Milli Fire, 2017

Greater Sisters Country

Community Wildfire Protection Plan

2019

Prepared by
Project Wildfire
projectwildfire.pw@gmail.com
www.projectwildfire.com
(541) 322-7129

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Executive Summary

Purpose

Community Wildfire Protection Plans (CWPPs) are documents that are designed by a local group of stakeholders who are invested in the wildland fire threat to their area. The group of stakeholders typically consists of a representative from the fire department(s), the state Forestry Department, any governing bodies and especially property owners. Each of these representatives should bring their concerns regarding wildland fire to the discussion and propose solutions to their concerns.

Although reducing the risk of high-intensity wildland fire is the primary motivation behind this plan, managing the larger landscape to restore forest health and more resilient conditions and improving fire response by all fire agencies are also discussed and addressed in the action plan. Continued efforts have been made by County, State, and Federal land management agencies to reduce the threat of high-intensity wildland fires through education and fuels reduction activities on public lands. In addition, private property owners have responded enthusiastically to the defensible space and preparation guidelines and recommendations to reduce hazardous fuels on their own properties by participating in programs such as Firewise and FireFree. All of these activities allow the Greater Sisters Country Area to become a more Fire Adapted Community.

Since its creation in 2005, the Greater Sisters Country Community Wildfire Protection Plan (CWPP) has been revised three times (2006, 2009 and 2014) by a local steering committee to be applied as it was intended by a wide variety of private landowners and public agencies to decrease the risks of high-intensity wildfire in the Greater Sisters Country Area.

The 2019 Greater Sisters Country CWPP will assist agencies and local property owners in the identification and prioritization of all lands, including surrounding public lands that are at risk from high-intensity wildland fire. The Greater Sisters Country CWPP identifies priorities and strategies for reducing hazardous wildland fuels while improving forest health, supporting local industry, and economy and improving fire protection capabilities.

Addressing these goals in a cooperative, collaborative manner maintains alignment with the goals outlined in the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) – resilient landscapes, Fire Adapted Communities, and safe and effective wildfire response. For more information on Cohesive Strategy, visit http://www.forestsandrangelands.gov/.

The goals of the Greater Sisters Country CWPP are to:

- Protect lives and property from wildland fires;
- Instill a sense of responsibility among residents, visitors, conservation groups and federal, state and local agencies to take preventive actions regarding wildland fire;
- Provide guidance to federal agencies for implementing fuels reduction treatments;
- Prioritize the use of limited funds for the treatment of hazardous fuels;
- Create and maintain fire-adapted communities;
- Increase public understanding of living in a fire-adapted ecosystem;
- Increase the community's ability to prepare for, respond to and recover from wildland fires;
- Restore fire-adapted ecosystems with diverse, multi-structured forests emphasizing large ponderosa pine trees;
- Improve the fire resilience of the landscape while protecting other social, economic and ecological values.

The Greater Sisters Country CWPP integrates information from a variety of sources to present a comprehensive picture of risk and possible treatments on the landscape and enable community organizations and their partners to act in a coordinated fashion. A completed plan also allows the adjacent federal land management agencies to make use of the expedited authorities provided by the Healthy Forest Initiative (HFI) and the Healthy Forest Restoration Act (HRFA). In addition, for communities seeking federal grant funding from the National Fire Plan, a completed community wildfire protection plan has become a *de facto* requirement. Lastly, developing a community wildfire protection plan is a powerful tool to help get local residents and visitors involved in fire protection efforts.

The Greater Sisters Country CWPP executes the elements of the Sisters Country Vision Plan that was adopted in 2019. Most relevant to this document is the

Resilient Sisters Strategy 5: Disaster Preparedness and Response. Promote enhanced coordination of disaster preparedness and response efforts in Sisters Country within the statewide network. Improve and enhance natural disaster preparedness and socioeconomic resilience training and education programs.

- **Resilient 5.1 - Active Forest Management**
  Sponsor public forums and education efforts illuminating the potential benefits and potential trade-offs of Active Forest Management practices, including prescribed burns, mechanical ground cover treatment and timber stand thinning.
- **Resilient 5.2 - Models for Active Forest Management**
  Collect and analyze models of programs and systems in which political jurisdictions (such as the cities of Ashland, Ore., and Prescott, Ariz.) fund
  active management, including prescribed burns and thinning, of forested land beyond their jurisdictional boundaries.

- **Resilient 5.3 - Economic Uses of Forest Management By-Products**
  Collect and analyze existing reports to identify approaches to making economic use of by- products from active forest management, such as thinning, with emphasis on identifying steps that could be taken within Sisters Country to realize such use of byproducts.
- **Resilient 5.4 - Community Outreach Activities**
  Conduct community outreach activities to educate residents, businesses and property owners about adaptive techniques to improve protection of structures and landscaping threatened by all natural hazards, including wildfire.

The Vision and Action Plan can be found online at https://sistersvision.org/.

Planning Area Boundaries

The Greater Sisters Country CWPP is multi-jurisdictional and addresses all lands and all ownerships within the boundaries of the plan area. It is located in the northwestern-most corner of Deschutes County as well as the western portion of Jefferson County. The eastern edge abuts the Greater Redmond CWPP. The southern edge of the boundary meets the northern boundaries of the East-West Deschutes County CWPP and Greater Bend CWPP. The western boundary is the county line shared with Linn and Lane Counties.

The CWPP planning area encompasses a larger area and is the greater extent of the plan, however, a smaller area within the planning area is considered the Wildland Urban Interface (WUI). The WUI is the area that actions described in this plan are focused on and consists of areas with structures or other infrastructure that are considered as a whole values at risk including an adequate buffer of those areas based on local knowledge of fire behavior. The Greater Sisters Country WUI boundary is approximately 671 square miles and covers 429,137 acres.

Geography and the Environment

The communities of Greater Sisters Country are bound together by Oregon State Highways 20, 126 and 242. The CWPP Planning area boundary lies within the larger area of the eastern Cascade slopes and foothills. The area is dominated by western juniper, sagebrush, and grasses on the high desert to the east; and a transition from ponderosa pine to mixed conifer to a sub-alpine mix of tree species near the crest of the Cascades in the west. The vegetation is adapted to the prevailing dry climate and is highly susceptible to wildland fire with major threats to the area each year. Volcanic cones and buttes dot the landscape across much of the region. Most of the communities in the area lie at an elevation of 3,200 feet.

The Greater Sisters community presents a unique challenge for the wildfire planning process. Not only are the core city business and residential areas at significant risk from wildfire, so too are the many subdivisions outside the city limits that have been developed in the thick of nearby forests. Dense stands of trees, topographical challenges, and thick ground vegetation contribute to the overall wildland fire risk in the Greater Sisters planning area.

The climate in Sisters is typical of the east slopes of the Cascade Mountains, with most of the annual precipitation coming as winter snow or fall and spring rains. Summers are dry and prone to frequent thunderstorms that may we wet or dry. These thunderstorms frequently cause multiple fire ignitions.

Today, with less stand management, logging activity, and highly effective wildland fire suppression, the forestland is predominantly dense conifer forests consisting primarily of ponderosa and lodgepole pine. Much of the understory consists of dense bitterbrush with some areas of native bunchgrasses. The other main vegetation type is shrubland on the eastern portion of the planning area. Due to the lack of disturbance, vegetation has continued to become more and more overcrowded.

Wildland Fire Risk Assessment

The CWPP steering committee undertook a wildland fire risk assessment to gauge the relative risk and hazard due to wildland fire for the lands and communities within the planning area. It is a tool to direct the implementation of wildfire mitigation activities to the highest priority areas and promote cross-boundary coordination. The assessment assessed risk, hazard, fire protection capability, structural vulnerability, and values to be protected.

The Greater Sisters Country CWPP used the Oregon Wildfire Risk Explorer tool that was created in partnership with the Oregon Department of Forestry and the Institute for Natural Resources at Oregon State University. The assessment organizes data into five categories in determining the relative severity of fire risk:

- ***Risks*** – the likelihood of a wildfire and the exposure and susceptibility of mapped valued resources and assets combined.
- ***Threat*** – the likelihood of a large wildfire, the average intensity and the likelihood of higher intensities, conveyed by flame length.
- ***Potential Impacts*** – the exposure of mapped resources and assets showing the consequence of wildfire if it were to occur, not incorporating the likelihood of burning.
- ***Hazard to Potential Structures*** – shows exposure and susceptibility to hypothetical structures in any area if a wildfire were to occur.
- ***Fire Model Inputs and Fuelscape*** – the fuels and topography used to run the fire model.

The Greater Sisters Country CWPP was developed by and for the community members to enhance their understanding of their local surroundings and how their landscape determines their risk of wildland fire. Each risk assessment and recommendation in this plan has been made after careful consideration by the Steering Committee. Specific recommendations for homeowners to reduce their risk can be found on pages 33 and 34 of this CWPP. The Steering Committee's recommendations to achieve more fire resilient landscapes can be found on pages 37 through 40 of this CWPP.

Declaration of Agreement

The Greater Sisters Country Community Wildfire Protection Plan was originally completed and signed on June 21, 2005. Other revisions were approved in 2006, 2009, and 2014. As directed by this CWPP, fuels reduction activities have been completed on public and private lands. Recent wildland fires have also impacted the landscape. Combined, these events have changed the priorities outlined in the three previous documents.

Under the Healthy Forests Restoration Act, the CWPP is approved by the applicable local government, the local fire department and the state entity responsible for forest management. This plan is not legally binding, as it does not create or place mandates or requirements on individual jurisdictions. It is intended to serve as a planning tool for fire and land managers and residents to assess risks associated with wildland fire and identify strategies and make recommendations for reducing those risks.

Roger Johnson, Fire Chief
Sisters – Camp Sherman Rural Fire Protection District — Date: 1-10-2020

Thad Olsen, Fire Chief
Cloverdale Rural Fire Protection District — Date: 1-15-2020

Dan Tucker, Fire Chief
Black Butte Ranch Rural Fire Protection District — Date: 1/13/2020

Chuck Ryan, Mayor
City of Sisters — Date: JAN 8 2020

Gordon Foster, Unit Forester
Oregon Department of Forestry — Date: Jan 10, 2020

Patti Adair, Chair
Deschutes County Board of Commissioners — Date: Jan 8 2020

Tony DeBone, Vice Chair
Deschutes County Board of Commissioners — Date: 8 JAN 20

Philip G. Henderson, Commissioner
Deschutes County Board of Commissioners — Date: Jan 8, 2020

Acknowledgements

Assembled within the true spirit of collaboration, the following people are acknowledged for their participation and commitment resulting in the creation of the 2019 Greater Sisters Country Community Wildfire Protection Plan.

Ben Duda	Oregon Department of Forestry
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Curtiss Scholl	Sisters School District
Dan Tucker	Fire Chief, Black Butte Ranch FD
David Gibson	Black Butte Ranch Fire District Board Member
Doug Green	Sisters – Camp Sherman RFPD
Ed Keith	Deschutes County Forester
Ed Young	Metolius Meadows Resident
Gordon Foster	Oregon Department of Forestry
Ian Reid	District Ranger, US Forest Service
James Osborne	US Forest Service/COFMS
Jinny Reed	US Forest Service/COFMS
Jodie Barram	Project Wildfire
Ken Birkes	Tollgate Resident
Larae Guillory	US Forest Service/COFMS
Lesley Allison	Sage Meadow HOA
Matt Cyrus	Board Member — Aspen Lakes
Nathan Garibay	Deschutes County Sheriff's Office of Emergency Management
Patrick Davenport	City of Sisters Community Development
Patti Adair	Deschutes County Commissioner
Roger Johnson	Fire Chief, Sisters – Camp Sherman RFPD
Thad Olsen	Fire Chief, Cloverdale RFPD

Contact Information

Copies of this CWPP may be found and downloaded at:

www.projectwildfire.org

Ed Keith, County Forester
Deschutes County
61150 SE 27th Street
Bend, OR 97702
(541) 322-7117

Gordon Foster, Unit Forester
Oregon Department of Forestry
3501 NE 3rd Street
Prineville, OR 97754
(541) 447-5658

Roger Johnson, Fire Chief
Sisters – Camp Sherman Fire District
301 S. Elm Street
Sisters, OR 97759
(541) 549-0771

James Osborne, Fire Management Officer
Central Oregon Fire Management Services-
Cascade Division
Pine St & Highway 20, PO Box 249
Sisters, OR 97759
(541) 549-7700

Dan Tucker, Fire Chief
Black Butte Ranch Fire District
13511 Hawks Beard
Black Butte Ranch, OR 97759
(541) 595-2288

Jodie Barram, Program Director
Project Wildfire
61150 SE 27th Street
Bend, OR 97702
(541) 322-7129

Thad Olsen, Fire Chief
Cloverdale Fire District
68787 George Cyrus Rd
Sisters, OR 97759
(541) 548-4815

Purpose

The purpose of the Greater Sisters Country Community Wildfire Protection Plan (CWPP) is to:

- Protect lives and property from wildland fires;
- Instill a sense of personal responsibility and provide steps for taking preventive actions regarding wildland fire;
- Increase public understanding of living in a fire-adapted ecosystem;
- Increase the community's ability to prepare for, respond to and recover from wildland fires;
- Restore fire-adapted ecosystems; and
- Improve the fire resilience of the landscape while protecting other social, economic and ecological values.

Originally completed in 2005 with a revised planning boundary in 2006 and full document updates in 2009 and 2014, this comprehensive revision maintains the original purpose and outlines the updated priorities, strategies and action plans for fuels reduction treatments in the Greater Sisters Country wildland-urban interface (WUI). This CWPP also addresses special areas of concern and makes recommendations for reducing structural vulnerability and creating defensible space in the identified Communities at Risk. It is intended to be a living vehicle for fuels reduction, educational, and other projects to decrease overall risks of loss from wildland fire; revisited at least annually to address its purpose.

Although reducing the risk of high-intensity wildland fire is the primary motivation behind this plan, managing the forests and wildlands for hazardous fuels reduction and fire resilience is only one part of the larger picture. Residents and visitors desire healthy, fire-resilient forests and wildlands that provide habitat for wildlife, recreational opportunities, and scenic beauty.

Wildland fire is a natural and necessary component of ecosystems across the country. Central Oregon is no exception. Historically, wildland fires have shaped the forests and wildlands valued by residents and visitors. These landscapes, however, are now significantly altered due to fire prevention efforts, modern suppression activities and a general lack of large-scale fires, resulting in overgrown forests with dense fuels that burn more intensely than in the past. In addition, the recent increase in population has led to a swell in residential development into forested land, in the wildland-urban interface.

The 2019 Greater Sisters Country Community Wildfire Protection Plan will assist the Sisters – Camp Sherman, Black Butte Ranch, and Cloverdale Fire Districts and Sisters area residents in the identification of surrounding lands, including federal and state lands at risk from high-intensity wildland fire. The Greater Sisters Country CWPP identifies priorities and strategies for

reducing hazardous wildland fuels while improving forest health, supporting local industry and economy and improving fire protection capabilities. It also identifies strategies to address special areas of concern such as evacuation routes as well as outlines actions that individuals can take to help protect themselves and their neighborhoods against the threat of wildland fires.

The Greater Sisters Country CWPP executes the elements of the Sisters Country Vision Plan that was adopted in 2019. Most relevant to this document is the

Resilient Sisters Strategy 5: Disaster Preparedness and Response. Promote enhanced coordination of disaster preparedness and response efforts in Sisters Country within the statewide network. Improve and enhance natural disaster preparedness and socioeconomic resilience training and education programs.

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  Collect and analyze existing reports to identify approaches to making economic use of by- products from active forest management, such as thinning, with emphasis on identifying steps that could be taken within Sisters Country to realize such use of byproducts.
- **Resilient 5.4 - Community Outreach Activities**
  Conduct community outreach activities to educate residents, businesses and property owners about adaptive techniques to improve protection of structures and landscaping threatened by all natural hazards, including wildfire.

Planning Summary

The Sisters City Council adopted the Greater Sisters Country Community Wildfire Protection Plan by resolution on October 8th, 2009 and its most recent update in May of 2014. Additionally, in 2014, the Sisters City Council adopted Ordinance 444 which amended its Municipal Code addressing the Urban/Rural Interface regulations and recommendations contained in Senate Bill 360 (Oregon Forestland Durban Interface Fire Protection Act). The ordinance incorporated changes regarding fire prevention, the spread of noxious weeds and improved aesthetics to help ensure the health, safety, and welfare of the residents of the City of Sisters. The Municipal Code which includes Wildland Urban Interface (WUI) standards in Chapter 8.20 was re-codified in May 2019.

Continued efforts have been made by county, state and federal land management agencies to reduce the threat of high-intensity wildland fires through education and fuels reduction activities on public lands. In addition, private residents have responded enthusiastically to the defensible space and preparation guidelines and recommendations to reduce hazardous fuels on their own properties.

Although reducing the risk of high-intensity wildland fire is the primary motivation behind this plan, managing the wildlands for hazardous fuels reduction and fire resilience is only one part of the larger picture. Residents and visitors desire healthy, fire-resilient wildlands that provide habitat for wildlife, recreational and economic opportunities, and scenic beauty.

In keeping with the strategy of the original Greater Sisters Country CWPP, the Steering Committee revisited the planning outline in *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (Communities Committee, Society of American Foresters, National Association of Counties, and National Association of State Foresters 2005); and Deschutes County Resolution 2004-093.

Eight steps are outlined to help guide Steering Committees through the planning process:

Step one: Convene the decision-makers.

The Greater Sisters CWPP Steering Committee reconvened in February 2019 to review the work completed within and adjacent to the WUI boundaries on public and private lands and reevaluate the priorities for future fuels reduction treatments. The Steering Committee is comprised of the Program Director from Project Wildfire; Fire Chiefs from Sisters-Camp Sherman, Cloverdale, and Black Butte Ranch Fire Districts; representatives from Oregon Department of Forestry (ODF); representatives from the Bureau of Land Management and the US Forest Service, the Deschutes County Forester, other stakeholders and members of the public.

Step two: **Involve state and federal agencies.**

The Healthy Forests Restoration Act (HFRA) directed communities to collaborate with local and state government representatives, in consultation with federal agencies and other interested parties in the development of a CWPP. The Steering Committee recognized the importance of this collaboration and involved not only members from the USDA Forest Service and USDI Bureau of Land Management (BLM) but Oregon Department of Forestry (ODF) and Deschutes County representatives as well. Each agency brought a wealth of information about fuels reduction efforts planned and completed along with educational information based on current research across the nation.

Step three: Engage interested parties.

Representatives from the Communities at Risk participated on the Steering Committee. The Steering Committee also included members of local businesses, homeowner/neighborhood associations, and other organizations and individuals.

Step four: Establish a community base map.

The Steering Committee reviewed the previous maps and boundaries from the 2014 CWPP. The group approved the 2019 CWPP boundary. The Steering Committee was able to estimate 5743 structures in the risk assessment process.

Step five: Develop a community risk assessment.

The Steering Committee relied on the Oregon Wildfire Risk Explorer tool to create an Advanced Report (Appendix A).

Step six: Establish community hazard reduction priorities and recommendations to reduce structural ignitability.

Based on the report, the Steering Committee produced priorities for fuels reduction treatments on public and private lands. The Steering Committee also made recommendations to reduce structural ignitability based on information in the assessments and local knowledge.

Step seven: Develop an action plan and assessment strategy.

The Steering Committee identified an action plan for key projects; roles and responsibilities for carrying out the purpose of the CWPP; potential funding needs and the evaluation process for the CWPP itself.

Step eight: Finalize the Community Wildfire Protection Plan.

A draft of the Greater Sisters Country CWPP was available for public comment prior to the final signing and approval of the plan. The Greater Sisters Country Community Wildfire Protection Plan was mutually approved by the Sisters-Camp Sherman Fire, Cloverdale Fire, Black Butte Ranch Fire, the Oregon Department of Forestry, the City of Sisters, and the Deschutes County Board of Commissioners as demonstrated in the Declaration of Agreement.

Collaboration

In 2002, President George W. Bush established the Healthy Forests Initiative (HFI) to improve regulatory processes to ensure more timely decisions, greater efficiency and better results in reducing the risk of high-intensity wildfire. This initiative allowed forest management agencies for the first time, to expedite the documentation process for the purpose of reducing hazardous fuels on public lands.

In 2003, Congress passed historical bi-partisan legislation: The Healthy Forests Restoration Act (HFRA). This legislation directs federal agencies to collaborate with communities in developing a Community Wildfire Protection Plan that includes the identification and prioritization of areas needing hazardous fuels treatment. It further provides authorities to expedite the National Environmental Protection Act (NEPA) process for fuels reduction projects on federal lands. The act also requires that 50% of funding allocated to fuels projects be used in the community-defined wildland-urban interface.

Communities now have the opportunity to participate in determining where federal agencies place their fuels reduction efforts. With a CWPP in place, community groups can apply for federal grants to treat hazardous fuels and address special concerns to reduce the risk of catastrophic loss as a result of wildland fire.

Although some of the authorities under HFI and HFRA have been subsequently challenged in federal courts, all have been successfully appealed and the original intent and authorities under each remain the same.

In 2009, Congress passed the Federal Land Assistance, Management, and Enhancement (FLAME) Act and called for a National Cohesive Wildland Fire Management Strategy to address wildland fire-related issues across the nation in a collaborative, cohesive manner. The Cohesive Strategy was finalized in 2014 and represents the evolution of national fire policy:

> ***To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.***

The primary, national goals identified as necessary to achieving the vision are:

Resilient landscapes: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.

Fire-adapted communities: Human populations and infrastructure can withstand a wildfire without loss of life and property.

Wildfire response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

Building a collaborative and cooperative environment with the fire department(s), community-based organizations, local government, and the public land management agencies has been the first step in reducing the risk of loss from wildland fire. The Steering Committee pledges to maintain this cooperation with the public over the long term with the commitment of all the participants involved. The importance of collaboration with neighboring CWPPs is recognized by the Steering Committee and is referenced throughout this CWPP as documentation of collaborative efforts to maximize hazardous fuels reduction efforts in the area. The Steering Committee agrees that the Greater Sisters Country Community Wildfire Protection Plan will be a living document, intended to promote fuels reduction, education, and other projects to decrease overall risks of loss from wildland fire; it is intended to be revisited at least annually to address its purpose.

At a minimum, the Greater Sisters Country CWPP Steering Committee shall include: representatives from Sisters – Camp Sherman Fire District, Black Butte Ranch Fire District, Cloverdale Fire District, Oregon Department of Forestry (ODF), the USDA Forest Service (USFS), the USDI Bureau of Land Management (BLM), the City of Sisters, Deschutes County and Project Wildfire along with members of the public.

Community Profile

The Greater Sisters Country is located in central Oregon on the east side of the Cascade Mountains. In 2018, the population according to the City of Sisters is 2,725 with another 11,025 estimated in the rural population that inhabit areas surrounding the city of Sisters. This is an increase of 31% within the city limits since 2012. These figures do not include the high influx of visitors during the tourist season.

Sisters is known for its outstanding recreational opportunities, cultural traditions, and general small-town feel. The annual Sisters Rodeo, the Starry Nights Music series and the Sisters Quilt Show consistently bring thousands of visitors to the area. Within the planning area, there is also a significant amount of public land with developed and dispersed recreation sites, which provide valuable recreation opportunities to both residents and visitors. In the summer months, the County estimates a transient population of up to 10,000 people that occupy these areas creating a seasonal challenge for those agencies responsible for fire suppression and evacuation.

The CWPP planning area boundary lies within the larger area of the eastern Cascade slopes and foothills. The area is dominated by western juniper, sagebrush, and grasses on the high desert to the east; and a transition from ponderosa pine to mixed conifer to a sub-alpine mix of tree species near the crest of the Cascades in the west. The vegetation is adapted to the prevailing dry climate and is highly susceptible to wildland fire with major threats to the area each year. Volcanic cones and buttes dot the landscape across much of the region. Most of the communities in the area lie at an elevation of 3,200 feet.

