



# Oregon Wildfire Risk Explorer - Watershed Summary Report

## McKenzie River

165,244 Acres: (258 Sq. Miles)



June 2020

Weather and vegetation conditions vary daily and seasonally. For current conditions and local fire restrictions, contact your local fire district or visit: [www.keeporegongreen.org/current-conditions](http://www.keeporegongreen.org/current-conditions)

## AREA OF INTEREST

This report summarizes wildfire risk in McKenzie River from the Oregon Wildfire Risk Explorer map viewer. Wildfire risk combines the likelihood of a fire occurring with the exposure and susceptibility of valued resources and assets on the landscape. This report provides interpretive text, maps, and charts depicting the wildfire risk in this area and various characteristics that influence wildfire risk. This information can help raise awareness about wildfire risk, identify local susceptibilities and exposures, identify areas to take action to reduce catastrophic wildfire losses and costs, and where applicable, restore forest health and the health of other ecosystems influenced by wildfire in Oregon.

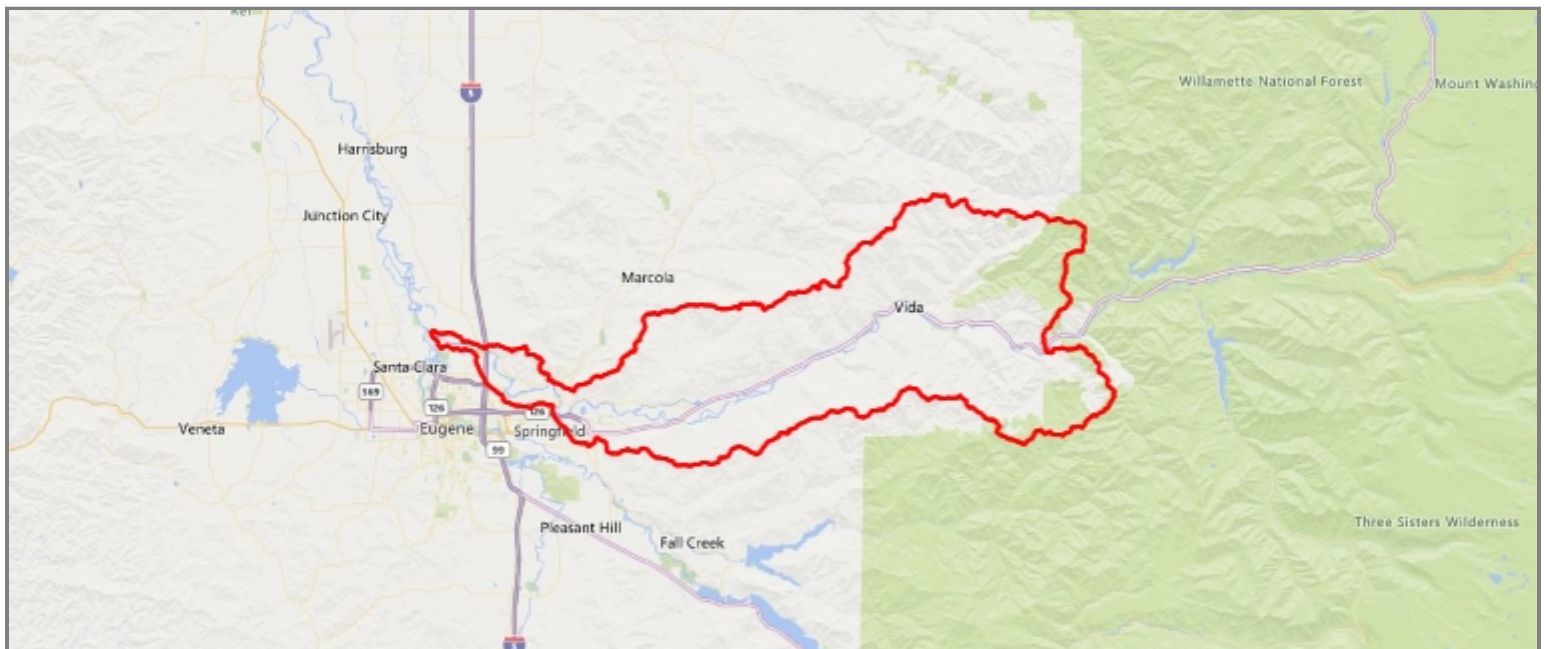
*Nearly all areas in Oregon experience some level of wildfire risk*. Conditions vary widely with local topography, fuels, and local weather, especially local winds. In all areas, under warm, dry, windy, and drought conditions, expect higher likelihood of fire starts, higher fire intensities, more ember activity, a wildfire more difficult to control, and more severe impacts.

For resources and information about the fire environment around your home and actions you can take to reduce your risk, generate a [Homeowner's Report](#). If you are a wildfire planner or professional, the [Advanced Oregon Wildfire Risk Explorer Map Viewer](#) provides many additional data layers and customized reporting.

McKenzie River in Oregon



## McKenzie River Reference Map



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## LAND OWNERSHIP AND MANAGEMENT

Knowing the land ownership and management in an area is important for hazard planning and for awareness when wildfires occur. Oregon has a coordinated wildfire management system between state, federal and local agencies and organizations, including local fire districts and rangeland fire protection associations. Federal, state, tribal, local, and private entities participate to fight fire in local areas and throughout the state according to their jurisdictions and protection responsibilities. Different land owners and managers have a variety of highly valued resources and assets to protect. Agencies differ in land use and overall management, including fire management.

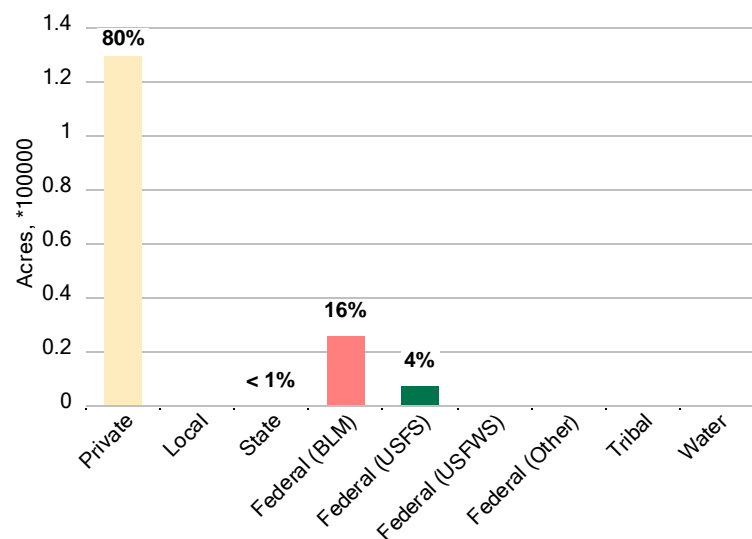
The total land base in Oregon is approximately 63 million acres, or just over 98,000 square miles. McKenzie River contains 165,241 acres (258 sq. miles).

