Chapter 9
CONDITIONS, TRENDS, & PROJECTIONS

INTRODUCTION

This chapter is a profile of Missoula County's human and natural resources. The information provides an overall picture of existing conditions and projected trends for the life of the growth policy, or 20 years. More detailed information and analyses are available from other sources including regional area plans and issue-specific plans. This chapter begins with an overview of the county followed by three main sections: landscapes, livelihoods and communities. Throughout this chapter the key trends are linked to action plan elements found in Chapter 2.

Missoula County Overview

Missoula County encompasses 1,675,584 acres or approximately 2,600 square miles, which is roughly equivalent to the size of Delaware. Missoula County ranks 25th for land area among Montana counties. Approximately 104,691 acres in the county are located within the Confederated Salish and Kootenai Tribes' Flathead Reservation. (See Map 1 in Chapter 1.)

The 2015 population of Missoula County is estimated to be 116,076 people, which ranks second in Montana for population behind Yellowstone County. Missoula County has an overall population density of approximately 43 persons per square mile, which is significantly denser than the state's population density of 6.8 persons per square mile. The City of Missoula is the only incorporated community in the county with an estimated 2015 population of 71,967 residents and an approximate population density of 2,428 persons per square mile. Outside of the city, Missoula County has an approximate population density of 17 persons per square mile.

Missoula County is governed by the Board of County Commissioners, which has three elected members who serve staggered six year terms. Seven areas of the county have community councils, established by the county commissioners to act as liaisons between residents and the commissioners and to advance and promote the interests of local residents. The community councils include:

- Bonner – Milltown
- East Missoula
- Evaro – Finley – O'Keefe
- Lolo
- West Valley
- Seeley Lake
- Swan Valley

Map 5 in Chapter 3 shows the community council areas.

LANDSCAPES

Missoula County is rich in natural resources that have influenced the character and economy of the region. This section provides an overview of the county's climate, soils and geology, water, biological, and air resources. In addition to the maps provided here, please refer to the PLACE Project Atlas of Conservation and Community Resources for more information: http://gis.missoulacounty.us/caps/place/.

Climate

Missoula County's climate is semiarid, with 12 to 15 inches of annual precipitation spread fairly evenly throughout the year. Winters are moderately cold with occasional arctic air masses creating short periods of subzero temperatures. Summers tend to be hot and dry, with cool evenings.

Increasing evidence indicates that the earth's atmosphere is warming and that climate change is projected to accelerate. Missoula's annual mean air temperature increased about 2.5 degrees Fahrenheit over the 60 years prior to 2014. The number of frost free days also increased over this same period.

According to a Geos Institute report for the Missoula area,[1] climate-related changes with a high degree of probability in Missoula County include:

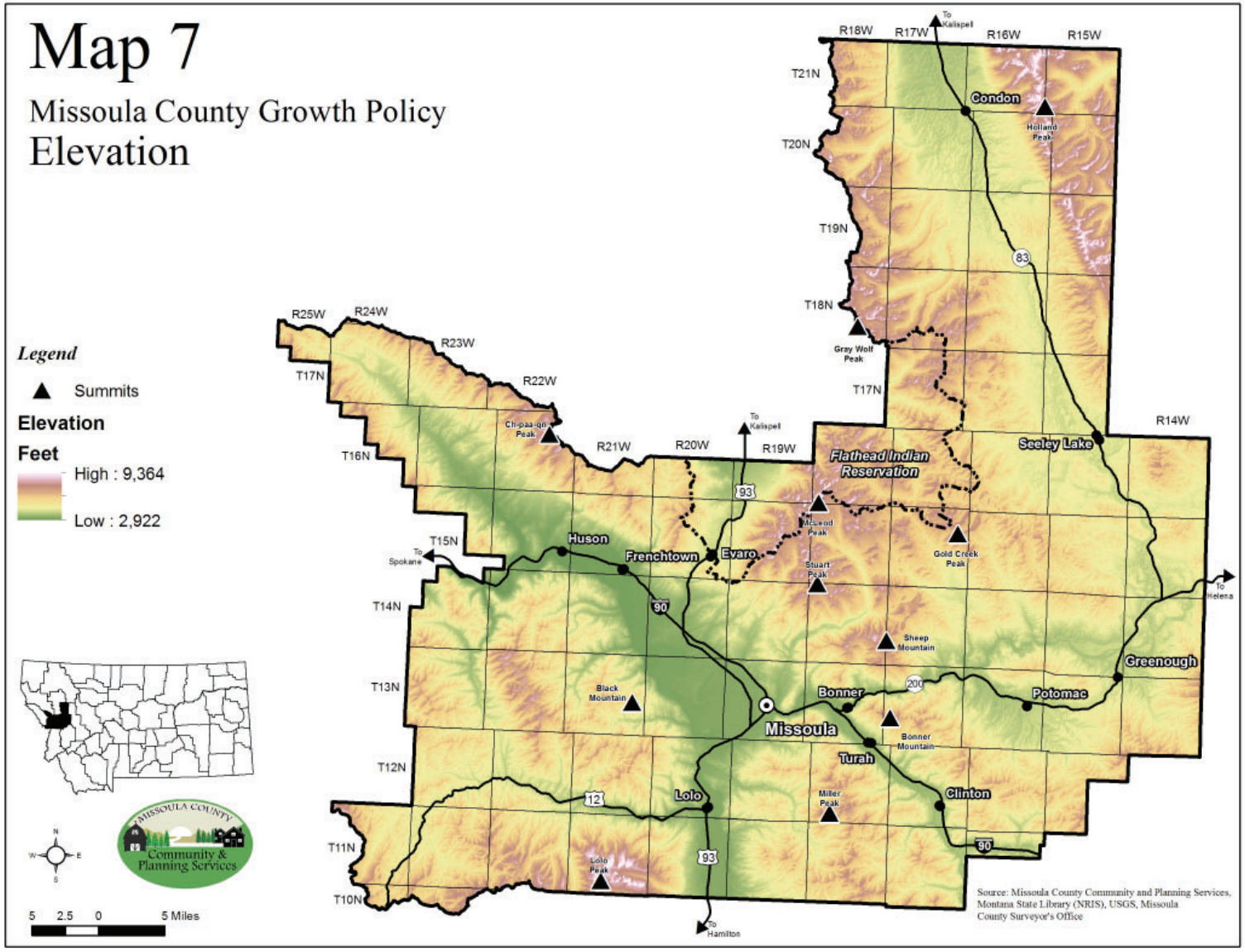
- Two to five degrees F warmer by 2035-2045
- Lower stream flow for an extended period in late summer with warmer overall stream temperatures
- Earlier and greater spring runoff
- Shifts in species ranges for wildlife and plants
- Greater likelihood of severe wildfire
- Increased spread of invasive plants and animals

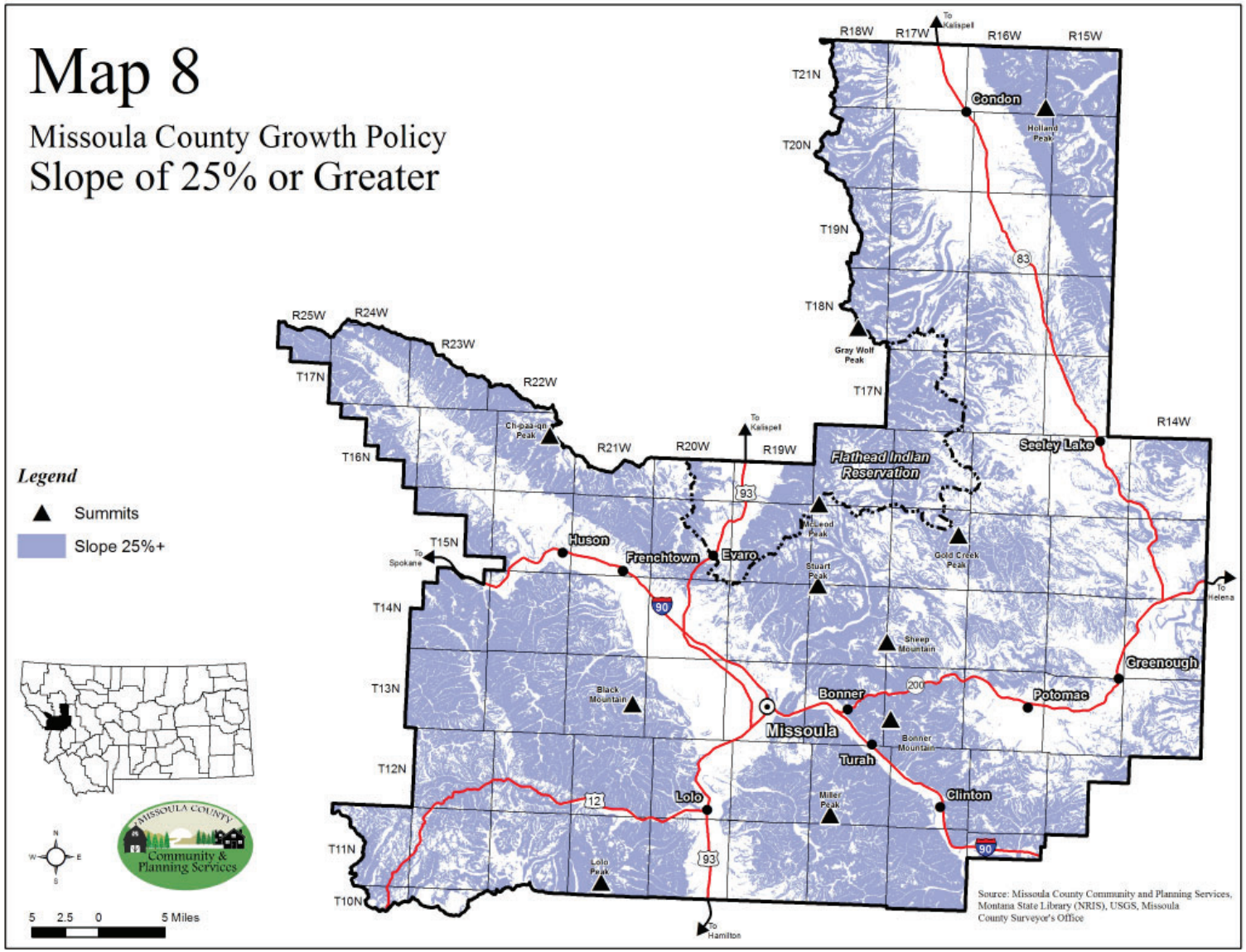
Potential implications of climate-related changes are described in a background document provided to participants in a ClimateWise workshop held in 2011.[2] The report from the workshop concludes that Missoula County may also be impacted by changes occurring in other parts of the country. Among the concerns identified at the workshop were:[3]

- More people moving to the area due to sea level rise and climate change impacts in other parts of the country
- Increased demand for domestically-produced energy, leading to increased area of land used for local production and new transmission corridors
- Increased demand for water for a growing population
- Higher land prices making it more expensive to produce local food
- Disproportionate effect of climate change on low-income populations
- Increased demand on food production capacity

Missoula County intends to take several steps to address climate change. Such steps include adopting a green building program; supporting alternative energy sources, encouraging multi-modal transportation, supporting local agriculture and businesses; encouraging more compact development; and minimizing development in the wildland urban interface. See Chapter 2, Goal 4.

Adapting to climate change poses challenges and opportunities for managing resources, infrastructure, and the economy. Missoula County will work with partners who are monitoring climate change and potential impacts to local communities. Preparation for and adaptation to potential impacts will be considered in resiliency planning.


Map 7
Missoula County Growth Policy
Elevation
Legend
Summits
Elevation
Feet
High : 9,364
Low : 2,922
Missoula County
Community & Planning Services
5 2.5 0 5 Miles
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
To Kalispell
To Spokane
To Helena
To Hamilton
Condon
Holland Peak
Gray Wolf Peak
Chi-paa-qn Peak
Seeley Lake
Flathead Indian Reservation
McLeod Peak
Gold Creek Peak
Stuart Peak
Huson
Frenchtown
Evaro
Sheep Mountain
Greenough
Potomac
Bonner
Bonner Mountain
Missoula
Turah
Clinton
Black Mountain
Lolo
Miller Peak
Lolo Peak
83
93
90
200
12
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office


Map 8
Missoula County Growth Policy
Slope of 25% or Greater
Legend
Summits
Slope 25%+
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
Condon
Holland Peak
Gray Wolf Peak
Chi-paa-qn Peak
Flathead Indian Reservation
Seeley Lake
Huson
Frenchtown
Evaro
McLeod Peak
Gold Creek Peak
Stuart Peak
Sheep Mountain
Greenough
Potomac
Bonner
Missoula
Bonner Mountain
Turah
Clinton
Miller Peak
Black Mountain
Lolo
Lolo Peak
To Kalispel
To Spokane
To Helena
To Hamilton
83
93
90
200
12
Missoula County Community & Planning Services
5 2.5 0 5 Miles
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office

Soils and Geology

Missoula County topography is mountainous and is divided by several intermountain valleys. Elevations range from approximately 9,140 feet on Lolo Peak to just under 3,000 feet where the Clark Fork River leaves the northwest end of the county. (See Map 7 for elevation information) Much of the land above the valleys in the county is characterized by steep hillsides and alpine terrain. Slopes greater than 25% are generally considered too steep for building purposes and special requirements apply for the siting of septic systems on slopes greater than 15%. Map 8 shows slopes of 25% or greater.

Agricultural Soils

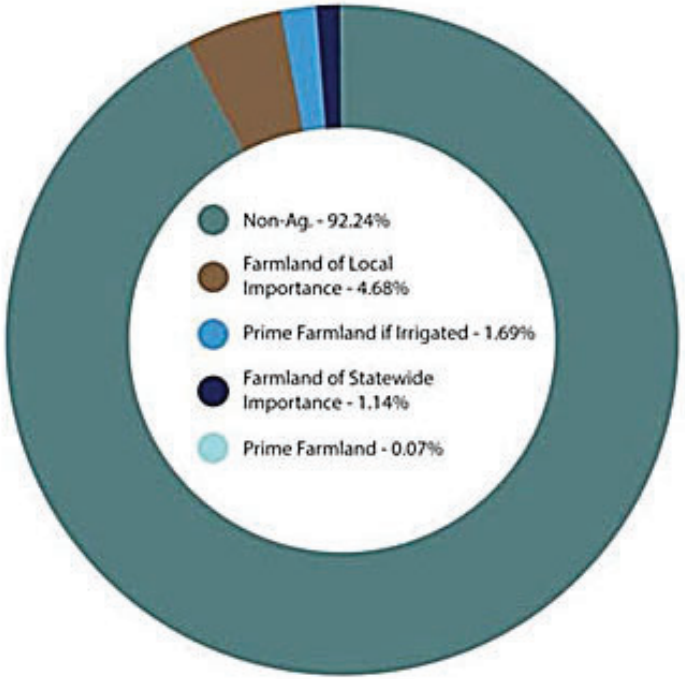
The U.S. Department of Agriculture Natural Resources Conservation Service, in collaboration with the Missoula County Conservation District, evaluates soils based on their capability to support agricultural production and classifies soils into four different categories:

- Prime Farmland has the properties needed to produce sustained high-yield crops when managed with modern farming techniques
- Prime Farmland (if irrigated) soil has the has the same characteristics and prime farmland, but requires a dependable water supply
- Farmland of Statewide Importance, which is not quite as good as prime farmland, but still produces high crop yields
- Farmland of Local Importance does not quite meet the guidelines for Prime Farmland or Farmland of Statewide Importance, but is considered locally important. Soils of Local Importance are designated by the Conservation District

Figure 4 shows the percentages (in acres) of each of these categories in Missoula County, and Map 9 shows the distribution of these soils across the county.

A total of 28,869 acres of farm and ranch land shifted from agricultural to non-agricultural tax classifications from 1986 to 2008, bringing the total number of acres taxed for agriculture

Figure 4 - Missoula County Soils of Agricultural Importance.
A small area of Missoula County has soils identified as agricultural.
Source: National Resource Conservation Service



to 112,227 in 2008. It is unclear exactly how this shift occurred. It is likely due to a variety of factors including, but not limited to, divisions of land through exemption, subdivision, construction on existing parcels, change in reporting of agricultural production to Department of Revenue, etc.[4]

According to Missoula County records, from 2007 to 2014, more than 1,000 acres of land with agricultural soils underwent subdivision review. Some of these subdivisions have not yet been filed. However, during the same time period, more than 4,000 acres of land with agricultural soils were protected through conservation easements.

Projected Trend

Depending on the prices of farm and ranch products, as well as the supply and demand for housing, farm and ranch lands may become more profitable when sold for development. Pressures to convert land from agricultural use are likely to continue as the economy rebounds, which may result in declining acres of land used for agriculture. Agriculture is important to Missoula County residents for many reasons and the county intends to support the conservation of agricultural resources and expansion of markets. See Goals 1, 5 and 7 and the Land Use Strategy in Chapter 2 for examples.

Sand and Gravel

Gravel resources are generally, but not always, located along streams, rivers, or areas where certain kinds of geologic activities have occurred. Map 10 shows potential gravel resources and currently permitted gravel pits throughout the county. This may help to identify where additional gravel resources have a greater potential of being found and developed.

State law allows the prohibition of sand and gravel mining in areas zoned residential. In areas zoned other than residential, sand and gravel mining may be conditioned to address the impacts to surrounding landowners and the environment, but may not be prohibited. Missoula County desires to provide for the extraction of sand and gravel in a manner that meets the needs of the growing population while concurrently protecting natural resources and public health and safety. Issues to be considered include air and water quality, impacts to agriculture and agricultural land, impacts to existing residential development, and public health and safety concerns.

Projected Trend

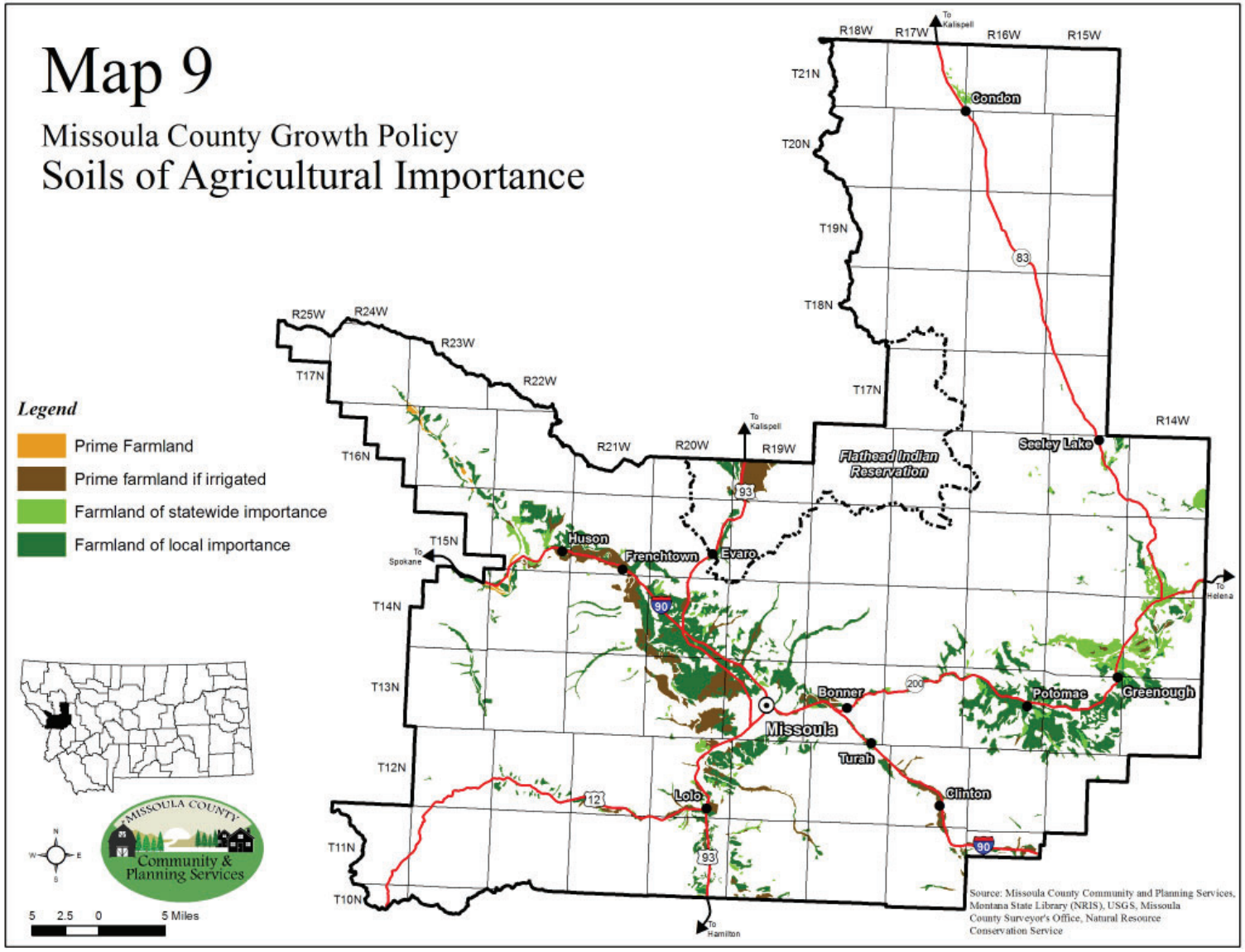
Sand and gravel are important materials for road and building construction. Therefore, as the population in Missoula County grows and the need for construction materials increases, the demand for sand and gravel will likely increase as well.