Approximately 7,000 acres of the CWPP planning boundary are agricultural lands. The large property owners consistently maintain and irrigate their agricultural property within the Greater Sisters CWPP planning boundary. These lands provide irrigated fuel breaks in the larger landscape of wildland fuels.

The Greater Sisters community presents a unique challenge for the wildfire planning process. Not only are the core city business and residential areas at significant risk from wildfire, so too are the many subdivisions outside the city limits that have been developed in the thick of nearby forests. The built environment of the City of Sisters places higher density residential adjacent to forest lands. Dense stands of trees, topographical challenges, and thick ground vegetation contribute to the overall wildland fire risk in the Greater Sisters planning area.

The climate in Sisters is typical of the east slopes of the Cascade Mountains, with most of the annual precipitation coming as winter snow or fall and spring rains. Summers are dry and prone to frequent thunderstorms that may be wet or dry. These thunderstorms frequently cause multiple fire ignitions.

The communities of Greater Sisters Country are bound together by Oregon State Highways 20, 126 and 242. The City of Sisters lies at the intersection of these corridors. As central Oregon grows, more residents and tourists crowd these highways and increase congestion, particularly during the summer months when the fire season reaches its peak. The City of Sisters Transportation System Plan calls for improving access through Sisters. This will benefit emergency response by improving access routes in the event of a major wildland fire. The Highway 242 and Highway 20 corridor, as well as Forest Road 16 (Three Creeks Road), are included in the consideration of the WUI boundary due to their critical role as roads and travel corridors that link communities together and serve as evacuation routes.

The Eagle General Aviation Airport is located at the intersection of Camp Polk Road and Barclay Drive, less than one mile from the Sisters city limits. Roberts Field in Redmond is the primary commercial aviation hub in Central Oregon and lies 20 miles east of the Sisters area. General aviation and wildland fire support facilities are also available at Roberts Field.

Public and Private Accomplishments

As part of the ongoing wildland fire risk management of the surrounding public and private forestlands, the US Forest Service, the Bureau of Land Management, Oregon Department of Forestry, Deschutes County and private landowners are engaged in hazardous fuels treatment projects across the planning area.

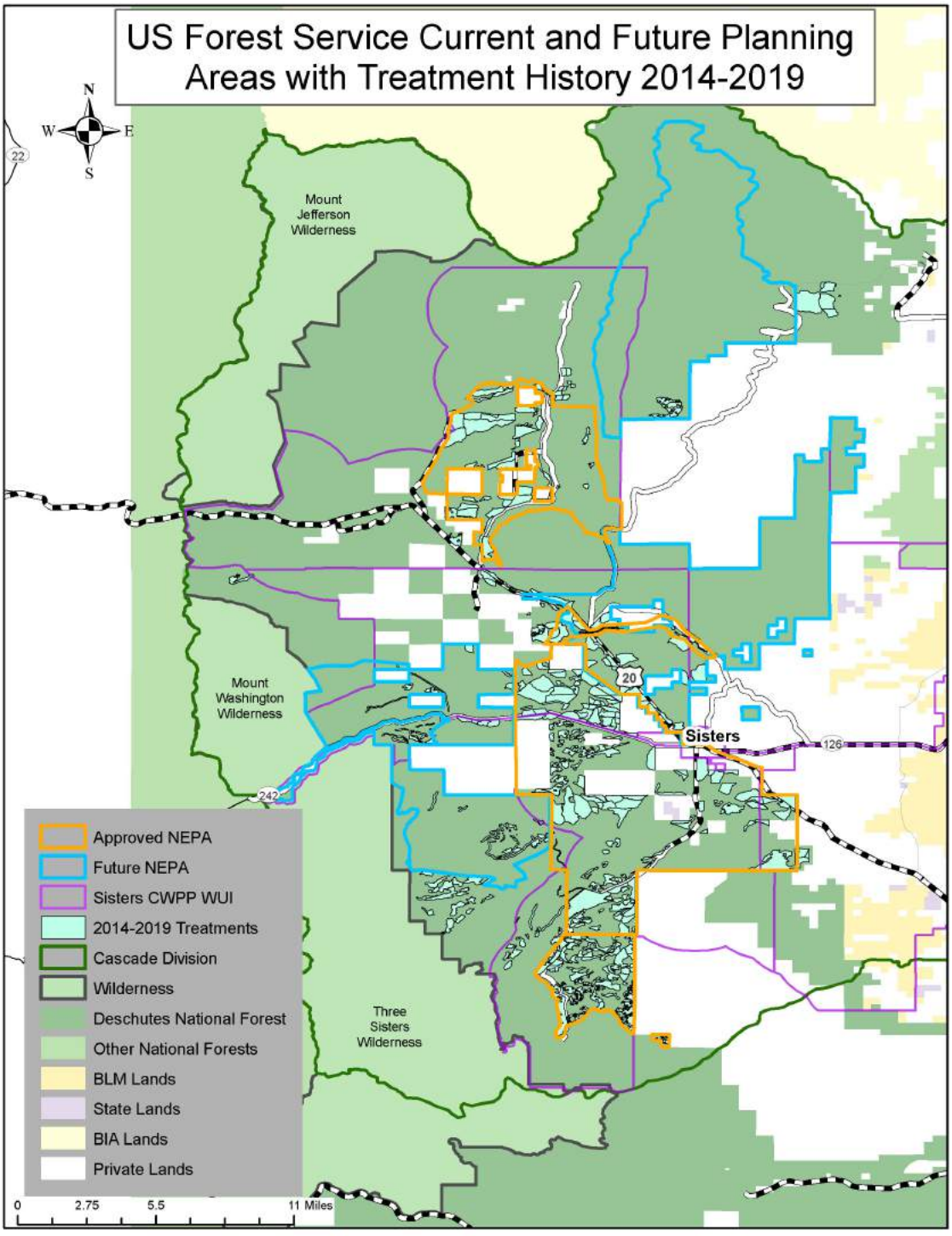
US Forest Service & Bureau of Land Management

The US Forest Service
The US Forest Service – Sisters Ranger District manages 203,890 non-wilderness acres within the Greater Sisters area of which 104,469 acres are classified as Wildland Urban Interface (WUI). District operations continue to make great strides to increase both forest health and reduce the potential for high-intensity wildland fire through fuels reduction activities. The following maps provide a snapshot of fuels treatment projects on Forest Service lands that have occurred during the life of the Greater Sisters Area CWPP.

It is important to note that each project area requires multiple types of fuels reduction activities to achieve the desired result including mechanical shrub mowing, tree thinning, hand piling, and under burning. Therefore, multiple entries are required in order to adequately restore forest ecosystem health and reduce hazardous fuels. The ultimate goal for these projects is to reduce the potential for a high-intensity fire that can spread to tree crowns, requiring costly suppression efforts and causing large losses on the landscape as well as in and around communities.

US Forest Service 2014-2019 Fuel Reduction Treatments by Planning Area (in acres)

Project Name	Project Status	Pre-commercial Thin	Commercial Thin	Mowing/ Mastication	Yarding/ Piling	Pile Burning	Underburning
Glaze Forest Restoration Project	Ongoing	164	128	130	30	32	269
Indian Ford Creek Restoration Project	Ongoing	63	93	0	0	28	525
Highway 20 Integrated Vegetation Management Project	Complete - Maintenance	555	0	1,269	0	38	249
McCache Vegetation Management Project	Ongoing	95	0	32	133	95	137
Melvin Butte Vegetation Management Project	Ongoing	3,106	1,514	115	695	39	0
Metolius Basing Forest Management Project	Ongoing	478	193	505	220	171	1,400
Metolius Research Natural Area	Complete	0	0	0	0	0	197
Milli Fire Danger Tree Abatement	95% Complete	595	0	0	0	140	0
Sisters Area Fuels Reduction	Ongoing	2,634	1,142	1,783	1,897	2,388	2,965
Pole Creek Fire Timber Salvage Project	Complete	0	0	0	0	1,116	0
Flymon	Ongoing	0	0	0	0	60	553
Other	Ongoing	122	0	0	0	132	
Total		7,812	2,977	3,834	3,040	4,239	6,295



The treatments associated with the various planning areas represented above are in various phases of completion, with some nearing their end (See above table). As projects come to a close, Forest Service land managers assess new priority treatment areas and begin associated project analysis.

Numerous areas have been identified for fuels related treatments in the future planning areas. Of these areas, the following are currently under development.

Green Ridge approximately 24,600 acres (In planning phase, implementation expected in 2021) – Northeastern portion of Sisters Ranger District between Eyerly Fire scar and western slope of Green Ridge. Project contains Metolius CWPP subregion.

Maintenance CE approximately 17,950 acres (In planning phase, implementation expected in 2021)—Throughout the Sisters Ranger District in past planning areas. Located within Metolius, Indian Ford Creek, Whychus Creek, Whychus Canyon, and Fryrear Butte CWPP subregions.

Garrison approximately 25,000 acres (On the planning horizon 2020/2021)—Eastern part of Sisters Ranger District. Project falls within Metolius, Indian Ford Creek, City of Sisters, and Whychus Canyon CWPP subregions.

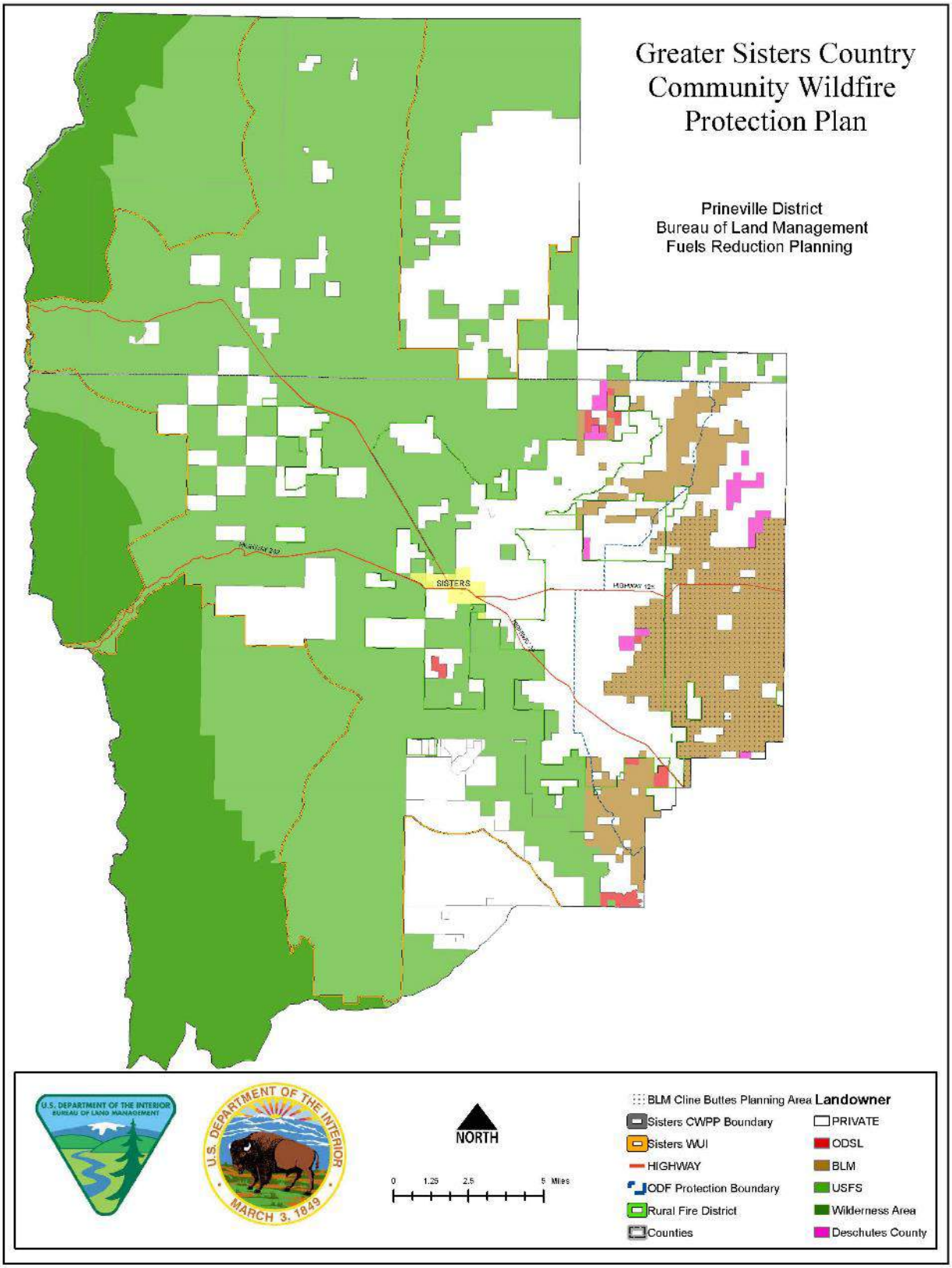
Three Creek WUI approximately 300 acres (On the planning horizon 2021/2022)—Southern portion of Sisters Ranger District. Located within Whychus Creek CWPP subregion.

Bluegrass approximately 18,000 acres (On the planning horizon 2022/2023)—Western end of Sisters Ranger District. Located within Indian Ford Creek and Whychus Creek CWPP subregions.

The Bureau of Land Management

The Prineville District manages 43,393 acres within the Greater Sisters area all of which are classified as Wildland Urban Interface (WUI). The BLM has conducted approximately 120 acres of fuels mitigation within the Sisters WUI between 2014-2019. Future projects are also planned in the Cline Buttes planning area with planned implementation starting in 2020.

Bureau of Land Management (BLM) Project Map



Oregon Department of Forestry

The Oregon Department of Forestry (ODF) works with larger landowners on a cost-share basis to reduce hazardous fuels and the potential for losses on larger tracts of land. In the last five years, grant dollars awarded to ODF have been used to help private landowners treat over 650 acres. ODF is also the program administrator for the Oregon Forestland-Urban Interface Fire Protection Act of 1997, also known as Senate Bill 360.

Oregon Forestland-Urban Interface Fire Protection Act of 1997

The Oregon Forestland-Urban Interface Fire Protection Act, also known as Senate Bill 360, enlists the aid of property owners toward the goal of turning fire-vulnerable urban and suburban properties into less volatile zones where firefighters may more safely and effectively defend homes from wildfires. The law requires property owners in identified forestland-urban interface areas to reduce excess vegetation around structures and along driveways. In some cases, it is also necessary to create fuel breaks along property lines and roadsides.

A classification committee identifies forestland-urban interface areas in each county. Once areas are identified, a committee applies fire risk classifications to the areas. The classifications range from "low" to "high-density extreme," and the classification is used by a property owner to determine the level of hazardous fuel reduction that needs to be established on the property to minimize the risk of experiencing structural property loss from unwanted wildfire.

The process of identifying forestland-urban interface areas follows steps and definitions described in the Oregon Administrative Rules. Briefly, the identification criteria include:

- Lands within the county that are also inside an Oregon Department of Forestry protection district.
- Lands that meet the state's definition of "forestland."
- Lands that meet the definition of "suburban" or "urban"; in some cases, "rural" lands may be included within a forestland-urban interface area for the purpose of maintaining meaningful, contiguous boundaries.
- Lots that are developed, that are 10 acres in size or smaller, and which are grouped with other lots with similar characteristics in a minimum density of four structures per 40 acres.

The classification committee was to reconvene every five years to review and recommend any changes to the classifications. This process was completed and approved in February of 2010. At the same time, Deschutes County elected to classify *all* the lands within its boundaries, regardless of ODF protection.

A detailed description of the standards is available from the Oregon Department of Forestry in the handbook for the Oregon Forestland – Urban Interface Fire Protection Act of 1997. This information is also available at www.oregon.gov/ODF/fire/SB360.

The Standards for properties classified as **high** under the Oregon Forestland – Urban Interface Fire Protection Act of 1997 are:

- Establish a primary fuel break of 30 feet around structures (additional 20 feet if flammable roofing material is present);
- Create fuel breaks around driveways longer than 150 feet;
- Remove tree branches within 10 feet of chimneys;
- Remove any dead vegetation that overhangs a roof;
- Remove flammable materials from under decks and stairways;
- Move firewood 20 feet away from structures;

If the property is classified as **extreme**, a total of 50 feet of defensible space around structures is required (an additional 20 if flammable roofing is present).

A fuel break consists of: Removal of dead/dry/flammable brush around the home, roof, chimney, decks and under nearby trees; removal of low hanging branches on trees; and reposition of woodpiles at least 20 feet away from home during fire season.

If the property is classified as **high-density extreme**, a total of 50 feet of defensible space around structures is required (an additional 20 if flammable roofing is present).
A fuel break consists of: Removal of dead/dry/flammable brush around the home, roof, chimney, decks and under nearby trees; removal of low hanging branches on trees; and reposition of woodpiles at least 20 feet away from home during fire season. Vacant lots should put in a 20-foot fuel break around the perimeter of the property in areas that are classified as high-density extreme.

The specific recommendations under Senate Bill 360 for private lands are also outlined under Prioritized Hazard Reduction Recommendations and Preferred Treatment Methods in this CWPP.

Deschutes County

Deschutes County owns 1% of the land in the greater Sisters Country WUI. Through ongoing funding opportunities including grants, Deschutes County is taking steps to reduce the hazardous vegetation and provide for a more fire-safe community. The County has worked cooperatively with private landowners to reduce hazardous fuels on approximately 629 acres of private land in the last 5 years.

City of Sisters

The City of Sisters operates with a council-manager form of government. Current City Council goals address livability and growth, public safety, economic development, essential infrastructure, good governance, and community vision. The Sisters water system dates back to the 1930's. Transmission and distribution mainlines in the City's water system total approximately 32 miles with approximately 1500 active service connections. Continued updating and maintenance in the past 5 years lends to greater preparedness for wildfire events.

Project Wildfire

Over the last five years, Project Wildfire, in cooperation with the Deschutes County Sheriff's Office of Emergency Management Program has coordinated evacuation route signage for neighborhoods in the Greater Sisters Country Area. Project Wildfire has also helped residents and neighborhoods find grant funding to reduce hazardous fuels on private lands. Providing home assessments for individuals on how vulnerable a structure will be during a wildfire, then offering recommendations that should be taken so the home will have a better chance to survive a wildfire is a free service Project Wildfire offers. As residents work on proactive planning in preparation for wildfire, they help achieve Project Wildfire's mission to prevent deaths, injuries, property loss, and environmental damage resulting from wildfires in Deschutes County.

In partnership with Deschutes County, Project Wildfire plans and implements two FireFree events every year in the spring and the fall. The spring days are completely free for residents to drop off yard debris at landfills and transfer stations throughout Deschutes County. The public has come to expect these FireFree events and there is a high level of participation each year. The events are an easy and cost-effective way for homeowners to create and maintain their defensible space.

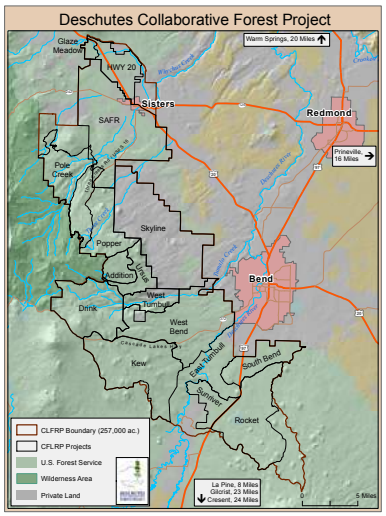
Firewise USA®

The Firewise USA® program is a national recognition program that highlights communities that have chosen to complete and maintain defensible space; ensure adequate access, water, and signage; promote ongoing fire prevention education, and build or retro-fit structures with non-combustible building materials such as siding, decks, and roofing. Adequate water availability and access are also required. Firewise USA® now recognizes 7 Deschutes County sites in the Greater Sisters Country CWPP area – Aspen Lakes, Cascade Meadows Ranch, Crossroads, Sage Meadow, Squaw Creek Canyon Estates, Starr Ranch, and Tollgate.

NFPA's Firewise USA® program teaches people how to adapt to living with wildfire and encourages neighbors to work together and take action now to prevent losses. The Firewise USA® Sites in the Greater Sisters Country Area have effectively lowered their wildfire risk. They have fostered collaboration between neighbors, increased awareness and their communities' ability to respond to wildfire. Their neighborhoods help provide a safe and effective location for fire professionals to work.

Collaborative Forests Landscape Restoration Act – Deschutes Collaborative Forest Restoration Project

In 2010, a collaborative group of local agencies and organizations formed a proposal for funding a large, collaborative forest restoration and hazardous fuels reduction project on public lands managed by the Deschutes National Forest. This landscape-level project is known as the Deschutes Collaborative Forest Project (DCFP). Under the federal Collaborative Forest Landscape Restoration Act (CFLRA), the proposal was approved for funding up to $10 million over the next ten years. The Steering Committee and several task-oriented sub-committees now provide input and recommendations to the Deschutes National Forest for projects located on the 257,000-acre landscape. The entire project spans the west side of the Greater Bend WUI, the western portion of the East & West Deschutes County CWPP boundary, and is also included in the Sisters CWPP boundary to the north and the Sunriver CWPP boundary to the south. An amendment to the original boundary was approved in 2012 to include additional landscape acreage near Sunriver and Black Butte Ranch. Now portions of the $10 million award can be expended across a broader area.



As restoration projects on this landscape are implemented, the prescriptions and guidelines identified in this CWPP will be met marking a significant treatment of wildland hazardous fuels on a landscape scale, a priority in each of the CWPPs in Deschutes County. This will also allow for the creation and realization of fire-adapted communities along much of the west side of the county.

The Deschutes Collaborative Forest Project has a website in place – www.deschutescollaborativeforest.org – along with a social media presence on Facebook to continue the stakeholder dialogue and educational outreach for this important landscape.

Fire-Adapted Communities

This CWPP is just a piece of the over-arching framework and goal of Fire-Adapted Communities. People and nature are increasingly threatened by fire, despite fire's natural, beneficial role. At the same time, firefighting costs are escalating and diverting money away from proactive land management. The solution is to make natural areas and communities more fire-ready so that we can allow fire to play its natural role at a meaningful scale. The Fire Adapted Communities (FAC) initiative and the FAC Learning Network are helping homeowners, communities and land managers in fire-prone areas prepare for inevitable fires -- to "live with fire" safely. A fire-adapted community acknowledges and takes responsibility for its wildfire risk, and implements appropriate actions at all levels. Actions address resident safety, homes, neighborhoods, businesses and infrastructure, forests, parks, open spaces, and other community assets. There is no end-point in becoming a fire-adapted community. Sustaining, growing and adapting strategies, partnerships, and capacity through time are key. Visit www.fireadapted.org for more information. Working toward being more fire-adapted by developing a CWPP addresses one of the three prongs outlined in the larger goal of the National Cohesive Wildland Fire Management Strategy.

Community Base Maps

The Steering Committee agreed to utilize the Oregon Explorer Wildfire Risk Explorer which makes data available from the Pacific Northwest Quantitative Wildfire Risk Assessment. This tool provides data, generates maps, charts, graphics, reports, and interpretation. The full report with maps is found in Appendix A.

Wildland Urban Interface Description

The Healthy Forests Restoration Act defines the wildland-urban interface (WUI) as an area within or adjacent to an at-risk community that has been identified by a community in its wildfire protection plan. For areas that do not have such a plan, it is identified as:

- extending ½ mile from the boundary of an at-risk community,
- extending 1½ miles from the boundary of an at-risk community when other criteria are met such as a sustained steep slope or a geographic feature that creates an effective firebreak.
- adjacent to an evacuation route.

In the 2009 CWPP review and revision, the initial WUI boundary determination process was reviewed. The WUI was refined and adjusted to better reflect the definition of community as outlined in this document and included considerations of community growth, seasonal recreation areas, and access and egress corridors that were not identified in the initial plan.