Within the entire state, the US Forest Service (USFS) manages just over 17 million acres, and US Bureau of Land Management (BLM) manages nearly 16 million acres; together they manage about 52% of the total land base. Other landownership and management types include other federal lands (e.g. US Fish and Wildlife Service [USFWS]), state, tribal, and private.

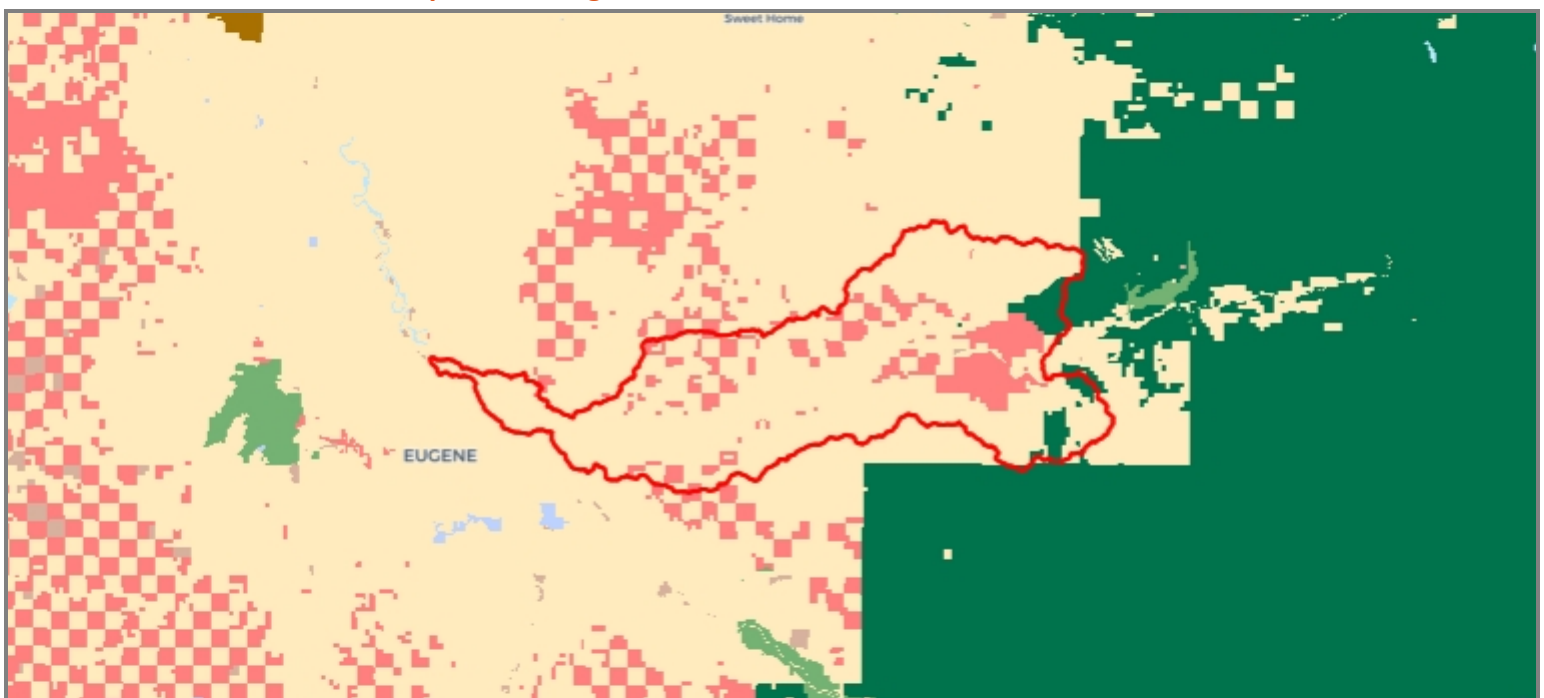
Of the nearly 30 million acres of forestland in Oregon, approximately 18 million is federal, 10 million is private, 1 million is state, and 475,000 acres are tribal. Many forested areas in Oregon are private, owned and managed for industrial timber and in small family farms and woodlands.

In your area, ownership and land management are mapped below and approximate percentages are shown in the chart.

Ownership and Land Management in McKenzie River



### McKenzie River Land Ownership and Management





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## EXISTING VEGETATION TYPE

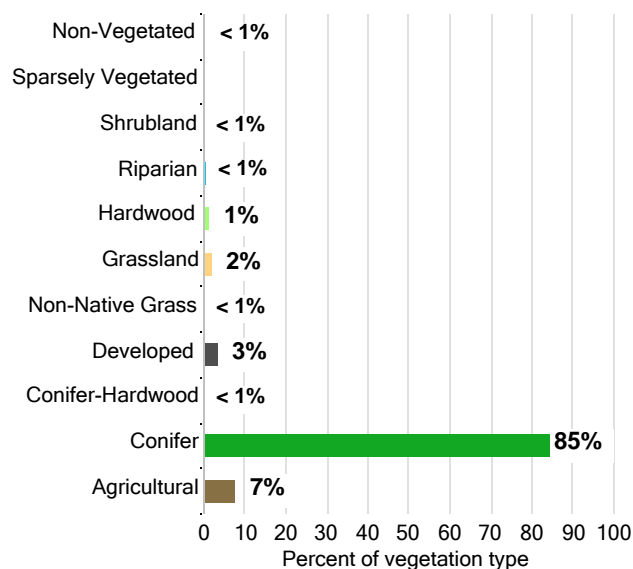
Vegetation is an important influence on potential wildfire behavior. The dominant vegetation type helps us understand the corresponding historical fire regime, a designation of fire frequency and severity. Fire frequency, or burn probability, suggests how often wildfire occurs. Fire severity tells us how much impact wildfires are likely to have on the vegetation and other elements of an ecosystem. More information about the fire regime in this area can be found on pages 5 and 6 (local fire history and burn probability).

Higher frequency fire areas generally have lower severities. Vegetation is continually or often thinned by fire and the remaining vegetation and other ecosystem elements can be considered adaptive or resilient to fire. Examples of this type of area are Ponderosa pine forests and oak woodlands.

Lower frequency fire regimes experience less fire, but generally have higher severities, with vegetation and other ecosystem elements which can be considered sensitive. Examples of this type of area are coastal forests, subalpine forests and many stream headwaters and riparian areas.

The map below shows broad vegetation types throughout McKenzie River. Although it is not shown in the map, the living and dead vegetation below forest canopies (shrubs, grasses, leaf litter, dead tree snags, etc.) strongly influence fire behavior and severity in a location. These elements are also extremely important to address in protecting a home from wildfire.