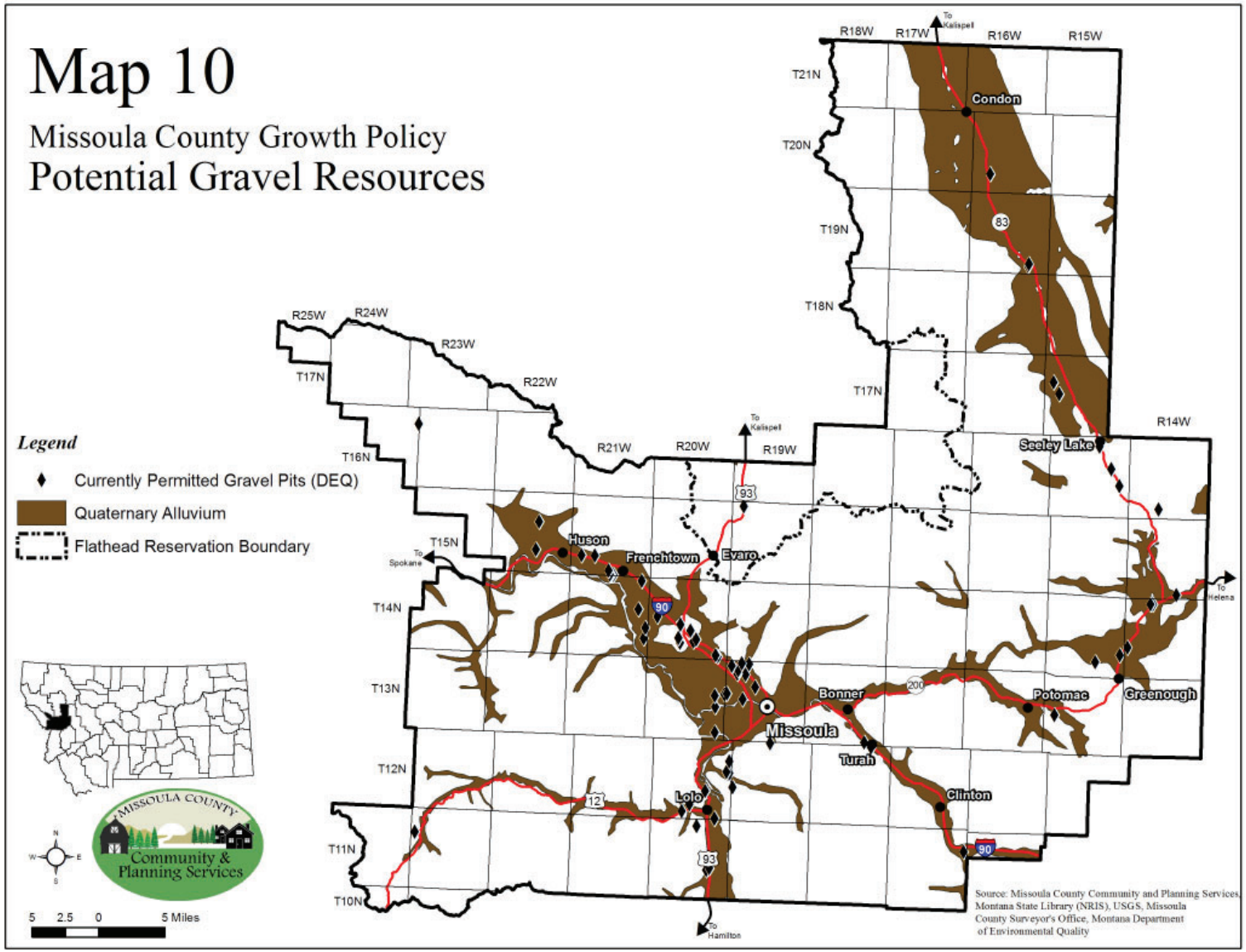
Water Resources

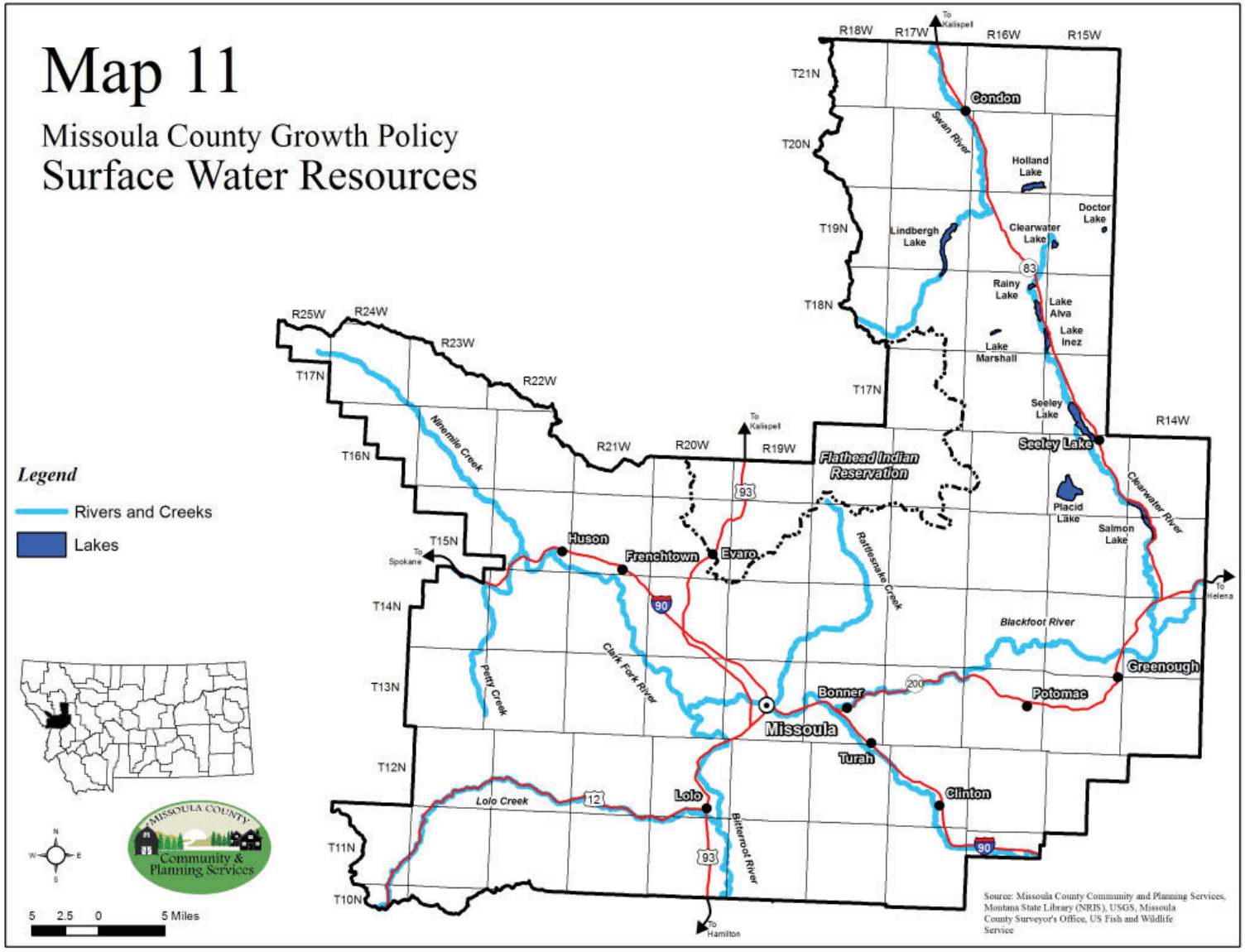
Missoula County surface resources include six major rivers with numerous tributaries and many lakes (Map 11). These watercourses provide groundwater recharge, water for drinking and irrigation, habitat for fish and wildlife, and recreational opportunities. An important groundwater resource in Missoula County is the Missoula Aquifer, which is the primary source of water for Missoula Valley residents. Related water resources such as wetland and riparian areas sustain important habitats and ecosystems throughout the county.

Water Quality

Although water quality in Missoula County is generally good, accidental releases of hazardous materials, runoff from urban and agricultural areas, and degradation from septic systems threaten water quality. The Montana Department of Environmental Quality (DEQ) develops "total maximum daily loads" (TMDL) for streams and lakes that do not meet Montana's water quality standards (both for drinking water and


Map 9
Missoula County Growth Policy
Soils of Agricultural Importance
Legend
Prime Farmland
Prime farmland if irrigated
Farmland of statewide importance
Farmland of local importance
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
To Kalispell
To Spokane
To Helena
To Hamilton
Condon
Seeley Lake
Flathead Indian Reservation
Huson
Frenchtown
Evaro
Bonner
Potomac
Greenough
Missoula
Turah
Clinton
Lolo
83
93
90
200
12
MISSOULA COUNTY
Community & Planning Services
5 2.5 0 5 Miles
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office, Natural Resource Conservation Service


Map 10
Missoula County Growth Policy
Potential Gravel Resources
Legend
Currently Permitted Gravel Pits (DEQ)
Quaternary Alluvium
Flathead Reservation Boundary
Missoula County
Community & Planning Services
5 2.5 0 5 Miles
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
To Kalispel
To Spokane
To Helena
To Hamilton
Condon
Seeley Lake
Huson
Frenchtown
Evaro
Bonner
Missoula
Turah
Potomac
Greenough
Lolo
Clinton
83
93
90
200
12
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office, Montana Department of Environmental Quality


Map 11
Missoula County Growth Policy
Surface Water Resources
Legend
Rivers and Creeks
Lakes
Missoula County
Community & Planning Services
5 2.5 0 5 Miles
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
To Kalispel
To Spokane
To Helena
To Hamilton
Condon
Swan River
Holland Lake
Doctor Lake
Lindbergh Lake
Clearwater Lake
Rainy Lake
Lake Alva
Lake Inez
Lake Marshall
Seeley Lake
Placid Lake
Salmon Lake
Clearwater River
Flathead Indian Reservation
Ninemile Creek
Huson
Frenchtown
Evaro
Rattlesnake Creek
Blackfoot River
Greenough
Potomac
Bonner
Missoula
Turah
Clinton
Petty Creek
Clark Fork River
Lolo
Lolo Creek
Bitterroot River
83
93
90
200
12
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office, US Fish and Wildlife Service

aquatic health). This process also defines solutions to the identified water quality issues through a Voluntary Nutrient Reduction Program. Local watershed groups and other stakeholders can then use this program to prioritize and carry out improvement activities.

A 2014 Department of Environmental Quality report documented water quality trends from 1998 to 2012 in the Clark Fork River. Since 1998, the levels of total nitrogen and phosphorous have decreased on the Clark Fork River below Missoula. In addition, total phosphorous has decreased on the whole section of the Middle Clark Fork, which extends from above Missoula to the confluence of the Flathead River.[5]

The Missoula Water Quality District samples a network of 40 wells twice per year to monitor groundwater quality. Groundwater quality is generally good in the Missoula Valley. However, several sites around Missoula have groundwater that has been contaminated by historic mining, industrial wastes, improper chemical disposal, or petroleum product spills and leaks.

Elevated nitrate levels have been found to occur in isolated areas, due primarily to improperly treated septic system discharges. Septic system discharge can also elevate the level of nutrients in lakes, which can lead to increased growth in aquatic plants, leading to decreased quality of cold water fish habitat.

There have been concerns regarding the water quality of Salmon and Seeley Lakes. A 2012 study examined water quality and potential contamination sources of these lakes. The study found that while there were no prominent trends since the 1970s, better information is needed through consistent monitoring. The report recommended that areas of dense housing near the lakes should be sewered to prevent decreases in water quality.

Projected Trend

Local efforts have been effective at improving stream conditions through stream restoration projects and changes in management practices. For example, water quality in the Clark Fork River has improved through the Voluntary Nutrient Reduction Program. In addition, Missoula County has partnered with Trout Unlimited and the US Forest Service to reclaim mining wastes in the Nine Mile Valley, resulting in improved water quality and fish passage with continued efforts. If this continues, levels of nutrients in rivers and lakes should continue to decrease. As sewer connections are added to areas within the county these trends are likely to continue.

Clean water is essential and maintaining high water quality is a fundamental value to Missoula County residents. Actions intended to address water quality are listed under Goals 1, 4, 5, 7, 9 and 11 in Chapter 2.

Water Quantity

Water quantity is an important aspect of overall watershed health as it affects the quality and abundance of riparian vegetation, fisheries, and the neighboring ecosystems sustained by surface and groundwater. Water quantity also has a strong effect on agricultural industries and the potential for future growth of these industries. Water quantity is affected by a wide variety of factors including climate, land use, and water consumption.

Stream flows in the Clark Fork Basin are largely driven by the frequency, magnitude, and distribution of rainfall and snowmelt, with annual stream flows peaking in the spring. Figure 5 shows the variability in average annual streamflow for the three major rivers in the county. The Clark Fork Basin is essentially closed to new surface and ground water rights appropriations. However, groundwater wells on existing parcels of land that pump less than 35 gallons per minute and produce less than 10 acre feet of water a year are exempt.

Projected Trend

The Montana State Water Plan for the Clark Fork and Kootenai River Basins gives a detailed description of water quantity conditions in the Clark Fork Basin and potential future water supply and demand given the potential effects of climate change. The plan projects that temperatures in the Upper Clark Fork Basin will continue to warm, variability in precipitation patterns will increase, and increases in evapotranspiration are possible. These changes could result in alterations in the timing of streamflow, with increased runoff earlier in the year and decreased runoff in the late summer. Overall, modeling shows runoff volumes either staying the same or increasing as compared to past conditions.[6]

Wetland and Riparian Resources

Wetlands can be located along rivers, streams, lakes, and irrigation ditches and within low spots along the landscape. Wetlands store surface water during floods, serve as ground water recharge areas, filter surface runoff, and provide wildlife habitat to maintain overall ecological health.

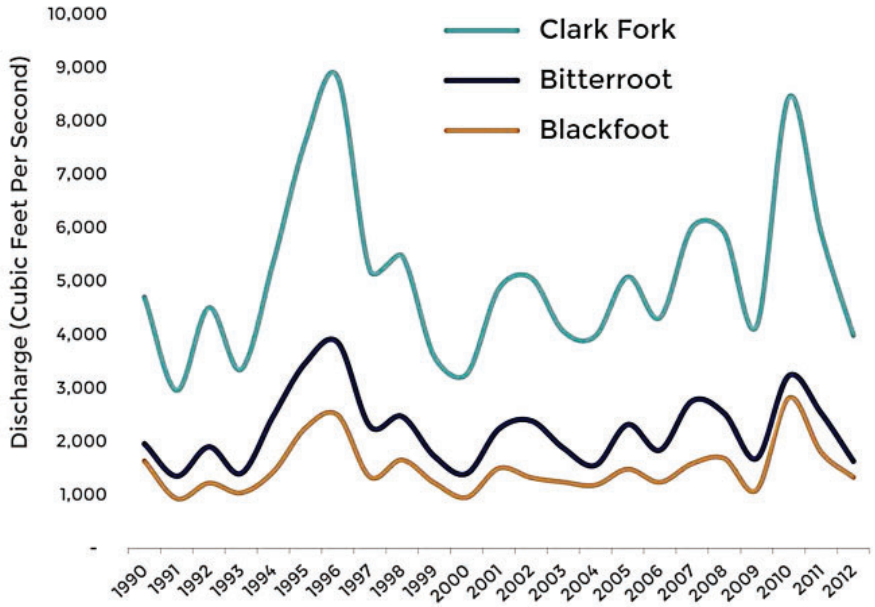
Wetlands include springs, seeps, marshes, wet meadows, and riparian areas (along creek or river margins). Healthy riparian areas are vital to the natural function of streams and provide bank stability. Riparian areas along creeks and rivers link wildlife habitats and are important hiding and feeding areas for migrating and nesting birds, big game species and smaller mammals, reptiles, and amphibians. Table 1 shows the different types and acreages of wetlands and riparian areas throughout the county.

At this time there is no information on the condition of these areas, nor are there quantitative data on wetland or riparian area loss in Missoula County. National estimates of wetland loss are over 50%, with estimates in Montana at 33% wetland loss since settlement.[7]

Table 2 - Wetland and Riparian Area Acreage in Missoula County
A very small portion of the county's lands are classified as wetland or riparian.
Source: Montana Natural Heritage Program.

Wetland Type	Acres	Percent of Total County Area
Wetland	25,972	1.55%
Riparian	16,814	1%
Freshwater Pond	3,597	0.2%
All Types	46,383	2.75%

Figure 5 - Average Annual Streamflow of Three Rivers in Missoula County
Of the county's three primary rivers, the Clark Fork experiences the greatest flow. There is considerable variability in flow between the three major rivers in Missoula County.
Source: U.S. Geological Survey



Some estimates place riparian habitat loss at greater than 95% in most western states.[8]

According to the Natural Resources Conservation Service, riparian and in-stream fish habitat represent the most degraded habitats in Montana. An estimated 70% of privately owned riparian habitats grazed by livestock could benefit from better grazing management.[9]

Streams and wetlands are protected under various state, federal and tribal laws. Road construction, vegetation clearing, dredging, filling and water diversion may require a permit. Programs available to assist landowners with wetlands protection include conservation easements, leases to conservation organizations, restoration, management agreements, limited development strategies, and sale or donation of land. Various non-governmental organizations and government agencies educate the public on the importance of riparian areas and wetlands and their impact on water resources and wildlife. Missoula County Floodplain Regulation amendments, adopted in 2015, prevent the removal of native vegetation within 50 feet of a designated stream.

Projected Trend

While existing protections and voluntary programs are likely to help maintain or improve the conditions of riparian areas and recover lost riparian and wetland areas, some are likely to be lost over time due to development and changing land management practices. Efforts Missoula County and its partners will initiate to conserve riparian and wetland areas are included in Chapter 2 under Goals 1, 4 and 7.

Flood Hazards

Flooding can occur due to overland flow, when excessive ground water fills an aquifer and surfaces, when stream channels erode their banks, and when ice jams break, releasing a surge of water that causes flooding downstream. Missoula County uses the Pre-Disaster Mitigation Plan to help assess and identify areas subject to frequent flooding in order to set priorities for mitigating damage and preventing casualties.

The Missoula County Floodplain Regulations provide requirements for residential, commercial, industrial, and recreational development built within designated floodplains. In Missoula County, Federal Emergency Management Agency 100-year floodplain maps identify areas associated with a risk of being impacted by a flood with a one percent chance of occurring in any year, also known as a "100-year flood." Loss of property on mapped rivers and streams in the event of a 100-year flood in Missoula County is estimated at 472 structures built prior to floodplain mapping, with an estimated value of over $16 million dollars. Missoula County coordinates with Federal Emergency Managment Agency and Department of Natural Resources and Conservation to identify and address properties that repeatedly flood.

Missoula County has completed channel migration zone mapping for a limited stretch of the Clark Fork River, which can help the public and policy makers better understand river movement and predict where the river may move in the future. Missoula County and landowners can use this information to help prevent costly and potentially catastrophic damage to private property and public infrastructure.

Projected Trends

The number of structures in Missoula County impacted by a 100-year flood should not substantially increase, although the estimated value of loss from a 100-year flood will likely increase due to inflation. Amendments to floodplain and subdivision

regulations will reduce the potential for additional structures in flood hazard areas. The county is also working on identifying floodplains on unmapped streams, conducting additional channel migration mapping, and ensuring that reconstruction of existing buildings meets floodplain regulations. Specific efforts the county plans to undertake in order to reduce the risk of loss to life and property from flooding are located in Chapter 2 under Goal 11 as well as the Land Use Strategy.

Vegetation

The vegetation zones in Missoula County range from the uppermost alpine zone, characterized by alpine meadows, scree, and the absence of trees, to the lower foothill zone, characterized by dry areas dominated by shrubs and grasses, with areas of open ponderosa pine parklands and pockets of Douglas-fir/ ponderosa pine forests.

Approximately 70% of the county is forested[10], including much of the land above the valley floors. Almost 70% of the county is owned and managed by the United States Forest Service, Weyerhaeuser, or The Nature Conservancy for timber and other uses. Quantitative measures of changes in vegetation type are not available. Some estimates indicate that western Montana has lost 80 to 90% of its low elevation, high productivity, old-growth forests and 80 to 90% of its low elevation grasslands.[11]

Overall, forest health is influenced by a variety of factors, including climate, occurrence of fire, and presence of insects and disease. Recently, forests have been less resistant to insects and disease due to drought and overstocking. Mountain pine beetles have had tremendous effects on forests across the state, causing tree mortality on more than six million acres. The beetle outbreaks are declining, but there is a small area in the southwestern part of Missoula County with a mountain pine beetle infestation.[12]

Plant Species of Concern

The Montana Natural Heritage Program lists species of concern designated by organizations or land management agencies in Montana. There are 47 vascular and non-vascular plant species of concern with recorded occurrences in Missoula County, including the federally threatened water howellia. An additional nine plant species are designated as potential species of concern.