The WUI also includes a ½ mile buffer on each side of the major transportation and evacuation routes through and out of the planning area. These routes include State Highways 20, 242, and 126; US Forest Service Roads 14 and 16 (Three Creeks Road). The WUI boundary continues all the way to the wilderness boundary of the Cascade Mountains on the west; to the Warm Springs Indian Reservation on the north; to the Greater Bend CWPP boundary and the East & West Deschutes County CWPP boundary on the south and the Greater Redmond CWPP boundary to the east.

There are additional lands not classified as WUI that are within the overall CWPP boundary. The Steering Committee chose not to classify the additional lands within the CWPP outside the WUI boundary, as they are predominately forested or rangelands with limited structural development. The wildland fire risk in those areas is significantly less than in the WUI areas. See community maps in Appendix A.

The Greater Sisters Country WUI boundary lies within the CWPP boundary and is approximately 409 square miles and covers 261,982 acres. There are non-WUI areas in the remainder of the CWPP boundary that bring the total acreage under this CWPP to 429,137 acres or 671 square miles.

Fuel Hazards and Ecotypes

The vegetation in the Greater Sisters Country WUI includes

- Ponderosa pine
- Western juniper
- Bitterbrush
- Manzanita
- Ceanothus or Snowbrush
- Western sage
- Mixed conifer

Ponderosa pine is currently found in varying degrees across the entire Sisters planning area. Historically, ponderosa pine forests contained more understory grasses and fewer shrubs than are present today. These plants combined with fallen pine needles formed fast-burning fuels that led to recurrent widespread burning. Low-intensity ground fires that occur at intervals of 11-15 years characterize the fire history for ponderosa pine. The pattern of low ground fires and stand dynamics resulted in the open park-like conditions that early inhabitants and visitors found in the region.

Less stand management, less logging activity, and highly effective wildland fire suppression have significantly altered the ponderosa pine forest type. Removal of the larger "yellow-belly" pines has dramatically decreased open park-like forests, replacing them with more evenly spaced and smaller "black-bark" forests. Similar to other species of conifer forest types, the suppression of fire has greatly increased the number and density of trees, creating ladder fuels and putting the stands at risk of attack from insects and disease. These factors have contributed to more intense fires in ponderosa pine forests in recent years.

Mature **lodgepole pine** in central Oregon is characterized by dense, uniform stands, an absence of other species, and a general lack of understory shrubs (although bitterbrush is often found with mature lodgepole pine). Lodgepole pine forests exhibit a moderate severity fire regime with a fire return interval between 60 and 80 years. Fire in lodgepole pine stands can be low, moderate, or severe over time and often result in full stand replacement.

In addition to fire, mountain pine beetles are worth noting as a significant disturbance agent as the two processes are linked. The fire cycle in lodgepole pine is 60-80 years and occurs as follows: a stand replacement fire leads to stand regeneration ➔ Dead snags from the fire fall to the forest floor and fuels begin to accumulate ➔ Windstorms blow more trees to the ground ➔ Forest fires burn some of the downed logs and lead to heart rot in the standing trees ➔ The heart rot stresses the stands and makes it vulnerable to attack by the mountain pine beetle ➔ A

major outbreak of the mountain pine beetle causes significant mortality and soon the conditions are ripe for another stand replacement fire.

Western juniper also occurs across the Sisters WUI but is more predominant to the east of the planning area. The fire history of western juniper is characterized by fire that occurs approximately every 30 years and is generally limited by the availability of fuels. Western juniper trees have thin bark and fires kill them easily. Western juniper is expanding its range over the previous century. Several factors may account for the expansion: a) fire suppression which allows the stands to grow unchecked by fire, b) overgrazing by domestic livestock which opens up new sites for colonization, c) re-establishment of juniper after an area is logged, and d) climate change.

Bitterbrush occurs throughout the Greater Sisters Country on all aspects and elevations and is frequently found with mixed shrubs such as Manzanita and Sage. Fire severely damages Bitterbrush, especially if rain is not received shortly after a burn. Bitterbrush is fire-dependent, but not fire-resistant. It regenerates mostly from seed after a fire and often sprouts from caches of seeds made by rodents. Bitterbrush will sprout after burning regardless of the severity of the burn and matures relatively quickly. Consequently, the Sisters wildland-urban interface area is rich with patches of bitterbrush that burn well on their own and provide fire-ready ladder fuels for taller tree stands.

Manzanita is a shrub that occurs mainly in the western portions of the Sisters planning area. It can be mixed with other shrub species such as bitterbrush. Manzanita is established both through sprouts and seeds that are stimulated by fire. Fires in Manzanita are conducive to rapid and extensive fire spread due to both physical and chemical characteristics. The shrub has volatile materials in the leaves, low moisture content in the foliage and persistence of dead branches and stems. Manzanita is particularly susceptible to a fire where it is the primary understory component.

Ceanothus or Snowbrush mainly occurs on the west side of Sisters in the higher elevations. It can commonly be found growing alongside Manzanita, Bitterbrush and mixed Conifer Forests. Ceanothus is promoted by fire, a “medium or hot” fire can create more favorable growing conditions by removing the canopy. The shrub usually increases following a fire, often dramatically where it was previously uncommon or not present. Like Manzanita, Ceanothus burns quite hot; its foliage contains volatile oils that contribute to its high fire hazard.

Western sage is found on the eastern lowlands of the Sisters planning area and commonly grows in association with juniper and bitterbrush. Most fires kill western sage plants. In many western sage communities, changes in fire occurrence along with fire suppression and livestock grazing have contributed to the current condition of sage communities. Prior to the introduction of annuals, insufficient fuels may have limited fire spread in big sagebrush communities. The introduction of annuals, especially cheatgrass, has increased fuel loads so that fire carries easily. Burning in sage communities commonly sets the stage for repeated fires. Fire frequency can be as little as 5 years, not sufficient time for the establishment and reproduction of big sagebrush. In these cases, annuals such as cheatgrass commonly take over the site.

Mixed conifer (wet and dry) is a complex forest type that varies considerably depending on elevation and site conditions. In the plan area, dry mixed conifer and wet mixed conifer forest types occur, depending on the elevation.

The dry mixed conifer includes Douglas fir, ponderosa pine, lodgepole pine, western larch, and true fir. Found at elevations ranging from 3,600 feet to 4,500 feet, it occupies a transitional zone between the higher elevation mixed conifer zone and the true ponderosa pine or lodgepole pine zone.

The wet mixed conifer is found in the higher elevations (4,000 – 7,000 feet) on the west side of the fire plan area. Similar to the dry mixed conifer sites, the vegetation consists of Douglas fir, white fir, ponderosa pine, western larch, and lodgepole pine. Spruce can be found in the wetter riparian areas.

Noxious weeds and cheatgrass are found across the planning area and present yearly challenges for residents, agricultural users and fire suppression agencies. Cheatgrass and other noxious weeds typically occur where the ground has been disturbed to create roads, paths, or other plantings. Once established, they return perennially and can reach heights of three feet or more creating an easily ignitable fuel bed once they dry out during summer months. Fires that occur in this type of fuel spread quickly and can direct fire to other fuels such as trees or structures.

Cheatgrass provides a flammable link in the brush and forest vegetation types. It cures early in the fire season and ignites readily during dry periods because of its very fine structure that responds readily to changes in the atmospheric moisture, tendency to accumulate litter and invasive nature. Cheatgrass promotes more frequent fires by increasing the biomass and horizontal continuity of fine fuels that persist during the summer lightning season. Its expansion has dramatically changed fire

regimes and plant communities over vast areas of western rangelands by creating an environment where fires are easily ignited, spread rapidly, cover large areas, and occur frequently. Fire in these habitats can have severe effects on native species of plants and animals.

The historical range of fire intervals in the wet and dry mixed conifer varies considerably; from 35 to 200 years and can be of variable intensity; from low-intensity maintenance burns to stand replacement events.

Fires have significantly impacted the Greater Sisters Country landscape. The table below recognizes the large fires that have endangered the Greater Sisters County since 2010. All of these large wildfires have threatened residents and prompted evacuations within multiple neighborhoods.

Fire Name	Fire Size (acres)	Year Occurred
Milli	24,079	2017
Whychus	1,540	2017
Sheep Springs	683	2017
Two Bulls	6,903	2014
Green Ridge	1,510	2013
Pole Creek	26,795	2012
Shadow Lake	10,025	2011
Rooster Rock	6,274	2010

Communities at Risk

The Healthy Forest Initiative (HFI) and the Healthy Forests Restoration Act (HFRA) define a "community at risk" from wildland fire as one that:

- is a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) in or adjacent to federal land;
- has conditions conducive to large-scale wildland fire; and
- faces a significant threat to human life or property as a result of a wildland fire.

Community Assessment of Risk

For the 2019 Greater Sisters Country Community Wildfire Protection Plan the Steering Committee used the Advanced Oregon Wildfire Risk Explorer (OWRE) map viewer to organize data into folders based on wildfire risk concepts. All OWRE advanced reports include information about overall wildfire risk, burn probability, flame length, overall potential impact, the hazard to potential structures, fire history, land management, and estimated housing density. Additional layers of interest may appear after the layers listed above.

Protection capability

In considering overall risk, the ability to provide a fire protection response must be considered. There are three structural fire districts that provide fire response within the planning area. In addition, wildland fire agencies provide fire response for areas of state and federal protection. A portion of the private lands located in the northeast corner of the planning area have no structural or wildland fire protection.

When local resources are fully engaged, all agencies can request additional resources through the State of Oregon and request federal resources through the Pacific Northwest Coordination Center.

In addition to this high level of coordination, all fire departments and agencies in Central Oregon convene each year for a pre-season meeting to discuss the upcoming wildland fire season. Topics addressed at this meeting include predicted wildland fire activity, lessons learned, weather forecasts and how agencies can/will respond to meet the needs of fire events.

<u>Sisters – Camp Sherman Rural Fire Protection District</u>

The Sisters-Camp Sherman Rural Fire Protection District is a combination career and volunteer department providing structural and wildland fire services to over 55 square miles. The District also provides advanced life support ambulance transport service to more than 800 square miles in mountainous and high desert terrain. Special services provided include vehicle extrication, water rescue, and hazardous materials response. A broad range of community risk and fire safety services are provided to area residents utilizing a combination of career and volunteer staffing. The District currently employs a Fire Chief, a Deputy Chief of Operations, an Executive Assistant, Four part-time positions including the Community Risk and Fire Safety Manager, Financial Manager, Volunteer Recruitment and Retention Coordinator and Mechanic. The District also employs three Shift Commander/Paramedics and Six Firefighter/Paramedics. Volunteer Firefighters are an integral part of the organization and provide both fire suppression and emergency medical services. The Fire Corps program utilizes volunteers to provide fire prevention and public education programs to residents of the District.

The District headquarters station is located in the City of Sisters. In addition to the headquarters station, the District utilizes two other volunteer stations, which are located in the Squaw Creek Canyon Estates Subdivision and the community of Camp Sherman.

The District utilizes a fleet of firefighting and EMS apparatus including four structural and interface engines, three water tenders, one heavy brush engines, three light brush engines, three ambulances, one command vehicle, and three staff vehicles.

The District is a party to the Central Oregon Mutual Aid Agreement. In the event of a major structural fire, the District may request assistance from all other fire departments that are a signatory to the agreement. In addition, all Central Oregon fire departments and the wildland fire agencies including the US Forest Service, Oregon Department of Forestry, and the Bureau of Land Management are a party to the Central Oregon Cooperative Wildland Fire Agreement. These cooperative agreements allow for interactive coordination in the event of a wildfire that threatens communities in Central Oregon.

Black Butte Ranch Rural Fire Protection District

Black Butte Ranch Rural Fire Protection District serves the residential and resort community of Black Butte Ranch. Located at the foot of the Cascade Mountains and the Three Sisters Wilderness, the district covers three square miles and protects 1,251 residences and a handful of light industrial buildings. Eight career staff and six to twelve fire/EMS resident student volunteers respond to calls from one centrally located station. The district trains all personnel in structural firefighting, emergency medical delivery, hazardous materials operations, and wildland fire suppression. The fire district also provides primary services to three residences immediately adjacent to Black Butte Ranch property under contract.

The District participates in the Central Oregon Mutual Aid Agreement. In the event of a major structural fire, the District may request assistance from all other fire departments that are a signatory to the agreement. In addition, all Central Oregon fire departments and the wildland fire agencies including the US Forest Service, Oregon Department of Forestry, and the Bureau of Land Management are a party to the Central Oregon Cooperative Wildland Fire Agreement.

Cloverdale Rural Fire Protection District

The Cloverdale Rural Fire Protection District is approximately 50 square miles in size and is located in the triangle between the Bend, Redmond, and Sisters – Camp Sherman fire districts. The Cloverdale Fire District is a combination department comprised of a paid Chief and Training officer as well as 20 dedicated volunteer personnel. Cloverdale provides fire prevention and suppression services, along with first response medical services, to assist the Sisters' ambulance service. The Cloverdale personnel are trained in structural and wildland firefighting as well as extrication, hazardous materials, and emergency medical care.

The district has two stations strategically located to serve the district. Equipment includes; two structural engines, three water tenders, two light brush units, and two command vehicles. The district was recently rated by the Insurance Service Office (ISO) and received a Fire Suppression Rating of 3 for the hydrant areas and 6 for the non-hydrant areas.

The District participates in the Central Oregon Mutual Aid Agreement. In the event of a major structural fire, the District may request assistance from all other fire departments that are a signatory to the agreement. In addition, all Central Oregon fire departments and the wildland fire agencies including the US Forest Service, Oregon Department of Forestry, and the Bureau of Land Management are a party to the Central Oregon Cooperative Wildland Fire Agreement.

Oregon Department of Forestry (ODF)

Within the Greater Sisters planning area, private forestland is protected by the Central Oregon District of the Oregon Department of Forestry (ODF). ODF provides wildland fire response for fires burning on or threatening private forestlands paying a Forest Patrol Assessment. There are some areas within the Greater Sisters WUI that receive dual protection from ODF and the local Fire Districts because they are located within the rural fire protection district and are also classified as private forestland within the ODF district. In those cases, the fire district provides initial response and transfers fire command to ODF upon their arrival.

Oregon Department of Forestry provides one Type 6 engine and one hand crew in the Sisters area, typically June through October. Ten additional engines are available for response in the Prineville-Sisters unit. Statewide resources are also available to ODF including initial attack hand crews, dozers, water tenders, helicopters, air tankers, and overhead staff positions, depending on statewide needs.

USDA Forest Service

The Forest Service provides wildland fire protection on the federal lands within the Greater Sisters planning area. Working in cooperation with the USDI Bureau of Land Management (BLM), they are identified as the Central Oregon Fire Management Service (COFMS). COFMS includes the Deschutes National Forest, the Ochoco National Forest, the Crooked River National Grassland, and the Prineville District of the BLM. These four units are managed cooperatively under combined leadership, with an Interagency Fire Management Officer, two Deputy Fire Management Officers, and a Board of Directors including decision-makers from both agencies, with Forest Service District Rangers and BLM Field Managers. COFMS has a central dispatching facility in partnership with the Oregon Department of Forestry that serves as a Coordination Center for fire and fuels operations, as well as safety and training issues for COFMS. In total, COFMS provides the following resources: 26 engines, six initial attack hand crews, six prevention units, two dozers, two water tenders, one Type 3 helicopter, 35 smokejumpers, two interagency Hotshot Crews (Redmond & Prineville), one Type 2 helicopter with 20 rappellers, one Type 1 helicopter, Central Oregon Dispatch Center (COIDC), Redmond Air Center, an air tanker base, a regional fire cache and required overhead staff positions. During the fire season, these resources are in high demand and may not always be available.

Law Enforcement

Police services are provided by the Deschutes & Jefferson County Sheriff's Office and Black Butte Ranch Police Department who have the responsibility for ensuring the safe and orderly evacuation of a community in the event of a major emergency. A number of resources have been allocated to accomplish this task including hi/lo sirens on vehicles; emergency notification via

radio and television; mass notification solution (phone, text, email, and TTY); Sheriff's staff and volunteers; Fire District staff, Forest Service Law Enforcement and community-wide volunteers. Any other issues relative to a major emergency are addressed by the Countywide Emergency Operations Plan maintained bythe Sheriff's Office Emergency Management Programs in each county.

Oregon State Police assists the law enforcement efforts and cooperates with Deschutes and Jefferson County and Forest Service for protection in the Greater Sisters area.

The **American Red Cross** offers a gamut of tools to boost community preparedness such as community presentations on emergency preparedness kits. The Red Cross gives presentations to church groups, HOAs, citizen groups, etc. Red Cross plays a vital in emergency response during large wildfire events and in the recovery post-fire. At any time of day or night, trained Red Cross volunteers to respond to the scene of structural or wildland fires and provide food, shelter, and emotional support to those affected.

Values Protected

The burn probability ratings by acreage in the Greater Sisters CWPP area is 191,045 (73%) as high, 54,958 (21%) as moderate, 5,234 (2%) as low and 10,468 (4%) as non-burnable.

The risk to assets, people and property are concentrated around the City of Sisters, Black Butte Ranch, Transportation corridors and agricultural properties. There are approximately 5,743 structures in the Greater Sisters planning area, with an estimated real market value of $2,829,349,079.

The essential infrastructure includes multiple webs of utilities, roads, water, and a recently added municipal sewer system and has an approximate replacement value of $275,000 per mile for electrical transmission lines; $150,000 per mile of electrical distribution lines; and $2 million per electrical sub-station. The physical loss to roads, water, and sewer systems would be minimal because most are underground or otherwise not flammable.

Other Community Values

Approximately, 350 businesses operate in the Sisters area. If a large wildland fire occurs in this area, which resulted in the closure of either State Highway 20, 242 or 126, the economic loss to businesses in Sisters could exceed $500,000 per day, and on the larger impacted area of central Oregon, the loss could exceed $3.5 million per day. The closure of Highway 20 for two weeks during the B&B Complex fire in 2003 resulted in the loss of $500,000 of daily commerce in Sisters, which resulted in the activation of the Federal Emergency Management Agency (FEMA) Disaster Loan program.

A business resiliency study conducted by FEMA in 2012 presents statistics for small businesses that have been impacted by a natural disaster such as a large wildfire. All of the statistics apply

to those businesses that did not have a business continuity plan or an emergency plan:

- 43% of companies never reopened.
- 51% of companies closed within 2 years.
- 80% of companies that do not recover from a disaster within one month are likely to go out of business.
- 75% of companies without a business continuity plan fail within three years of a disaster.
- Companies that aren't able to resume operations within ten days (of a disaster hit) are not likely to survive.
- Of those businesses that experience a disaster and have no emergency plans, 43% never reopen; of those that do reopen, only 29% are still operating two years later.

A large wildfire can have lingering effects that last for months and the largest impacts lasting for at least a month. With much of the local economy tied to small local businesses that depend on the local surrounding forest environment, the consequences of a wildfire that closed major recreation and tourism opportunities would be catastrophic. Business resiliency of the local small businesses is a critical piece in creating a more fire-adapted community. Based on a statewide economic impact study of the spending losses to the travel and tourism industry due to wildfires in 2017, Deschutes County lost an estimated $16 million. Specific action items for business owners are located in the Action Plan.

The loss of recreational use by visitors to the area as a result of scenic quality, specifically large "burn over" areas, will have an unknown economic impact not only to the area but to the remainder of Deschutes County and neighboring cities like Bend and Redmond. If a large wildland fire occurs in this area, the result will be a catastrophic loss to both the developed and dispersed recreational opportunities in the Greater Sisters Country area.

Structural Vulnerability

In recent years, many neighborhoods in the greater Sisters area have taken steps to decrease the vulnerability of structures to wildland fire. Although attitudes and behaviors towards fire are changing thanks to educational programs like FireFree and Firewise, the population growth and continued development into the wildland-urban interface present fresh challenges each year. The Steering Committee puts a high value on the importance of making structures and neighborhoods in the Greater Sisters Country area as fire-safe as possible.

The issue of adequate water resources was raised in this assessment and is addressed as a priority item under Action Plan and Implementation.

Areas of special concern

Critical Transportation Routes

For purposes of the Greater Sisters Country CWPP, the Steering Committee defines Critical Transportation Routes as:

- all routes necessary for the support of routine flow of commerce to and/or through the greater Sisters area,
- all routes that could be used for the potential evacuation of citizens and/or visitors from a wildland fire threat to public safety,
- routes needed for emergency ingress and egress to a wildland fire incident, not including unimproved or "two-track" roads,
- and, all routes needed to protect and support critical infrastructure (power substations, communication transmission lines, water and fuel storage, public service facilities, recreation facilities, etc.).

The Steering Committee expressed great concern over the need to identify, develop and protect critical transportation routes as part of this planning process. A detailed look at specific ingress/egress issues is included under Recommendations to Reduce Structural Ignitability. This issue is also highlighted under Action Plan and Implementation.

Vacant lots

Within the Greater Sisters Country WUI, approximately 15% of the private lots are considered vacant, or lots with no structural improvements. Many of those lots are owned by "absentee owners". In general, vacant lots owned by absentee owners present a specific threat to neighborhoods in that owners have little to no connections to the neighborhoods and in most cases do not recognize their responsibility to contribute to the safety of the entire neighborhood by reducing the hazardous vegetation on their properties. The risk of destructive wildland fires is thereby greater inside these neighborhoods due to the lack of owner attention on vacant lots.

Urban density adjacent to WUI

As land is developed in the City of Sisters, concern was raised regarding urban density adjacent to the WUI. Within the Sisters city limits there is opportunity for addressing this concern through the land use application process, as well as city codes and ordinances. The City has a Planning Commission which reviews subdivisions, conditional use permits, and master plans. The Planning Commission also advises the City Council on development code text amendments, zone changes, and comprehensive plan amendments. The Urban Forestry Board is tasked with providing guidance for management of the urban forest, including all trees located within public right-of-way, parks and public places owned or controlled by the City, and providing recommendations to staff regarding City ordinances and Codes involving trees.

Prioritized Hazard Reduction Recommendations and Preferred Treatment Methods

The Steering Committee agreed that the Greater Sisters Country Community Wildfire Protection Plan is a living tool that can be used for multiple outcomes. The following is an outline of the priorities, as well as preferred treatments and goals under the Greater Sisters Country Community Wildfire Protection Plan.

Goals

With critical needs assessed and priority areas listed, the Steering Committee identified the following goals to meet the Purpose on page 1 of the Greater Sisters Country CWPP:

- Reduce hazardous fuels on public lands
- Reduce hazardous fuels on private lands (both vacant and occupied)
- Reduce structural vulnerability
- Increase education and awareness of wildfire threat
- Identify, improve and protect critical transportation routes

Preferred treatments and goals for hazardous fuels reduction

The overall standard of the Greater Sisters Country CWPP is to decrease the risk of high-intensity wildland fire behavior by reducing and maintaining fuel loads to that which can produce flame lengths of less than four feet. This enables a safe and effective initial attack. The overall goal is to reduce the potential for crown fires and provide for a healthy, fire resilient landscape that supports the social, economic and ecological values of Sisters area residents and visitors. The Steering Committee recognizes the effectiveness and value of maximizing treatment efforts in areas that are adjacent to federal, state, or private projects and recommends that future projects consider these benefits when selecting areas for treatment. The following specific standards are recommended for treatments on public and private lands within the Greater Sisters Country planning area.

Public lands

Federal lands make up 69% of the Greater Sisters Country planning area and are managed by the US Forest Service from the Sisters Ranger District and the Bureau of Land Management from the Prineville District. Each of the Communities at Risk is adjacent to public lands.

It is the intent of the Steering Committee that the Greater Sisters Country WUI area is subject to expedited measures for hazardous fuels treatment and allocation of funds to protect the Communities at Risk as stipulated by the Healthy Forests Restoration Act.

These measures should be in accordance with the Sisters Country Vision and Action Plan, Resilient Sisters Strategy 5, Actions 5.1, 5.2 and 5.3.

The maps in Appendix A detail the WUI boundary throughout the Greater Sisters Country CWPP area and the areas calling for protection specifically by reducing wildland fuel hazards on public lands.