Vegetation Types in McKenzie River



### McKenzie River Existing Vegetation Type







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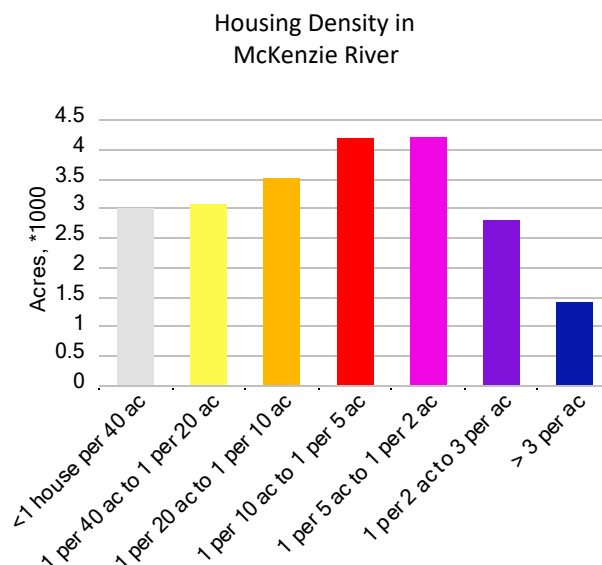
## HOUSING DENSITY - WHERE PEOPLE LIVE

Areas where people live are a prime concern when assessing wildfire risk. Especially critical is an area called the Wildland Urban Interface (WUI). WUIs are areas where houses and other development meet or mix with undeveloped natural areas, with a close proximity of houses and infrastructure to flammable wildland vegetation.

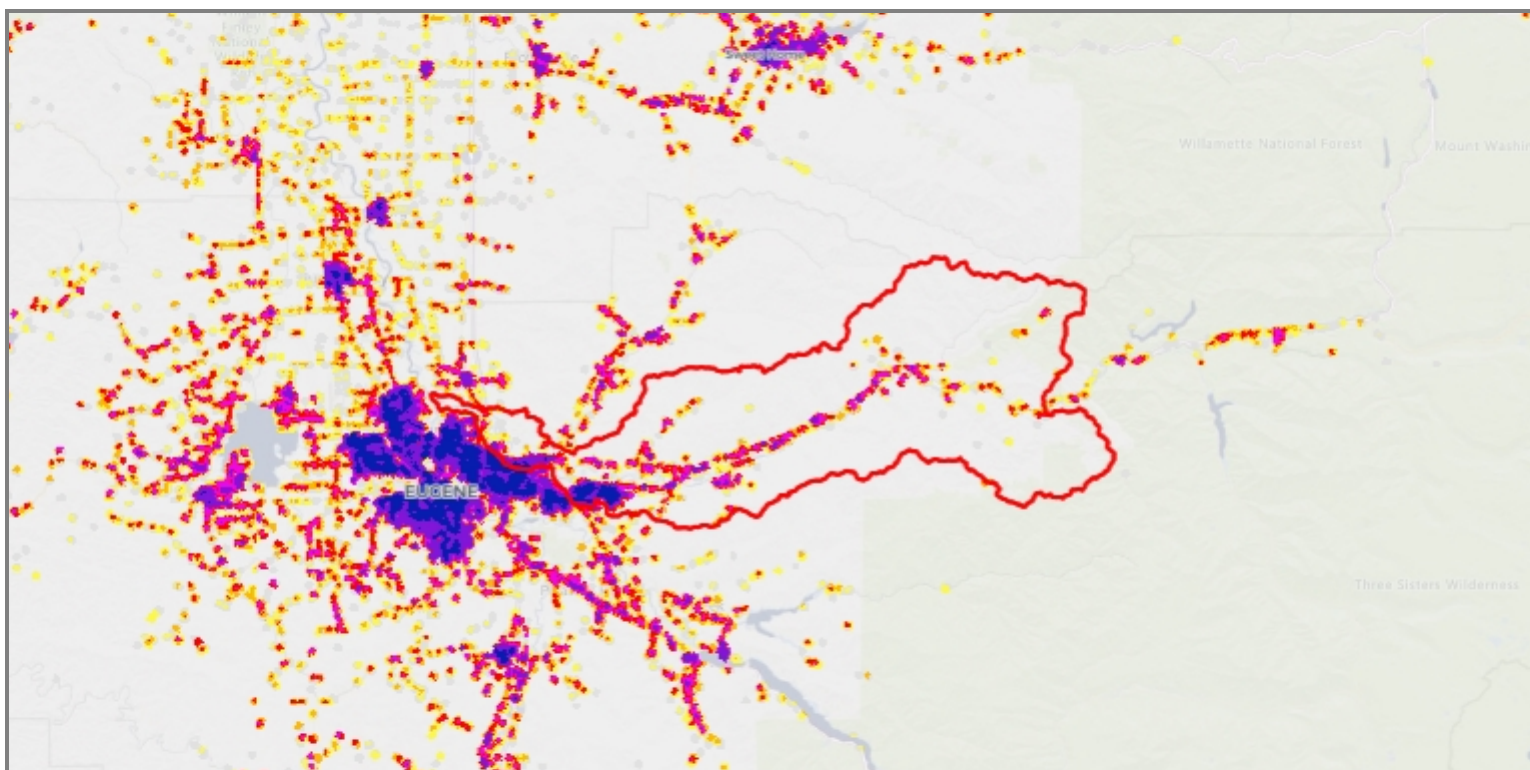
In the U.S., the number of homes in the WUI increased by 13.4 million from 1990, making it the fastest growing land use type in the conterminous U.S. This expansion of the WUI poses particular challenges for wildfire management, creating more structures and populations at risk in environments where firefighting is often difficult.

In Oregon, nearly 3,700 sq. mi. or 2.4 million acres are considered WUI areas, about 3.8% of the state. Of the nearly 1.7 million total homes in Oregon, over 603,000, or 36%, are in the WUI. The map below estimates where people live in McKenzie River in terms of location and housing density. The chart shows approximate acres of the different housing density classes. Generally, WUI areas are just outside the most dense urban core, adjacent to, and within wildlands.

There are a variety of educational and mitigation resources for people living in the WUI. The National Fire Protection Association's [Firewise USA™](#) program teaches people how to adapt to living with wildfire and encourages neighbors to work together and take action to prevent losses. For more resources, including joining a network for [Fire Adapted Communities](#), please see page 10 of this report.



### McKenzie River Housing Density







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## FIRE HISTORY

Historical fire information is important to understand the fire environment in your area, and knowing where and why fires start is the first step in prevention and mitigation. Viewing local fire starts in conjunction with large wildfire probability (next page) can give a more comprehensive view of local fire history and potential. Knowing where and why fires start is the first step in prevention and mitigation.

In all of Oregon from 2008-2017, an annual average of over 2,000 fire starts were recorded, with average acres burned reaching 480,000 per year. 71% of fires recorded by the Oregon Department of Forestry (ODF) are human-caused, and many of these fires are near or in the WUI. Lightning caused fires make up only 29% of fire starts on ODF protected lands, but tend to burn more acres as many start in more remote areas or wilderness.