Invasive Species

Western Montana's native landscape is threatened by noxious weeds, which limit agricultural productivity, reduce wildlife habitat and threaten native grasslands. Road building, off-road vehicles, logging and construction can damage native vegetation and increase noxious weed invasions.

Aquatic invasive species are a recent concern for the county's waterways. Aquatic invasive species are non-native species that can have devastating effects on native species – sometimes out-competing them for food and habitat. For example, Eurasian watermilfoil is a weed-like plant that grows so thick on shallow lake bottoms that it can make swimming nearly impossible.

The Missoula County Noxious Weed Management Plan, developed by the Missoula County Weed District as required by state law, provides a framework and rationale for effective noxious weed management. The plan divides the State Noxious Weed List into three categories:

- Priority 1 weeds: those not currently found in Missoula County
- Priority 2 weeds: new invaders that cover less than 100 acres
- Priority 3 weeds: species that are widespread and infest more than 100 acres in Missoula County.

Priority 3 weeds cover over 650,000 acres. Priority 2 weeds are the highest priority in Missoula County for control efforts in order to prevent their spread. There are currently 13 Priority 2 weed species in Missoula County, which cover a total of 399 acres.[13]

Public and private landowners are responsible for noxious weed management in Missoula County. Infestation rates are influenced through understanding control methods, working in partnership, and managing vegetation to be competitive with noxious weeds.

Projected Trend

Weed control efforts will continue to address and reduce weed infestation for certain species, but new infestations of other species are likely to continue. The Missoula County Weed District has instituted the following programs as part of the Noxious Weed Management Plan to help address noxious weeds in the future:

- Focus on Priority 1 and 2 noxious weeds and control these noxious weeds through expending resources and organizing cooperative landowner projects
- Seek control of Priority 3 weeds through assisting in developing and funding cooperative vegetation management projects
- Conduct educational programs to improve land managers' knowledge of vegetation management and noxious weed control
- Work with the research community to develop more environmentally sensitive, cost-effective means of control
- Pursue the legal process of compliance as a last resort, with a focus on Priority 1 and 2 noxious weeds

Wildland Urban Interface

Wildland Urban Interface is the area where homes are built near or among lands prone to wildland fire. All of the Missoula County communities are located in or near the interface consequently fire hazards pose a significant threat to life and property. Map 12 shows the Wildland Urban Interface in Missoula County.

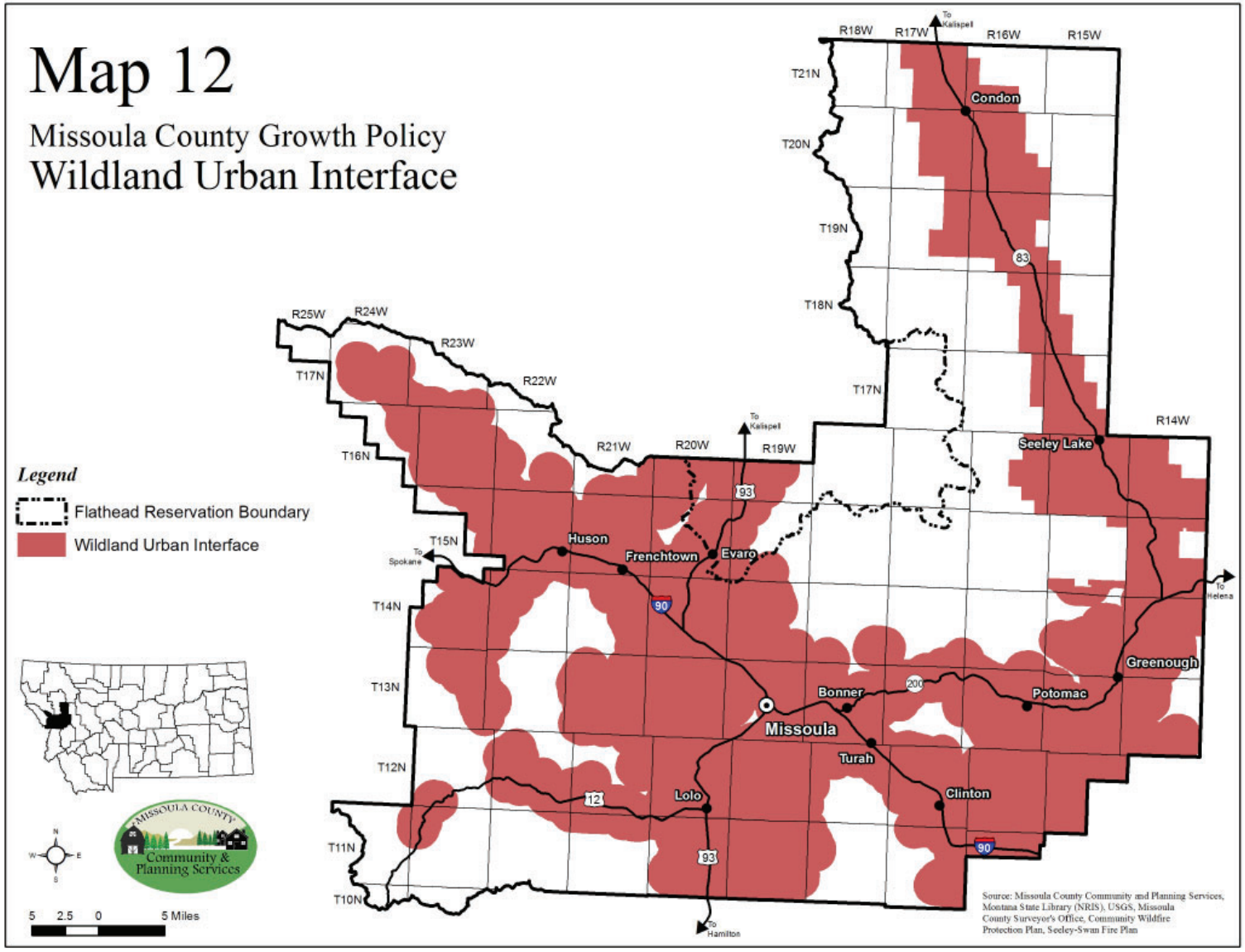
The Missoula County Community Wildfire Protection Plan seeks to reduce hazardous fuels and structure ignitability to protect communities from wildfire. The Missoula County Community Wildfire Protection Plan and the Seeley Swan Fire Plan contain more detailed maps identifying areas of greater fire risk and where fire hazard reduction treatments should be prioritized. A new wildfire hazard risk mapping project is underway to help provide landowners, the public, and decision makers with additional information about wildfire hazards in Missoula County. The project will result in recommendations for possible firewise treatments and other land management options to reduce risks associated with wildfire.

The Missoula County Subdivision Regulations contain requirements for subdivisions in the Wildland Urban Interface that address defensible space for critical infrastructure, ingress and egress for lot owners and emergency responders, and water supply for fire suppression. The Missoula County Zoning Resolution and building code may be updated or other measures developed to further protect life and property.

Missoula County supports responsible forest restoration programs, including fuel mitigation intended in part to reduce risk of wildfire in the Wildland Urban Interface and also aids private landowners to create defensible space by supporting cost sharing and other programs.

Projected Trends

Trends over the last 20 years show


Map 12
Missoula County Growth Policy
Wildland Urban Interface
Legend
Flathead Reservation Boundary
Wildland Urban Interface
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
Condon
Seeley Lake
Huson
Frenchtown
Evaro
Bonner
Potomac
Greenough
Missoula
Turah
Clinton
Lolo
To Kalispel
To Spokane
To Helena
To Hamilton
83
93
90
200
12
Missoula County
Community & Planning Services
5 2.5 0 5 Miles
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office, Community Wildfire Protection Plan, Seeley-Swan Fire Plan

increased frequency and intensity of wildfires and increased costs to control wildfires and protect structures. This trend is likely to continue. It is estimated that wildfire activity will double in the Rocky Mountains by 2050 due to the effects of climate change including altered vegetation and less precipitation.[14] There is also increased development pressure in fire hazard areas. These trends indicate that additional money, equipment, water supplies and personnel are likely to be needed for the protection of lives and property are likely to be needed. Missoula County, in conjunction with its partners, intends to take several actions to address healthy forest management and public health and safety issues related to Wildland Urban Interface development These are listed in Chapter 2 under Goals 5, 7, 8, 9, 11 and the Land Use Strategy.

Wildlife

Missoula County possesses diverse and high quality wildlife habitats. For a number of species, conservation of seasonal habitats and other populations are important for long-term survival. Wildlife corridors enable species to disperse, migrate, and maintain linkages with other populations that provide population support and genetic exchange. In recent years, major highway reconstructions have improved habitat connectivity by including wildlife crossing structures. Highway projects between Evaro and Polson and between Lolo and Hamilton added more than 50 fish and wildlife crossing structures between 2005 and 2012. Connectivity and habitat conservation will become even more important as species ranges shift due to climate change.[15]

Mammals

The variety of large and small mammals in Missoula County includes grizzly bears, bobcats, lynx, otters, and weasels. Quantity and quality of winter range are the most limiting factors in the lifecycle of most big game.[16] Map 13 shows areas of big game winter range. The Confederated Salish and Kootenai Tribes have also mapped big game winter and summer range on the Flathead Reservation. (Big game hunting on the Reservation is restricted to tribal members only, as guaranteed by the 1855 Treaty of the Hellgate.)

Table 2 summarizes the winter range of several species within the county. Over 70% of winter range is located on private land.[17]

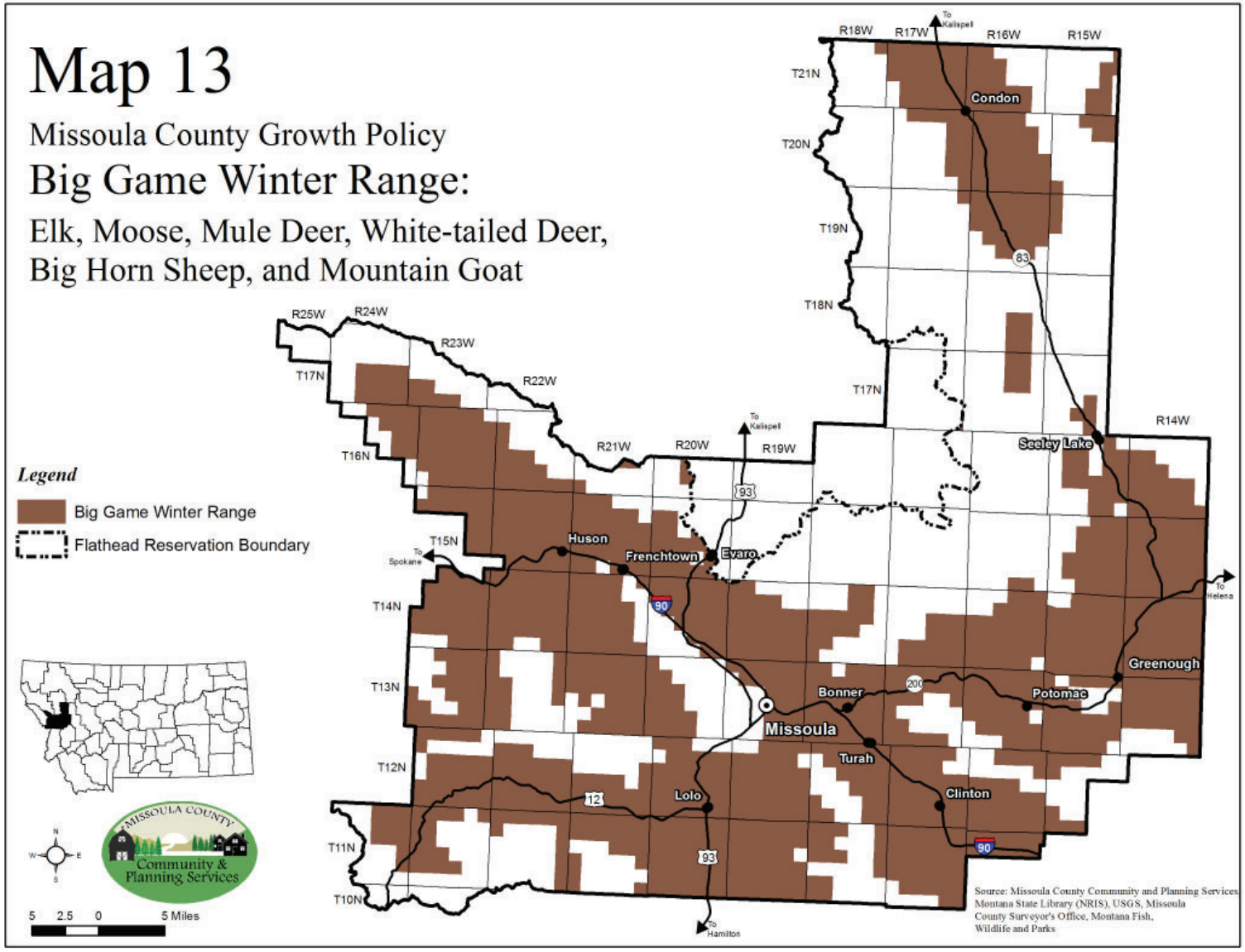
Table 3 - Big Game Winter Range
Most of the county's land serves as winter range for a variety of big game, primarily white-tailed deer, mule deer and elk.
Source: Montana Fish, Wildlife, and Parks.

Winter Range	Acres	Percent of Total County Area
White-tailed Deer	543,097	32%
Mule Deer	458,438	27%
Elk	698,580	42%
Moose	125,231	7%
Big Horn Sheep	45,473	2%
Mountain Goat	21,366	1%

Big game hunting is an important part of Missoula County's heritage, culture and economy. Based on its 2014 hunter/angler expenditure survey report, Montana Fish, Wildlife and Parks estimates that deer and elk hunters log over 100,000 'hunter days' in Missoula County and spend over $10 million annually.

Projected Trend

Population levels vary among species. Bighorn sheep populations fluctuate in the county and disease has caused recent large die-offs.[18] Black bears are abundant and numbers are expected to remain stable in the county. While white-tailed deer are abundant, mule deer populations have been declining.


Map 13
Missoula County Growth Policy
Big Game Winter Range:
Elk, Moose, Mule Deer, White-tailed Deer,
Big Horn Sheep, and Mountain Goat
Legend
Big Game Winter Range
Flathead Reservation Boundary
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
Condon
Seeley Lake
Huson
Frenchtown
Evaro
Greenough
Bonner
Potomac
Missoula
Turah
Clinton
Lolo
To Kalispel
To Spokane
To Helena
To Hamilton
83
93
90
200
12
Missoula County
Community & Planning Services
5 2.5 0 5 Miles
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office, Montana Fish, Wildlife and Parks

Although regional elk populations have remained relatively stable, some local populations have decreased in recent years, likely due to wolves and hunter harvests.[19] Carnivore populations, including wolves and grizzly bears, have increased in recent decades. Wolf populations are expected to decrease in number with active management and hunting. A map of grizzly bear habitat and linkages on Map 14 shows the occupied habitat, recovery areas and linkage zones, which are described as follows:

- Occupied habitat – Areas where grizzly bears are likely to reside on a regular basis. While grizzlies are most likely to be found in this area, bear managers in Missoula County caution that it is possible to encounter a grizzly bear in any but the most urban areas as bears continue to expand their range.

- Recovery areas – Portions of two United States Fish and Wildlife Service designated Recovery Areas occur in Missoula County: the North Continental Divide Ecosystem and the Bitterroot Recovery Area. Grizzly bears currently occupy much of the North Continental Divide Ecosystem, but are not thought to be established in the Bitterroot Recovery Area at this time.

- Linkage Zones – Linkage zones in general are broad areas of seasonal habitat where animals can find the quantity and quality of food shelter and security to meet their needs. Linkage zones for grizzly bears were identified in the Swan Valley, representing areas that provide habitat with low levels of disturbance. These linkage zones support grizzly movement between the Swan and Mission Mountain ranges.

Wildlife populations are threatened by direct habitat loss, habitat fragmentation and increased conflicts with humans that can result from development in or near wildlife habitat and corridors. Conflicts are on the rise, with significant increases occurring since 1999, and this trend is expected to continue as the county's population continues to grow. Continued public and private efforts to conserve wildlife habitat and maintain habitat connectivity will help protect these wildlife populations. Goal 1 and the Land Use Strategy of Chapter 2 outlines actions Missoula County will take to conserve wildlife and wildlife habitat.

Birds

Missoula County bird species habitats include cottonwood gallery forests, conifer forests, riparian willows, various wetland types and grasslands. Grasslands provide habitat for a small population of Swainson's Hawks (6 to 8 breeding pairs) and wintering raptor species.

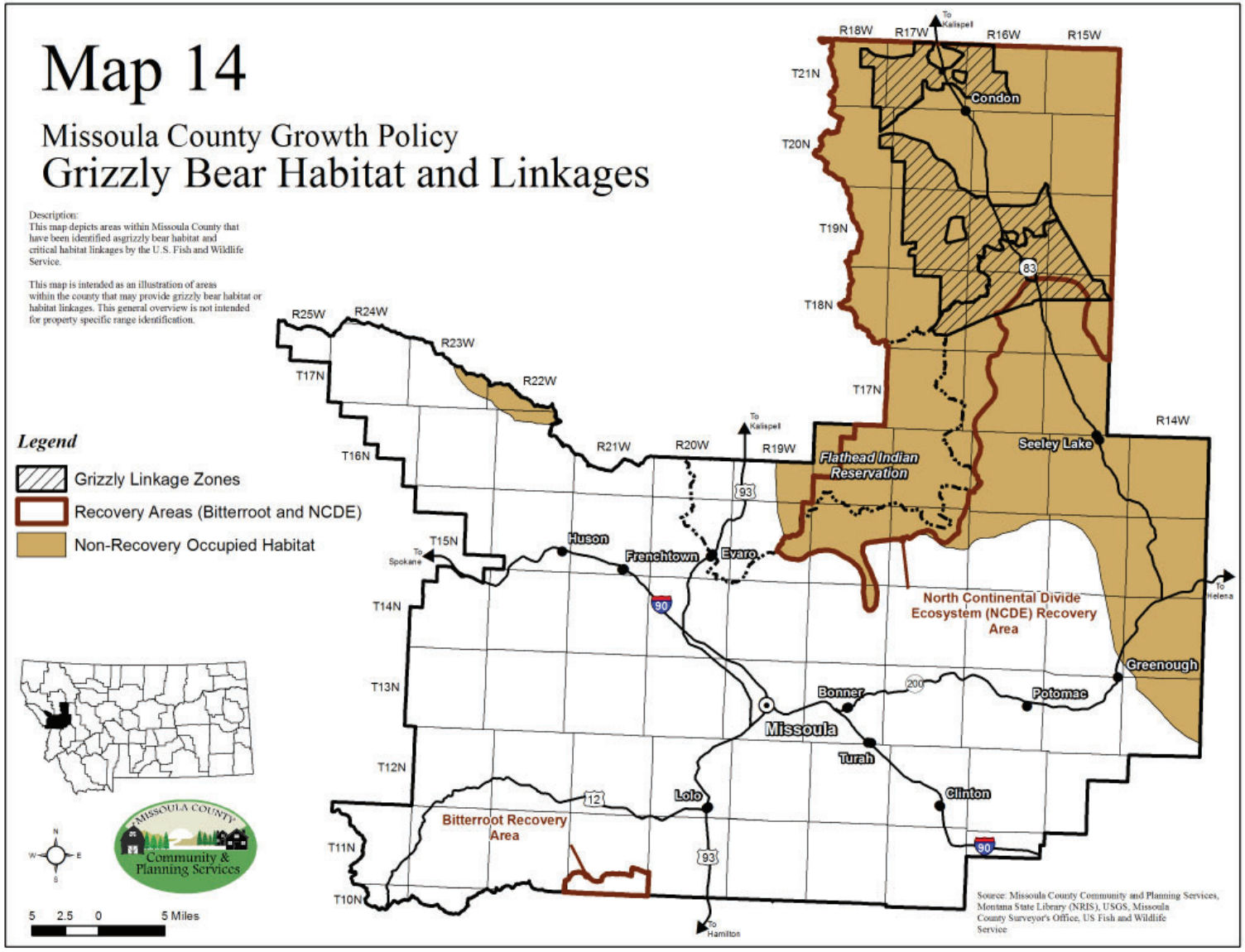
The National Audubon Society has identified several important bird areas in Missoula County including the Kelly Island Fishing Access, Maclay Flat, the Rattlesnake National Recreation Area, Mount Jumbo and Pattee Canyon, which provide essential habitat for one or more species of birds. Throughout the county, more than 265 species may be found as year-round residents, winter or summer migrants, or as transient migrants.[20]

Projected Trend

Bird habitats in the county that are most under threat are wetland and riparian areas and the native grasslands.[21] The status of these habitat types will be a large factor in the population trends of many bird species in Missoula County.