The overall standard for public lands under this CWPP is to decrease the risk of high-intensity wildland fire behavior by reducing and maintaining fuel loads to that which can produce flame lengths of less than four feet in the areas within the WUI boundary of each Community at Risk. This buffer will begin at the edge of private lands and extend onto the federal lands to the designated WUI boundary. This enables a safe and effective initial attack. This standard will be achieved by the federal land management agencies through a variety of treatment methodologies such as thinning, prescribed burning and mechanical treatments.

Based on the risk assessments, the priorities of the Greater Sisters Country CWPP with regard to public lands within the WUI are as follows:

- All areas within the designated WUI boundary beginning with the first ¼ mile buffer around each Community at Risk utilizing the following priorities:
- Within 300 feet of any evacuation route from each Community at Risk.
- All areas beyond the initial ¼ mile of each prioritized Community at Risk above, in ¼ mile increments until the WUI boundary is reached.
- For mixed conifer and lodgepole stands which have missed typical fire cycles and still pose threats of potential crown fires to communities, specific fuels treatments shall be accomplished on federal and state lands to reduce and maintain fuel loads to that which can produce flame lengths of less than four feet to provide for effective initial attack and minimize the resistance to control.

- Although the treatments should focus on areas rated Extreme Risk Priority Communities, maintenance of previously treated lands is also a top priority where treatment is critical to maintaining this status within the CWPP area. Treatment and maintenance of previously treated lands before treatment begins again in other places is an important component of keeping communities safe.

In general, the dominant strategy in all areas should be thinning from below, in an effort to restore large tree, open park-like ponderosa pine-dominated forests. In exclusively lodgepole pine and mixed conifer stands where site conditions are favorable to ponderosa pine, intensive thinning should occur with a reforestation strategy to restore a proper ratio, as determined by the agency, of lodgepole or mixed conifer to ponderosa pine. Excessive dead/down fuels should be removed followed by understory maintenance.

The Steering Committee also encourages federal land managers to work with local landowners to minimize road closures that could be used as alternate evacuation routes from Communities at Risk.

Private and county-owned lands

Private lands make up 31% of the area in the planning area. The County owns less than 1% of the land in this planning area. The Steering Committee recommends that County-owned lands be treated in the same manner as privately-owned lands.

Private lands with structural improvements

On private lands with structural improvements, the goal is for each structure to meet the specific standards for classified lands as identified in the Oregon Forestland-Urban Interface Fire Protection Act of 1997, also known as Senate Bill 360. This statute outlines standards and requirements for defensible space on private property that receives fire protection from the Oregon Department of Forestry. The Oregon Department of Forestry provides wildland fire protection to a portion of the Greater Sisters Country planning area and the Steering Committee supports the goals and standards of Senate Bill 360. The Steering Committee agreed that the required standards under each classification from Senate Bill 360 are the goal to achieve on private and county-owned lands throughout the Greater Sisters Country WUI.

A detailed description of the standards is available from the Oregon Department of Forestry in the handbook for the Oregon Forestland-Urban Interface Fire Protection Act of 1997. This information is also available at www.oregon.gov/ODF/fire/SB360.

The Default Standards under the Oregon Forestland-Urban Interface Fire Protection Act of 1997 are:

- Establish a primary fuel break of 30-100 feet around structures;
- Create fuel breaks around driveways longer than 150 feet;
- Remove tree branches within 10 feet of chimneys;
- Remove any dead vegetation that overhangs a roof;
- Remove flammable materials from under decks and stairways;
- Move firewood 30 feet away from structures;

Property owners can also achieve the Senate Bill 360 standards by taking advantage of FireFree and Firewise suggestions to create and/or maintain defensible space, a fire-resistant buffer that allows for effective first-response firefighting and a significantly reduced risk of the spread of fire. These national education programs promote a variety of fire safe actions to help prevent the spread of fire to protect individual homes and neighborhoods. Information about these programs can be found at www.firefree.org and www.firewise.org. More information is also listed in this plan under Recommendations to Reduce Structural Vulnerability.

Recommendations to Reduce Structural Vulnerability

Structural Vulnerability

There are approximately 5,743 structures spread across this CWPP boundary.

Table 7 identifies the main hazards for communities at risk. For each hazard or risk listed, action is recommended to address the threat or decrease the risk. Adequate water resources for fire suppression were not considered as part of this assessment. This topic is addressed under Action Plan and Implementation

Table 7 – Recommendations to Reduce Structural Ignitability

☑	**How can I reduce my home's probability of igniting?**
❑	Increase Homeowner education with programs such as FireFree, Firewise, Senate Bill 360
❑	Establish additional evacuation routes, sign & maintain evacuation routes
❑	Identify, upgrade and maintain any roads <20 feet in width
❑	Produce & install reflective signs for any non-reflective that may exist
❑	Maintain fuel reduction projects annually
❑	Re-apply for Firewise annually, if applicable

Table 8 provides a checklist for residents seeking to reduce the risk of catastrophic losses to their homes and properties.

Table 8 – Defensible Space Checklist

☑	**What can I do to help prevent losses to my property and my neighborhood?**
❑	If you are interested in a free home assessment – call your local Fire Agency
❑	Post easy-to-read address signs so emergency crews can find your home.
❑	Reduce the density of nearby trees.
❑	Clear wood piles and building materials at least 30 feet away from your home.
❑	Remove low tree branches and shrubs. Trim up juniper and other trees at least 4 feet from the ground. Remove "ladder fuels" among trees.
❑	Keep grass and weeds cut low.
❑	Remove all branches and limbs that overhang roofs.
❑	Remove leaves & needles from gutters, roofs, and decks.
❑	Remove dead plants and brush.
❑	Maintain 30-100 feet of defensible space around your home.
❑	Screen vents and areas under decks with 1/8" metal mesh or fire-resistant siding.
❑	Keep decks free of flammable lawn furniture, toys, doormats, etc.
❑	Choose fire-resistant roofing materials like metal, tile or composition shingles.
❑	Trim vegetation along driveways a minimum distance of 14' wide x 14' high for fire trucks.
❑	Choose fire resistive plants. Visit www.extension.oregonstate.edu/deschutes to view *Fire-Resistant Plants for the Home Landscape.*
❑	Use alternatives to burning debris like composting or chipping.
❑	If burning debris outside city limits – call the Burn Line at your local Fire District to see if burning is allowed. Do not burn building materials.

Education

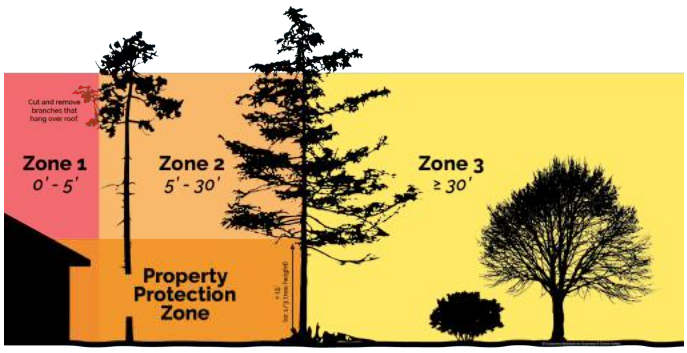
As stated in the Purpose of the Greater Sisters Country CWPP, four outcomes for this planning effort are to:

- Instill a sense of personal responsibility for taking preventative actions regarding wildland fire,
- Increase public understanding of living in a fire-adapted ecosystem,
- Increase the community's ability to prepare for, respond to and recover from wildland fires, and
- Create and maintain more fire-adapted communities.

With these goals in mind, education and outreach are top priorities for the Greater Sisters Country CWPP. Resilient Sisters, Strategy 5, Actions 5.1 and 5.4 of the Sisters Country Vision Action Plan offer specific activities that should be undertaken.

The rapid influx of new residents is just one reason the Steering Committee places a high value on the education of Sisters area residents and landowners. Many new residents are unfamiliar with wildland fire and have limited experience with issues like defensible space. Residents and visitors will continue to benefit from clear examples of what a fire resilient forest and community look like as well as easy access to resources that help them take action.

There are several opportunities to enhance educational efforts in the Greater Sisters area. All fire districts, the US Forest Service and BLM, the Oregon Department of Forestry, the Central Oregon Fire Prevention Cooperative and Project Wildfire all provide wildland fire prevention programs through a variety of individual and collaborative efforts. The City of Sisters is working with the Sisters Area Chamber of Commerce to develop wildfire awareness and prevention information to place on the websites for both organizations.



Some neighborhoods in the Greater Sisters area are well organized through homeowners associations and other groups. These groups provide valuable ongoing education to their populations about the risks of catastrophic wildland fire and ways to improve their protection. The Steering Committee supports these groups and encourages their formation in the Sisters area to address the educational needs of current and incoming residents about living in a fire-adapted environment and increasing personal responsibility for creating defensible space.

The Steering Committee also recommends support for projects that enhance a community's ability to communicate necessary information in the event of a wildfire. Programs that develop and maintain neighborhood phone trees or communication lists that identify neighbors who may need additional assistance during an evacuation are encouraged.

Utilizing the information in Tables 7 and 8, property owners are strongly encouraged to learn more about how they can reduce the hazards on their own property. Local residents are encouraged to contact their local fire department for information. Residents may also find additional information on how they can reduce hazards and protect themselves at www.firefree.org and www.firewise.org.

Action Plan and Implementation

The Steering Committee recognizes that the Greater Sisters Country CWPP is a living tool with multiple applications. The following priority actions are intended to assist individuals and agencies in the implementation of this CWPP across Greater Sisters Country.

Improving Fire Protection Capabilities

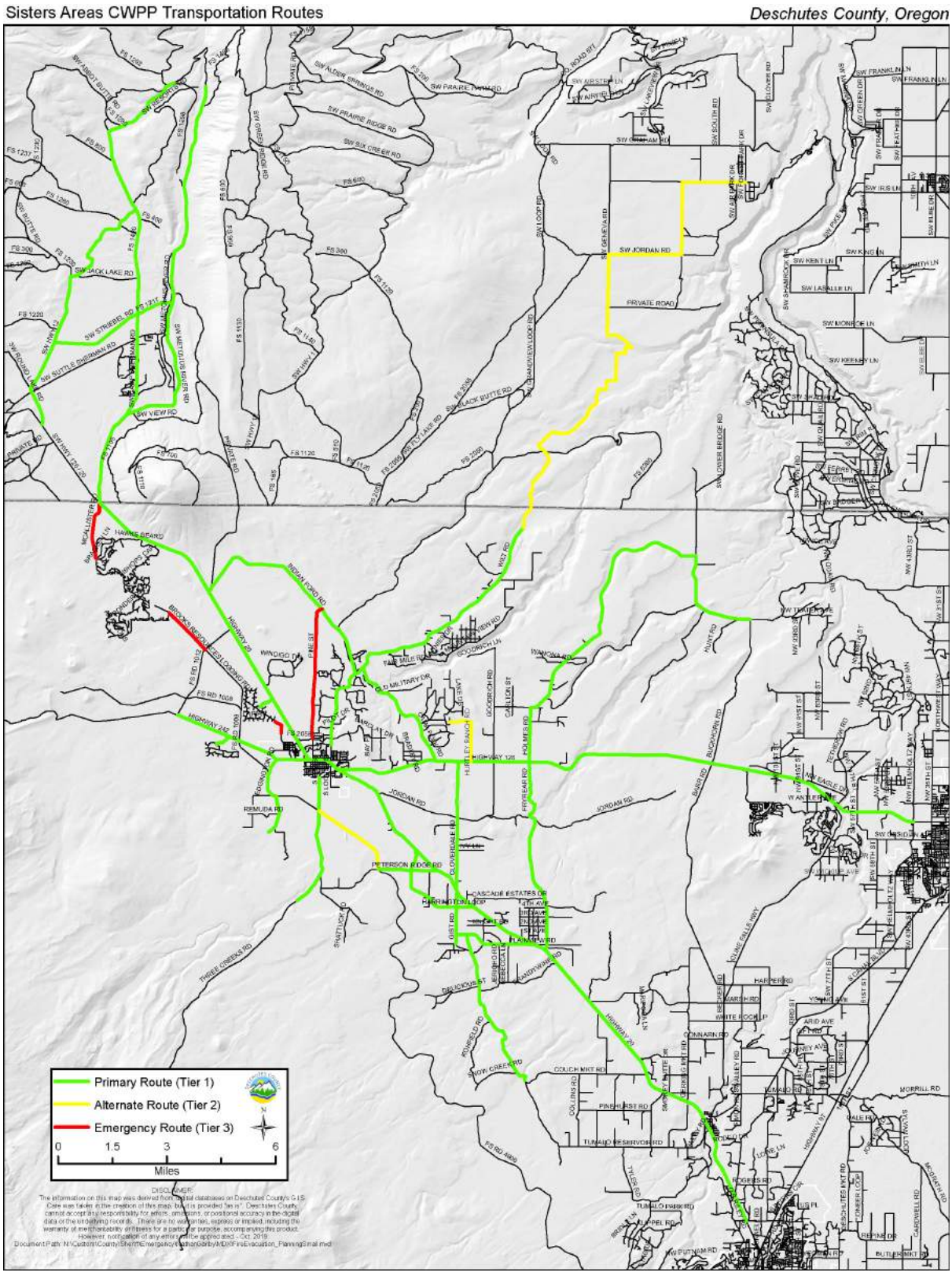
Immediately following the acceptance and signed approval of this plan, the Steering Committee will forward copies of the 2019 Greater Sisters Country CWPP available to all public land managers and public safety officials including:

- Central Oregon Forest Management Service - US Forest Service and BLM
- Oregon Department of Forestry
- Sisters-Camp Sherman Fire Protection District
- Black Butte Ranch Rural Fire Protection District
- Cloverdale Rural Fire Protection District
- City of Sisters
- Deschutes County Sheriff's Office
- Oregon Department of Transportation

The Steering Committee is again charged with the task of engaging community members to review the risk assessment including the overall wildfire risk in this CWPP (Appendix A, pages 9-10) and identify projects that will strengthen the potential for the neighborhoods to survive a high-intensity wildland fire in the Greater Sisters Country area and the adjacent WUI. Homeowners can utilize tables 7 & 8 as a resource to improve the fire resistance of their homes on an individual basis. Partnerships to improve defensible space voluntarily is preferred then by enforcement actions.

Local Fire Departments, wildland fire agencies and the City of Sisters are charged to identify and assess the water resources available for fire suppression in the Communities at Risk. The Steering Committee will make recommendations for projects to ensure adequate water resources are available for fire suppression. The benefits of looped lines, fire hydrants, redundant power supplies, protected wells, reservoirs and the surrounding landscape should be considered.

Local Fire Departments, the City of Sisters, Deschutes County Sheriff's Office, Jefferson County Sheriff's Office, Oregon Department of Transportation and homeowner groups will work together to identify and map existing critical transportation routes in the CWPP area. The map below illustrates these routes as of 2019.


Sisters Areas CWPP Transportation Routes
Deschutes County, Oregon
Primary Route (Tier 1)
Alternate Route (Tier 2)
Emergency Route (Tier 3)
0
1.5
3
6
Miles
N

The Steering Committee will assist in conducting further assessments to determine the evacuation needs and identify potential projects developing new routes and/or improving existing routes.

The Steering Committee will assist in conducting further assessments to determine the evacuation needs of the Greater Sisters Country area and identify at least one neighborhood per year to approach and develop evacuation signage projects.

The Steering Committee will continue to encourage federal land managers to work with local landowners to minimize the closures of roads that could be considered critical transportation routes.

Working towards a more Fire Adapted Community

The intention of the Steering Committee is to engage in continued discussions with landowners to facilitate fuels reduction projects on private lands utilizing the data in Appendix A. These actions can be accomplished through educational activities or grants for specific projects on private lands. Specific action items include:

Specific Action Items
If there is a significant amount of vegetation present; all stakeholders are urged to mitigate their fuels to create a fire resilient and healthy landscape.
Given the historical and recent fire occurrence, the crown fire potential is high. Residents are urged to create and maintain defensible space, reduce ladder fuels and thin where necessary.
Ensuring the access & evacuation routes are clear of vegetation will ensure access for emergency personnel during large wildfires and/or other emergency incidents.
Residents should develop evacuation kits for their families in case of a large wildfire.

The Steering Committee has expressed the vital need of educating vacant lot owners in the CWPP Boundary. The group will work on strengthening the relationships between residents and local leadership so that they can collaboratively develop an educational campaign. Education was an overarching theme that the Steering Committee agreed is a paramount priority throughout the revision process.

The Steering Committee will pursue funding for demonstration lots for local residents to use as examples in visible, strategic locations throughout the CWPP boundary. The Steering Committee will encourage and assist community groups in seeking funding for fuels reduction, educational, and other projects to decrease overall risks of loss from wildland fire.

One important piece of a Fire Adapted Community is preparing for the recovery process after a wildland fire occurs. There are many resources for residents who are recovering from a wildland fire that can impact their small business and home. Building community and business resiliency is the key to being fully adapted to fire. Post-fire recovery resources can be found in Appendix C of this document.

Restoring Resilient Landscapes

The intention of the Steering Committee is to engage in continued discussions with the local community and adjacent landowners to implement the CWPP and accomplish hazardous fuels reduction projects in the most expeditious manner possible.

The Steering Committee recognizes the effectiveness and value of maximizing treatment efforts in areas that are adjacent to federal, state or private projects and recommends that future projects consider these benefits when selecting areas for treatment.

There are 429,137 acres in the Planning Area. Significant fuels reduction projects continue to improve the overall health and fire resiliency of the landscape. Achieving a resilient healthy landscape, however, requires multiple entries on treatment sites, over a period of years. For example, thinning and mowing may occur over a 12-24-month project period. The under-burning component of the project may not occur for 3-5 years while the land recovers from the thinning and mowing and produces an adequate shrub content to support prescribed fire.

Therefore, the Steering Committee recognizes that although significant fuels reduction work has been completed the need continues on the landscape as a whole. The Steering Committee supports the ongoing planning and treatment process on public lands, especially an increase in the use of prescribed fire. There are multiple prescribed fire techniques that land managers may use to best suit the area they are working within. The ultimate goal is to restore low-intensity fire, or also known as a broadcast burn, to the local ecosystem, which has been historically dependent on fire for its health.

Treating ground fuels is a critical component of any effort designed to reduce fire threats, and it has added ecological benefits, such as recycling nutrients. Once an area, or unit, has been thinned and the slash has been treated, the site can be broadcast burned. Fire practitioners prepare the area by constructing firelines and/or use natural breaks such as roads or existing trails for containment lines for the prescribed burn. Where site objectives dictate that standing dead trees and large downed woody material need to be protected, they can be either hand-lined or otherwise excluded from the burn block. Extra protection measures may not be necessary for many fire-tolerant cultural or archaeological sites: treating these areas with prescribed fire has the advantage of protecting them from emergency suppression activities during a wildfire. Generally, the target flame length is under four feet, although some sites require a “hotter” burn to achieve the resource objectives.

Historically, large-scale broadcast burning has occurred in the spring. As the demands to boost prescribed fire use increase, utilizing as many “burn windows”, or days when the weather conditions are favorable, will be a critical piece in achieving restoration goals. This, however, is a more challenging time to use prescribed fire and will depend on the availability and preparedness of appropriate resources and weather.

Burn operations usually begun by mid-morning following the break-up of the nighttime temperature inversion and the establishment of the daytime wind pattern. Completion of ignition should be targeted early enough to ensure adequate smoke dispersal prior to the onset of cooler nighttime temperatures.

Extensive public notification is an essential element of the program. The public can contact the Deschutes National Forest if they have health concerns that are exacerbated by smoke so that they can be notified prior to a prescribed burn. The Deschutes National Forest uses social media; especially Twitter, their handle is @CentralORFire and Central Oregon Fire, www.centraloregonfire.org, to notify local residents of prescribed burns on the Forest. Fire personnel also rely on their local partners to notify and educate the local public through educational programs with civic groups, service clubs, homeowner associations, etc.

Once thinning, slash treatment, and first under-burning has been completed, the treated area constitutes an effective fuel-break for the next several years. Follow-up thinning and maintenance burns must be scheduled as necessary to ensure the treated areas remain free of the risk of catastrophic wildfire. Adequate access must be assured, not only to conduct needed follow-up treatments but also to permit the rapid response of fire suppression forces.

For our area, it is no longer a question of if a wildfire will occur, but when, where, and how much damage will result. Working with residents before the wildfire, not during or after it, is preferred. Experience with wildfires burning in previously treated areas demonstrates the following:

- Improved access for firefighters and apparatus
- Increased efficiency when locating and constructing firelines
- Easier detection and suppression of spot fires
- Decreased mop-up time and effort
- Reduced fire intensity, torching, and mortality
- Improved public safety
- Reduction of loss
- Reduction of air emissions

Another benefit, particularly in interface areas, is reduced trash accumulation through the elimination of hiding cover necessary for transient camps and party spots.

Evaluation and Monitoring

The Steering Committee faced a complex task in the comprehensive revision of the Greater Sisters Country Community Wildfire Protection Plan. Implementing and sustaining these efforts will require a significant commitment. Building a collaborative and cooperative environment with the fire districts, community-based organizations, local government, and the public land management agencies has been the first step in reducing the risk of loss from wildland fire. The Steering Committee pledges to maintain this cooperation with the public over the long-term with the commitment of all the partners involved.

At a minimum, the Steering Committee shall include: the Program Director from Project Wildfire; a Chief Officer from each fire district; a representative from Oregon Department of Forestry (ODF); a representative from Central Oregon Fire Management Service (COFMS), the City of Sisters and Deschutes County along with members of the Sisters area public.

The Steering Committee agrees that the Greater Sisters Country Community Wildfire Protection Plan will be a living document, intended to promote fuels reduction, educational, and other projects to decrease overall risks of loss from wildland fire; revisited at least annually and revised every five years in order to address its purpose.

Sisters – Camp Sherman Rural Fire Protection District will work with Project Wildfire to convene the Steering Committee at least once per year, or as often as the Steering Committee deems necessary to implement and review the Greater Sisters Country Community Wildfire Protection Plan. Topics for discussion can include:

- Identification and assessment of new or treated risks.
- Evaluation and tracking of progress toward goals.
- Updating of maps.
- Adoption of new and/or revised priorities.
- Identification of specific projects.
- Discussion of grant opportunities and determination of projects eligible for funding.
- Writing of grants.
- Identification of appropriate projects to address additional items as outlined in the Action Plan for Structural Vulnerability, Education and Critical Transportation Routes.
- Coordination of additional items, projects, and assessments.

The Sisters – Camp Sherman Rural Fire Protection District and Project Wildfire will ensure that the evaluation and monitoring activities listed above are addressed by the Steering Committee each year. As members of the Steering Committee change, Project Wildfire will ensure that it maintains a balanced representation of agency and public members, with a continued focus on inviting interested parties to participate in the review and planning process.