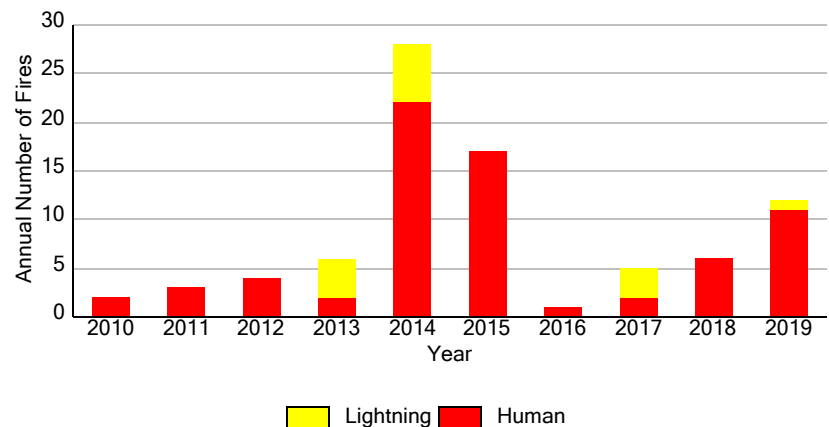
The map and charts below show the locations of human and lightning-caused fires for the past 10 years in McKenzie River. Historical large fire perimeters are also viewable in the Oregon Wildfire Risk Explorer map viewers.

### Fires in the Last 10 Years (2010-19) in McKenzie River

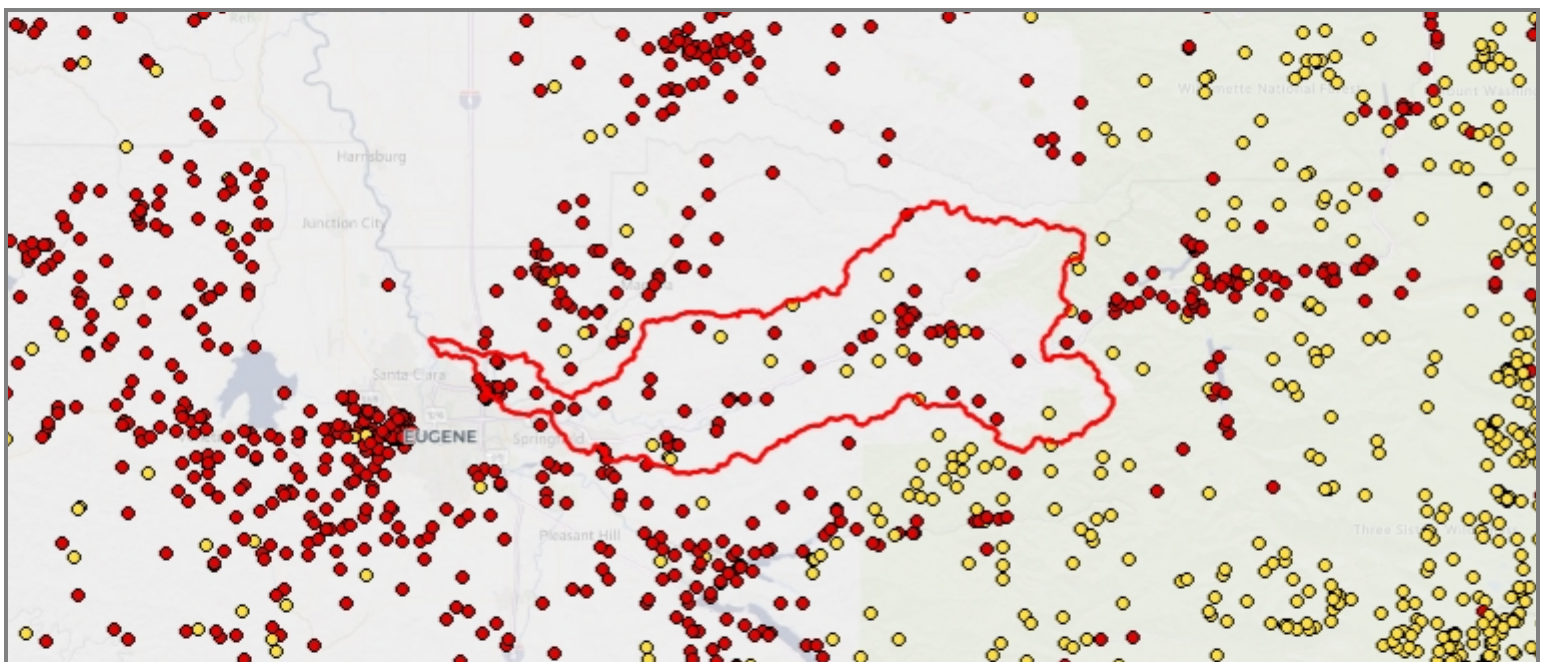
Total Acres Burned  
36  
Total Number of Fires  
84  
Average Acres Burned per year  
4  
Average Fires per year  
8  
Percent lightning caused  
16.7%  
Percent human caused  
83.3%



Number of Lightning and Human Fires in last 10 Years for McKenzie River



### McKenzie River Fire Starts





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


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### BURN PROBABILITY

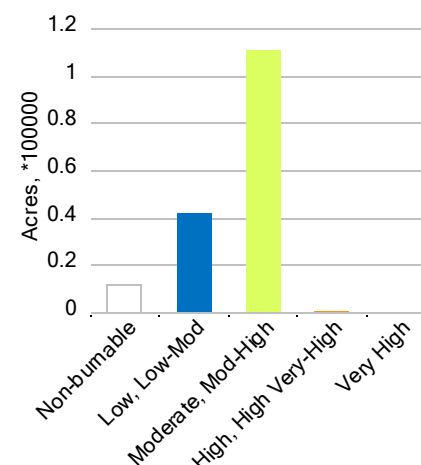
Burn probability shows the annual likelihood of occurrence of a large wildfire greater than 250 acres, considering weather, topography, fire history, and fuels (vegetation), including recently disturbed fuels from large Oregon wildfires in notable years 2013, 2014, 2015, and 2017. Only large wildfires are included here because they are the most influential on the landscape and they can be simulated using computer software.

Conditions vary widely with local topography, fuels, and local weather, especially local winds, within large geographic areas. In all areas, under warm, dry, windy, and drought conditions, expect higher likelihood of fire starts, higher fire intensities, more ember activity, a wildfire more difficult to control, and more severe fire effects and impacts. Under normal weather conditions, descriptive classes of annual large wildfire burn probability within McKenzie River is shown in the chart below.