Fish

Thirty fish species are found in the county, including rainbow trout, brown trout, westslope cutthroat trout (a statewide species of concern), bull trout (a federally-listed threatened species), perch, whitefish, sculpins, and suckers. Nationally significant fisheries in the county include the Blackfoot River,


Map 14
Missoula County Growth Policy
Grizzly Bear Habitat and Linkages
Description:
This map depicts areas within Missoula County that have been identified asgrizzly bear habitat and critical habitat linkages by the U.S. Fish and Wildlife Service.
This map is intended as an illustration of areas within the county that may provide grizzly bear habitat or habitat linkages. This general overview is not intended for property specific range identification.
Legend
Grizzly Linkage Zones
Recovery Areas (Bitterroot and NCDE)
Non-Recovery Occupied Habitat
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
To Kalispell
To Spokane
To Helena
To Hamilton
Condon
Seeley Lake
Flathead Indian Reservation
Huson
Frenchtown
Evaro
North Continental Divide Ecosystem (NCDE) Recovery Area
Greenough
Bonner
Potomac
Missoula
Turah
Clinton
Lolo
Bitterroot Recovery Area
83
93
90
12
200
MISSOULA COUNTY
Community & Planning Services
5 2.5 0 5 Miles
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office, US Fish and Wildlife Service

Bitterroot River, middle Clark Fork River, and Rock Creek.

Fishing is a significant part of Missoula County's heritage, culture, and economy. Based on its 2014 hunter/angler expenditure survey report, Montana Fish, Wildlife and Parks estimates anglers spend more than 250,000 days on the water and more than $60 million annually in Missoula County.

The spread of non-native fish species has profoundly impacted native fish populations. Since the introduction of northern pike into the Clearwater River watershed within Missoula County, many native fish populations have shown dramatic local declines.

Indirect but significant impacts to streams and fisheries typically accompany development. These include riparian degradation, livestock overgrazing and channel modification. Other activities such as construction of artificial ponds, excessive stream channel crossings, road construction in floodplains, and gravel mining degrade aquatic systems. It is rare for stream habitats and fisheries to remain intact when people inhabit areas that are near or directly adjacent to streams and other surface waters.

Projected Trends

Fish passage barriers on mainstem rivers and tributaries are often identified as limiting factors for fish populations. Over the past decade, many of these obstructions have been removed and fish passage work will continue to be a priority for fisheries enhancement within the county. In spite of these potential improvements, conditions for cold-water fisheries and native fish may face challenges due to climate change and human population growth. Efforts to protect habitat, preserve water quality and quantity, and to recreate are included under Goals 1, 2 and 9 and the Land Use Strategy in Chapter 2.

Air

Over the last few decades, air quality has dramatically improved in Missoula County. Factors responsible for this improvement include the Missoula City-County Air Pollution Control Program (which includes rules that limit residential wood smoke, regulate debris burning, and require paving), changes in industry, and motor vehicle fleet turnover.

As of 2016, Missoula monitors $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5 microns or less), PM_{10} (particulate matter with an aerodynamic diameter of 10 microns or less), and ozone. Missoula ceased monitoring carbon monoxide in 2011 due to extremely low ambient carbon monoxide concentrations.

$PM_{2.5}$

Like many mountain valley communities, Missoula's primary pollutant of concern is $PM_{2.5}$. $PM_{2.5}$ forms as a result of incomplete combustion, and in Missoula County, the primary sources of $PM_{2.5}$ are residential wood smoke in the winter and wildfires in the summer. Figure 6 shows characteristic $PM_{2.5}$ peaks in the winter and summer months.

$PM_{2.5}$ is composed of tiny particulates that can penetrate deep into a person's lung and even pass into the bloodstream. These particulates aggravate asthma and lead to decreased lung function, increased respiratory symptoms, and have been linked to premature death in people with heart or lung disease.

Missoula monitors $PM_{2.5}$ in the City of Missoula (at Boyd Park), Frenchtown, and Seeley Lake. Frenchtown $PM_{2.5}$ concentrations are typically on par with Missoula's.

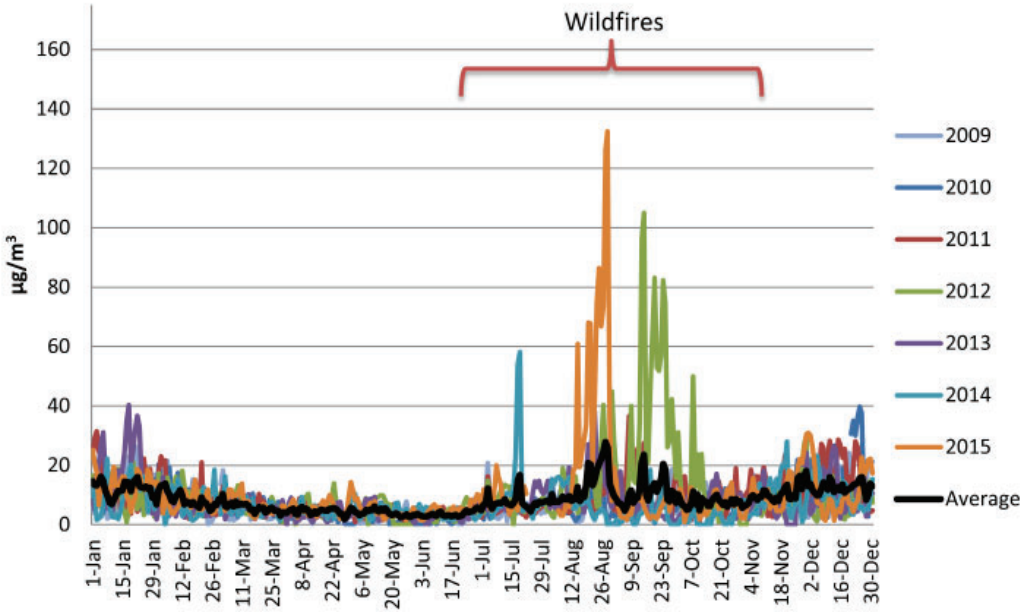
Residential Wood Smoke

In the winter months, residential wood smoke builds up in mountain valleys

due to inversions that trap cold air and pollutants near the valley floor. Regulations that require the removal of woodstoves in the Missoula Air Stagnation Zone - which includes the City of Missoula and much of the surrounding area - and prohibit the installation of wood stoves or fireplaces in the air stagnation zone has led to steady improvements in winter air quality. Figure 7 shows the Missoula trend of decreasing $PM_{2.5}$ in the winter months, as well as wildfire spikes in the summer months.

Outside the air stagnation zone, many Missoula County residents continue to rely on wood heat. In Seeley Lake, smoke from wood stoves has led to a large number of poor air quality days. In 2010, the Missoula City-County Health Department, with the help of several community members, began raising funds to start replacing inefficient woodstoves with low-emission EPA-certified stoves. By the winter of 2014/2015, more than 160 stoves were exchanged and significant progress was made in improving air quality in the Seeley Lake Valley (Figure 8). Missoula County now has an electronic sign at the Seeley Lake Elementary School to display air quality data and messages encouraging proper wood stove use. The City-County Health Department continues to work with the community to lower wood smoke pollution.

Figure 6 - 24-Hour $PM_{2.5}$ Averages at Boyd Park in Missoula 2009-2015
Missoula Valley's $PM_{2.5}$ levels characteristically peak in the winter and summer months, primarily due to wood burning stoves and wildfires.
Source: Missoula City-County Health Department



Wildfires

Due to the changing climate, wildfire season has become longer and more severe in the western United States. Wildfires are burning more acreage and causing more severe damage than they were in the 1980s and early 1990s. During a bad wildfire year, smoke from these fires is the source of Missoula County's most significant $PM_{2.5}$ pollution.

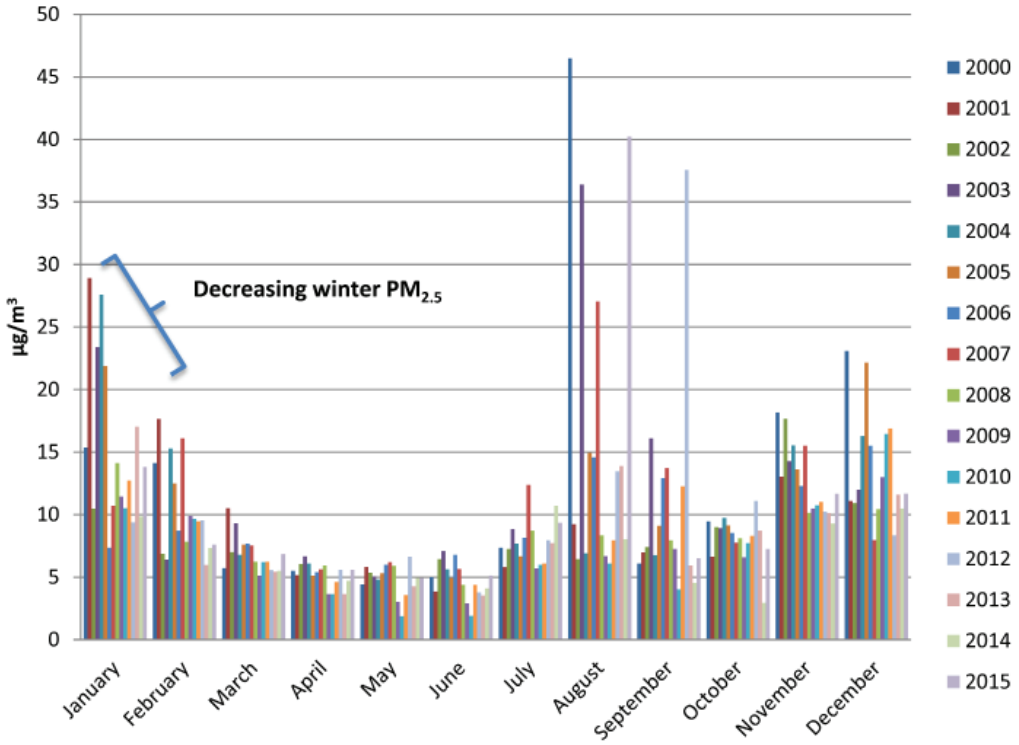
Carbon Monoxide

Carbon monoxide is a product of incomplete combustions and the primary source in Missoula County is vehicle traffic. In the 1990s, Missoula initiated an oxygenated fuels program and reconfigured a busy intersection to reduce carbon monoxide pollution. These efforts, in addition to fleet turnover, led to dramatic reductions in carbon monoxide. Missoula is making a maintenance area. Missoula County last violated the federal carbon monoxide standard in 1991.

PM_{10}

PM_{10} includes all particulates that are

Figure 7 - Missoula Monthly Average $PM_{2.5}$ 24-Hour Concentrations 200-2015
Over time, the urban area has decreased winter PM2.5 levels through a wood burning stove exchange program. Wildfires, however, continue to contribute heavily in summer.
Source: Missoula City-County Health Department



10 microns in diameter or smaller. The primary sources of PM_{10} in Missoula County are road dust, residential wood smoke, and wildfires. Thanks to paving and woodstove regulations in the air stagnation zone, Missoula last violated the PM_{10} federal standard in 1989. PM_{10} concentrations have been relatively stable (and well below the federal standard) for the past several years. Missoula is currently seeking redesignation from the U.S. Environmental Protection Agency from non-attainment to attainment. The request is scheduled to be considered in 2017. If Missoula is redesignated, the area will enter a 20-year maintenance period for PM_{10}.

Missoula monitors PM_{10} in the City of Missoula (at Boyd Park).

Ozone

Ground level ozone is created by chemical reaction between oxides of nitrogen and volatile organic compounds in the presence of sunlight. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of oxides of nitrogen and volatile organic compounds.

The Montana Department of Environmental Quality has been monitoring ozone at Boyd Park in Missoula since 2010. While concentrations increase in the late spring and summer months, ozone levels in Missoula are well below the federal standard.

Projected Trends

Overall, $PM_{2.5}$ pollution in the Missoula urban area and Seeley Lake is on a downward trend (See Figures 8 and 9). This is due to the reduction of residential wood smoke and corresponding improved winter air quality. However, wildfire smoke is a continual summer threat and the general improvement may be overshadowed by these high pollution spikes. PM_{10} concentrations are expected to remain relatively stable. However, PM_{10} concentrations will spike in the summer months due to wildfire smoke intrusions. Ozone pollution is not expected to increase significantly in the near future. As the vehicle fleet continues to turn over and

Figure 8 - Number of Winter Days that Exceeded the Federal $PM_{2.5}$ Standard in Seeley Lake 2010-2015
Overall, air pollution in the Seeley Lake area is decreasing.
Source: Missoula City-County Health Department

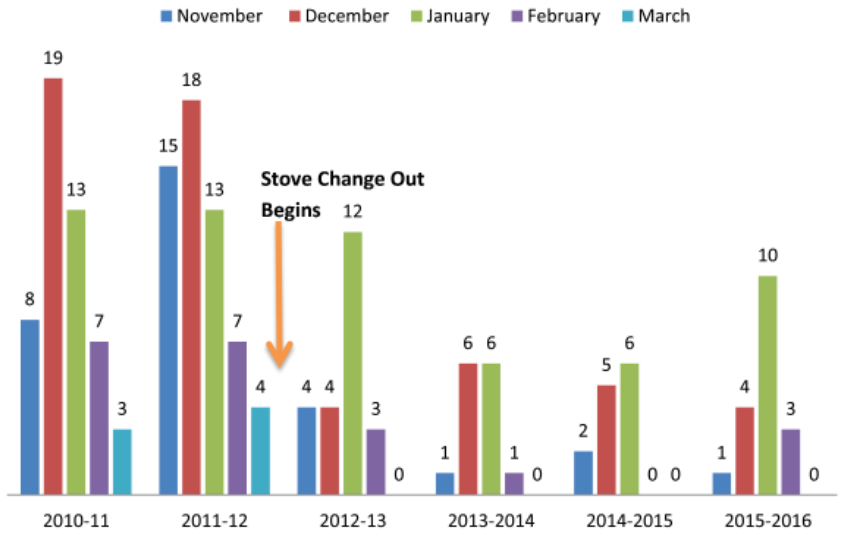
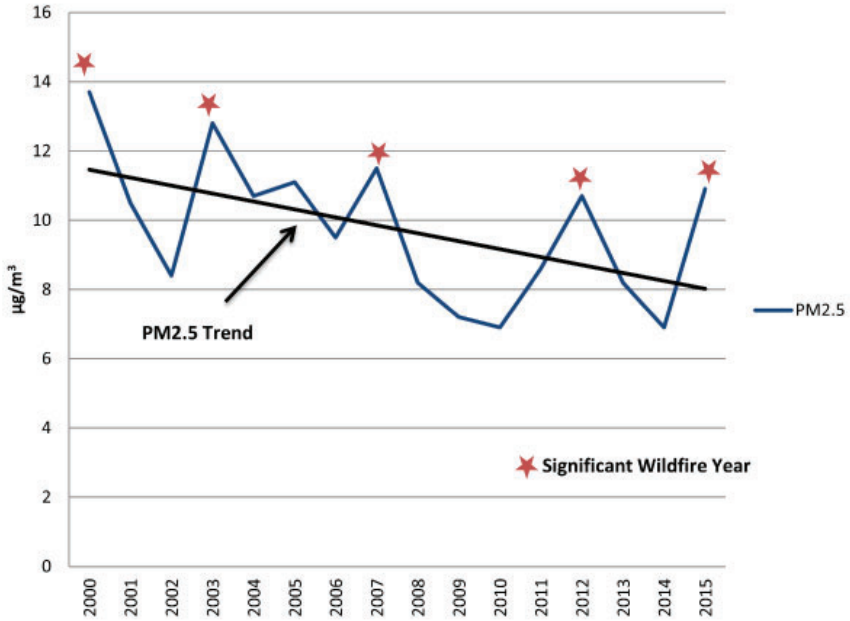


Figure 9 - Missoula Annual Average $PM_{2.5}$ Concentration 200-2015
While air pollution in general is decreasing in the Missoula urban area, particularly significant wildfire years continue to impact reduction goals.
Source: Missoula City-County Health Department



more efficient vehicles take the roads, carbon monoxide levels in Missoula are expected to continue to decline.

Air quality in Missoula County is expected to continue improving. A robust air quality control program and the availability of cleaner motor vehicles and more efficient wood stoves are providing cleaner air for a growing population. In addition, local projects (such as free mass transit in the Missoula urban area) are helping clean up Missoula's skies.

Actions to be taken by Missoula County and its partners to address air quality can be found in Chapter 2 under Goals 1, 4, 7 and 12.

Land Conservation

Protection of ecological, agricultural, scenic, and cultural resources can be achieved through land conservation measures on both public and private land. As summarized below, conservation easements are one tool for land protection. Other conservation tools, such as land donation and land purchases are used throughout the county. These include public/private partnerships such as the Montana Legacy Project, which transferred 230,000 acres of land from Plum Creek Timber Company to The Nature

Conservancy , most of which was eventually transferred into public ownership. Missoula County voters approved a $10 million Open Space Bond in 2006 in Missoula County, with half allocated to the county and half allocated to the City of Missoula for use in the urban area.

The amount of land in Missoula County in conservation easements has been growing steadily. As of December 2015, there were 205 filed conservation easements on more than 55,444 acres.[22] The results of private/public land acquisition projects have more frequently resulted in thousands of acres of land in Missoula County shifting out of Plum Creek (now Weyerhaeuser) ownership in the last 10 years. The Montana Legacy Project involved conserving more than 223,000 acres and the Clearwater-Blackfoot Project involved 117,000 acres, the outcome of which has not been finalized. Private land conservation efforts are affected by the economy and the availability of private and public funding.

As of December 2015, 23 county open space bond projects had been completed (including two jointly funded with the city) comprising 20 conservation easements and three acquisitions. When completed, these projects will directly protect 11,564 acres, and with the additional leverage provided as match for other projects, nearly 29,621 acres will be protected.

Projected Trends

The amount of land in conservation easements has been increasing in the county. With less than approximately $2.8 million of the $10 million 2006 Open Space Bond remaining, more land is expected to be conserved using this tool. Efforts to continue conservation of vital natural resources and working lands are listed in Chapter 2, Goal 1.

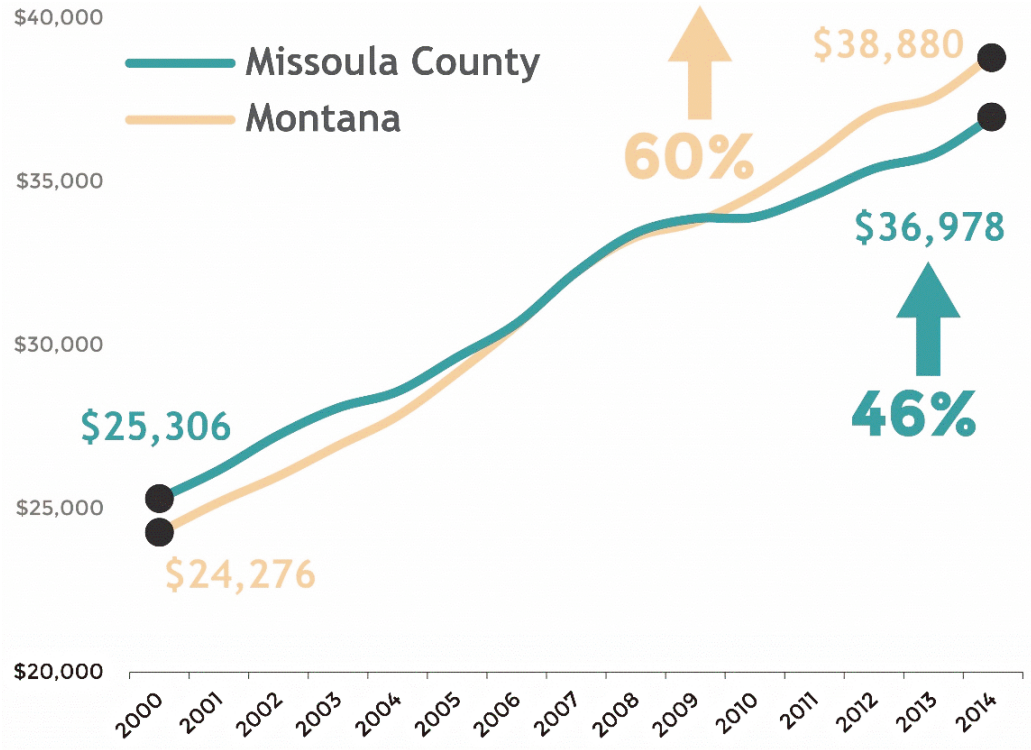
LIVELIHOODS

Outside the City of Missoula the local economy was historically fueled by timber production and agriculture. While these industries are still important, the economy is changing rapidly. Today, jobs in health care, education, retail and wholesale trade, tourism, government, professional, technical and

Figure 10 - Average Annual Wage 200-2014

Before 2008, the county exceeded the average state wage; however, since then, wages in Missoula County have not kept up with average statewide increases.