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

Generated: April 9, 2019

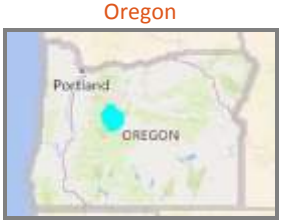
Weather and vegetation conditions vary daily and seasonally. For current conditions and local fire restrictions, contact your local fire district or visit: www.keeporegongreen.org/current-conditions

INTRODUCTION

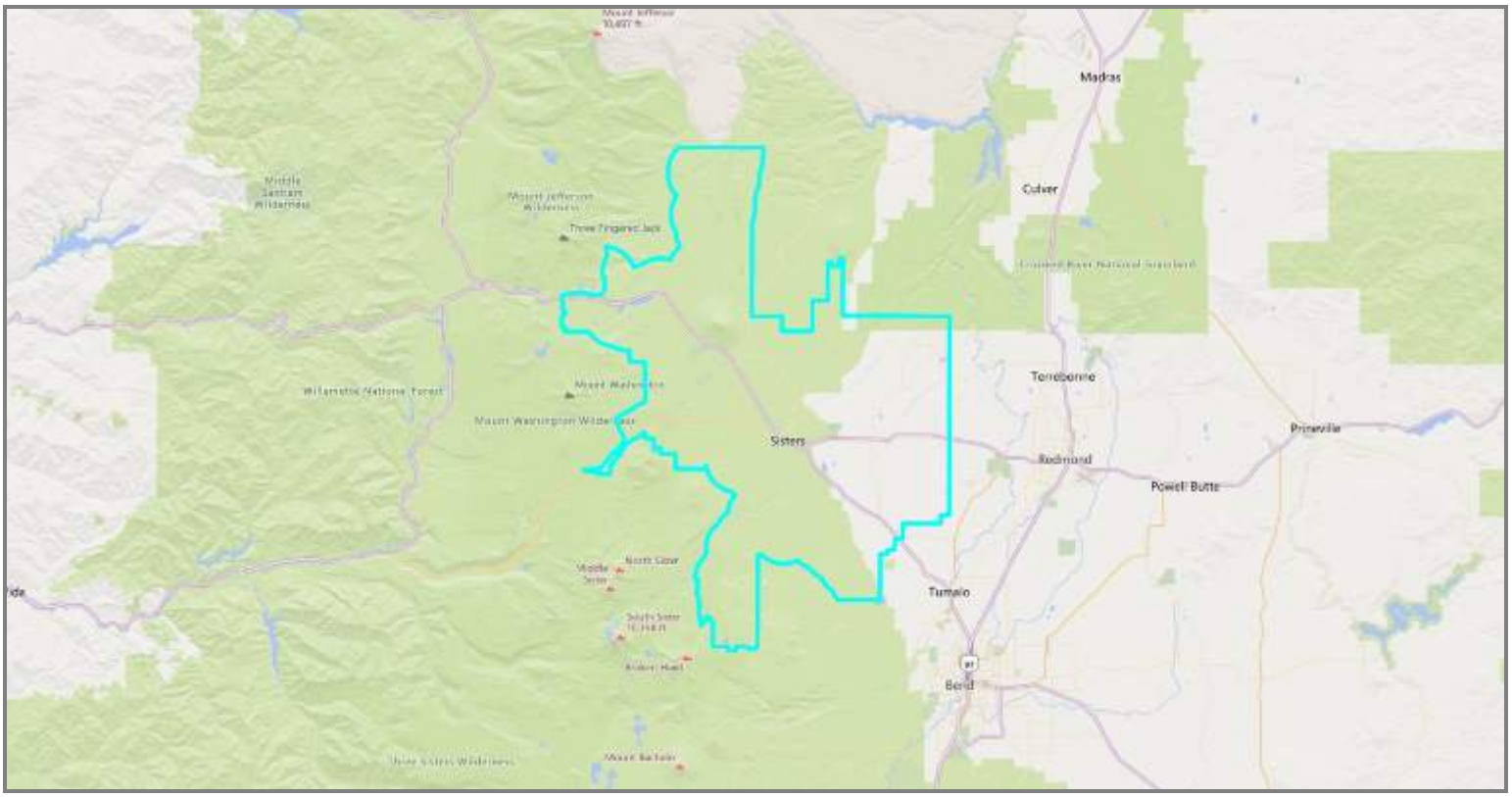
This report summarizes wildfire risk in Greater Sisters CWPP from the Advanced Oregon Wildfire Risk Explorer map viewer (OWRE). Wildfire risk combines the likelihood of a fire occurring with the exposure and susceptibility of valued resources and assets on the landscape.

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.

Greater Sisters CWPP in Oregon



Greater Sisters CWPP Reference Map



REPORT CONTENTS

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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GUIDELINES

The OWRE Advanced Report provides wildfire risk information for a customized area of interest to support Community Wildfire Protection Plans (CWPPs), Natural Hazard Mitigation Plans (NHMPs), and fuels reduction and restoration treatments in wildfire-prone areas in Oregon. Here are some things you need to know about this information:

The Advanced OWRE map viewer provides **wildfire risk assessment** data primarily from the 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, produced by the US Forest Service with a coalition of local fire managers, planners, and natural resource specialists in both Washington and Oregon. The assessment uses the most current data (incorporating 2017 fires) and state-of-the art fire modeling techniques, and is the most up-to-date wildfire risk assessment for Oregon. The assessment characterizes risk of large wildfires (>250 acres). Data also comes from the 2013 West Wide Wildfire Risk Assessment, Oregon Department of Forestry (ODF), and other sources.

Wildfire risk is modeled at a landscape scale. The data does not show access for emergency response, home construction materials, characteristics of home ignition zones, or NFPA Firewise USA® principles. For CWPP and NHMP updates you may want to **consider two scales**:

- first, use data from the OWRE to characterize and understand the fire environment and fire history in your area broadly at a landscape scale, focusing on watersheds or counties;
- then, overlay local knowledge, focusing on communities, fire protection capabilities, local planning areas, and defensible space concepts for neighborhoods and homes.

The OWRE Advanced Report will provide the landscape context of the current fire environment and fire history upon which you can build your local plans toward resilience by preparing and mitigating the larger landscape wildfire risk.

The OWRE Advanced Map Viewer and Report will not replace local knowledge of communities you may consider high risk. Continue to use local Fire Department and ODF knowledge to generate CWPP concern areas. OWRE will produce broad scale maps for your CWPP area as a whole, but maps and data will contain some inaccuracies, which are most prevalent at fine scales.

Recommended additional information sources for wildfire planning:

- Oregon Department of Forestry CWPP list - https://www.oregon.gov/ODF/Fire/Pages/CWPP.aspx
- Oregon Explorer Communities Reporter - demographic and other data for counties and communities http://oe.oregonexplorer.info/rural/CommunitiesReporter/
- Wildland Urban Interface Toolkit - https://www.usfa.fema.gov/wui_toolkit/wui_planning.html
- Wildland Urban Interface Wildfire Mitigation Desk Reference Guide - https://www.nwcg.gov/sites/default/files/publications/pms051.pdf
- Oregon Spatial Data Library - http://spatialdata.oregonexplorer.info/geoportal/
- NFPA Firewise USA® - teaching people how to adapt to living with wildfire and encouraging neighbors to work together and take action to prevent losses. - https://www.nfpa.org/Public-Education/By-topic/Wildfire/Firewise-USA
- Headwaters Economics - Full Community Costs of Wildfire - https://headwaterseconomics.org/wildfire/homes-risk/full-community-costs-of-wildfire/

This Advanced Wildfire Risk Report was generated from the Advanced Oregon Wildfire Risk Explorer map viewer at: tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfireplanning. This site is intended for wildfire professionals and planners. For a basic summary of wildfire risk geared toward a public audience, visit the basic OWRE map viewer: tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfire.

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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WILDFIRE RISK ASSESSMENT CONCEPTS & DATA

The Advanced Oregon Wildfire Risk Explorer (OWRE) map viewer organizes data into folders based on wildfire risk concepts. All OWRE advanced reports will include information about Overall wildfire risk, Burn probability, Flame length, Overall potential impact, Hazard to potential structures, Fire history, Land management, and Estimated housing density. Users can select additional data layers of interest, which will appear after the layers listed above.

Wildfire Risk

Overall wildfire risk takes into account both the likelihood of a wildfire and the exposure and susceptibility of mapped valued resources and assets combined. The dataset considers (1) the likelihood of wildfire >250 acres (likelihood of burning), (2) the susceptibility of resources and assets to wildfire of different intensities, and (3) the likelihood of those intensities. Blank areas either have no currently mapped assets or resources and/or are considered a non-burnable fuel in terms of wildfire. Note that agricultural lands are considered non-burnable in this map, even though fires can occur in these areas and may spread into more typically considered burnable areas such as forested lands. Data layers include: Overall wildfire risk, Wildfire risk to assets, and Wildfire risk to people and property.

Wildfire Threat

Wildfire threat shows the likelihood of a large wildfire, the average intensity and the likelihood of higher intensities, conveyed by flame length. Data layers include: Burn probability, Average flame length, Probability of exceeding 4'flames, and Probability of exceeding 8' flames. Additional data layers that show wildfire threat are found under the Fire History and Active Fires folder, where historical fire starts and historical fire perimeters are located.

Wildfire Potential Impacts

Wildfire potential impacts shows the actual exposure of mapped resources and assets. The data layers do not incorporate the likelihood of burning, they only show the consequence of wildfire if it were to occur. Data layers include: Overall potential impact,Potential impact to people and property, Potential impact to infrastructure, Potential impact to timber resources, Potential impact to wildlife, and Potential impact to forest vegetation. The layers (Potential impact to timber resources, wildlife, and forest vegetation) may be useful when targeting fuels treatment. These layers are influencing the "Benefit" areas in the Overall wildfire risk map - they show areas where there is ecological opportunity to restore historical or desired conditions and/or potentially reduce the risk of catastrophic wildfire with managed fire use or other management. The Potential impact to forest vegetation optional report element is coupled with historical fire regime information to give basic context when comparing historical and current conditions.

Hazard to Potential Structures

Hazard to potential structures depicts the hazard to hypothetical structures in any area if a wildfire were to occur. This differs fromPotential Impacts, as those estimates consider only where people and property currently exist. In contrast, this layer maps hazard to hypothetical structures across all directly exposed (burnable), and indirectly exposed (within 150 meters of burnable fuel) areas inOregon. As with the Potential Impacts layers, the data layer does not take into account wildfire probability, it only shows exposure and susceptibility.

Fire Model Inputs and Fuelscape

These layers are the fuels and topography used to run the fire model in the 2018 Pacific Northwest QuantitativeWildfire Risk Assessment. Data layers include: Fuel models, Fuel model groups, Forest canopy base height, Forest canopy height,Forest canopy cover, Forest canopy bulk density, Slope, Elevation and Aspect. Fuel models and groups characterize local surface vegetation composition relative to carrying fire more precisely than a basic land cover or vegetation maps. Fuel models indicate the type of potential wildfire based on the fuels that will ignite and spread fire. Canopy data layers characterize vegetation structure for fire modeling: base height, cover, and bulk density estimates can show where there may be propensity for ladder fuels (ground vegetation and trees that reach up to tree branches and upper forest canopy), and where contiguous forest canopies have potential for canopy fire.Note that not all of these layers are available to select for use in the OWRE advanced reports, but all of them are available for download and they are described in the metadata. Also note that weather, the third part of the three maor elements that determine wildfire occurrence and intensity, is not included in this data distribution - please see the full report to understand the weather parameters used in the assessment.

For more detailed information, please see the full 2018 PNW Quantitative Wildfire Risk Assessment report:
oe.oregonexplorer.info/externalcontent/wildfire/reports/20170428_PNW_Quantitative_Wildfire_Risk_Assessment_Report.pdf

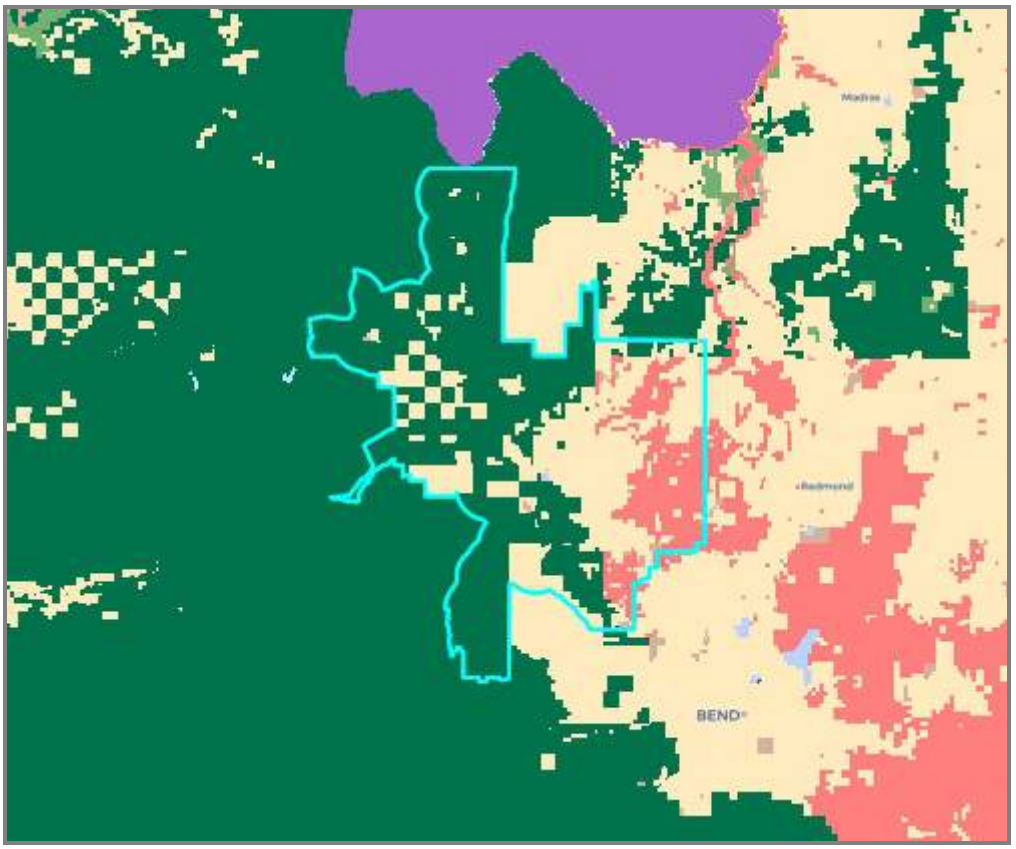
Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

Generated: April 9, 2019

LAND OWNERSHIP AND MANAGEMENT

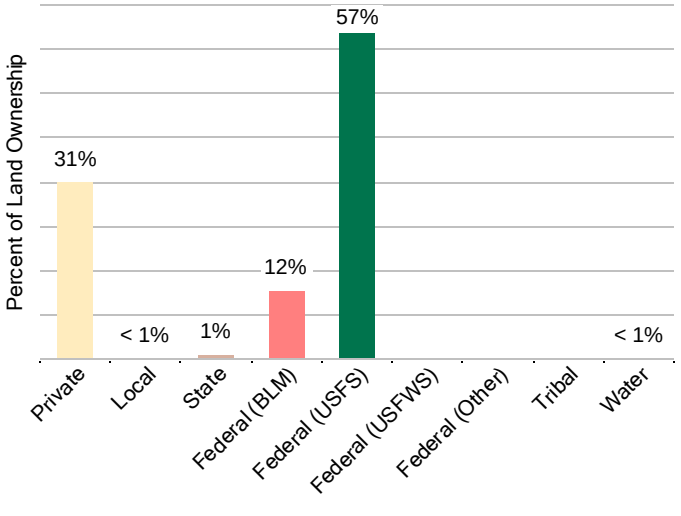


Knowing the land ownership and management in an area is important for hazard planning and awareness when wildfires occur. Oregon has a complete and coordinated wildfire management system between local, private, tribal, state, and federal agencies. These entities participate to fight fire in local areas 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 map, table and charts below show the breakdown of ownership types in your area.

Greater Sisters CWPP

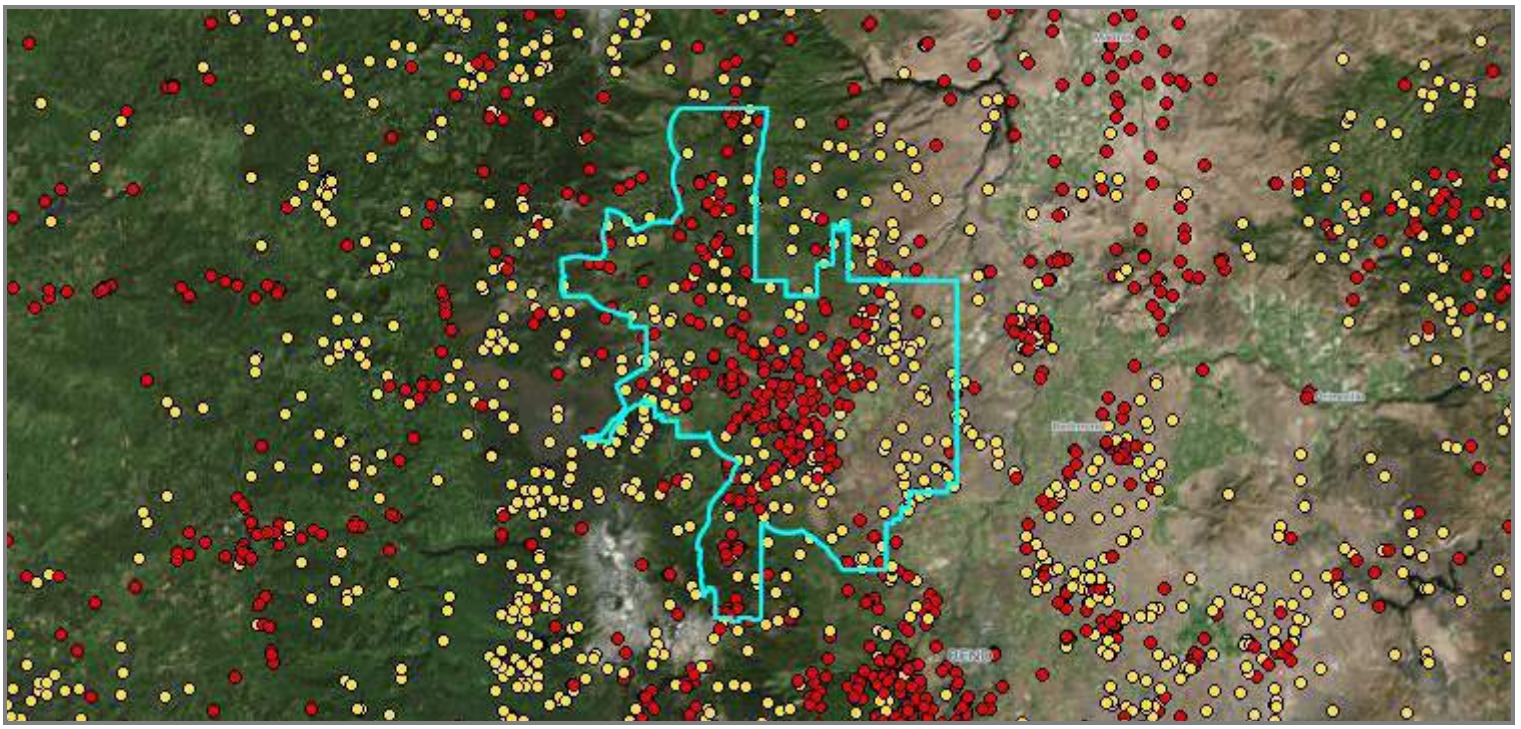
	Major Landowner/Manager	Acres
	Private	79,884
	Local	160
	State	1,468
	Bureau of Land Management (BLM)	30,725
	US Forest Service (USFS)	149,472
	US Fish & Wildlife (USFWS)	0
	Other Federal	0
	Tribal	0
	Water	83



Source: Bureau of Land Management, 2015

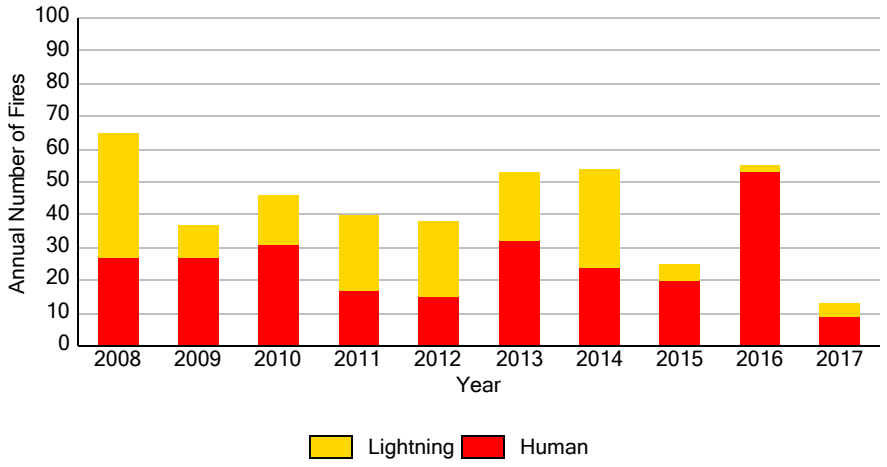
** Values may add up to over 100% due to rounding precision*

FIRE HISTORY - FIRE IGNITIONS



Greater Sisters CWPP fire starts between 2008-2017

Total Acres Burned	15,589
Total Number of Fires	426
Average Acres Burned Per Year	1,559
Average Fires Per Year	43
Percent Lightning Caused	40.1%
Percent Human Caused	59.9%



Knowing where and why fires start is the first step in awareness, prevention, and mitigation. Viewing local fire starts in conjunction with burn probability (provided later in this report) provides a comprehensive view of local fire history and potential.

Statewide, 71% of fires recorded by ODF are human-caused, and many of these fires are near populated areas. Lightning caused fires make up only 29% of fire starts, but tend to burn more acres as they are often located in remote areas.

The map, table and charts on this page show the cumulative number fire starts in your area.

Source: Short, K. and Oregon Department of Forestry, 2017

Oregon Wildfire Risk Explorer- Advanced Report

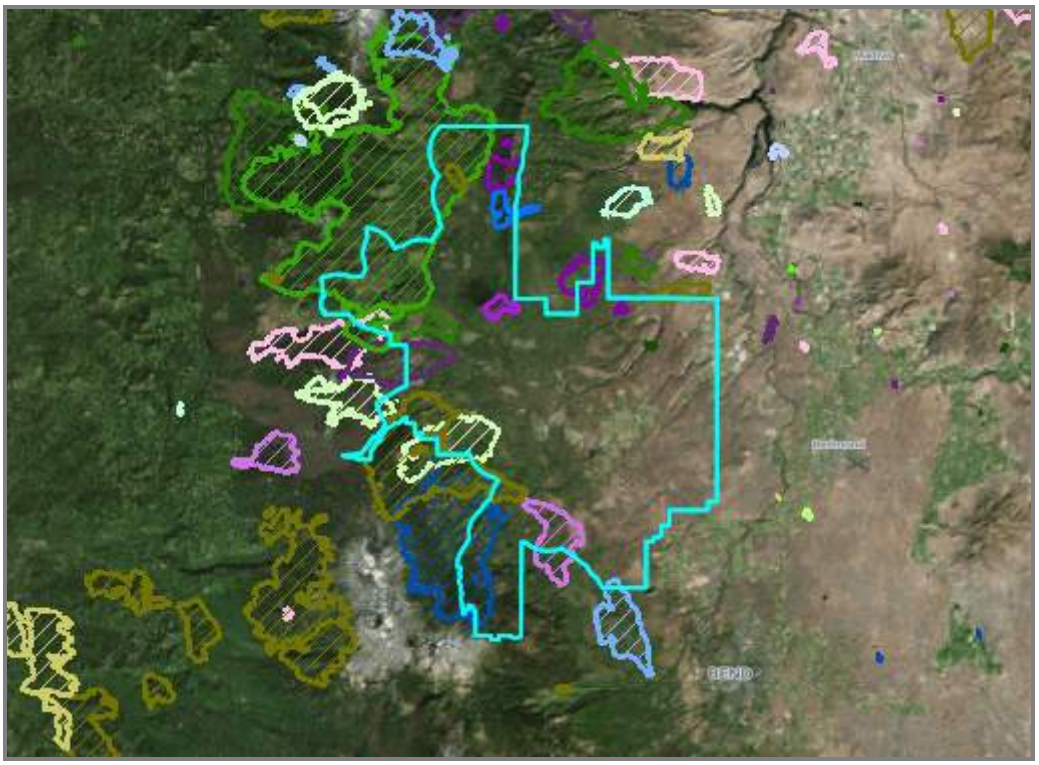
Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

Generated: April 9, 2019

FIRE HISTORY - FIRE PERIMETERS

Although most wildfires in Oregon are human-caused and suppressed quickly while small, Oregon has experienced many large wildfires. The map and table below show the footprints of fires that have occurred in your area since 2000.