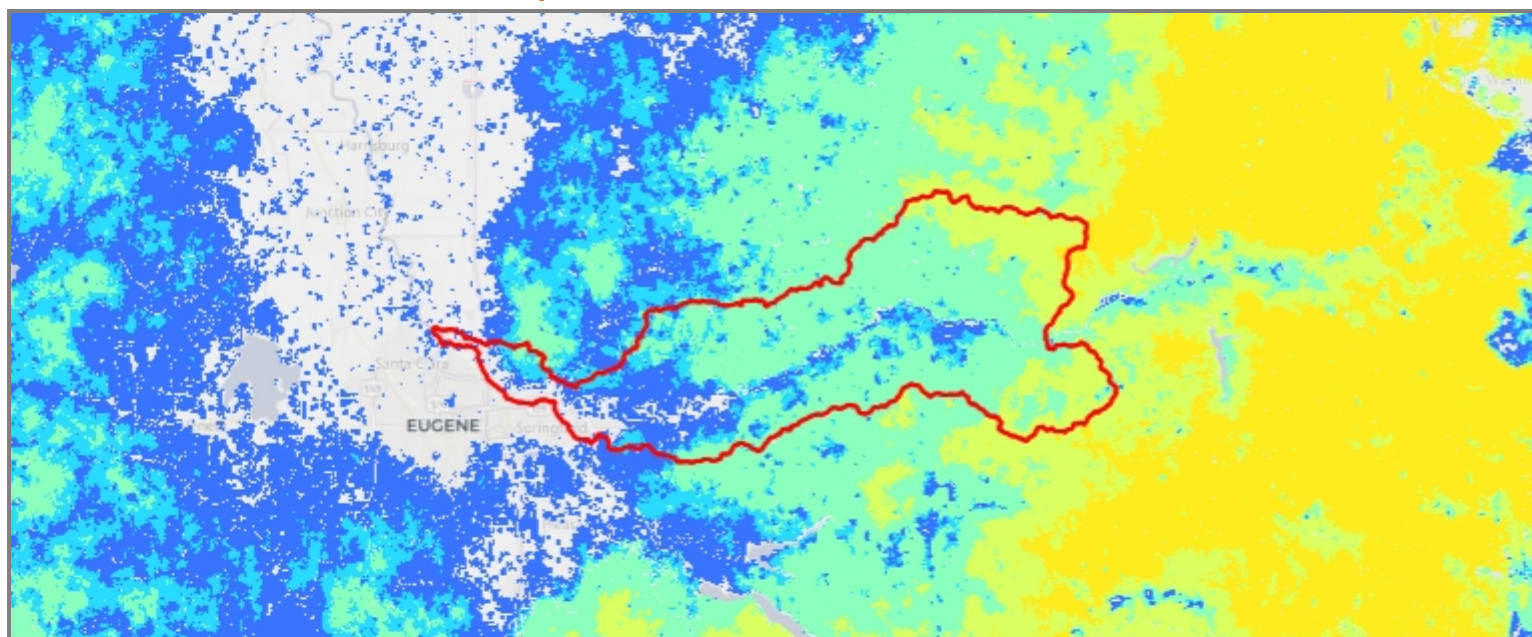
#### Chances of a large wildfire in a single year

 Very High	Very High burn probability indicates greater than 1 in 50 chance of a wildfire >250 acres in a single year (greater than the 96th percentile of values across the landscape).
 High-Very High	High burn probability indicates between 1 in 500 and 1 in 50 chance of a wildfire >250 acres in a single year (29th to 96th percentile).
 High	
 Moderate-High	Moderate burn probability indicates between 1 in 5,000 and 1 in 500 chance of a wildfire >250 acres in a single year (11th to 29th percentile).
 Moderate	
 Low-Moderate	Low burn probability indicates less than approximately 1 in 5,000 chance of a wildfire >250 acres in a single year (up to the 11th percentile).
 Low	
 Nonburnable	In this area there are a majority of non-burnable fuel types such as water, urban, agriculture, barren rock, glacial areas, etc.

Annual Large Wildfire Burn Probability Classes for McKenzie River



#### McKenzie River Annual Burn Probability







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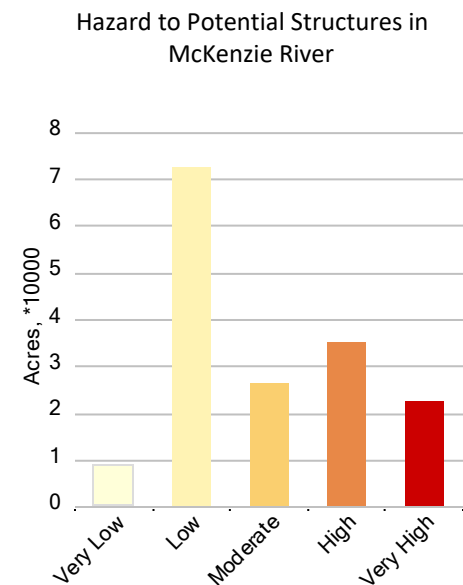
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### HAZARD TO POTENTIAL STRUCTURES

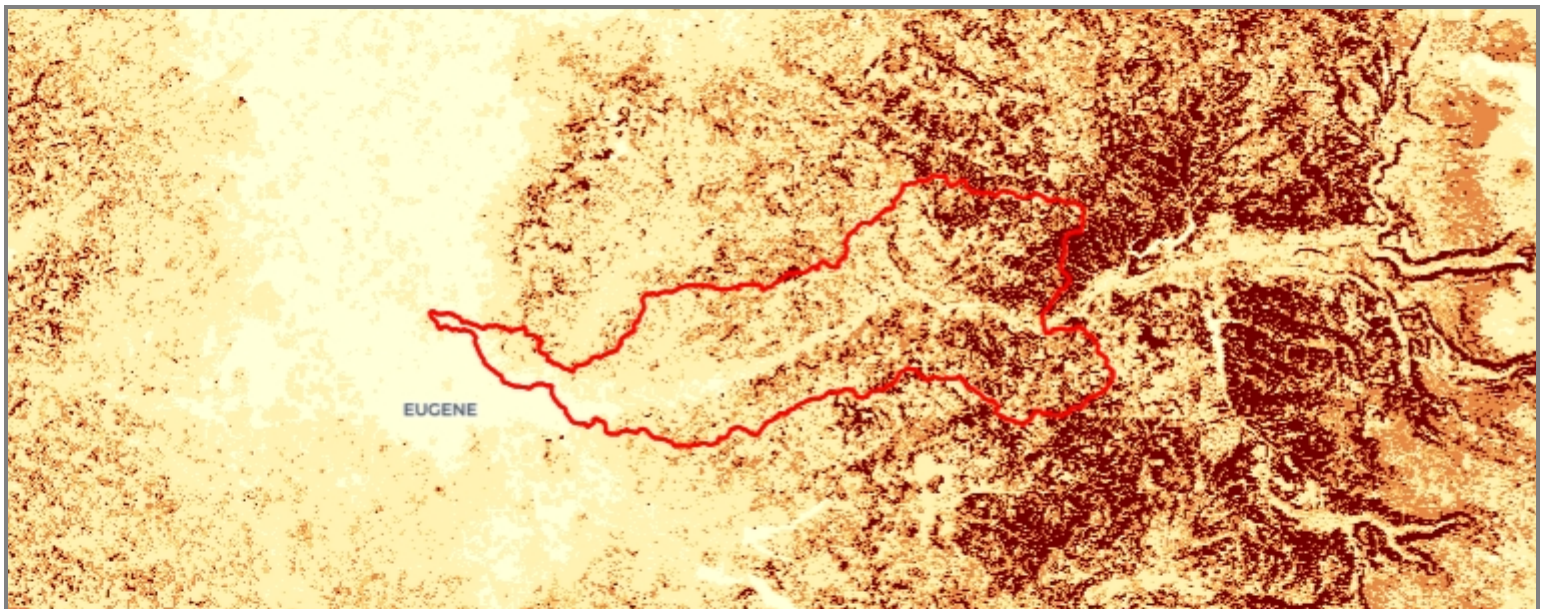
Hazard to potential structures depicts the hazard to a hypothetical structure (not necessarily an existing structure) if a wildfire were to occur. This differs from overall estimates of wildfire impact, as those estimates only consider where existing structures are located. Hazard to potential structures depicts the fire environment only and does not consider other important factors in determining structural fire risk such as building construction materials. Community planners can use this information when planning development outside of existing urban or WUI areas, and are encouraged to develop as [Fire Adapted Communities](#).