Source: Montana Department of Labor and Industry



business services, and construction are the largest income generators. Many of these jobs require education and specialized training beyond high school level. Fortunately, Missoula County has a strong educational culture (94.5% of residents hold a high school diploma or higher) and a strong education system to help prepare the workforce to serve the growing demand for goods and services.

Table 4 - Average Annual Wages By Industry in Missoula County - 2014
Wages in the county vary by industry and job type, but are generally higher than average in non-service and government sectors.
Source: US Bureau of Labor Statistics.

Industry	Avg. Annual Wages	Percent Above/ Below Avg.
Total	**$36,978**	
Private	**$35,244**	**-5%**
Non-Services Related	**$43,563**	**18%**
Natural Resources and Mining	$52,952	43%
Agriculture, forestry, fishing & hunting	$52,583	42%
Mining	$57,554	56%
Construction	$44,590	21%
Manufacturing	$40,002	8%
Services Related	**$34,267**	**-7%**
Trade, Transportation, and Utilities	$32,668	-12%
Financial Activities	$50,927	38%
Professional and Business Services	$41,942	13%
Education and Health Services	$41,949	13%
Leisure and Hospitality	$15,912	-57%
Other Services	$25,157	-32%
Government	**$45,815**	**24%**
Federal Government	$69,194	87%
State Government	$41,775	13%
Local Government	$42,185	14%

Wages and Industry

Wages in Missoula County have increased by 46% since 2000, but they have not matched the rate of increase across the State of Montana which is 60% (Figure 10). Wages in Missoula County vary by industry and job type. Wages are higher than average in the non-service and government sectors, but below average in categories such as the leisure and hospitality industries (Table 3). The Missoula County economy added almost 8,500 jobs from 2001 to 2013.

The types of jobs in Missoula County have also changed. The greatest numbers of jobs created between 2001 and 2013 were in health care and social assistance; administrative and waste services; government; accommodation and food services; real estate, rental and leasing; and professional and technical services. The biggest job losses occurred in manufacturing, construction, transportation and warehousing, information, wholesale trade, and farm (Figure 11).

By 2013 Missoula County was starting to recover from the Great Recession. Consequently, some of the job gains since that time are not accounted for in the data. From 2001 – 2013 total job earnings increased by approximately

12%, with the largest increases in mining and service related industries (Figure 12).

Business Activity in Missoula County Communities

The City of Missoula is the economic center for not only the county, but also the region. There were more than 76,000 jobs in Missoula County in 2013, but less than 6,000 jobs were located outside of the city. In addition, almost 3,000 people work out of their homes running trucking, construction, and professional services firms, etc. These businesses supplement the traditional "brick-and-mortar" establishments such as restaurants, gas stations and stores, providing communities with vital and diverse economic activity.

Accommodating low-impact, home- based businesses in area plans and zoning will help to keep the county's unincorporated communities strong.

Agricultural Economic Activity

Agriculture contributes to the more than $38 million in wages paid by the agriculture and related services, forestry, fishing, and hunting industries in the county. The U.S. Department of Agriculture's 2012 Census of Agriculture reports that the number of farms in Missoula County increased between 1974 and 2012 from 310 to 637 (Table 4). Although the total number of farms has increased, the size of the average farm has decreased by almost 50%.

Table 5 - Farming in Missoula County 1974-2012
While Missoula County's number of farms has increased over time, the average farm size has decreased.
Source: USDA 2012 Census of Agriculture.

	Number of Farms	Total Acres in Farms	Avg. Farm Acreage
1974	310	262,024	845
1997	608	269,657	443
2002	641	258,315	403
2007	699	281,893	403
2012	637	247,141	388

Almost 38% of farms in the county now sell less than $1,000 worth of agricultural products in a year, and most proprietors do not make their primary living from farming or even produce the majority of their own food. Many of the county's farms may primarily be rural residences with agriculture playing a secondary role on the property. [23]

Direct markets in Missoula such as the Missoula Farmer's Market, Clark Fork Market, sales to grocery stores, and food being sold through the Western Montana Growers cooperative, contribute to the agricultural economic activity within Missoula County. The largest agricultural sales within Missoula County are cattle and calves ($8,148,000); nursery and greenhouse sales ($1,945,000); and crops and hay ($1,593,000).

Residents of Missoula County have consistently noted that local agriculture is important for maintaining a resilient local economy and conserving the history and culture of the region. The county will support conservation of agricultural resources and expansion of markets as outlined in Goals 1, 5 and 7 and the Land Use Strategy in Chapter 2.

Timber and Wood Products Economic Activity

The timber and wood products industry drove the Missoula County economy throughout the 20th century. Although the industry is now far less dominant, it still plays an important role and Missoula County has timber resources that can provide an economic base. Timber is harvested on private, state, and federal lands and processed at the Pyramid Mill in Seeley Lake and Roseburg Mill in Missoula. In 2013, the industry paid more than $34 million in wages and employed almost 700 workers in forestry, logging, support activities, and wood products manufacturing.

Economic Development

Missoula County is a member of the Bitter Root Economic Development District, Inc., the federally-designated economic development district for the Western Montana Region. The district developed and maintains the Comprehensive Economic Development Strategy for Missoula County and Mineral County. Missoula County contracts with the district to administrer Big Sky Trust Fund Category I Job Creation Grants from the Montana Department of Commerce for eligible businesses in Missoula County. Missoula County also contracted with BREDD to do the Broadband Master Plan and Industrial Lands Assessment.

The County is also an investor and an active participant in Missoula Economic Partnership, is a public-private partnership created to connect businesses with the programs, resources and workforce to enhance their success.

Figure 11 - Change in Number of Jobs By Industry in Missoula County 2001-2013
Missoula County's job market has changed over time, shifting from production to service, which reflects a nation trend.
Source US Bureau of Economic Analysis

Industrial Lands

Missoula County commissioned an Industrial Lands Study to identify and analyze currently or formerly used industrial properties that could be re-developed into industrial and commercial sites. The survey evaluated 38 locations outside of the city limits. The Industrial Lands Study included factors such as demographic, economic and labor force trends, transportation accessibility, utility infrastructure, and regulatory, and environmental opportunities and constraints. These factors were applied to each property to characterize the sites' current status as ranging from 'decision ready' (presently suited for re-development) to 'industrial reserve' (impediments need to be overcome prior to re-development).

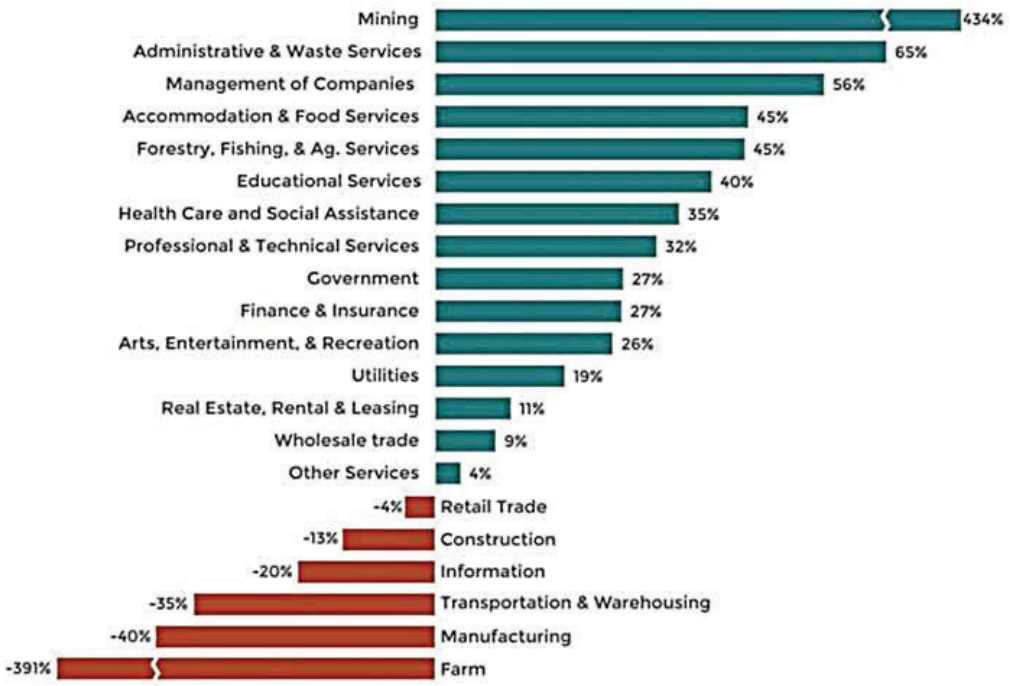
The Industrial Lands Study indicates that the Missoula Development Park, Bonner Mill Site, Frenchtown Mill Site and the Wye are ready for re-development because they have sufficient supply or access to transportation and utilities and/or have limited environmental constraints. The Missoula and Bonner sites have additional capacity for further industrial business. The Frenchtown site is awaiting environmental and projected land use studies to be completed before re-development can take place.

The study states that Missoula County has an excess supply of industrially-zoned lands given current market absorption rates. All of the potential sites could be redeveloped to accommodate non-industrial/non-manufacturing uses that are current growth sectors such as health care services, accommodations and food services, retail trade, and professional scientific and technical services. Current county zoning regulations may hinder some conversion to non-industrial business activity and the study recommended updating the zoning to allow land uses that reflect current and future demands. Actions the county plans to take to address these issues are located primarily under Goal 5 in Chapter 2.

Targeted Economic Development Districts and Tax Increment Financing

The State of Montana's Urban Renewal Law (Montana Code Annotated 7-15-4279) provides opportunities for cities and counties to create targeted economic development districts with the purpose of developing infrastructure to encourage the location and retention of value-adding industries or projects. Targeted economic development districts must have a comprehensive development plan, be located in an area that is deficient in infrastructure improvements, and must be zoned appropriately for the intended uses.

Figure 12 - Percent Change in Total Earnings By Industry in Missoula County 2001-2013
Since 2001, the county has experienced the greatest increase in earnings in mining and service-related industries.
Source US Bureau of Economic Analysis



Local governments may use tax increment financing to finance the development of infrastructure needed by industry within the districts. Tax increment financing allows cities and counties to direct new tax dollars that accrue from development within the district and reinvest those funds in infrastructure for that district for a limited period of time. Tax increment financing does not increase property taxes, but it affects the way new tax revenues, once collected, are distributed. Tax payers within the district pay the same amount as they would pay if the property were located outside of the district, but virtually all of the resulting new property tax dollars can be directed to redevelopment and economic revitalization activities within the area in which they are generated. Funds generated from tax increment financing districts can be used directly for projects and also to leverage state and federal grants.

Tax increment financing is an important fiscal tool that allows local governments to finance certain kinds of development costs. Bonds may be sold to finance re-development efforts based on anticipated increases in property taxes collected in that locale. The actual increment of increased tax revenue from the area is used to pay off the bonds. Opportunities exist for the establishment of districts for the use of tax increment financing, particularly in conjunction with superfund and brownfield sites. There is an industrial tax increment financing at the Bonner Mill Site and a targeted economic development districts across the river from the Bonner Mill Site on industrial lands.

Counties have the ability to establish three types of TIF districts – industrial, technology, and aerospace transportation and technology. Industrial districts must be zoned for light or heavy industrial use in accordance with the growth policy, and have as their purpose the development of infrastructure to encourage the growth and retention of secondary, value-added industries.

Technology districts must, through the employment of knowledge or labor, add value to a product, process, or export service that results in the creation of new wealth of which at least 50% of the sales of the business or organization occur outside of Montana.

Aerospace transportation and technology districts must be designed to develop infrastructure intended to encourage the location and retention of aerospace transportation and technology development projects in the state. Missoula County intends to apply these re-development tools as opportunities arise to spur economic development.

Projected trends

Due to the baby boom generation exiting the workforce over the next 20 years, Missoula County, like the state as a whole, will have to attract a qualified workforce to meet the needs of a growing population. According to the Montana Department of Labor and Industry's Labor Day Report, unemployment rates are projected to drop to 1 to 2% over the next 10 to 20 years. This is likely to put upward pressure on wages as workers will be relatively scarce.

Areas of growth appear to be health care services, accommodations and food services, retail trade, and professional scientific and technical services. Additionally, efforts to support local agriculture and other value-adding industries, education and job training programs are expected to increase.

One of the implementation actions of this growth policy is to work closely with economic development agencies to develop a targeted economic development plan focusing on the rural communities of Missoula County (See Goal 5 in Chapter 2). Please see Goals 5, 6 and 7 in Chapter 2 for Missoula County's approach to address economic development challenges and opportunities.

COMMUNITIES

The distinct communities of Missoula County extend along highway corridors and river valleys. Each community has a unique history and identity. This section focuses on the portions of Missoula County outside of the City of Missoula. In some cases information about the city is included to provide context. This section presents population growth, housing needs, land ownership and land use patterns, local services, public facilities, and cultural resources.

Missoula County's population is expected to grow significantly over the next 20 years. In order to meet the challenge of accommodating growth while conserving vital natural resources,

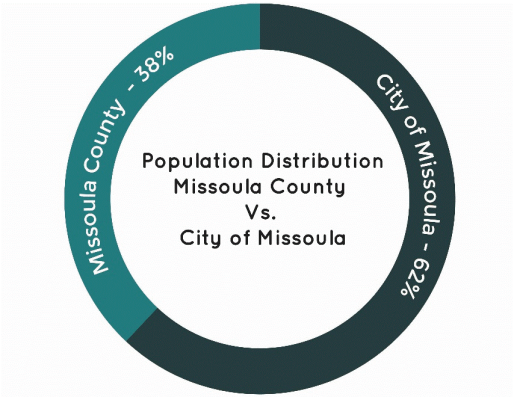
providing amenities, and maintaining the high quality of life that makes our communities special, Missoula County and its partners must provide attractive and functional places for people to live, work and recreate.

Population

The 2015 population of Missoula County is estimated to be 116,076 people, an increase of 6,847 people since the 2010 Census.[24]

Map 15 provides a snapshot of the overall population distribution based on 2010 Census figures. The map shows the vast majority of Missoula County residents live within or in close proximity to the City of Missoula.

Figure 13 - Population Distribution Missoula County Vs. City of Missoula
Continuing the current trend, the population is split with about two-thirds in the city and one-third in the county.
Source: American Community Survey



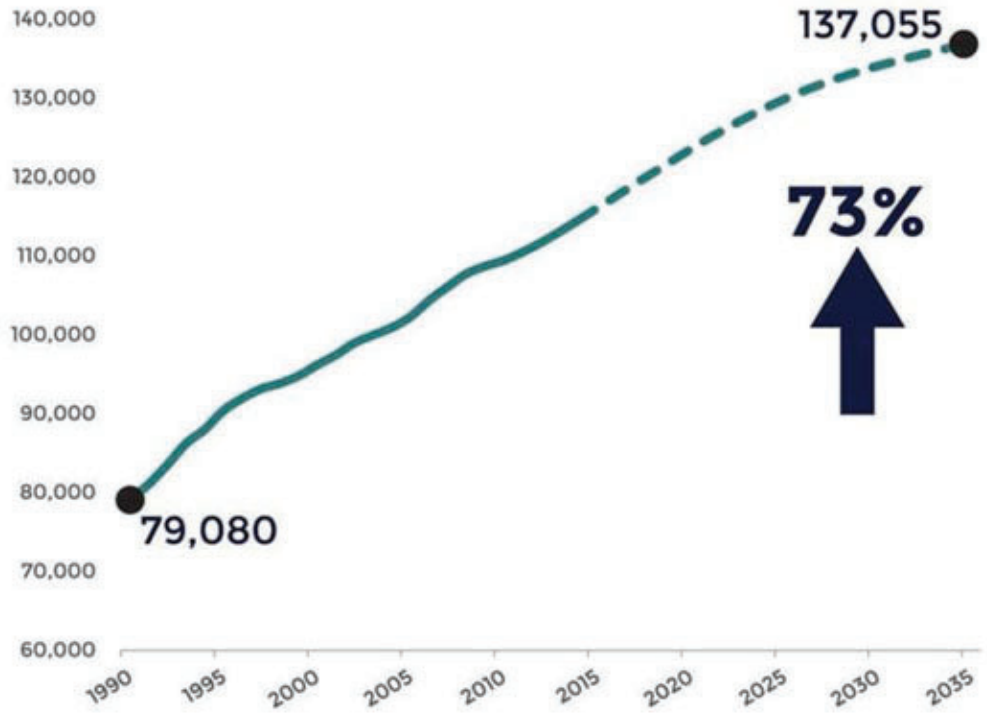
Population Projections

The Missoula County population is projected to be 137,055 in 2035, an increase of 20,979 persons in both the city and unincorporated areas over a 20-year period.[25] Figure 13 shows past and projected population growth.

We know growth is coming, but where will it occur? The city is a focal point of employment and education and has stated its intent to accept several thousand new residents. Based on current population distribution and assuming 65 to 70% of new residents locate within the city and 30 to 35% locate within the unincorporated areas, Missoula County can plan for an additional 6,300 to 7,400 new residents over the next 20 years. (See Figure 14)

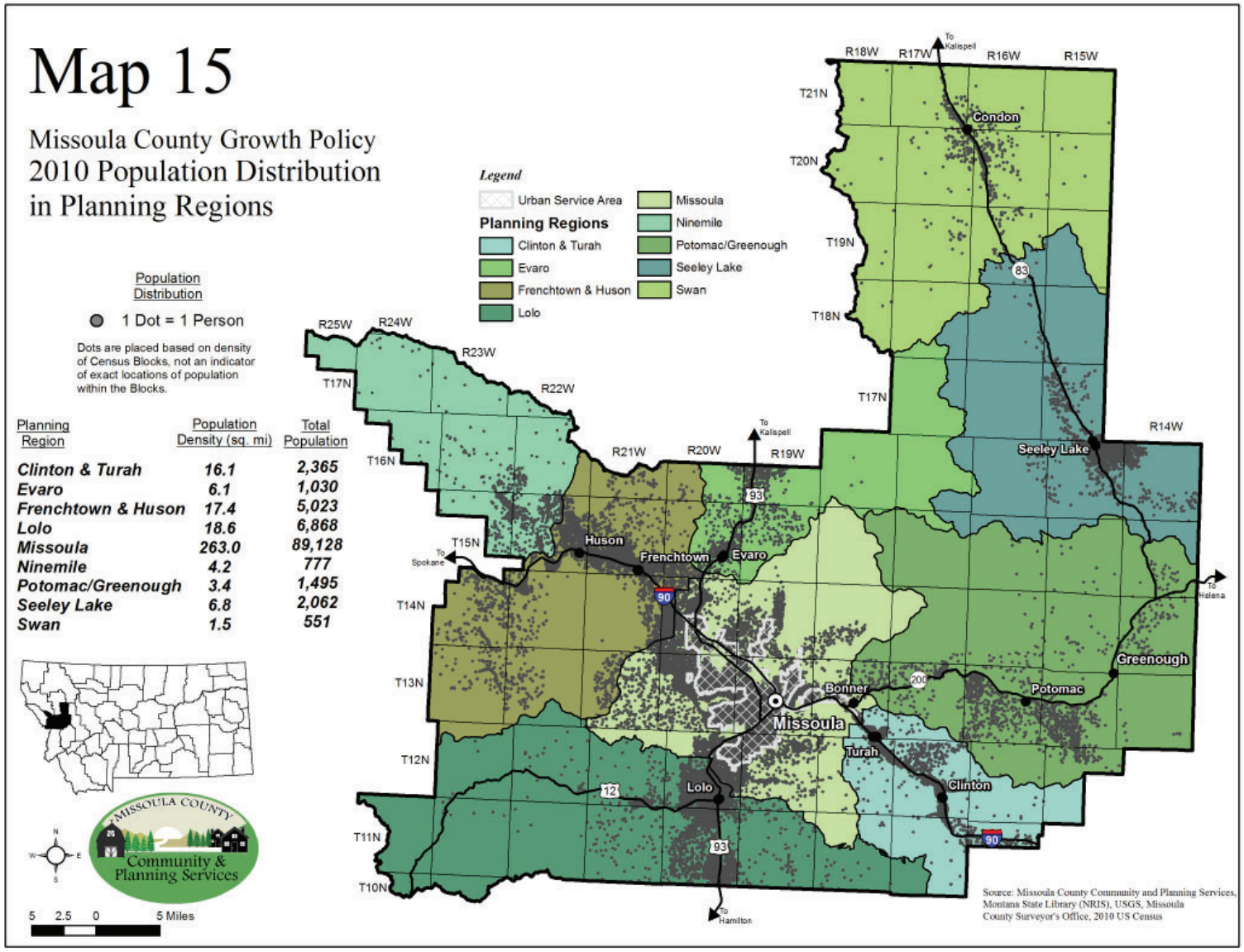
Missoula County intends to guide the majority of new growth within and adjacent to existing communities through efforts to help develop communities as attractive and functional

Figure 14 - Missoula County Population Growth and Projections
The county's population has grown consistently over time and is expected to continue to grow, adding nearly 21,000 people in 20 years. Source: Montana Department of Commerce with permission from Regional Economic Models, Inc.