Wildfires in Greater Sisters CWPP

Wildfire Name	Year	Acres Burned
MILLI 0843 CS	2017	24,079
WHYCHUS 0814 CS	2017	1,540
SHEEP SPRINGS 0341 CS	2017	683
Two Bulls	2014	6,903
Green Ridge	2013	1,510
Pole Creek	2012	26,795
SHADOW LAKE	2011	10,025
ROOSTER ROCK	2010	6,274
BLACK BUTTE II	2009	1,013
SUMMIT SPRINGS COMPLEX	2008	3,529
WIZARD	2008	1,918
GW	2007	8,570
CASCADE CREST COMPLEX	2006	12,094
BLACK CRATER	2006	9,412
LAKE GEORGE	2006	6,538
B&B COMPLEX	2003	90,981
LINK	2003	3,717
CACHE MOUNTAIN	2002	4,451
Metolius RNA 1707	2002	175
SQUAW CREEK	2001	110

Source: Geomac https://www.geomac.gov/

For more information about previous large wildfires, see: National Interagency Fire Center
https://www.nifc.gov/fireInfo/fireInfo_main.html

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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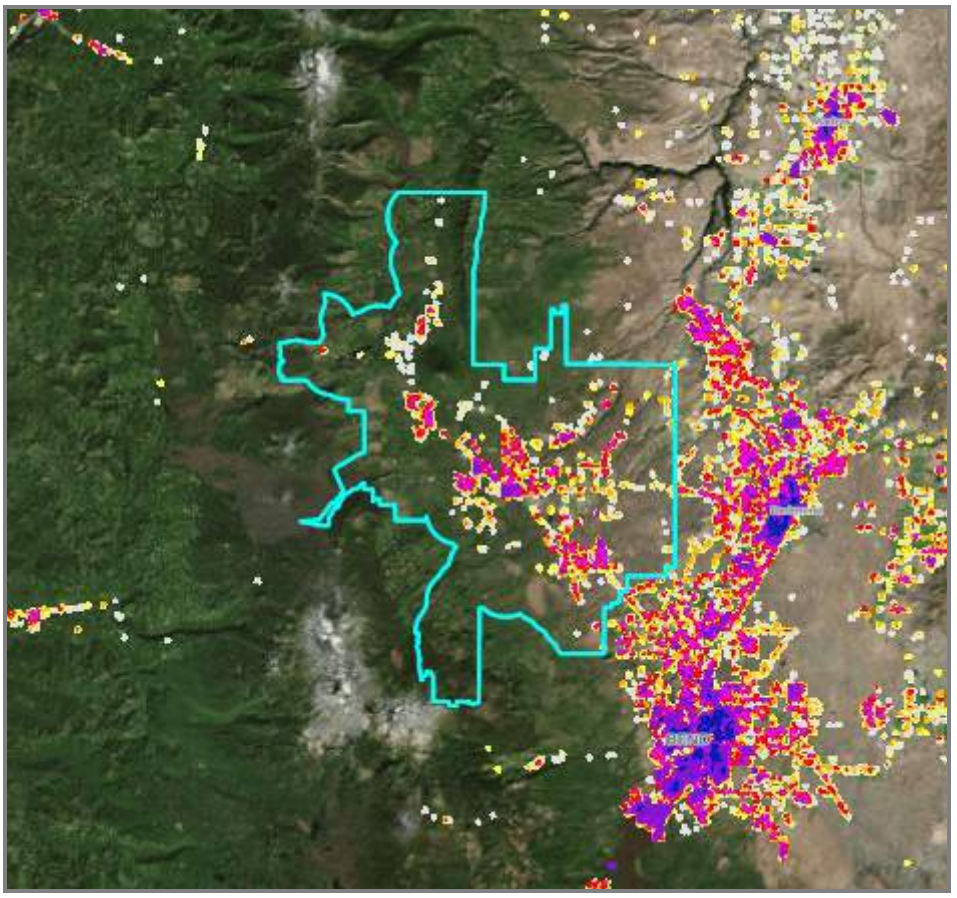
HOUSING DENSITY - WHERE PEOPLE LIVE

Areas where people live are a primary concern when assessing wildfire risk. Especially critical is the Wildland Urban Interface (WUI) - 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 since 1990. 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 2.4 million acres are considered WUI areas, about 3.8% of the state. Of the nearly 1.7 million homes in Oregon, over 603,000, or 36%, are in the WUI.

The map and table on this page shows the location and density of where people live in your area.



Greater Sisters CWPP housing density

Category	Acres	%*
<1 house per 40 acres	7,993	3
1 per 40 acres to 1 per 20 acres	5,506	2
1 per 20 acres to 1 per 10 acres	6,044	2
1 per 10 acres to 1 per 5 acres	5,591	2
1 per 5 acres to 1 per 2 acres	4,959	2
1 per 2 acres to 3 per acres	1,451	< 1
> 3 per acres	0	0

Source: 2013 West Wide Wildfire Risk Assessment, ODF

** Values may add up to over 100% due to rounding precision*

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

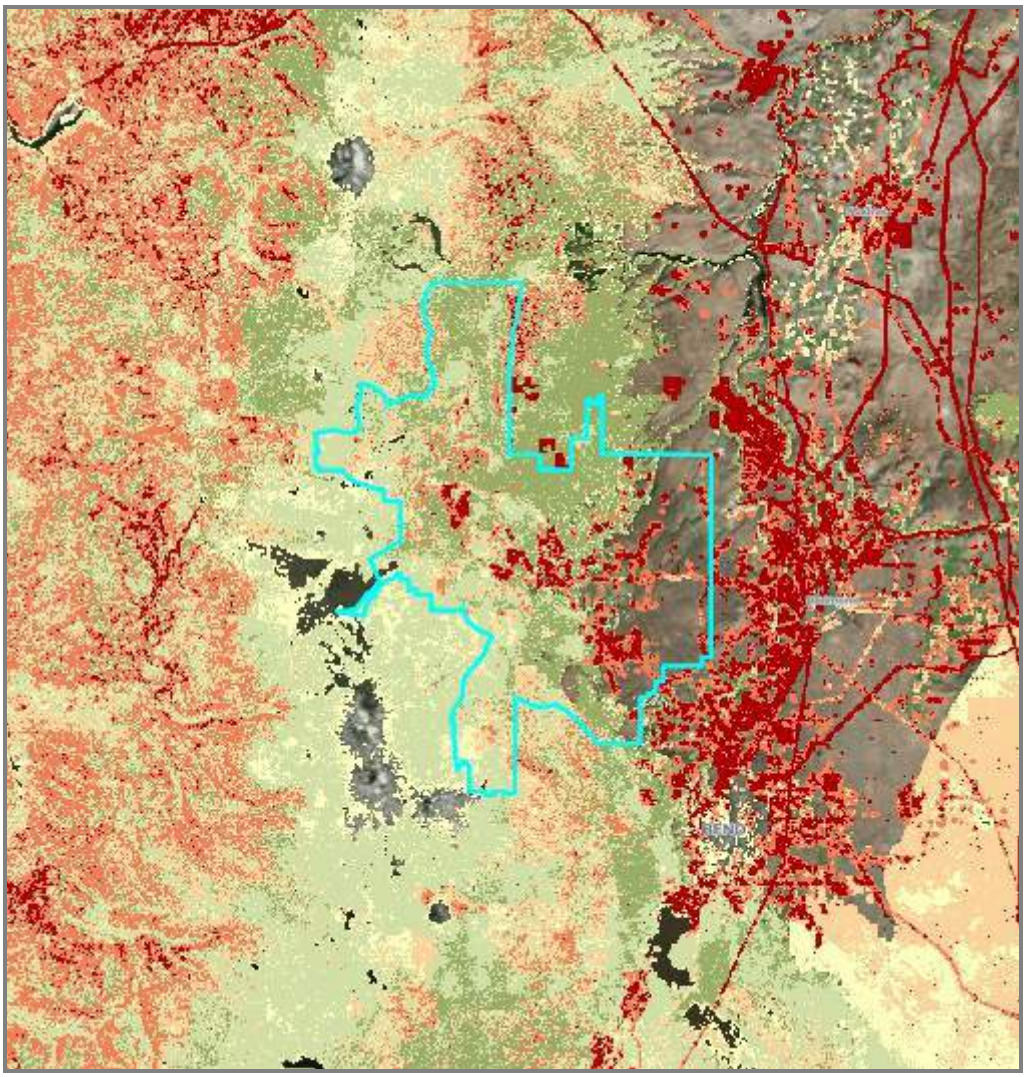
Generated: April 9, 2019

OVERALL WILDFIRE RISK

Overall wildfire risk combines both the likelihood of a wildfire and the expected impacts of a wildfire on highly valued resources and assets. (See other sections for more information on Burn probability and Overall potential impact.) Overall wildfire risk also reflects the susceptibility of resources and assets to wildfire of different intensities, and the likelihood of those intensities.

Mapped resources and assets include critical infrastructure, developed recreation, housing unit density, seed orchards, sawmills, historic structures, timber, municipal watersheds, vegetation condition, and terrestrial and aquatic wildlife habitat.

The data values in the overall wildfire risk map and chart reflect a range of impacts from a very high negative value, where wildfire is detrimental to one or more resources or assets, to positive, where wildfire has an overall benefit (e.g., forest health or wildlife habitat).



Overall wildfire risk: Legend	
Very High	Wildfire risk is very highly negative (top 5% of values).
High	Wildfire risk is highly negative (80th to 95th percentile).
Moderate	Wildfire risk is moderately negative (50th to 80th percentile).
Low	Wildfire risk is slightly negative(29th to 50th percentile).
Low Benefit	Wildfire is slightly beneficial (14.5 to 29th percentile).
Benefit	Wildfire is beneficial overall (0-14.5th percentile).
Non-burnable	There are no highly valued resources or assets mapped in the area, or it is considered non-burnable (urban, agriculture, etc).

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

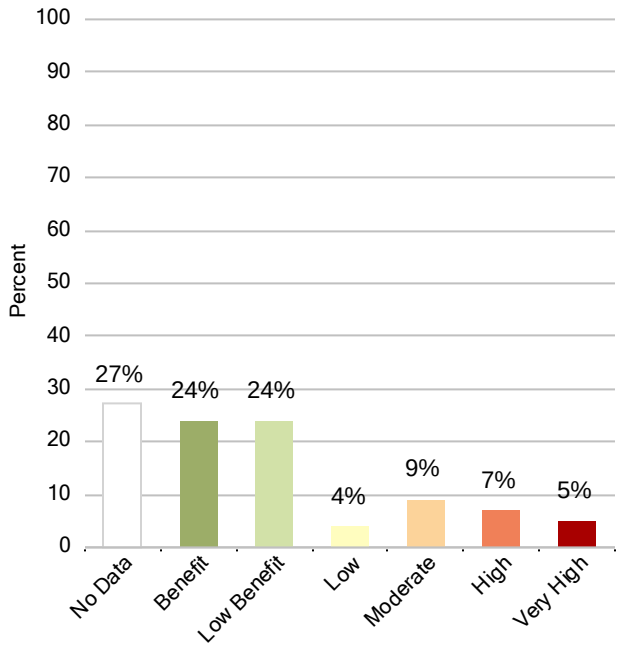
Generated: April 9, 2019

This page contains additional information about overall wildfire risk, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale prioritization.

Overall wildfire risk in Greater Sisters CWPP: estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
Very High	12,515	9,051	6	63	1,158	2,237	0	0	0
High	18,846	8,102	6	107	1,729	8,902	0	0	0
Moderate	23,144	5,674	13	95	374	16,988	0	0	0
Low	10,832	2,051	5	17	107	8,652	0	0	0
Low Benefit	61,910	10,411	72	108	209	51,110	0	0	0
Benefit	63,707	13,424	19	148	382	49,734	0	0	0
No Data	70,749	31,132	38	926	26,786	11,867	0	0	0
Total Area	261,703	79,845	159	1,464	30,745	149,490	0	0	0

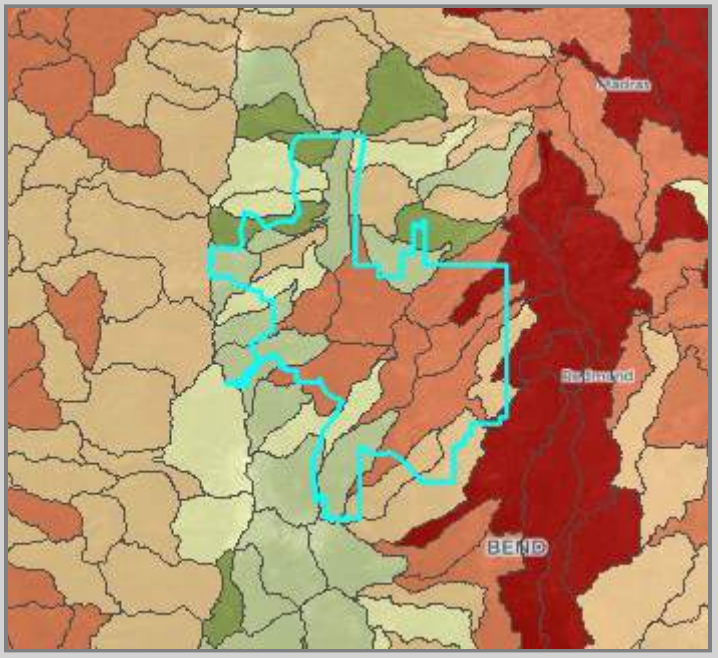
Overall wildfire risk in Greater Sisters CWPP *



Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Overall wildfire risk in Greater Sisters CWPP: sub-watershed summary map. Overall wildfire risk is summarized at the sub-watershed (6th field Hydrologic Unit Code, HUC12) level. Watershed summaries enable you to view the landscape context and identify and compare sub-watersheds for prioritization.



Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

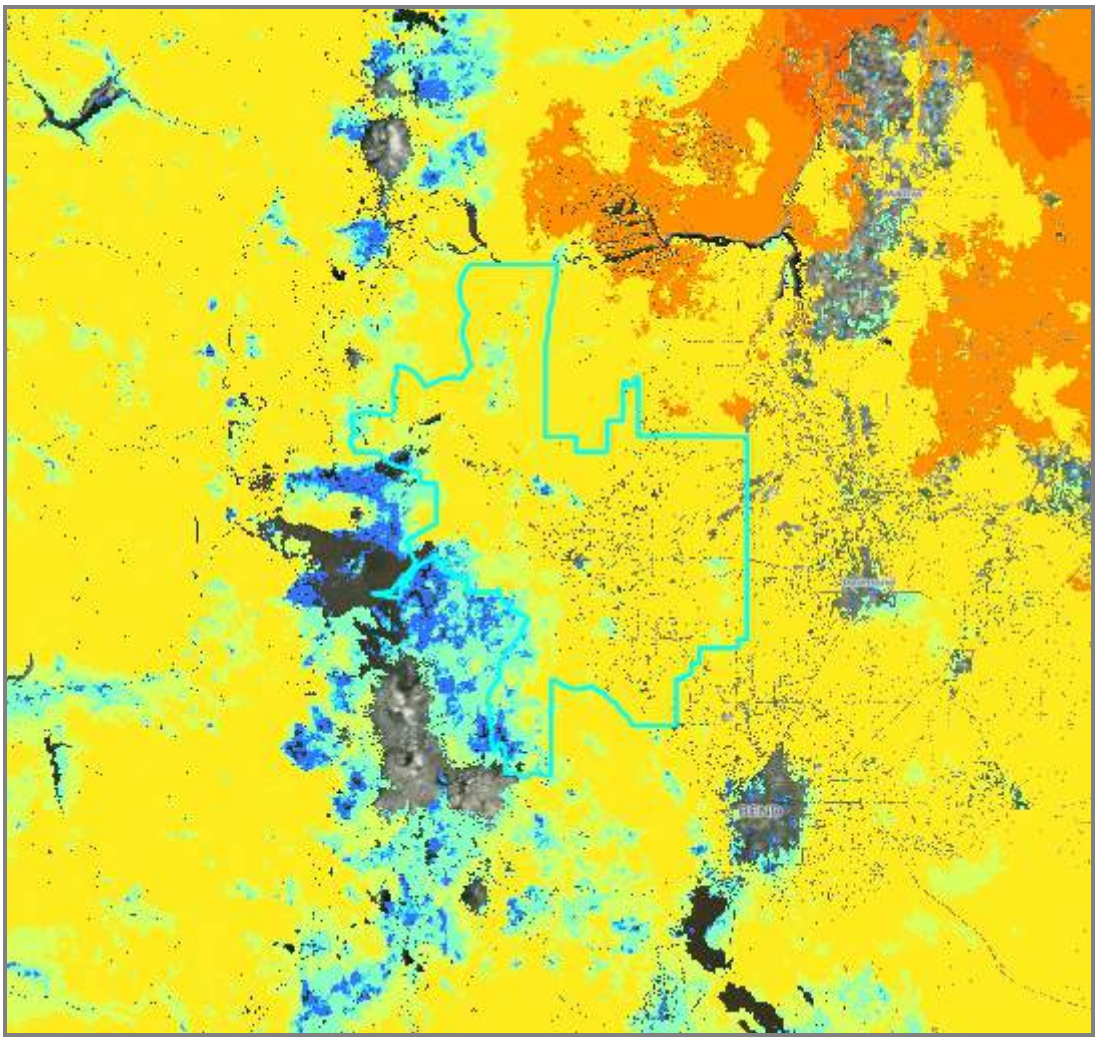
261,806 Acres: (409 Sq. Miles)

Generated: April 9, 2019

BURN PROBABILITY

Burn probability shows the annual likelihood of a wildfire greater than 250 acres in size occuring, considering weather, topography, fire history, and fuels (vegetation). This estimate includes fire history from 1992 through recently disturbed fuels from large Oregon wildfires in notable years 2013, 2014, 2015, and 2017.

Only large wildfires over 250 acres in size are included because they are the most influential on the landscape and they can be simulated using computer software. Most fire occurrences are less than 250 acres (see fire history section). Although these smaller fires have a low impact on the broader landscape, they can have significant local impacts, especially in areas with human activity and infrastructure.



Burn probability	
Very High	Greater than 1 in 50 chance of a wildfire >250 acres in a single year (>96th percentile).
High	Between 1 in 500 and 1 in 50 chance of a wildfire >250 acres in a single year (29th to 96th percentile).
Moderate	Between 1 in 5,000 and 1 in 500 chance of a wildfire >250 acres in a single year (11th to 29th percentile).
Low	Less than approximately 1 in 5,000 chance of a wildfire >250 acres in a single year (up to the 11th percentile).
Non-burnable	This area contains non-burnable fuel types such as water, urban, agriculture, barren rock, etc.

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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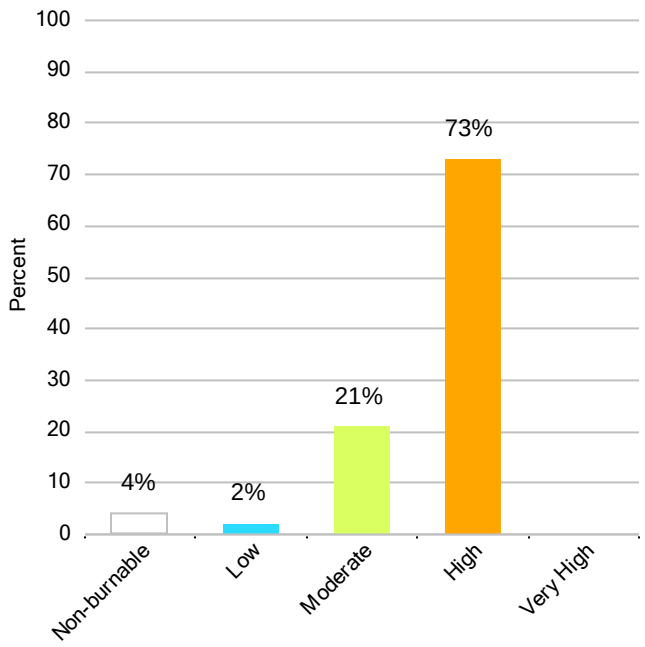
Generated: April 9, 2019

This page contains additional information about burn probability, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale prioritization.

Burn probability in Greater Sisters CWPP: estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
Very High	0	0	0	0	0	0	0	0	0
High	189,870	63,949	84	1,313	27,358	97,166	0	0	0
Moderate	53,915	9,015	47	76	2,433	42,344	0	0	0
Low	6,145	591	0	0	0	5,554	0	0	0
Non-Burnable	11,776	6,290	28	76	955	4,427	0	0	0
Total Area	261,706	79,845	159	1,465	30,746	149,491	0	0	0

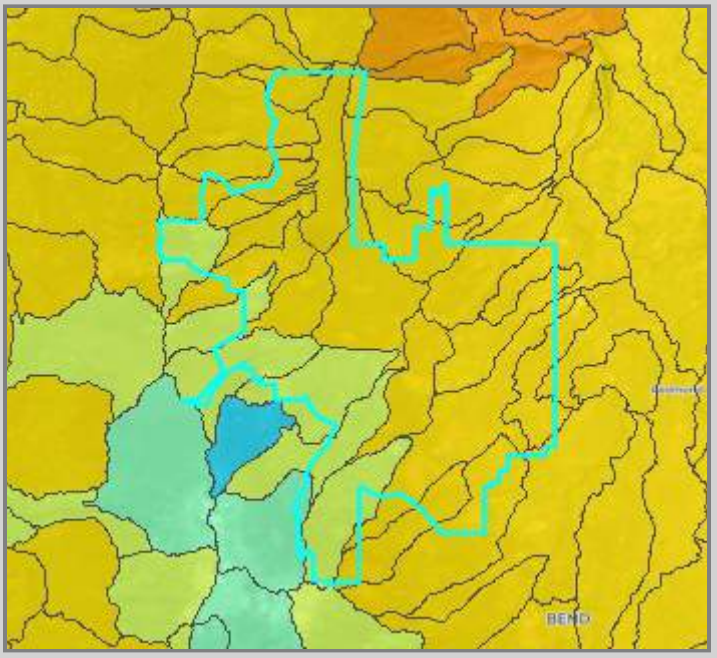
Burn probability in Greater Sisters CWPP *



Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Burn probability in Greater Sisters CWPP: sub-watershed summary map. Burn probability is summarized at the subwatershed (6th field Hydrologic Unit Code, HUC12) level. Watershed summaries enable you to view the landscape context and identify and compare sub-watersheds for prioritization.



Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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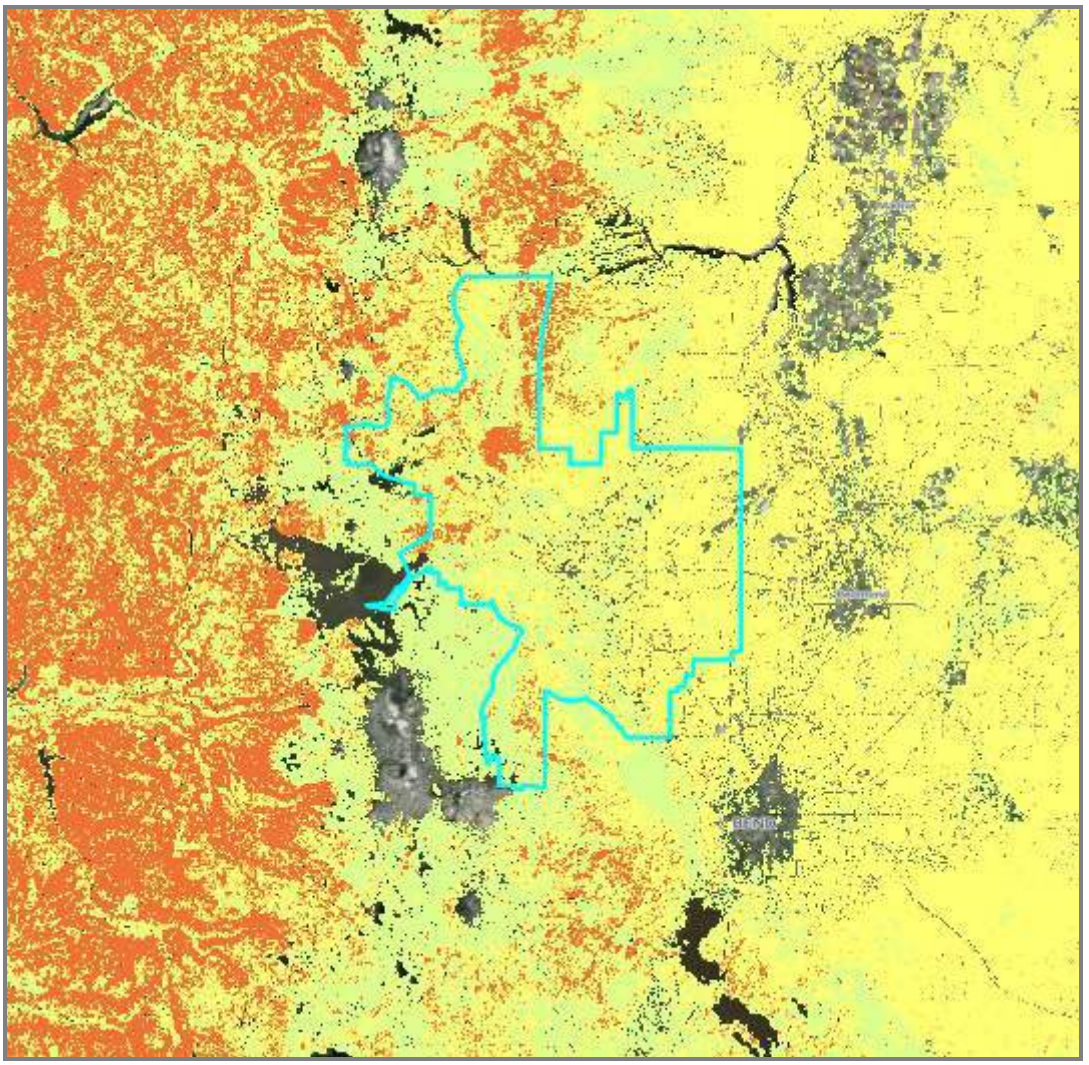
FIRE INTENSITY - FLAME LENGTHS

Flame length is an indication of fire intensity, which is a primary factor to consider for gauging potential impacts to values at risk and for firefighter safety. It can also guide mitigation work to reduce the potential for catastrophic fires by reducing fire intensity and flame length.

Under normal weather conditions average flame lengths within your area are shown, and the associated table describes the expected fire behavior in each average flame length category.

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.



Average fire intensity - flame lengths under normal weather conditions

> 11 foot	Fires may exhibit greater than 11-foot average flames with major fire movement, tree crowning, longer-range spotting and ember travel.
8-11 foot	Fires may exhibit 8-11 foot average flames with tree torching and increased ember travel.
4-8 foot	Fires may exhibit 4-8 foot average flames, and embers may travel moderate distances.
4 foot	Fires may exhibit 4 foot average flames.
Non-burnable	This area contains non-burnable fuel types such as water, urban, agriculture, barren rock, etc.

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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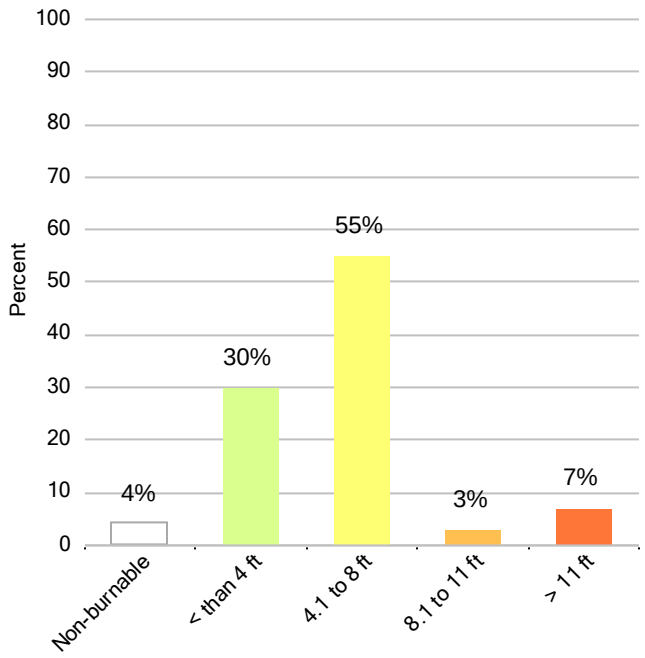
This page contains additional information about fire intensity, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale prioritization.

Greater Sisters CWPP average fire intensity - flame lengths estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
> 11 ft	18,398	1,662	0	8	60	16,668	0	0	0
8 - 11 ft	9,030	2,063	0	57	340	6,570	0	0	0
4 - 8 ft	143,910	48,210	58	1,130	27,021	67,491	0	0	0
> 0 - 4 ft	78,590	21,620	72	193	2,370	54,335	0	0	0
Non-burnable	11,776	6,290	28	76	955	4,427	0	0	0
Total Area	261,704	79,845	158	1,464	30,746	149,491	0	0	0

Fire intensity - flame length in Greater Sisters CWPP *



Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

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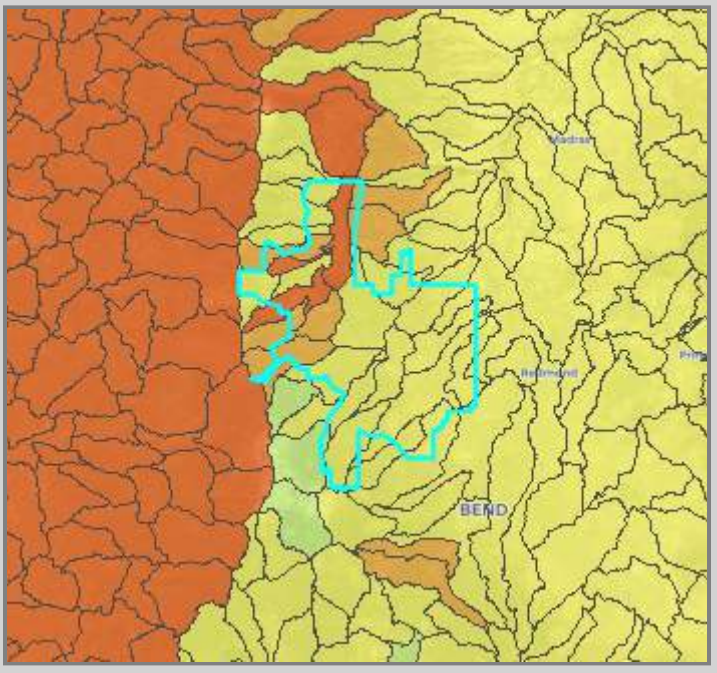
Fire intensity in Greater Sisters CWPP: sub-watershed summary map. Fire intensity is summarized at the subwatershed (6th field Hydrologic Unit Code, HUC12) level. Watershed summaries enable you to view the landscape context and identify and compare sub-watersheds for prioritization.



Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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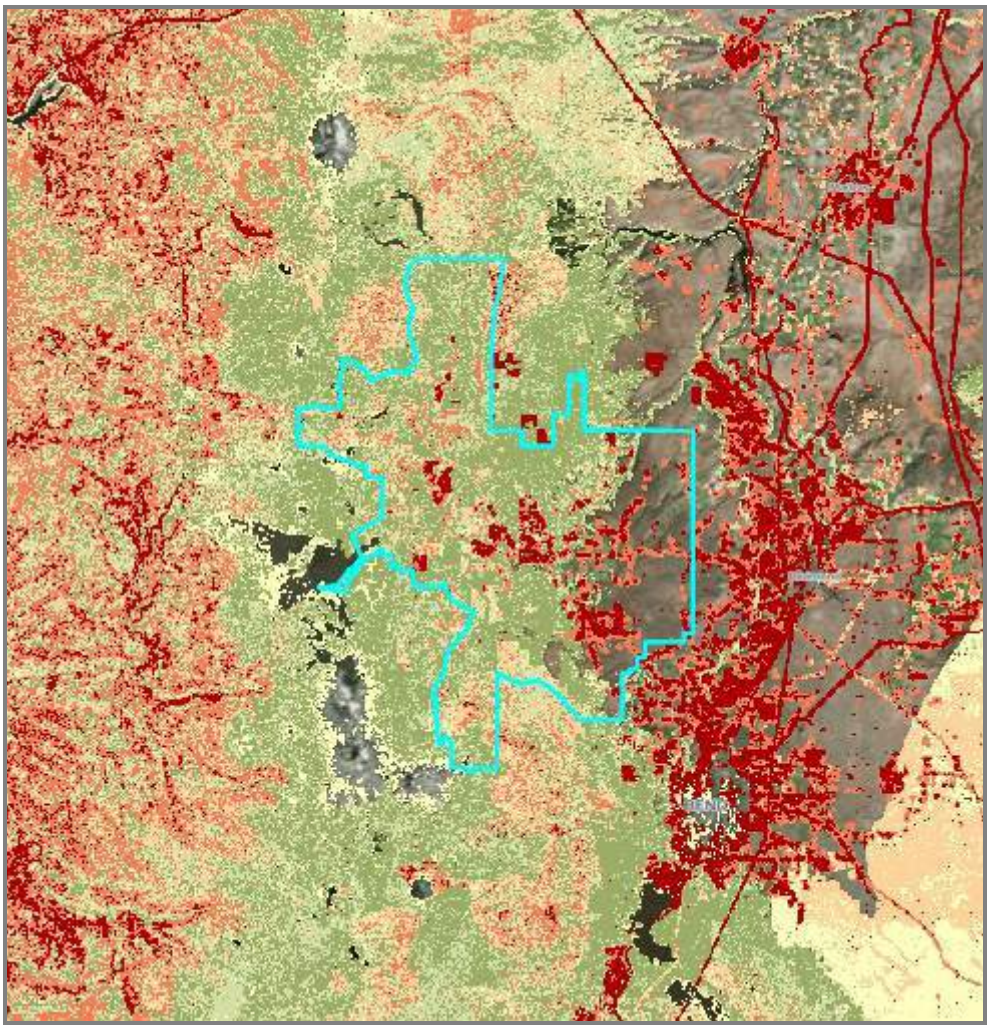
OVERALL POTENTIAL IMPACT

Overall potential impact represents the exposure or consequence of wildfire on all mapped highly valued assets and resources combined, including critical infrastructure, developed recreation, housing density, seed orchards, sawmills, historic structures, timber, municipal watersheds, vegetation condition, and selected terrestrial and aquatic wildlife habitat.

The Potential Impact data layers characterize exposure and susceptibility only, and do not include the likelihood of an area burning. This differentiates the Potential Impact layers from Wildfire Risk layers, which account for the burn probability in the risk rating.

The data values reflect a range of impacts from a very high negative consequence, where wildfire is detrimental (e.g., high exposure to structures, infrastructure, or sensitive habitat), to a positive impact of wildfire, where wildfire will produce an overall benefit (e.g., improving forest health or wildlife habitat).



Overall potential impact (if a wildfire were to occur)

Very High	Overall potential impact is very highly negative (top 5% of values).
High	Overall potential impact is highly negative (80-95th percentile).
Moderate	Overall potential impact is moderately negative (50-80th percentile).
Low	Overall potential impact is slightly negative (30-50th percentile).
Low Benefit	Overall potential impact is slightly beneficial at low flame lengths (15-30th percentile).
Benefit	Overall potential impact is slightly beneficial, with a cumulative positive impact of fire (0-15th percentile).
No Data (blank)	There are no highly valued resources or assets mapped in the area or it is non-burnable (urban, agriculture, barren,etc).

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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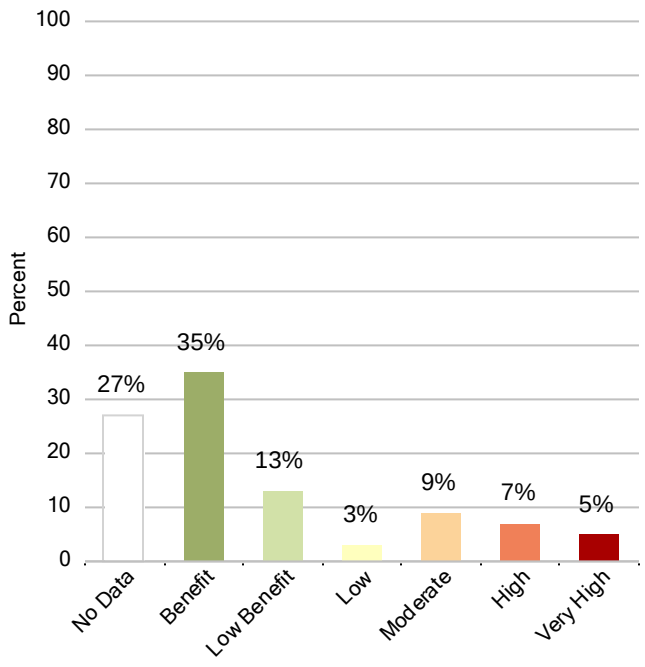
This page contains additional information about overall potential impact, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale prioritization.

Greater Sisters CWPP overall potential impact estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
Very High	13,950	10,061	8	66	1,246	2,569	0	0	0
High	19,331	7,420	6	98	1,706	10,101	0	0	0
Moderate	23,111	5,177	10	95	262	17,567	0	0	0
Low	7,021	2,117	5	22	152	4,725	0	0	0
Low Benefit	35,164	6,355	14	103	343	28,349	0	0	0
Benefit	92,378	17,583	77	154	251	74,313	0	0	0
No Data	70,749	31,132	38	926	26,786	11,867	0	0	0
Total Area	261,704	79,845	158	1,464	30,746	149,491	0	0	0

Overall potential impact in Greater Sisters CWPP *



Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

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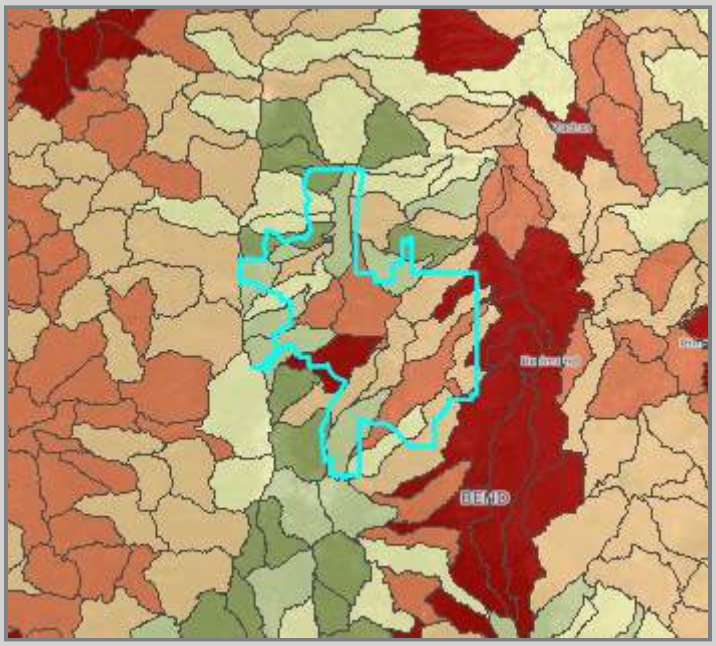
Overall potential impact in Greater Sisters CWPP: sub-watershed summary map. Overall potential impact is summarized at the sub-watershed (6th field Hydrologic Unit Code, HUC12) level. Watershed summaries enable you to view the landscape context and identify and compare sub-watersheds for prioritization.

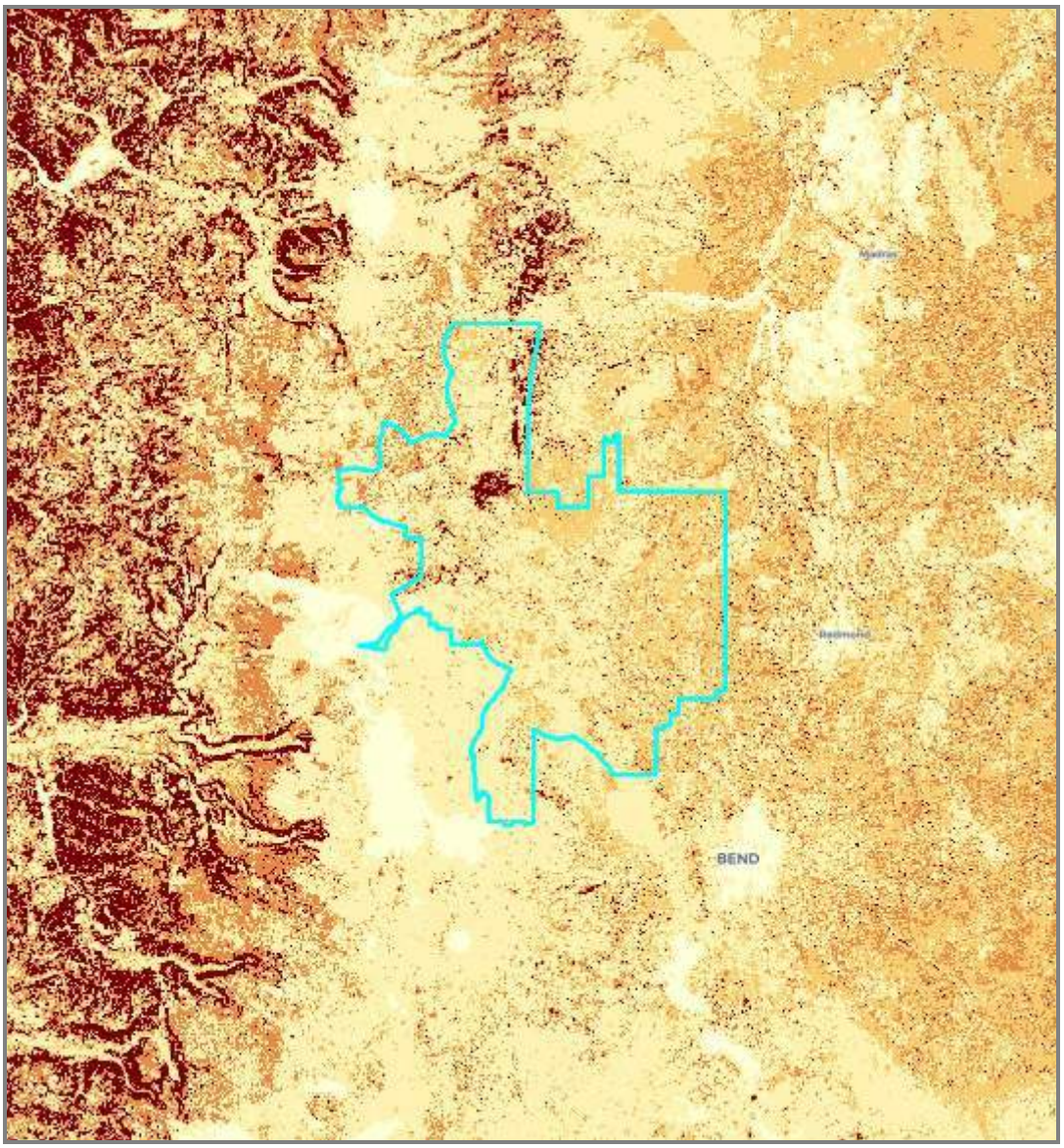


HAZARD TO POTENTIAL STRUCTURES

Hazard to potential structures depicts the hazard to a hypothetical structure (not necessarily an existing structure) if a wildfire were to occur. Hazard to potential structures differs from overall estimates of wildfire impact or risk, as those estimates only consider where existing structures are currently located.

Community planners can use this information when planning development outside of existing developed, urban or WUI areas. This data provides model-based consideration of wildfire hazard when developing Fire Adapted Communities in Oregon.

As with the other data layers, this layer characterizes the fire environment only and does not consider other important factors in determining structural fire risk such as building construction materials and vegetation within close proximity of a structure.



Hazard to potential structures	
Very High	Potential hazard is very high (top 5 percent).
High	Potential hazard is high (80th to 95th percentile).
Moderate	Potential hazard is moderate (50th to 80th percentile).
Low	Potential hazard is low (up to the 50th percentile).
Non-Burnable	Fuel in the area is largely non-burnable or very sparse.

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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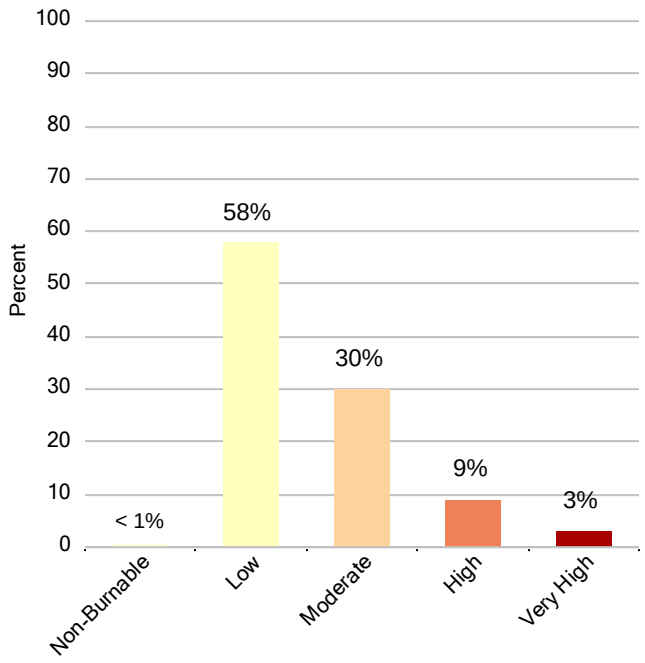
This page contains additional information about hazard to potential structures, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale prioritization.

Hazard to potential structures in Greater Sisters CWPP: estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
Very High	6,701	1,024	0	27	219	5,431	0	0	0
High	23,075	6,771	0	180	3,286	12,838	0	0	0
Moderate	78,457	26,416	18	700	16,400	34,923	0	0	0
Low	151,210	45,117	116	557	10,829	94,591	0	0	0
Non-Burnable	2,261	518	24	0	11	1,708	0	0	0
Total Area	261,704	79,846	158	1,464	30,745	149,491	0	0	0

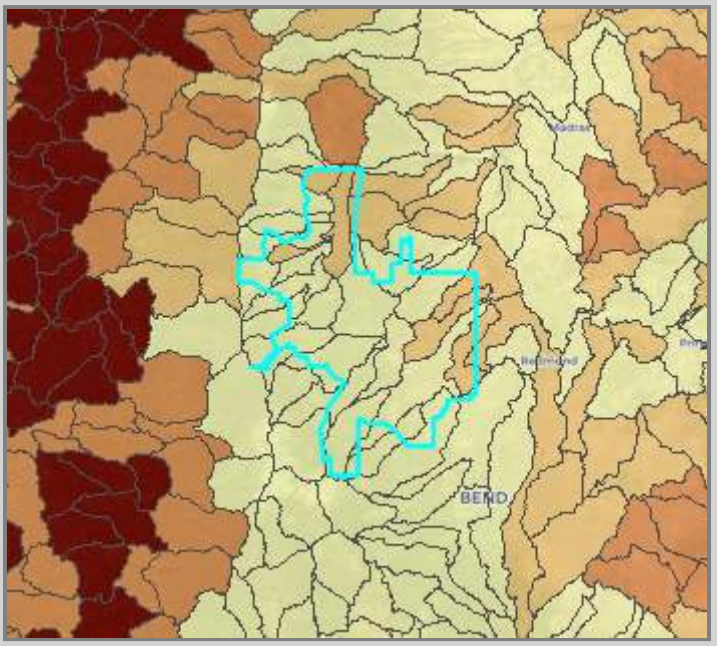
Hazard to potential structures in Greater Sisters CWPP *



Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Hazard to potential structures in Greater Sisters CWPP: sub-watershed summary map. Hazard to potential structures is summarized at the subwatershed (6th field Hydrologic Unit Code, HUC12) level. Watershed summaries enable you to view the landscape context and identify and compare sub-watersheds for prioritization.