Conditions vary widely with local topography, fuels, and local weather, especially local winds. In all areas, under warm, dry, windy, and drought conditions, expect higher likelihood of fire starts, higher fire intensities, more ember activity, a wildfire more difficult to control, and more severe fire effects and impacts. Hazard to potential structures within McKenzie River is shown in the chart.

Hazard to Potential Structures		
	Very High	The hazard to potential structures when wildfire occurs is very high (top 5 percent of values across the landscape). If a fire ignites near your home there is very high potential for loss.
	High	The hazard to potential structures when wildfire occurs is high (80th to 95th percentile). If a fire ignites near your home there is high potential for loss.
	Moderate	The hazard to potential structures when wildfire occurs is moderate (50th to 80th percentile). If a fire ignites near your home there is moderate potential for loss.
	Low	The hazard to potential structures when wildfire occurs is expected to be low (up to the 50th percentile). If a fire ignites near your home there is potential for loss.
	Nonburnable/ Very Low	The hazard to potential structures when wildfire occurs is expected to be very low. Fuel in the area is largely non-burnable or very sparse. If a fire ignites near your home there is low potential for loss.



### McKenzie River Hazard to Potential Structures







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



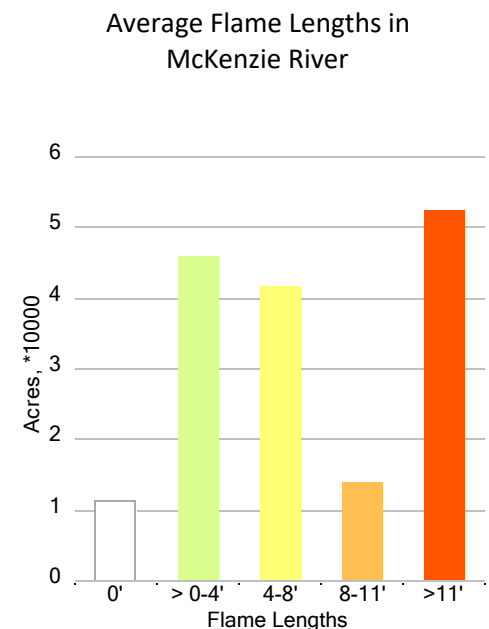
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### FIRE INTENSITY - FLAME LENGTHS

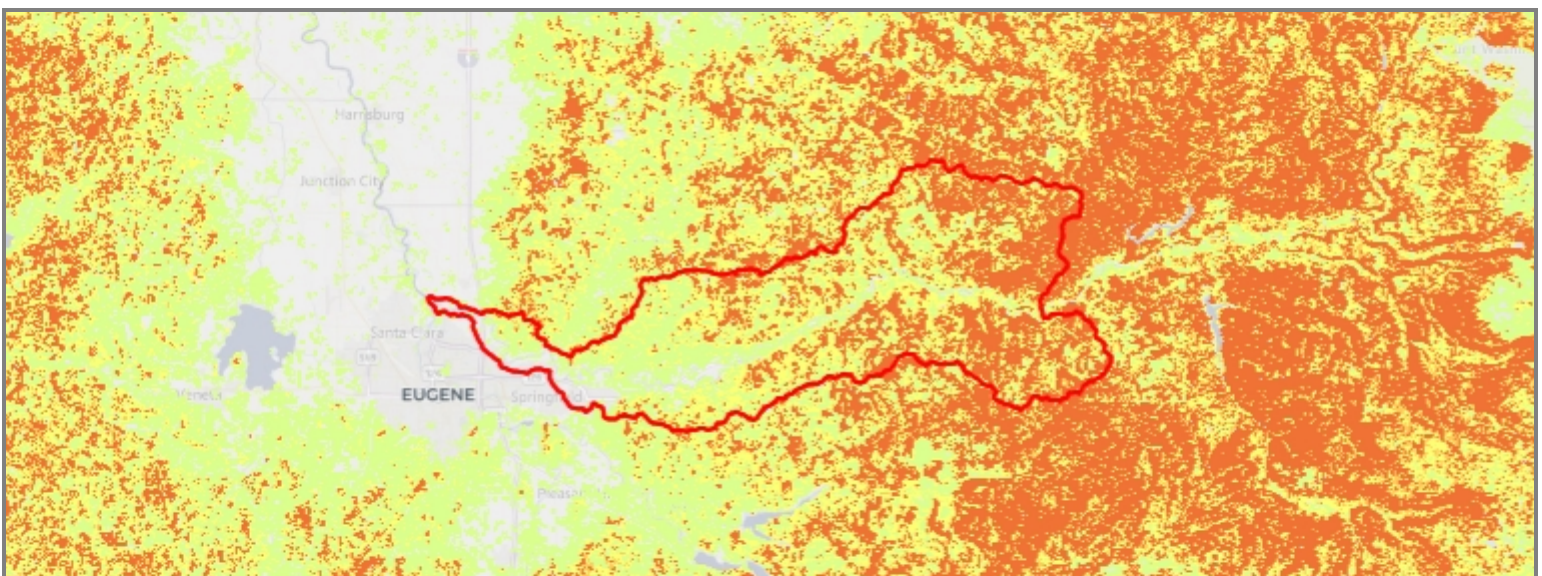
Flame length is an indication of fire intensity and a primary factor to consider for firefighter safety and for gauging potential impacts to values at risk. It can also guide mitigation work to reduce the potential for catastrophic fires bringing higher intensities down to lower intensities. Flame lengths have potential to exceed the mapped values shown, even under normal weather conditions and especially under more severe fire weather.

Conditions vary widely with local topography, fuels, and local weather, especially local winds. In all areas, under warm, dry, windy, and drought conditions, expect higher likelihood of fire starts, higher fire intensities, more ember activity, a wildfire more difficult to control, and more severe fire effects and impacts. Under normal weather conditions average flame lengths within McKenzie River are shown in the chart below.

Average Flame Lengths under normal weather conditions		
	> 11 foot	Under normal weather conditions, a fire in these areas can be expected to be very high intensity. The fire may exhibit on average, greater than 11-foot flames, and is expected to be extremely difficult to control. Major fire movement is likely with tree crowning and longer-range spotting and ember travel.
	8-11 foot	Under normal weather conditions, a fire in these areas can be expected to be high intensity. The fire may exhibit on average, 8-11 foot flames, and is expected to be highly to extremely difficult to control. Expect tree torching and spotting (additional fires igniting away from the main fire). Ember travel increased.
	4-8 foot	Under normal weather conditions, a fire in these areas can be expected to be moderate intensity. The fire may exhibit on average, 4-8 foot flames, and is expected to be moderately to highly difficult to control. Fires are too intense to work at the front of the flame. Embers travel moderate distances.
	> 0-4 foot	Under normal weather conditions, a fire in this area can be expected to be low intensity. The fire may exhibit on average, 4 foot flames, and is expected to be low to moderately difficult to control.
	Nonburnable (0 foot)	In this area there are a majority of non-burnable fuel types such as water, urban, agriculture, barren rock, glacial areas, etc.