Map 15

Missoula County Growth Policy 2010 Population Distribution in Planning Regions



places with necessary infrastructure, housing and services.

Aging Population

In Missoula County, even more so than the rest of the United States, the population is aging. Families across the county are having fewer children and now living longer lives. Figure 15 shows the portion of the population under 18 years of age has decreased while the population over 65 continues to increase, both in total numbers and as a percentage of the overall population.

Figure 16 shows that while all age groups are projected to increase numerically, the largest percentage gains are likely to occur in the 65+ age group. More senior-friendly housing and functional communities with grocery stores, pedestrian facilities, medical care and transportation, and other services will be necessary in the coming years to accommodate the aging population. A combination of efforts with partners from the public, private and non-profit sectors will be necessary to provide for our aging population.

Housing

In 2014, there were an estimated 51,411 housing units in Missoula County, including 30,682 located within

Figure 15 - Population Age Group Changes 1990-2014
Over time, the population younger than 18 has decreased while the population older than 65 has increased.
Source: Decennial Census and American Community Survey

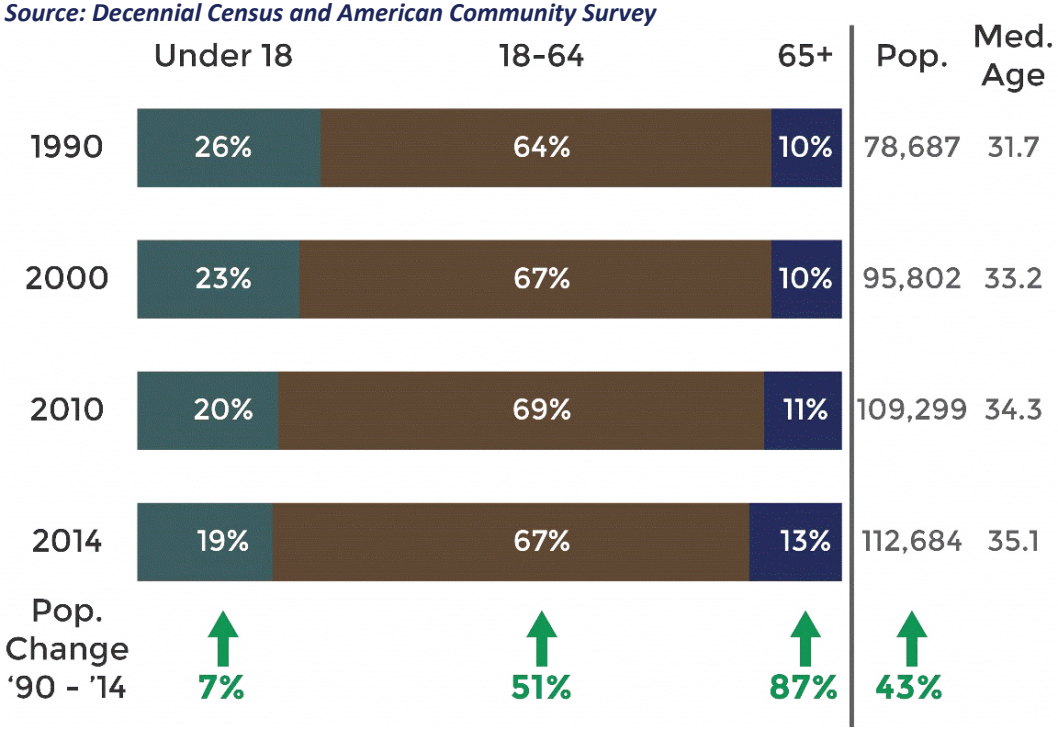
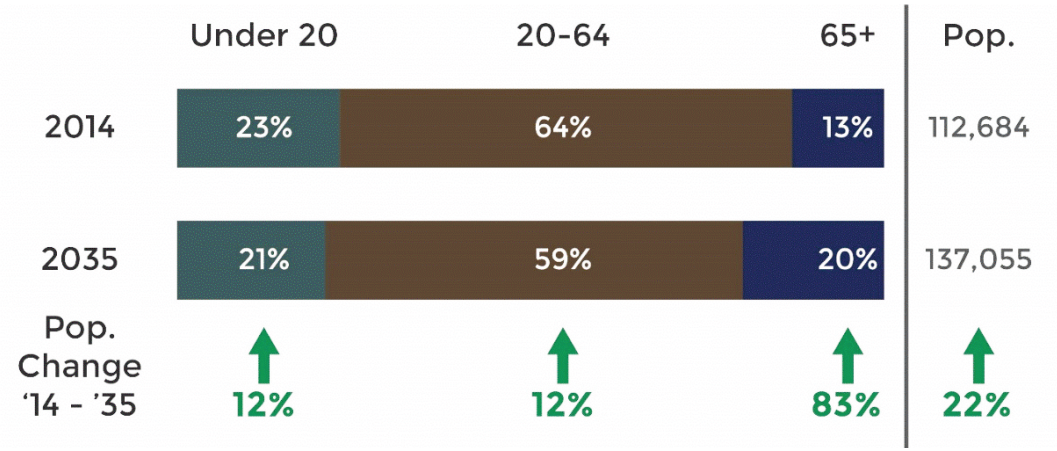


Figure 16 - Projected Population By Age Group 2035
Over the next 20 years, most population growth will occur in the older than 65 age group.
Source: Decennial Census and American Community Survey

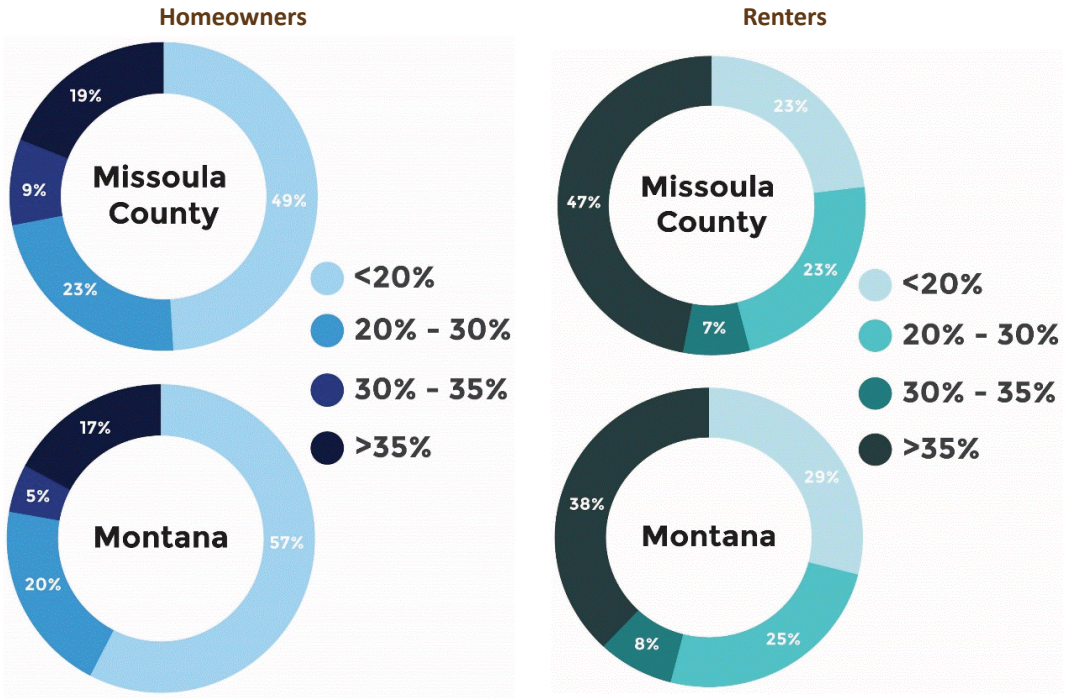


the City of Missoula. Housing within the County consists of single-family units (62%), multi-family units (28%), and mobile homes (10%). Missoula County's housing occupancy rate is 56% owner-occupied units, 35% renter-occupied units, and approximately 9% vacant (including seasonal and temporarily vacant homes).[26] Of the total vacancies, the rental market typically averages less than a 5% vacancy rate at a given time, which puts upward pressure on rent and sale prices.

Housing Costs

In Missoula County, the median housing value (cost) is far higher than the State of Montana. From 2009 to 2013, the median housing cost for owner-occupied units (typically single-family detached structures) was estimated at approximately $237,500, while the median cost across the state was $184,200.[27] For about 28% of the homeowners and 54% of renters, the cost of housing exceeds 30% of their gross monthly incomes, which is considered a cost-burden by the U.S. Department of Housing and Urban Development (Figure 17). These figures point to a significant need for new housing that accommodates a range of incomes in both the Missoula urban area and in and around the unincorporated communities. Goals 8, 9 and 10 and the Land Use Strategy in Chapter 2 focus on actions Missoula County will take with its partners to provide opportunity for a wide range of housing choices.

Figure 17 - Homeowner Costs adn Rent as a Percent of Income 2014
More than a quarter of Missoula County homeowners and half of renters pay more than 30% of their income for housing costs, making them cost-burdened.
Source: American Community Survey



Household Composition

Between 2000 and 2014, the average household size in Missoula County decreased from 2.4 to 2.35 persons.[28] During that same time, the percent of single person households increased by 5%, while the percent of 3 and 4+ person households decreased (Figure 18).

Table 6 - Changes in Household Composition
Slightly more than half of county households consist of two or more people, a small decrease since 2000.Family households with children has decreased, whereas households with one or more individuals 65+ has increased.
Source: Decennial Census and American Community Survey

	2000	2014
Households (HH)	38,493	46,407
Family HH	60%	55%
Family HH w/ Children <18	49%	43%
HH w/ >1 Individual 65+	18%	24%

As shown in Table 5, as of 2014, 55% of all households in Missoula County were family households with two or more people related by birth, marriage or adoption, down from 60% in 2000. Of those family households, 43% had children under the age of 18, down from 49% in 2000.

At the same time, the percent of households with one or more person over the age of 65 increased from 18% in 2000 to 24% in 2014. All of these figures indicate that household size is decreasing in Missoula County, with an increasing share of households with individuals over the age of 65.

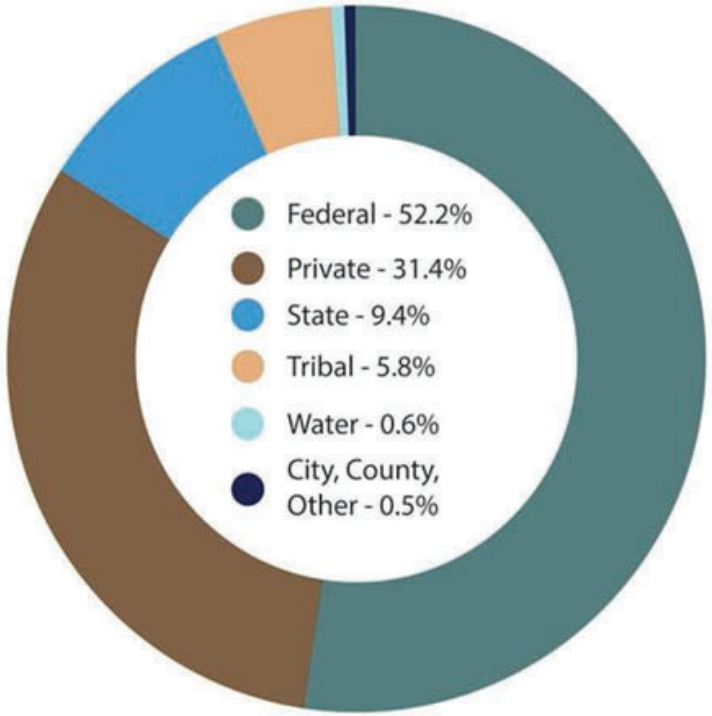
Projected Trends

Due in part to the aging population and family decisions to have fewer children, the average household size is expected to decrease to approximately 2.3 people per household. Based on household size and population estimates, Missoula County (outside of the city) will need between 2,740 and 3,220 new housing units by 2035. Efforts to provide smaller and senior friendly housing within and around our communities will be important to meet the expected demand.

Housing costs are high in Missoula County. With this range of new

Figure 18 - Change in Household Size 2000-2014
While household size has decreased slightly, the number of single person households in Missoula County has grown, following the national trend.
Source: American Community Survey

Figure 19 - Land Ownership in Missoula County
Most of the county's lands are managed by local, state and federal government, with half of the land in the county owned by the U.S. Forest Service.
Source: Missoula County Community and Planning Services



households anticipated, housing costs as a percentage of income can only be expected to increase unless significant new supply across the spectrum of price ranges is developed.

Land Ownership

The total area of Missoula County is approximately 1,675,584 acres. Almost 62% of the land is managed by state, federal and local governments, with tribal lands accounting for an additional 5.8% (Figure 19). The U.S. Forest Service is the largest landowner, with 50.8% of the Missoula County land area, followed by the State of Montana at 9.4%.

Approximately 31.4% of the county is privately owned with the largest private landowner being The Nature Conservancy at 9.3%. Weyerhaeuser also has significant private land holdings. Approximately 19.5% of the county land area can be considered private and non-corporate.

Private land ownership in the county has decreased from 736,648 acres in 2005 to 526,635 acres in 2015. This is largely a result of a transfer of Plum Creek Timber Company (now Weyerhaeuser) land to the U.S. Forest Service, Montana Department of Natural Resources and Conservation, City of Missoula, the Nature Conservancy, and other private owners via the Montana Legacy Project and the Clearwater-Blackfoot Project. The land transfer is intended to protect fish and wildlife habitat, maintain productive working forests, and provide public access for outdoor recreation activities. Map 16 depicts land ownership in Missoula County.

Projected Trend

The mix of land ownership is still in transition. The transfer of private land to public ownership is expected to slow with the completion of the Montana Legacy and the Clearwater-Blackfoot Projects. However, there will still be a transition of land from ownership by The Nature Conservancy to public, and to a lesser extent private, ownership as part of the Clearwater-Blackfoot Project

Development Patterns

Most of the subdivision and development activity in Missoula County has historically occurred in the valleys near existing communities, a pattern Missoula County seeks to continue in accommodating future growth. From 2000 to 2010, almost 80% of new housing units were built in the Missoula urban area (city and county) and, more recently, construction of multi-family units in this area has been on the rise.

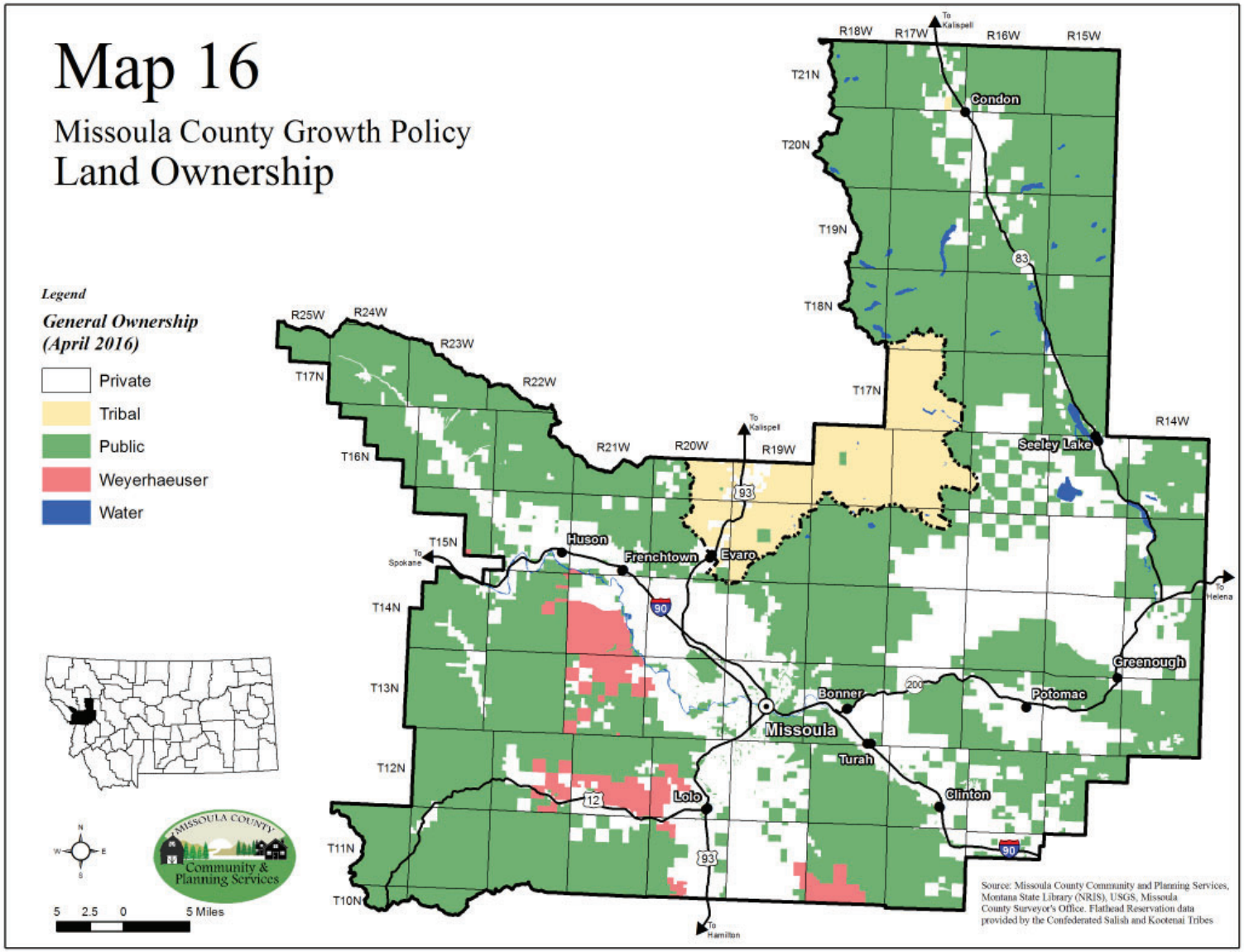
Missoula County adopted a building permit program in 2006 to provide for public safety and consumer protection. In conjunction with the efforts of the private development industry, subdivision, zoning and floodplain regulations ensure our communities are reasonably well planned. The Land Use Designation map (Map 18) and local area plans also guide development.

Subdivision Activity

Subdivision activity provides a snapshot of current and future development patterns. From 2005 through 2014, the county and the city preliminarily approved 3,559 lots on 4,510 acres

Table 7 - Subdivisions By Region
Regionally, most subdivision development has occurred in the Missoula Valley.
Source: Missoula County Community and Planning Services

	Lots	Acres
Missoula Valley	3,041	1,986
Frenchtown & Huson	183	232
Lolo	163	1,040
Clinton & Turah	66	504
Swan Valley	44	481
Seeley Lake	44	194
Potomac/ Greenough	16	63
Ninemile	2	10


Map 16
Missoula County Growth Policy
Land Ownership
Legend
General Ownership
(April 2016)
Private
Tribal
Public
Weyerhaeuser
Water
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R18W
R17W
R16W
R15W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
To Kalispell
To Spokane
To Helena
To Hamilton
Condon
Seeley Lake
Huson
Frenchtown
Evaro
Greenough
Bonner
Potomac
Missoula
Turah
Clinton
Lolo
83
93
90
200
12
Missoula County
Community & Planning Services
5 2.5 0 5 Miles
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office. Flathead Reservation data provided by the Confederated Salish and Kootenai Tribes

(Table 6). Although precise figures are not available, many of these lots have yet to be developed and several of the subdivisions have not received final approval due to the recent economic recession and slow-down in construction. Since 2005, most development has been in the Missoula Valley.

Zoning

Zoning regulates the density and types of land uses that are permitted on a property. About 7% of land outside of the City of Missoula is currently zoned. Within the city, 96% of the land is zoned. Missoula County first adopted a zoning resolution in 1976. Missoula County planners intend to update the zoning resolution to address several of the goals and objectives in this growth policy, as well as to generally modernize the document.

Land Use Designation Maps

Land use designation maps are another indicator of a community's future development potential. The current Missoula County Land Use Designation Map (Map 18) incorporates designations from local area plans that have been adopted over the years, as well as designations for portions of the County without area plans that were originally adopted in 1975 and re- adopted in 2002. Please see the Land Use Strategy at the end of Chapter 2 for a discussion of how the county's Land Use Designation Maps are planned to be updated.

