial Harvest	1074	11%
Other (seeding, pruning, trapping)	925	9%
Total	9981	100%

Figure 5: Completed Silvicultural Treatments 1990-2010



Timber Harvest within the Planning Area

Silvicultural treatments and timber harvest have occurred and will continue in the GFMA and LSR land use throughout the planning area in accordance with the Salem District RMP (see section 1.7.1 BLM land Use Allocations). The abundance of Open sapling and Closed sapling seral stages within the GFMA and LSR land use allocations indicate the likelihood of proposed commercial thinning or density management projects in the next several years on BLM ownership. The presence of even-aged conifer stands within the proposed project area illustrates the level of timber harvest that once occurred between 20 to 80 years ago in these areas.

The "Annie's Cabin Commercial Thinning" sale is currently proposed in the planning area. This timber sale involves 570 acres of second-growth thinning, with several units to be thinned with trees removed by helicopter. This timber sale was sold in 2007, and is scheduled for harvest within approximately the next 1-5 years. Some of the proposed haul routes are old logging roads to be renovated and currently used as recreation trails.

3.12 Fire /Rural Interface Areas

Disturbance Regimes and Ecological Effects

Many disturbance factors continue to operate within the Upper Molalla watershed including wind, fire, floods, insects, disease and human influence. Second only to human influence, fire remains the most influential disturbance factor over the landscape and causes the greatest ecological effects over space and time.

Common forest types found in the planning area include Western Hemlock and Pacific Silver fir. These types generally lack the fine fuel loadings found in other forest types and are characterized by deep duff and heavy loading of large logs. The resulting fire hazard is usually low to moderate, depending on weather conditions in a given year. Most years the associations in this group retain moisture well and are slow to dry. Once the duff dries, however, it will carry fire. Prolonged smoldering in deep duff and punky logs is common. In these stands, high severity stand replacing fire will dominate during large fires.

In and adjacent to wet riparian areas, major stand replacement fires occur in 300 to 800 year intervals. In drier mid and upper slope areas, stand replacement fires are interspersed with mixed severity fires. Mixed severity fires occur at 50 to 150 year frequencies, while stand replacement fires occur at 250 to 500 year frequencies. This pattern is largely responsible for the dominance of Douglas Fir in these landscapes.

From a historical perspective, the watershed was more complex and resilient prior to large-scale forest management than it is now. Disturbance did not have an adverse effect but added or maintained complexity and diversity. Timber harvest has changed the forest to a less complex system. Fire has been virtually eliminated from the ecosystem. Older forests are now young to early mid-age (50-100 years) and structural complexity has been reduced.

Fire Behavior

The physical setting for the Cascades has major west-east lying mountain drainages. This allows for the creation of strong up-canyon winds in the afternoon during the late spring, summer and early fall. The west to east oriented drainages also provide funneling to strong, dry east winds that can occur unpredictably. During the summer and fall seasons, these dry, warm winds reach velocities of 30 to 40 miles per hour, with stronger gusts over the higher ridges and down east-to-west oriented drainages. East winds are important because they often occur when fuel moistures are at critically low levels. Large wildland fires igniting on the lower and middle thirds of slopes may spread to ridgelines before safe suppression action can be taken.

In temperate ecosystems like the Pacific Northwest, biomass accumulates faster than it decomposes. New studies have linked occurrence of wildfire with global weather changes such as El Niño/La Niña and global warming. Virtually all climate-model projections indicate that warmer springs and summers would occur over the region in coming decades.

The trends would reinforce the tendency toward early spring snowmelt and longer fire seasons which would have the potential to accentuate conditions favorable to the occurrence of large wildfires.

Fire History

Cadastral surveys of the townships within the upper Molalla Watershed completed during the nineteenth and early twentieth centuries provide information on historical forest conditions and the role of fire in the watershed. Records and forest inventory data indicate the occurrence of large, stand replacement fires in the second half of the nineteenth century. The general description of T.7 S., R.3 E by Jesse Moreland, written in December of 1868 states:

This Township is for the most part over rugged mountainous land; the Southern part being too much cut up with deep rocky canyons to be surveyed. A great part of the timber had been destroyed by fire.

William Bushey in 1882 surveying T. 7 S., R. 3 E., Sec 12 and 13, writes:

Land mountainous and hilly-Soil 3rd rate. Dense forest of fir, pine, and cedar. Timber all dead. Scattering of hazel and maple brush.

These are but a few examples of fire effects on the landscape with many more examples of fire effects throughout the cadastral notes. These descriptions can be correlated to the forest stand ages that range from 100 to 150 with few stands of old growth.

Recent Fire History

Human caused fires are responsible for the majority of fires in Clackamas County. The North Cascade District of the Oregon Department of Forestry provides fire protection and first response services for BLM-administered lands in the Salem District. In order to provide a picture of fire risk on lands it services throughout the county, ODF provides information regarding fire causes over the past decade through its Clackamas County Wildlife Protection Plan. According to ODF, debris burning has been the number one cause of fires on forest lands in Clackamas County. Over 166 fires in the past ten years have been caused by debris burns.

The second leading cause of fires in the North Cascade District is recreation. Campers and other visitors to the forest have been responsible for 85 fires in the last ten years. Recreation presents an inherent fire risk in the form of unattended campfires, lit cigarettes and other fire sources. Regular patrols by ODF staff focused in high use recreation areas like the Molalla River-Table Rock area and fire season use restrictions have been put in place to mitigate this risk.

Fire Hazard Rating/ Fire Risk and Values At Risk

Fire hazard ratings provide an index of resistance to control a wildfire and are based on vegetation, fuel arrangement and volume, condition and location. All are determinants of the potential for spread of a fire and difficulty of suppression.

Fire risk reflects the probability of ignition in a given area. Fire risk is higher than in other watersheds in the Cascade Resource Area because of the amount of dispersed recreation that occurs. An added potential for fire starts within the planning area due to heavy recreation use has resulted in a series of fuel treatment between 2007 and 2009. These treatments include pruning, cutting brush, chipping, piling and burning, and machine treatments within 50 feet of the South Molalla Forest Road.

Values at risk provide an index of resource and human values that could be affected by wildfire. The lower end of the watershed would be given the highest value because of the proximity to private residences. The upper portion of the watershed has timber values but no structures.

Wildland/Urban Interface

Wildland / Urban Interface (WUI) is a term used to describe the area where developed lands meet undeveloped lands. The developed lands can be homes, businesses or agricultural lands. Under the Healthy Forest Restoration Act of 2003 the term “at risk community” means either the interface community or a group of homes and other structures with basic infrastructure and service (such as utilities and collectively maintained transportation routes). Molalla and Glen Avon would be considered such communities.

From the viewpoint of fire management the WUI creates many problems because of the people and property which may be in jeopardy during wildfire events. Access to these areas is typically limited and the attitudes, values and capabilities of the people living there vary tremendously. Together these elements present firefighting personnel with a very complicated situation, often requiring more firefighters and equipment to insure the safety of both the residents and the firefighters.

The constricted pattern of access, with much of ingress and egress coming on a single arterial road, presents additional challenges for management of a wildfire within the planning area. In the case of a large-scale fire during the high use season, substantial pressure would be placed on the S. Molalla Forest Rd and Horse Creek Rd systems.