### McKenzie River Average Flame Lengths





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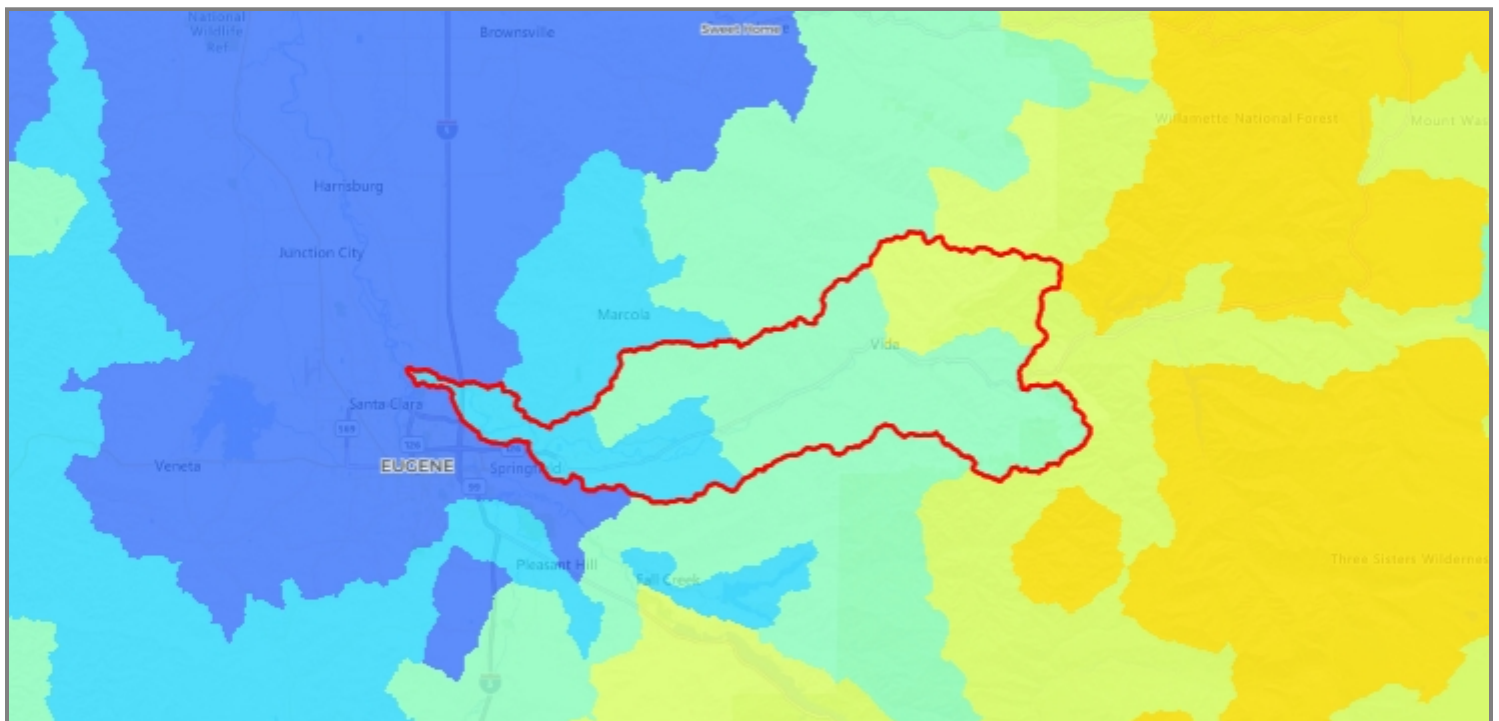
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## SUB-WATERSHED SUMMARIES

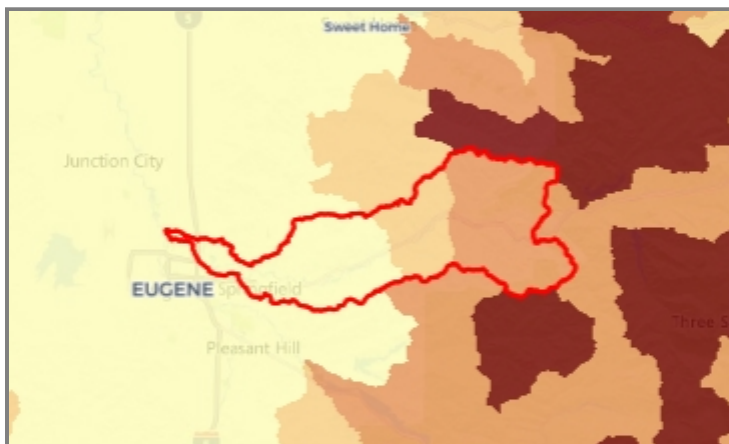
Summarizing wildfire risk data to landscape units such as watersheds provides important landscape-level context. Subwatershed (6th-level hydrologic unit, or ~10k-40k acres) summaries for mean burn probability, mean flame length and mean hazard to potential structures are included in this report for landscape-level awareness. These summaries are important for efforts such as the [National Cohesive Wildland Fire Strategy](#). Wildfire is a natural process and does not follow administrative boundaries. Neighbors in Oregon work together to reduce the potential for catastrophic wildfire, improve ecosystem and forest health, and stimulate economic development such as working in [Oregon Forest Collaboratives](#). Using these watershed summaries, localities can prioritize areas for prevention education and outreach, and for mitigation or fuels reduction projects.

Watershed Summaries for McKenzie River are shown below. Map legends are the same from pages 6-8, respectively for each map below.