Urban Fringe Development Area Project

The 2008 Urban Fringe Development Area Project analyzed where additional residential growth might occur within the Missoula urban services area with particular emphasis on potential growth on lands between the city limits and the Missoula Urban Service Area boundary.[29] The project provided city and county governments with recommendations to accommodate residential growth to 2028.[30]

Based on building permit data and population trends, the Missoula urban area will grow at an average rate between 1% and 2% per year. As a result, the Missoula Urban Service Area will have to accommodate approximately 15,000 new dwelling units by 2028 in accordance with adopted policies applicable to the areas.[31] A map in the fringe area document shows the preferred residential development allocation within the Missoula Urban Services Area. (See Map 3 in Chapter 3)

The 2012 Urban Fringe Developed Area Yearbook showed that housing growth slowed to 1.1% annually in the last five years, which is less than the projected 1.5% Census growth rate. During this time period, 1,665 new units were built, which is an average of 383 new units annually.[32] In 2012, out of 288 new units in the urban services area, 31 were outside the city limits. Over the last five years, one-quarter of the new 1,665 units within the urban services area were outside the city limits.

Projected Trends

As the economy improves new construction on approved lots is expected to increase throughout the county. The Miller Creek/Linda Vista area in particular is expected to grow within the next 10 to 20 years as more than 1,200 residential lots have been preliminarily approved for development in that area. Depending on the availability and costs of housing in the City of Missoula, increased residential development pressure can be expected in other areas within commuting distance to the city such as Frenchtown, Huson, Lolo, Clinton and Turah. The second home market is also likely to pick up again in the Swan Valley and other areas near lakes, rivers, and natural amenities.

Local Services

Law Enforcement and Crime

The Missoula County Sheriff's Office and the Missoula City Police Department are

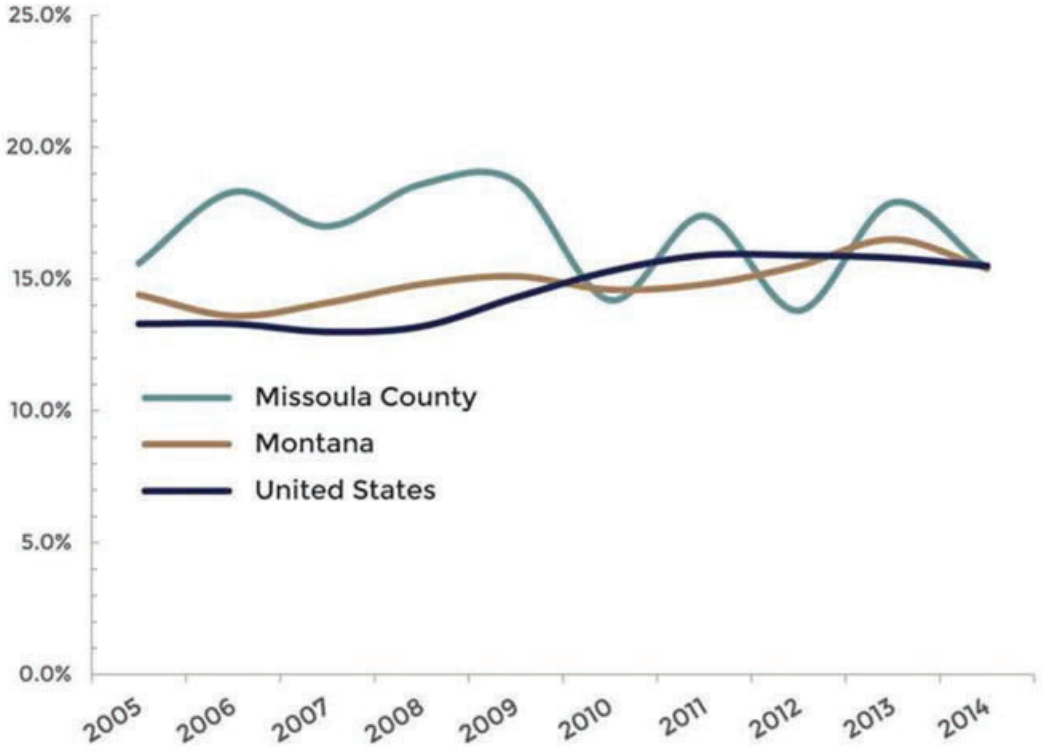
the primary law enforcement agencies within the county. The Montana Highway Patrol maintains traffic enforcement and crash investigation on State highways and areas outside the city limits. On the Flathead Reservation, Tribal Police have law enforcement authority. Other agencies with law enforcement roles in Missoula County are Montana Fish, Wildlife and Parks, the U.S. Forest Service, U.S. Bureau of Land Management, and the U.S. Fish and Wildlife Service.

Fire Protection

Several agencies respond to fire and medical emergencies throughout the county. Together, these agencies participate in the Missoula County Fire Protection Association, a private not-for-profit organization. The agency closest to the fire responds at the request of the sheriff. The City Fire Department and the Missoula Rural Fire District provide emergency medical services in most of the urban area. Other fire organizations in the county include:

- Clinton, East Missoula, Florence, Frenchtown, Arlee, and Seeley Lake Rural Fire Districts
- Greenough-Potomac and Swan Valley Fire Service Fee Areas
- Lolo, Flathead, and Bitterroot National Forests

Figure 20 - Percent of Population at or Below Poverty Line
Relatively speaking, Missoula County has a large population living in poverty.
Source: American Community Survey



- Bureau of Land Management
- Montana Department of Natural Resources and Conservation

The fire districts and fire service fee areas are staffed by volunteers. There are areas without designated fire services. A discussion of wildland urban interface issues is located in the Landscapes section of this chapter.

Social Services

Various government and private social service agencies provide food, shelter, clothing, transportation, child care, and medical care for those living at or below the poverty level. Flathead Reservation human service programs provide similar services for eligible Indian and low- income applicants in Missoula County. The Missoula City-County Health Department tracks the

well-being of residents including the availability of social service needs and resources.

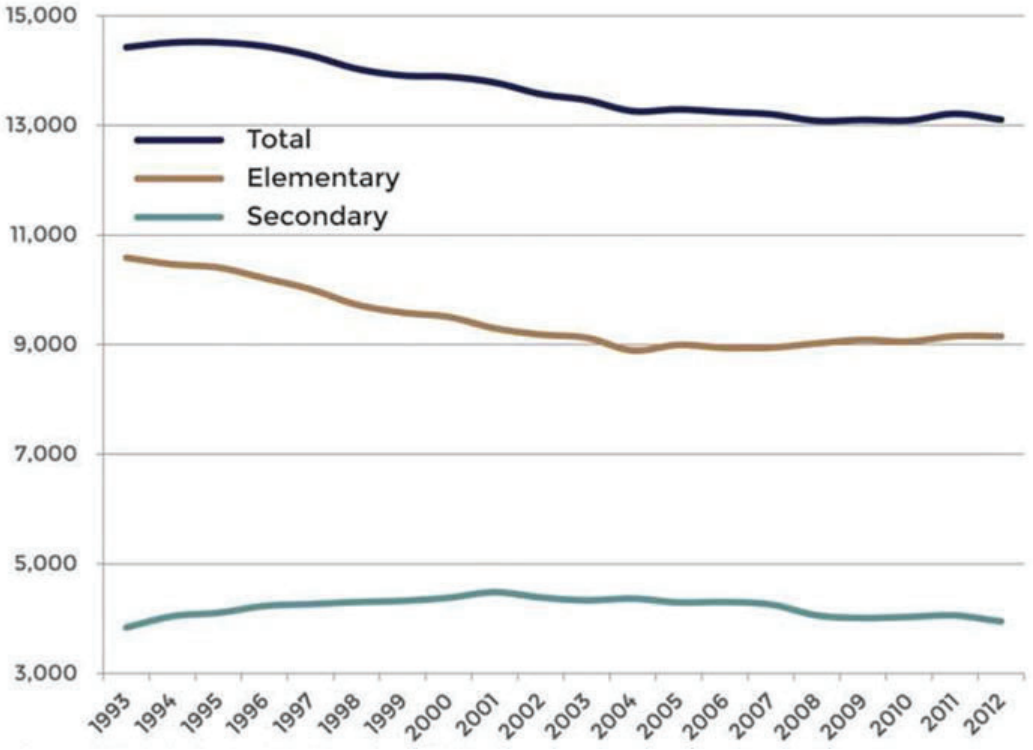
Missoula County has a large population living in poverty. Between 2005 and 2014, the percentage of the population in poverty decreased slightly from 15.6% to 15.4% (Figure 20). Regardless of this slight decrease, there remains a need for the county to continue its partnerships with the public, private, and not-for-profit sectors to address the needs of low-income populations.

Medical Services & Facilities

Missoula is a regional medical center with two hospitals. Community Medical Center serves almost 6,000 patients annually with 146 acute-care beds. St. Patrick Hospital served 8,144 patients in 2010 with 253 acute-care beds.[33]

Partnership Health Center, a City-County program, provides medical, dental, and pharmacy services to over 7,000 patients annually based on ability to pay. Partnership has clinics in Missoula, Seeley Lake, and Superior. Partnership serves all sectors of the population, including low and moderate income populations, uninsured and underinsured, workers, and homeless individuals and families from Missoula and surrounding rural counties.

Figure 21- Missoula County Public School Enrollment 1990-2012
Overall, public school enrollment has declined over the past two decades, as can be expected when the share of population under 18 is shrinking.
Source: Missoula County Superintendent of Schools



Missoula Emergency Services, Inc. provides paramedic-level ambulances and responds to approximately 9,000 calls per month.[34] Northwest MedStar helicopter serves Community Medical Center and St. Patrick Hospital in areas up to 125 miles from Missoula.[35] The medical service transports approximately 800 patients each year.[36]

Education

Public education is provided by thirteen school districts located throughout the city and county, each with its own governing board. In 2012, 13,255 Missoula County residents were enrolled in the public schools. An additional 421 residents attended joint districts (school districts which extend across county boundaries). Of these three joint districts, 67 students attended school

in Arlee (Lake County), 112 in Alberton (Mineral County), and 242 in Florence-Carlton (Ravalli County). Overall, public school enrollment has declined over the past two decades as shown in Figure 21.

The number of students who are home-schooled or enrolled in private schools is a relatively small percentage of the overall student-age population, with 189 students home-schooled and 1,023 students attending private schools in 2012.

Libraries

The Missoula Public Library has branches in Swan Valley, Seeley Lake, Potomac, Lolo, Frenchtown, and in Big Sky High School in Missoula. Web on Wheels, a mobile computer and library bus, serves areas outside the city limits and low-income apartment complexes and elder residential facilities. In 2010, the library provided services to more than 11,100 users in a typical week, an increase of over 3,700 per week since 2005. Efforts are underway to expand library facilities.

The Maureen and Mike Mansfield Library at the University of Montana has the largest library collection of books and media in Montana. Combined collections within the Montana Public Access Catalog of the Affiliated Libraries of the University of Montana are in excess of 1.9 million volumes.

Museums

Missoula Art Museum and the Historical Museum at Fort Missoula reflect both current and historical aspects of the community. Missoula Art Museum includes six exhibition spaces, a library, and education center. The Historic Museum at Fort Missoula collects, preserves, and interprets the history of Missoula County and western Montana. Other communities have facilities or collections that honor local history and culture.

Solid Waste

Republic Services operates a regional landfill serving Missoula County. Additional landfill space was created for future use to the north of the current facility. According to Republic Services, the landfill has sufficient capacity until 2031. Missoula County supports efforts at waste reduction and recycling. Please see Chapter 2, Goal 4 for actions the county will take in this area.

Electricity and Natural Gas

Northwestern Energy and Missoula Electric Cooperative provide most of the electric service in the county. Mission Valley Power serves the area of the county within the Flathead Reservation. Northwestern Energy provides natural gas service and is generally less available outside the city because extension of gas is costly to developers and the consumer. Bonneville Power Administration, Northwestern Energy, and Yellowstone Pipeline Company own transmission lines and gas pipelines that cross the county. Many rural residents also rely on propane.

Solar and Wind Energy

Some county homeowners and businesses are installing solar and wind energy systems to reduce utility costs and carbon emissions. Missoula County permits these systems in some zoning districts as special exceptions. One solar unit has been built within the county and another was recently approved. The City of Missoula permits wind and solar units in all zoning districts. Since 2010, 130 solar systems have been installed within city limits.

Missoula County recognizes the importance of developing alternative energy sources for several reasons, including to reduce reliance on fossil fuels and for increased energy independence. In Chapter 2, Goals 4 and 5 in particular address actions the county will take to support the development and use of alternative energy and the development of clean technology.

Telephone and Internet Services

Numerous local and national companies provide cellular, landline, and/or internet telecommunication services within the county. Broadband internet is generally available to residents throughout Missoula County. The main line from Seattle/ Chicago/ Denver/ Salt Lake City runs through Missoula and into the Swan Valley, Seeley Lake, Potomac, and Greenough. Due to terrain, there are areas that experience problems with these services. It is estimated that it would cost about $225 million to connect all Blackfoot customers to the main line.

Current infrastructure provides high speed internet, but not the highest available speeds. As the economy and technology change in the coming years, the availability and speed of broadband is expected to be a major determinant of an area's economic development potential. Missoula County plans to support the expansion of broadband and digital technologies. Please see Chapter 2, Goal 6.

Projected Trends

With the projected population increase, it will be necessary to continue to increase law enforcement personnel in order to effectively serve the population. Similarly, fire protection resources and the need for volunteer and potentially paid personnel will likely increase with the population, particularly to respond to an expected increase in wildland fires. The decline in total enrollment of students in public and private schools is likely to continue based on demographic changes in the population. Additionally, with increasing population in the county, the changing economy and demographics, there is likely to be an increased demand for all types of local and social services.

Public Facilities

Water Supply

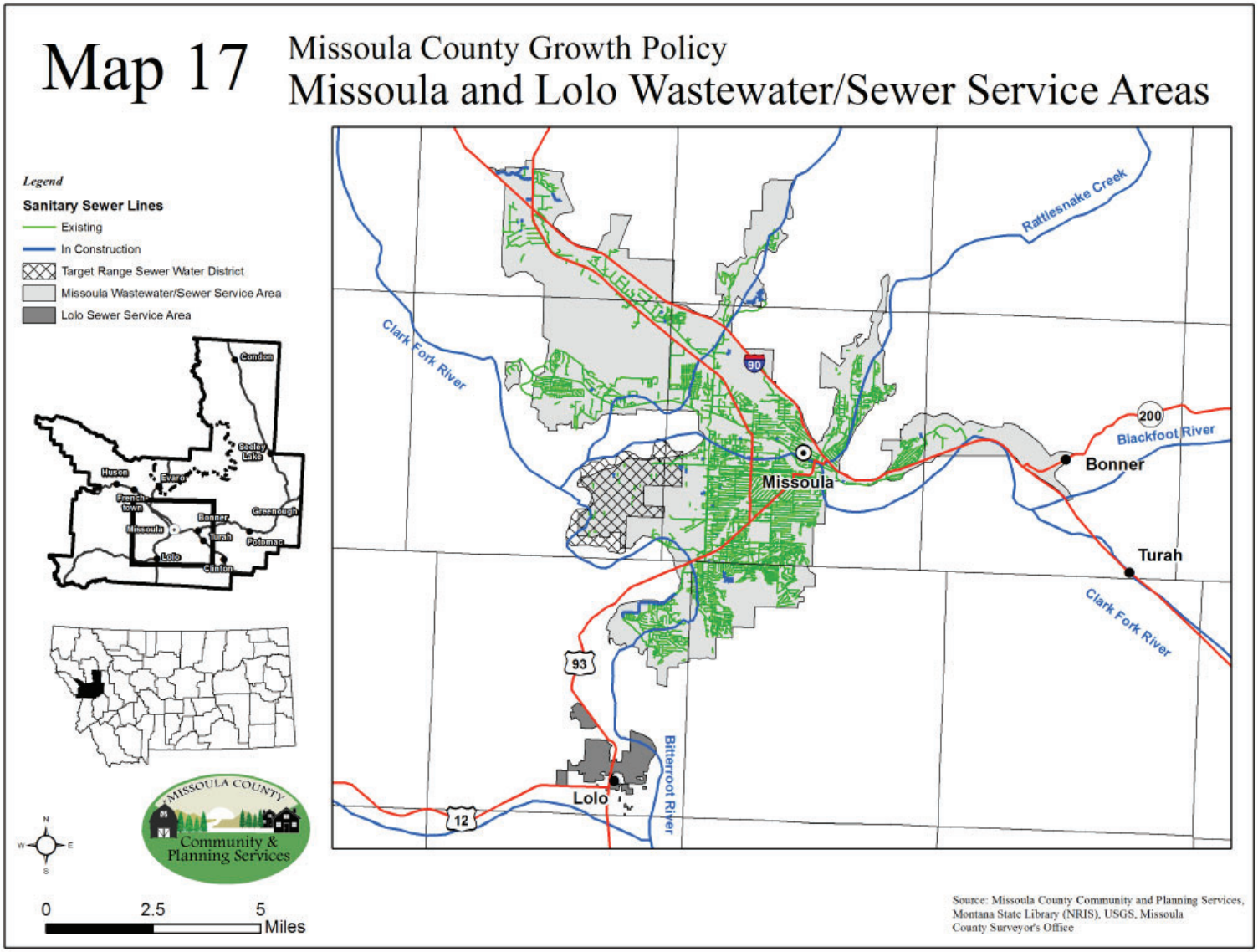
Drinking water for 80% of Missoula County residents is supplied by the Missoula Valley aquifer. Mountain Water Company currently serves the majority of the urban area and East Missoula, although the city is in the process of taking over the system. The water system relies on 37 wells drawing from the aquifer. Rattlesnake Creek serves as an emergency backup supply and future resource if needed. The water receives no treatment except for chlorination before distribution.

Missoula County owns and operates the Lolo, El Mar/New Meadows, Sunset West, and Lewis and Clark water systems. The Confederated Salish and Kootenai Tribes maintain three community water systems in Missoula County. The Seeley Lake Water District serves a portion of the Seeley Lake town and some areas on the eastside of Seeley Lake. The number of new private wells drilled within Missoula County over the past ten years is approximately 3,165.[37]

Wastewater Treatment

Public wastewater treatment systems protect human health and preserve water quality. Areas without public systems are served by community or individual wastewater treatment systems. Plans have been developed to extend sewer collection systems in the urban area to several neighborhoods as well as the Miller Creek area. The Missoula City-County Board of Health has adopted a goal to ensure that connections to public sewer systems that do not discharge into the aquifer and are inside the Water Quality District occur at a rate such that the total number of septic systems in the District does not increase over time. A study is underway for the development of sewer service in the Bonner/ Milltown/ West Riverside areas.

Map 17 identifies where sewer service is anticipated by 2020. The City of Missoula is the primary provider of sewer service within the urban area (Map 2 in Chapter 3). A recent wastewater treatment facility upgrade increased capacity,


Map 17
Missoula County Growth Policy
Missoula and Lolo Wastewater/Sewer Service Areas
Legend
Sanitary Sewer Lines
Existing
In Construction
Target Range Sewer Water District
Missoula Wastewater/Sewer Service Area
Lolo Sewer Service Area
Condon
Seeley Lake
Huson
Evaro
Frenchtown
Greenough
Bonner
Missoula
Turah
Potomac
Lolo
Clinton
Missoula County
Community & Planning Services
N
W
E
S
0
2.5
5
Miles
Rattlesnake Creek
Clark Fork River
90
200
Blackfoot River
Bonner
Missoula
Turah
Clark Fork River
93
Bitterroot River
Lolo
12
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office

improved treatment, and is expected to be sufficient through at least 2020.

Missoula County Public Works operates and maintains the sanitary sewer system and wastewater treatment plants in Lolo and at the Lewis and Clark District in Clinton. The Lolo facility has approximately 1,100 connections. The facility is planned to be upgraded to add nutrient removal capabilities to meet discharge limits. The Lewis & Clark District has 42 connections and will require an update sometime between 2015 and 2020.

The Seeley Lake Sewer District is planning a wastewater project that will provide sewer treatment to residential and commercial areas around Seeley Lake. The project is in the design and permit phase. In conjunction with planning, Missoula County supports the development and expansion of public water and wastewater systems to help provide for the growth of communities, to protect public health and safety, and to protect water quality. Measures to assist with the creation and expansion of such systems are included in Goal 9 of Chapter 2. Goals 1, 4, 5, 8, 10, 11 and the Land Use Strategy all complement this goal.

Transportation

Missoula County has approximately 1,500 miles of public roadway. The County Road Department is responsible for maintenance activities on approximately 474 miles of road, including approximately 232 miles of paved roads and 242 miles gravel roads.[38] New subdivision roads are generally maintained privately. The City of Missoula has approximately 338 total miles of local streets and highways.[39] Montana Department of Transportation roads include 191 miles of interstate, highway, and urban roads. About 10 miles of tribal residential and forest roads are within the Flathead Reservation in Missoula County as are over 2,400 miles of U.S. Forest Service roads.

Traffic Volumes

In 2010, estimated vehicle miles traveled in the urban area exceeded 1.59 million miles per day.[40] Projected vehicle miles traveled in 2040 will exceed 2.73 million miles per day.[41] Roads previously congested can reasonably be expected to experience more congestion in 2040 unless significant improvements are made. Maintenance and construction costs associated with traffic growth are expected to increase faster than traditional sources of revenue.

Alternate Forms of Transportation

Busing, walking, cycling, carpooling, and vanpooling, reduce fuel consumption, pollution, traffic congestion, and construction and maintenance costs.

Figure 22 - Means of Transportation to Work

Since 2000, the share of people who drive to work has declined slightly with corresponding increases seen in the percentage of people who work from home and who commute by bus. Source: Decennial Census and American Community Survey

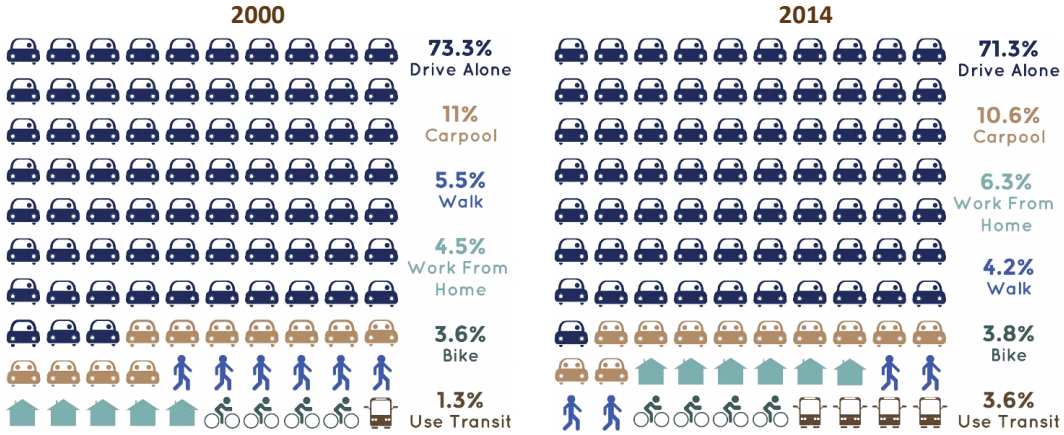


Figure 22 shows how people traveled to work within Missoula County in 2000 and 2014. The Missoula Active Transportation Plan encourages a transportation system that permits walking and biking.

Missoula County owns and maintains almost 45 miles of improved surface trails, including trails along the I-90 frontage road in Frenchtown, on Highway 210 in Milltown/Bonner, and along Highway 12 in Lolo. Many miles of recreational trails are located on federal and state lands. The Missoula to Lolo Trail is a 7-mile shared-use pathway that will complete the 50-mile trail connection between Missoula and Hamilton. The pathway will be completed in 2016.

Mountain Line provides public transportation in the city and surrounding area. Ridership has increased appreciably in recent years, with 933,694 rides in 2015, the first year of the three-year zero-fare demonstration project. In 2012, Mountain Line provided 19,340 door-to-door transportation rides to senior and disabled residents on six paratransit buses and in 2015 Mountain Line provided an increase in paratransit services. Mountain Line Senior Van service serves those not eligible for paratransit. Other transportation service providers include university and non-profit organizations. Providing alternative forms of transportation, including public transportation, will help Missoula County to achieve several of its goals related to developing functional communities, serving an aging and low income population, and reducing our contribution to climate change.

Airports

The Missoula County Airport Authority operates the Missoula International Airport west of Missoula. The airport is a significant economic driver and averages 155 landings and takeoffs per day.[42] Four air carrier and commuter airlines and several all-cargo airlines serve the airport.[43] The Aerial Fire Depot, Intermountain Fire Sciences Laboratory, and the Missoula Technology Development Center use the airport. Other airports in Missoula County include the Seeley Lake Airport, the Rock Creek Airport and U.S. Forest Service landing strips in Condon, Missoula (Johnson Bell Field), Ninemile, and Seeley Lake.[44]

Railroads

Montana Rail Link and Burlington Northern-Santa Fe move freight through Missoula. According to Montana Rail Link, about 16 to 20 freight trains pass through Missoula daily. The Bitterroot Railroad Line operates on an infrequent basis. The rail lines in Missoula County provide opportunity for goods to be transported to and from the area, particularly in relation to manufacturing operations. Passenger rail service is not available in Missoula.

Parks and Recreation

Parks, trails and recreation sites, and easy access to them, are key features of Missoula County that contribute to our high quality of life and are part of our overall economic development efforts.

County Parks

Missoula County manages 91 parks, greenways, open space sites, and special use facilities and nearly 45 miles of natural and improved trails. The Missoula County Parks & Trails Advisory Board and staff, local community groups, homeowners' associations, or individuals manage, maintain, and improve these sites. The Parks & Trails Advisory Board matching grant program assists these groups with funding for capital improvements and maintenance. The 2012 Missoula County Parks & Trails Plan provides guidance on improvements, maintenance, and management of the parks and trails systems in the county.

State Parks and Recreational Lands

Montana Fish, Wildlife, and Parks

manage Salmon Lake, Placid Lake, Beavertail Hill, Frenchtown Pond, Council Grove, Travelers' Rest, and Milltown State Parks in the County. The agency manages 27 fishing access sites in the county that provide access to rivers and lakes for activities such as fishing, boating, swimming, and wildlife viewing. They also manage the Mount Jumbo, Marshall Creek, and Blackfoot-Clearwater Wildlife Management areas which comprise more than 35,000 acres.

Federal Recreational Lands

Federal public lands are important for tourism, recreation, wood-gathering, and other uses. The U.S. Forest Service manages most of the federal lands within Missoula County including Pattee Canyon, Blue Mountain, Rattlesnake, Maclay Flats, Lolo Pass, Seeley Lake, Lake Alva, Lake Inez, Lindbergh Lake, and Holland Lake.

Tribal Recreational Lands

The Confederated Salish and Kootenai Tribes maintain thousands of acres for recreation in the Missoula County portion of the Flathead Reservation. Whenever engaged in recreation activities on tribal lands, all non-tribal members must have a Flathead Reservation Use Permit.

Other tribal and/or state recreation permits and appropriate bird hunting or fishing stamps are required for non-tribal members depending on the form of recreation.[45]

Projected Trends

With increased population growth, the need for public water supplies and wastewater treatment systems will be necessary to protect public health and water quality and to encourage development in existing communities. Traffic congestion, maintenance, and construction costs are expected to increase faster than traditional revenue sources. Air travel is also expected to increase in the coming years, which will be important for economic growth.

The need for high speed data resources is expected to increase in the coming years. The Missoula County Parks & Trails Program is expected continue to foster partnerships with public and not-for-profit organizations to meet the increased demand for parks, trails and recreation services, linking communities to each other and to public land and recreation. There are also efforts underway to significantly improve parks and trails maintenance services. Please see Chapter 2 for approaches Missoula County plans to take to address these issues.

Cultural Resources

Diverse historic and archeological resources are found in Missoula County. These include paleo-Indian Native American artifacts, occupation sites and trails, sites of current cultural importance, and historic structures and land areas associated with white settlement. Seventy-five historic sites, districts, landmarks, and trails in Missoula County are listed in the National Register of Historic Places. More than 3,500 properties have been surveyed.

Native American Archaeological & Cultural Sites

Evidence of early inhabitation comes from a variety of sites and artifacts such as tools, pictographs, stone cairns, scarred trees, tipi rings, hearths, rock quarries, and chipping sites. Approximately 95% of archeological and cultural artifacts in Missoula County have been found along creeks, rivers, and lakes. Sites of current cultural importance to Native Americans also include undisturbed spiritual sites, prehistoric and historic campsites, and burial grounds.[46]

Historic Places

Historic sites include Council Grove, Travelers' Rest, the Lolo Trail, Fort Fizzle, Camp Paxson in Seeley Lake,

and the Ninemile Ranger Station and numerous buildings and historic districts in the Missoula urban area. The Wallace, Coloma, and Potomac Mining Districts in eastern Missoula County and the Ninemile District in the western part of the County had brief but colorful histories in the late 19th and early 20th centuries.

Historic Buildings and Districts

A historic building or district displays architectural characteristics that reflect the history of the time in which it was built, is associated with significant people or events in the past, or may provide important historical information such as the County Courthouse and fairgrounds. Buildings and districts not on the Register may be considered historic or eligible to be listed.

Travelers' Rest

The Travelers' Rest Campsite was designated a National Historic Landmark in 1960. Recent investigations indicated that the original landmark location east of Highway 93 was not the actual Lewis and Clark campsite. The National Park Service re-designated the official landmark location after an archeologist verified the historic campsite location west of Highway 93 along Lolo Creek. The Montana Department of Fish, Wildlife, and Parks has acquired portions of the Travelers' Rest site west of US Highway 93 for Travelers' Rest State Park. The Travelers' Rest Preservation and Heritage Association, a non-profit organization, provides the interpretation and education programming.

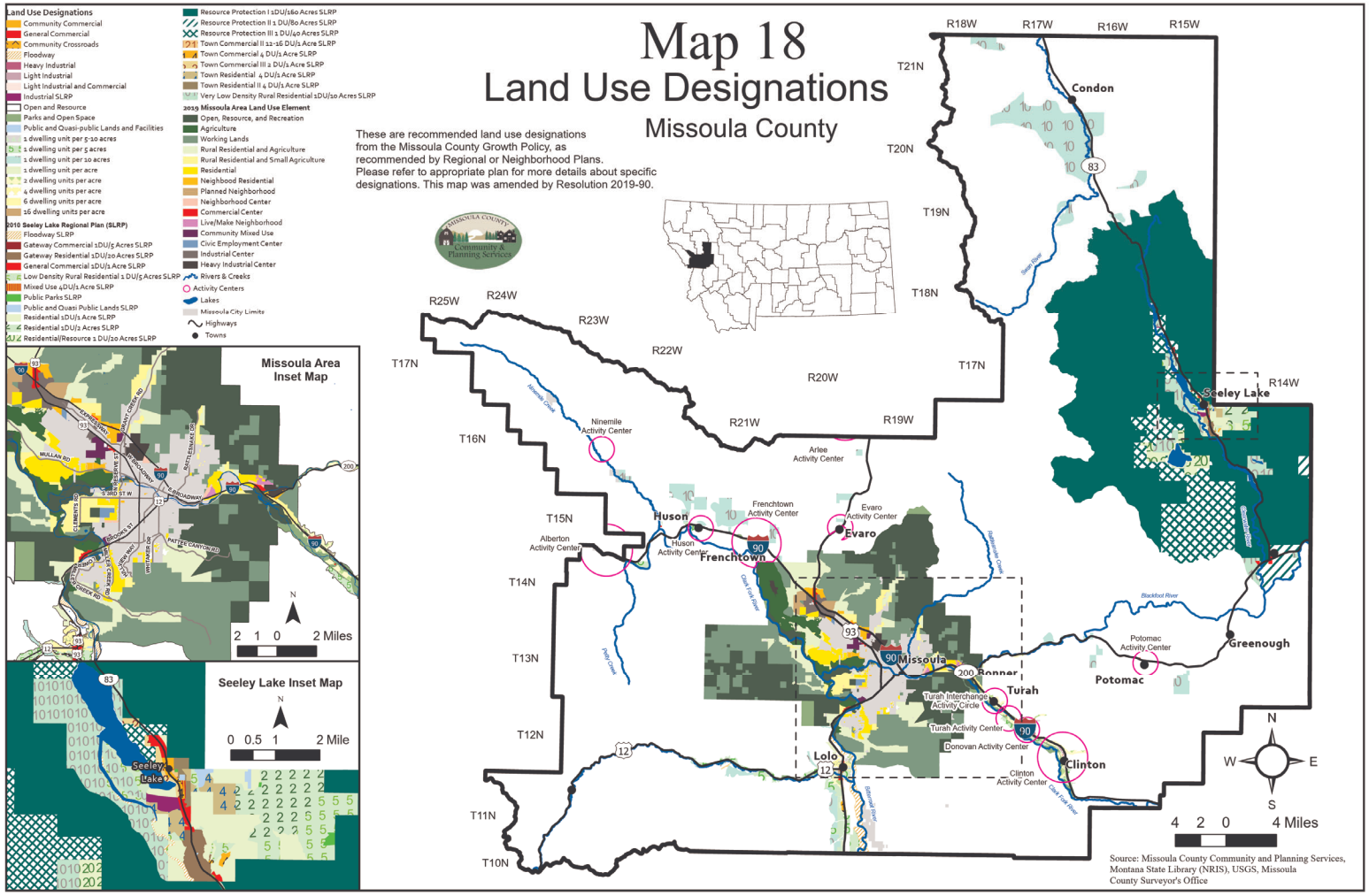
Historic Trails

Historic trails in the County include the Lolo and Nez Perce Trails and the Lewis and Clark routes. The Lolo Trail was an Indian trade and hunting route across the Bitterroot Mountains to the Clearwater River. The Lolo Trail route is a designated National Historic Landmark. The Lewis and Clark route, a designated National Historic Trail, includes the trail south through the Bitterroot Valley and east through the City of Missoula and along the Blackfoot River.

The Lolo Trail, portions of the Nez Perce National Historic Trail, and the Lewis and Clark National Historic Trail generally follow Lolo Creek from Lolo Pass to Travelers' Rest. Other early trails noted on the first surveys include the Jocko Trail and the Trail to the Buffalo, east over the Mount Jumbo Saddle to the Blackfoot River Valley.

Projected Trend

Depending on the interest and commitment of volunteers and the availability of funding, cultural and historic resources in Missoula County are expected to be protected and utilized in the coming years, where feasible and sustainable. Please see Goal 3 in Chapter to for Missoula County's planned approach to protecting and enhancing historic and cultural structures and sites.


Map 18
Land Use Designations
Missouri County
These are recommended land use designations from the Missoula County Growth Policy, as recommended by Regional or Neighborhood Plans. Please refer to appropriate plan for more details about specific designations. This map was amended by Resolution 2019-90.
Land Use Designations
Community Commercial
General Commercial
Community Crossroads
Floodway
Heavy Industrial
Light Industrial
Light Industrial and Commercial
Industrial SLRP
Open and Resource
Parks and Open Space
Public and Quasi-public Lands and Facilities
1 dwelling unit per 5-10 acres
1 dwelling unit per 5 acres
1 dwelling unit per 10 acres
1 dwelling unit per acre
2 dwelling units per acre
4 dwelling units per acre
6 dwelling units per acre
16 dwelling units per acre
2010 Seeley Lake Regional Plan (SLRP)
Floodway SLRP
Gateway Commercial 1DU/5 Acres SLRP
Gateway Residential 1DU/20 Acres SLRP
General Commercial 1DU/1 Acre SLRP
Low Density Rural Residential 1 DU/5 Acres SLRP
Mixed Use 4DU/1 Acre SLRP
Public Parks SLRP
Public and Quasi Public Lands SLRP
Residential 1DU/1 Acre SLRP
Residential 1DU/2 Acres SLRP
Residential/Resource 1 DU/20 Acres SLRP
Resource Protection I 1DU/160 Acres SLRP
Resource Protection II 1 DU/80 Acres SLRP
Resource Protection III 1 DU/40 Acres SLRP
Town Commercial II 12-16 DU/1 Acre SLRP
Town Commercial 4 DU/1 Acre SLRP
Town Commercial III 1 DU/1 Acre SLRP
Town Residential 4 DU/1 Acre SLRP
Town Residential II 4 DU/1 Acre SLRP
Very Low Density Rural Residential 1DU/10 Acres SLRP
2035 Missoula Area Land Use Element
Open, Resource, and Recreation
Agriculture
Working Lands
Rural Residential and Agriculture
Rural Residential and Small Agriculture
Residential
Neighbood Residential
Planned Neighborhood
Neighborhood Center
Commercial Center
Live/Make Neighborhood
Community Mixed Use
Civic Employment Center
Industrial Center
Heavy Industrial Center
Rivers & Creeks
Activity Centers
Lakes
Missoula City Limits
Highways
Towns
Missoula Area Inset Map
2 1 0 2 Miles
Seeley Lake Inset Map
0 0.5 1 2 Mile
R18W
R17W
R16W
R15W
R25W
R24W
R23W
R22W
R21W
R20W
R19W
R14W
T21N
T20N
T19N
T18N
T17N
T16N
T15N
T14N
T13N
T12N
T11N
T10N
Condon
Seeley Lake
Ninemile Activity Center
Arlee Activity Center
Huson
Huson Activity Center
Frenchtown
Frenchtown Activity Center
Evaro
Evaro Activity Center
Alberton Activity Center
Missoula
Bonner
Turah
Turah Interchange Activity Circle
Turah Activity Center
Donovan Activity Center
Potomac
Potomac Activity Center
Greenough
Lolo
Clinton
Clinton Activity Center
4 2 0 4 Miles
Source: Missoula County Community and Planning Services, Montana State Library (NRIS), USGS, Missoula County Surveyor's Office

Endnotes

1. Future Climate Conditions in Missoula County and the Western Montana Region, Geos Institute, August 2011.
2. The People, Economy, Land, and Resources of Missoula County and Potential Vulnerabilities to Climate Change, Headwaters Economics, June 2011.
3. Missoula County Climate Action: Creating a Resilient and Sustainable Community. M.E. Koopman, J. Alban, B. Randall, M. Haggerty, and R. Rasker. 2011.
4. Community Food and Agriculture Coalition. 2010. Losing Ground: The Future of Farms and Food in Missoula County.
5. HydroSolutions. 2014. Clark Fork River Water Quality Trends Report 1998-2012. Helena, MT. Prepared for Montana Department of Environmental Quality, Helena, MT and Avista Corporation, Spokane, WA.
6. Montana State Water Plan, Clark Fork and Kootenai River Basins, Montana Water Supply Initiative 2015
7. Montana Wetland Information Clearing House, Montana Department of Environmental Quality's Wetland Program, 2011.
8. Effects of Land Use Practices on Western Riparian Ecosystems, 1993.
9. State of the Land Summary, 2001.
10. USGS National Land Cover Database 2006.
11. Endangered Ecosystems of the United States, 1995.
12. Montana Forest Health Highlights 2014. Forest Pest Management Program of the MT DNRC.
13. Missoula County Noxious Weed Management Plan, 2012. Missoula County Weed District
14. Climate Change and Wildfires: What's The Connection? 2013. U.S. Global Change Research Program.
15. Future Climate Conditions in Missoula County and the Western Montana Region, Geos Institute, August 2011, pages 8, 34.
16. Inventory of Conservation Resources for Missoula County, 1992.
17. Montana Fish, Wildlife & Parks, Region 2, 2005.
18. MFWP. Region 2. 2010. Moose, bighorn sheep, mountain goat, antelope, mountain lion, and black bear survey and inventory progress report July 1, 2005–June 30, 2010. August 2010.
19. Hamlin, K. L. and J. A. Cunningham. 2009. Monitoring and assessment of wolf-ungulate interactions and population trends within the Greater Yellowstone Area, southwestern Montana, and Montana statewide: Final Report. Montana Department of Fish, Wildlife, and Parks, Wildlife Division, Helena, Montana, USA.
20. Birding Montana. Montana Audubon. 2011. Bird species of west central Montana.
21. Jim Brown. 2011. Personal communication. Montana Audubon.
22. Montana Natural Heritage Program and Missoula County Community and Planning Services, 2013.
23. CFAC (Community Food and Agriculture Coalition). 2010. Losing Ground: The Future of Farms and Food in Missoula County.
24. Missoula County Population Projections, Projected Figures for 2011 – 2060. Census & Economic Information Center, Montana Department of Commerce, 2013.
25. Missoula County Population Projections, Projected Figures for 2011 – 2060. Census & Economic Information Center, Montana Department of Commerce, 2013.
26. Bureau of Business and Economic Research, 2011 Missoula Housing Report.
27. Missoula County QuickFacts from the US Census Bureau
28. U.S. Census Bureau 2011. 2010 Summary File1-Montana.
29. The Urban Services Area Boundary is the City's Wastewater and Sewer Service Treatment Area
30. Urban Fringe Development Area Project, 2008. City of Missoula.
31. Urban Fringe Development Area Project Update 2009. City of Missoula.
32. Urban Fringe Development Area Yearbook 2012. City of Missoula.
33. St. Patrick Hospital. 2011.
34. Missoula Emergency Services. Don Whalen. 2011.
35. Spokane company to replace Missoula hospitals' Life Flight. Vince Devlin. Missoulian. December 31, 2013.
36. St. Patrick Hospital Life Flight, 2008.
37. Groundwater Information Center, Montana Bureau of Mines and Geology, Montana Tech of The University of Montana, 2011.
38. Missoula County Department of Public Works. 2011. Website. Available at www.co.missoula.mt.us/road/.
39. Missoula Metropolitan Planning Organization 2011. Missoula Active Transportation Plan.
40. Ibid, page 7-4.
41. Ibid, page 7-4.
42. FlyMissoula. 2011. Brian Ellestad.
43. http://www.flymissoula.com, 2010.
44. Airfield/Airstrip Directory. U.S. Forest Service. May 1, 2000.
45. Confederated Salish and Kootenai Tribes, 2002.
46. Confederated Salish and Kootenai Tribes. January 1996. Flathead Reservation Comprehensive Resources Plan.