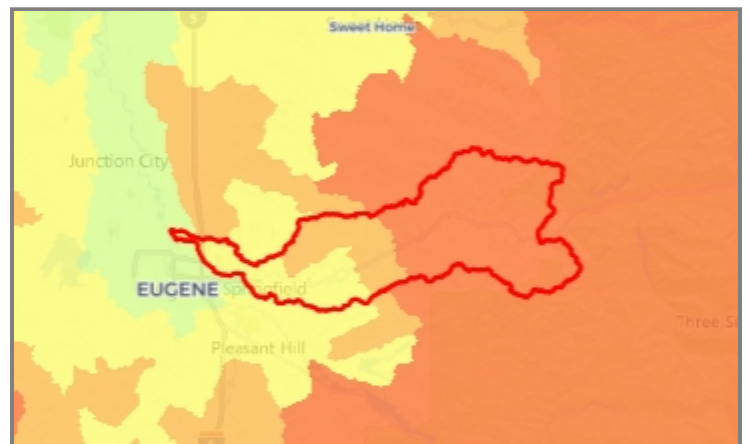
### Mean Burn Probability



### Mean Hazard to Potential Structures



### Mean Fire Intensity





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## PREVENTION & MITIGATION RESOURCES

About 70% of the wildfires in Oregon are started by people, and over 80% of those wildfires start in the wildland urban interface. The leading cause of wildfire on state-protected lands is backyard debris burning. Burning allows property owners to clean up and dispose of branches and brush around their property. However, these fires can spread when left unattended or when lit under windy conditions. Backyard campfires can also escape if they are unattended or not fully extinguished. The simple act of DROWN, STIR, DROWN with water and a shovel can prevent careless wildfires. For current conditions and local fire restrictions, contact your local fire district or visit: [www.keeporegongreen.org/current-conditions](http://www.keeporegongreen.org/current-conditions)

Motor vehicles (including ATVs), weed eaters and lawn mowers are a few examples of power equipment that can cause a wildfire. A vehicle driving or idling over dry grass, a lawn mower blade striking a rock or a power saw casting sparks into dry vegetation creates the ignition.

**Remember the embers!** Even if a wildfire occurs outside of your immediate area, embers can travel more than a mile ahead of a fire.



Wildfire safety begins with you. Since people start most wildfires do your part to prevent them. Contact your local fire agency for information on current fire restrictions that may be in place during fire season.

- Avoid burning debris, particularly in the afternoon when temperatures are high and humidity is low. If you choose to burn your yard debris, follow all open air burning regulations and check current conditions and local fire restrictions:

[www.keeporegongreen.org/current-conditions](http://www.keeporegongreen.org/current-conditions)

- Avoid using any power equipment near dry vegetation.
- Dispose of woodstove and BBQ ashes properly by soaking them in water, in a metal container for three days prior to discarding them in an area free of fuel.
- Never leave a backyard fire unattended. Extinguish your fire completely before calling it a night.
- Keep vehicles on established roads and trails.
- Teach children about fire safety.
- From target shooting to smoking, always have the proper tools on hand, such as a fire extinguisher, shovel, garden hose or a bucket of water to extinguish any ignitions or escaped embers.

Oregon Department of Forestry (ODF)  
[www.oregon.gov/odf](http://www.oregon.gov/odf)

ODF Fire Season Restrictions & Closures  
[www.oregon.gov/ODF/Fire/Pages/Restrictions.aspx](http://www.oregon.gov/ODF/Fire/Pages/Restrictions.aspx)

Oregon Office of State Fire Marshal  
[www.oregon.gov/osp/sfm](http://www.oregon.gov/osp/sfm)

Oregon Defensible Space Law  
[www.oregon.gov/ODF/Fire/Pages/UrbanInterface.aspx](http://www.oregon.gov/ODF/Fire/Pages/UrbanInterface.aspx)

Keep Oregon Green  
[www.keeporegongreen.org](http://www.keeporegongreen.org)

Oregon Ready Set Go!  
[www.oregonrsg.org](http://www.oregonrsg.org)

Oregon State University Extension  
[extensionweb.forestry.oregonstate.edu](http://extensionweb.forestry.oregonstate.edu)

Firewise  
[www.firewise.org](http://www.firewise.org)

Pacific Northwest Fire Adapted Communities  
[www.pnwfac.org](http://www.pnwfac.org)

Ready.gov  
[www.ready.gov/wildfires](http://www.ready.gov/wildfires)

Federal Emergency Management Agency (FEMA)  
[www.fema.gov](http://www.fema.gov)

Insurance Information Institute  
[www.iii.org](http://www.iii.org)

U.S. Fire Administration (USFA)  
[www.usfa.fema.gov](http://www.usfa.fema.gov)

## LOCAL ODF CONTACTS

This report is not a substitute for an on-the-ground site assessment from a professional forester or fire personnel. Please contact your local fire department or Oregon Department of Forestry for more information.

**Oregon Department of Forestry Office**  
Eastern Lane Unit Office  
3150 Main Street  
Springfield, OR 97478  
541-726-3588





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## SUMMARY

This report provides an overview of a variety of elements to consider in a wildfire risk assessment. Valued resources and assets were identified and mapped, then potential exposures and susceptibilities from wildfire were estimated. Not all resources, assets, or risk assessment outputs are shown in this McKenzie River summary report. For a more detailed inventory of risk assessment data layers and reports options, please see the [Advanced Oregon Wildfire Risk Explorer map viewer](#).

## PRIMARY DATA SOURCES

Primary wildfire risk assessment data and products are from the Pacific Northwest Quantitative Wildfire Risk Assessment. 2018. USFS Pacific NW & Alaska Regions/BLM State Office. Portland, OR. Pyrologix. [View final report](#)

Some wildfire risk interpretative context is courtesy of Fire Program Solutions, LLC. [www.fireps.com](http://www.fireps.com).

Estimated Housing Density is from Oakridge National Laboratory LandScan™ population data, and was obtained from the 2013 West Wide Wildfire Risk Assessment. [web.ornl.gov/sci/landscan/](http://web.ornl.gov/sci/landscan/)

Fire history point data for 1992-2015 is from Short, Karen C. 2017. Spatial wildfire occurrence data for the United States, 1992-2015 [FPA\_FOD\_20170508]. 4th Edition. Fort Collins, CO: Forest Service Research Data Archive. <https://doi.org/10.2737/RDS-2013-0009.4>

Fire history point data for 2016-2019 was compiled by the, Oregon Department of Forestry.

Oregon Land Ownership/Management is from the Bureau of Land Management (2015).

Vegetation Type and other general fire-related reference data is from LANDFIRE. [www.landfire.gov](http://www.landfire.gov).

## ACKNOWLEDGEMENTS AND DISCLAIMER

This report was generated from the Oregon Wildfire Risk Explorer map viewer at this website address: [tools.oregonexplorer.info/OE\\_HtmlViewer/index.html?viewer=wildfire](https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfire) For more information on wildfire risk in a specific location, you can generate a Homeowner's report from the Oregon Wildfire Risk Explorer map viewer.

How to Cite:

Accessed from the Oregon Wildfire Risk Explorer on June 18, 2020

URL: [https://tools.oregonexplorer.info/OE\\_HtmlViewer/index.html?viewer=wildfire](https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfire)

Primary data Source: USDA Forest Service Pacific Northwest Quantitative Wildfire Risk Assessment (2018)

The Oregon Wildfire Risk Explorer site, tools and reports are the result of a collaboration among the following organizations and others:



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*Wildfire risk data is primarily from the USDA Forest Service 2018 Pacific Northwest Quantitative Wildfire Risk Assessment with some components from the 2013 West Wide Wildfire Risk Assessment. The information is being provided as is and without warranty of any kind either express, implied or statutory. The user assumes the entire responsibility and liability related to their use of this information. By accessing this website and/or data contained within, you hereby release the Oregon Department of Forestry, Oregon State University, and all data providers from liability. This institution is an equal opportunity provider. This publication was made possible through grants from the USDA Forest Service.*