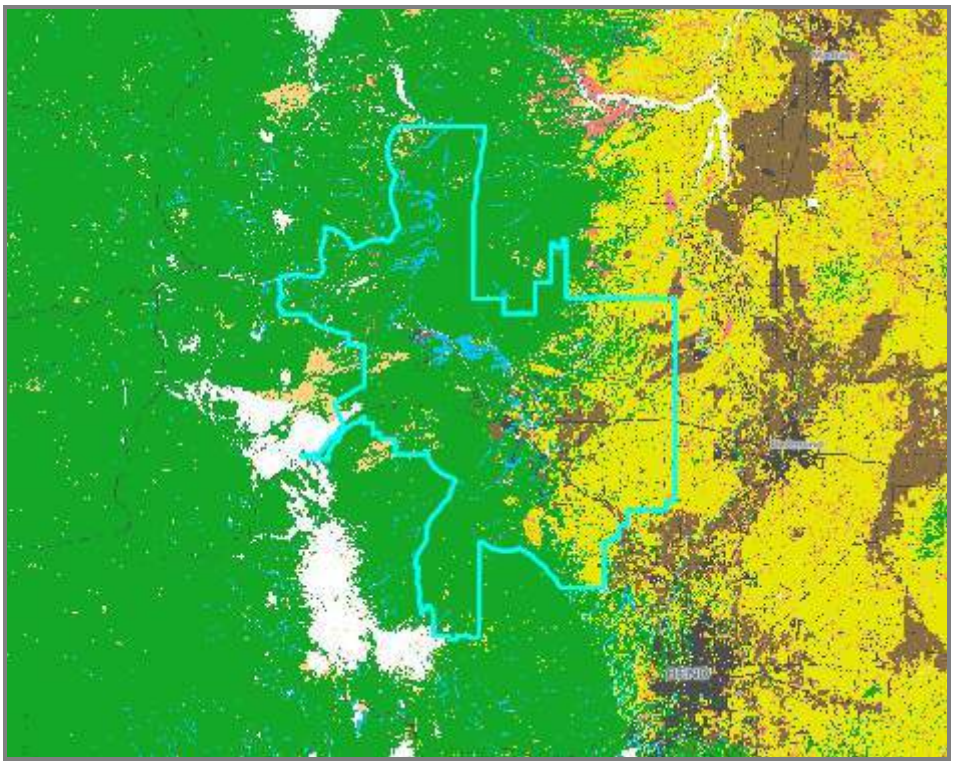


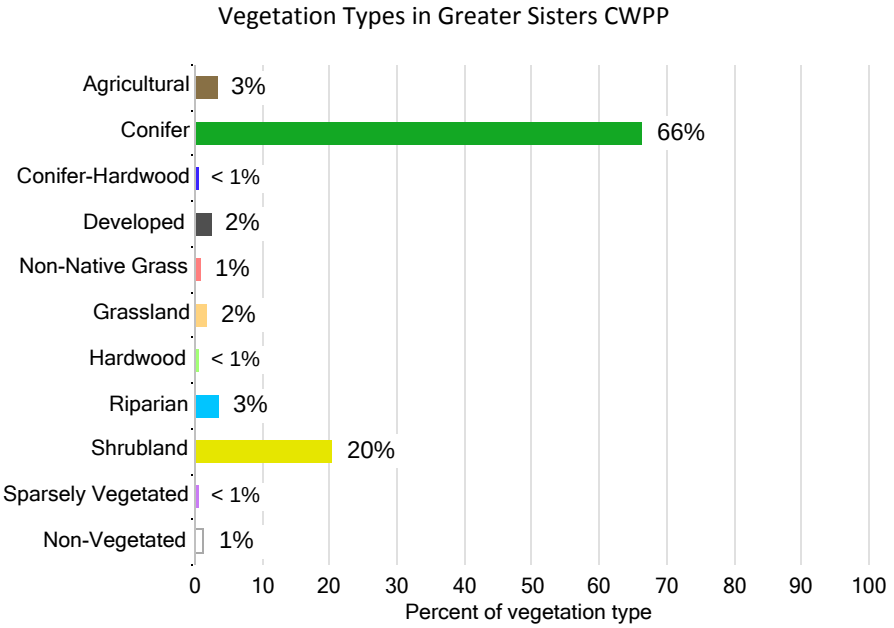
EXISTING VEGETATION TYPE

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 (see Burn probability data layer). Fire severity tells us how much impact wildfires are likely to have on the vegetation and other elements of an ecosystem (see Potential impact to forest vegetation data layer). The living and dead vegetation below forest canopies (shrubs, grasses, leaf litter, dead tree snags, etc.) also strongly influence fire behavior and impacts in a location (see Fuel models).

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 include 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 include coastal forests, subalpine forests and many stream headwaters and riparian areas.





Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

Generated: April 9, 2019

Greater Sisters CWPP vegetation type

Category	Description	Acres	%*
Non-vegetated or recently disturbed	Non-vegetated	3,742	1
Agricultural	Agricultural	8,558	3
Conifer	Conifer	173,475	66
Conifer-Hardwood	Conifer-Hardwood	396	< 1
Developed	Developed	6,352	2
Exotic Herbaceous	Non-Native Grass	2,167	< 1
Grassland	Grassland	4,445	2
Hardwood	Hardwood	496	< 1
Riparian	Riparian	9,055	3
Shrubland	Shrubland	53,101	20
Sparsely Vegetated	Sparsely Vegetated	< 1	< 1

Existing Vegetation Type Data Dictionary https://www.landfire.gov/evt.php
Source: LANDFIRE https://www.landfire.gov

Resource:
US Forest Service Fire Regime Table
https://www.fs.fed.us/database/feis/fire_regime_table/fire_regime_table.html#PacificNorthwest

** Values may add up to over 100% due to rounding precision*

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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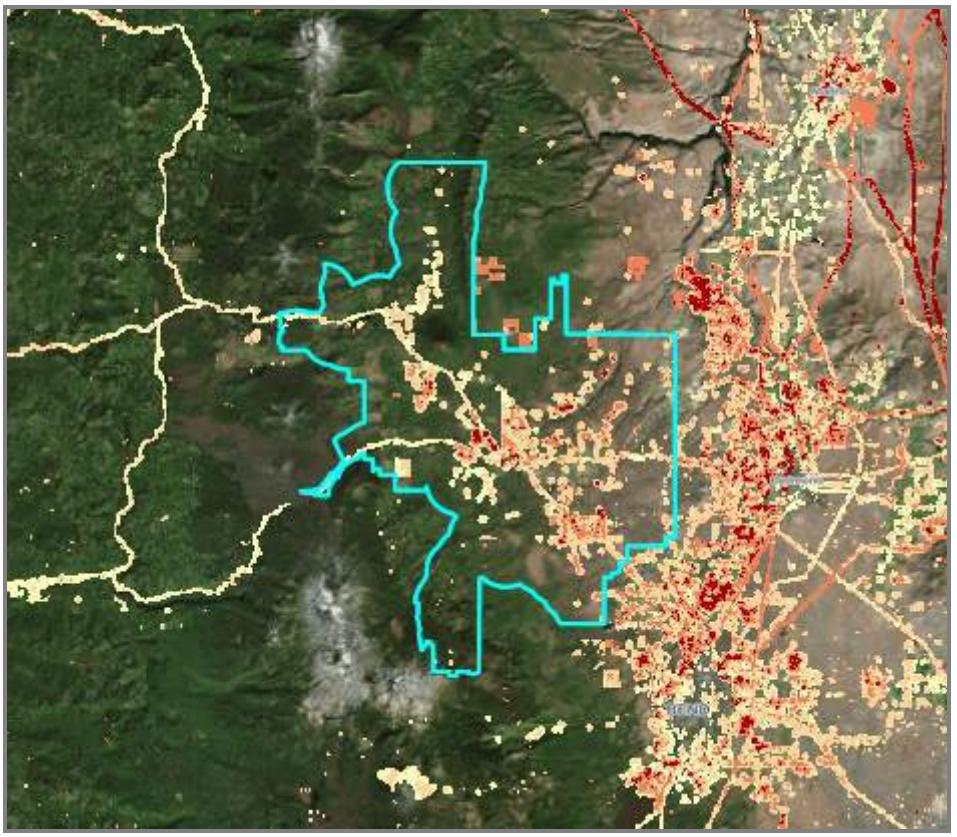
WILDFIRE RISK TO ASSETS

Wildfire risk combines both the likelihood of a wildfire (or Burn probability) and the expected effects of a wildfire on highly valued resources and assets. See the description of Overall wildfire risk for more details.

Wildfire risk to assets maps wildfire risk only in places with the following assets: critical infrastructure, developed recreation, housing unit density, seed orchards, sawmills, and historic structures. Note that these resources and assets were mapped at a broad scale across all of Oregon and Washington, and maps contain errors and omissions, especially at fine scales.

The values in the maps and charts reflect a range of negative impacts from low to very high. Positive benefits of wildfire are not mapped in this layer, assuming that any impact of wildfire to human development is negative.



Wildfire Risk to Assets in Greater Sisters CWPP

Category	Description	Acres	%*
Very High	Wildfire risk is very highly negative to all combined mapped assets (top 5%).	1,338	< 1
High	Wildfire risk is highly negative (80-95th percentile).	6,059	2
Moderate	Wildfire risk is moderately negative (50-80th percentile).	17,631	7
Low	Wildfire risk is slightly negative (0-50th percentile).	7,045	3
No Data	There are no highly valued resources or assets mapped in the area, or it is considered non-burnable.	229,713	88

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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Generated: April 9, 2019

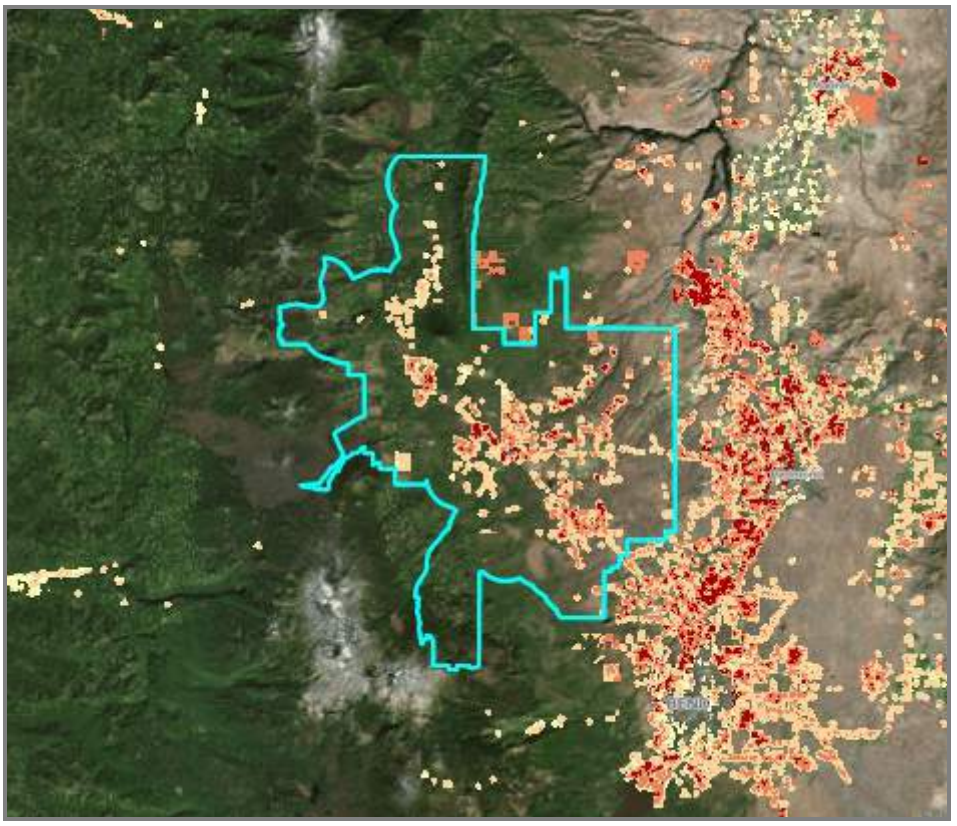
WILDFIRE RISK TO PEOPLE AND PROPERTY

Wildfire risk combines both the likelihood of a wildfire (or burn probability) and the expected effects of a wildfire on highly valued resources and assets. See the description of overall wildfire risk for more details.

Wildfire risk to people and property includes only housing unit density as mapped in the Where people live layer and US Forest Service private inholdings.

Note that these resources and assets were mapped at a broad scale across all of Oregon and Washington, and maps contain errors and omissions, especially at fine scales.

The values in the maps and charts reflect a range of negative impacts from low to very high. Positive benefits of wildfire are not mapped in this layer, assuming that any impacts of wildfire to human development is a negative impact.



Wildfire Risk to People and Property in Greater Sisters CWPP

Category	Description	Acres	%*
Very High	Wildfire risk is very highly negative to people and property (top 5%).	1,779	< 1
High	Wildfire risk is highly negative (80-95th percentile).	8,014	3
Moderate	Wildfire risk is moderately negative (50-80 percentile).	18,138	7
Low	Wildfire risk is slightly negative (0-50 percentile).	1,082	< 1
No Data	There are no highly valued resources or assets mapped in the area, or it is considered non-burnable.	232,774	89

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

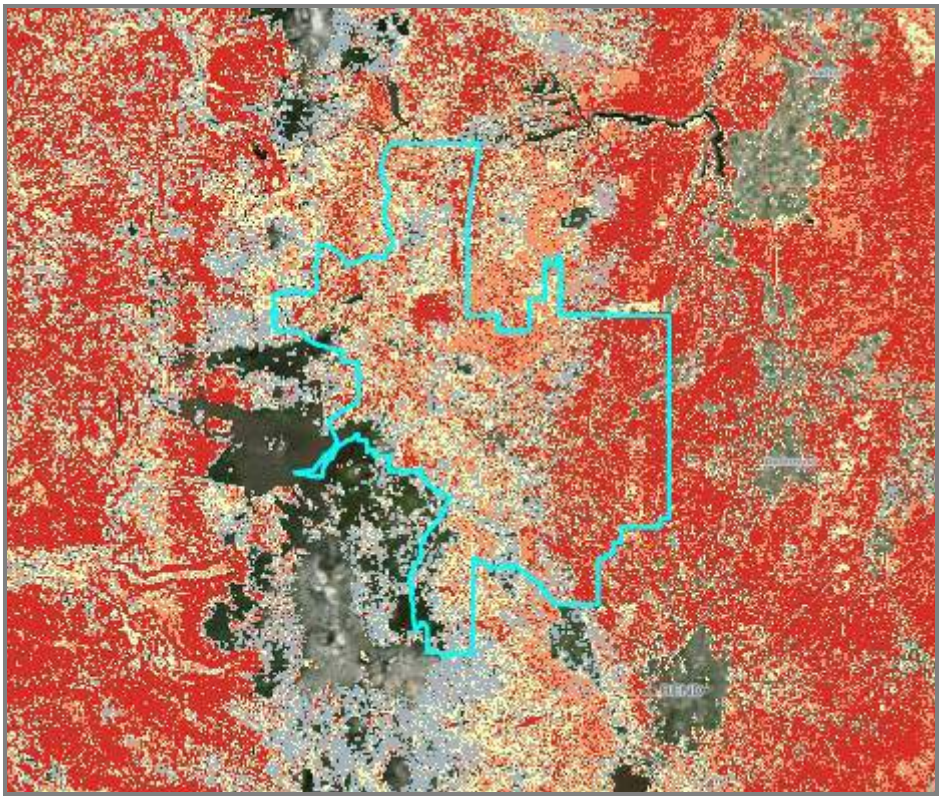
Generated: April 9, 2019

PROBABILITY OF EXCEEDING 4 FOOT FLAME LENGTHS

Flame length is an indication of fire intensity, which is a primary factor to consider for firefighter safety and for gauging potential impacts to values at risk. Fires with greater flame lengths are more intense and difficult to control. At higher flame lengths, firefighters cannot directly approach. As flame lengths increase, tree torching and spotting is expected and ember travel is increased.

Fires with greater than 4' flames are too intense for firefighters to work at the front of the flame using hand tools, and heavier equipment such as bulldozers may be necessary.

Using this layer to help target locations of higher flame length potential, a local assessment might reveal opportunity to reduce fire intensity as a goal of fuels treatment projects by using managed fire and/or other active management activities. Values are expressed as a percent likelihood. These probabilities do not take into account the likelihood of burning (see Burn probability).



Greater Sisters CWPP probability of exceeding 4' flames

Category	Description	Acres	%*
75-100%	If a fire occurs, there is a very high (>75%) chance that flame lengths will be greater than 4'.	70,280	27
50-75%	If a fire occurs, there is a high (50-75%) chance that flame lengths will be greater than 4'.	70,882	27
25-50%	If a fire occurs, there is a moderate (25-50%) chance that flame lengths will be greater than 4'.	51,961	20
0-25%	If a fire occurs, there is a low (<25%) chance that flame lengths will be greater than 4'.	48,624	19
0%	This area contains non-burnable fuel types such as water, urban, agriculture, barren rock, etc.	20,040	8

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

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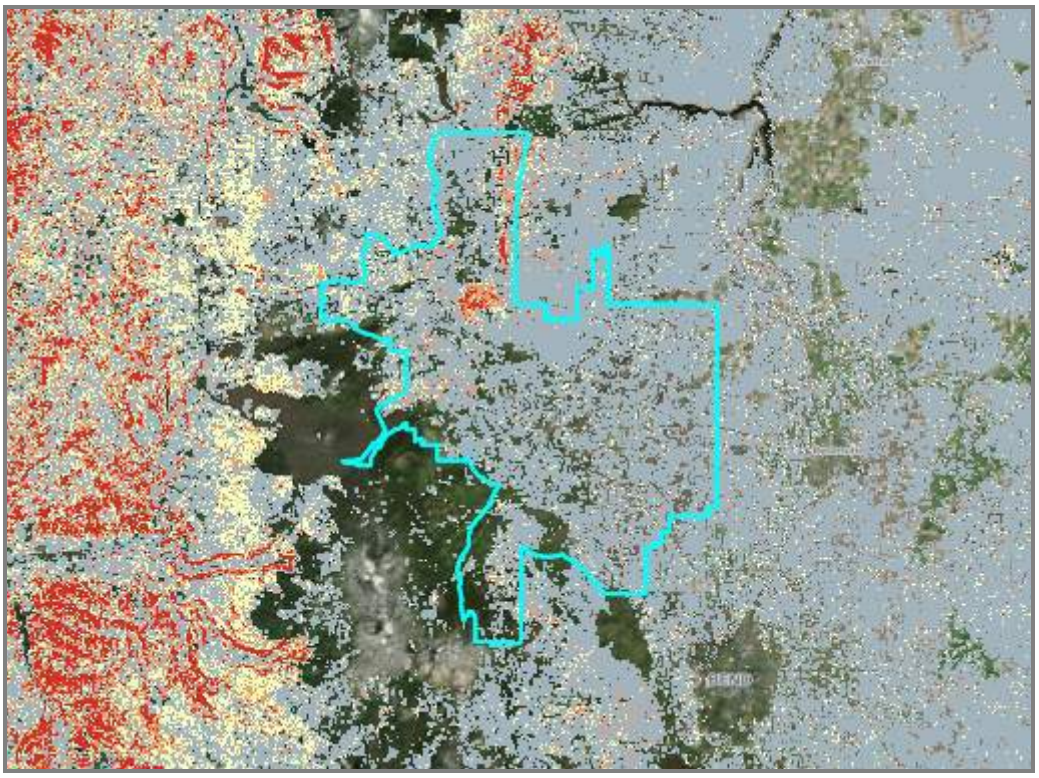
PROBABILITY OF EXCEEDING 8 FOOT FLAME LENGTHS

Flame length is an indication of fire intensity, which is a primary factor to consider for firefighter safety and for gauging potential impacts to values at risk. Fires with greater flame lengths are very intense and are expected to be highly difficult to control -- too intense for firefighters to work at the front of the flame, and they can severely impact values at risk. Tree torching and spotting is expected and ember travel is increased.

Fires with >8' flame lengths may be very difficult to control with little ability to work at the front of the flame, and greater risk of torching, crowning and spotting.

Using this layer to help target locations of higher flame length potential, a local assessment might reveal opportunity to reduce fire intensity as a goal of fuels treatment projects by using managed fire and/or other active management activities.

Values are expressed as a percent likelihood. These probabilities do not take into account the likelihood of an area burning.



Greater Sisters CWPP probability of exceeding 8' flames

Category	Description	Acres	%*
75-100%	If a fire occurs, there is a very high (>75%) chance that flame lengths will be greater than 8'.	1,861	< 1
50-75%	If a fire occurs, there is a high (50-75%) chance that flame lengths will be greater than 8'.	8,343	3
25-50%	If a fire occurs, there is a moderate (25-50%) chance that flame lengths will be greater than 8'.	11,906	5
0-25%	If a fire occurs, there is a low (<25%) chance that flame lengths will be greater than 8'.	173,751	66
0%	This area contains non-burnable fuel types such as water, urban, agriculture, barren rock, glacial areas, etc.	65,927	25

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

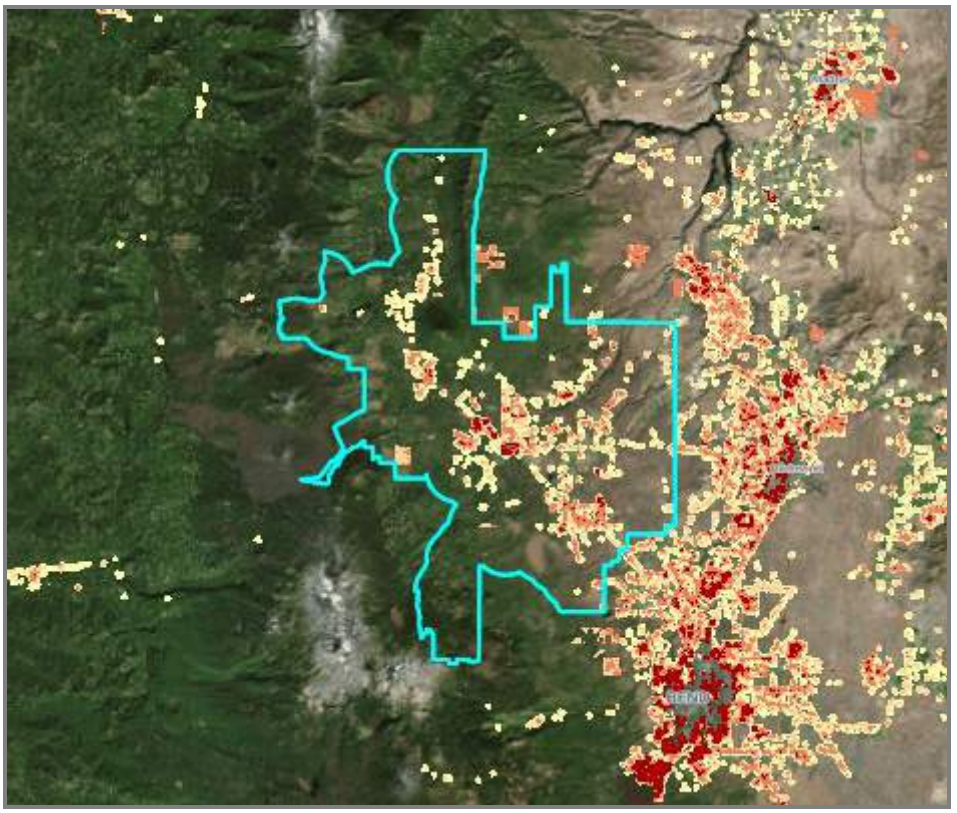
Generated: April 9, 2019

POTENTIAL IMPACT TO PEOPLE AND PROPERTY

Potential impact to people and property represents the exposure or consequence of wildfire on mapped highly valued assets including housing unit density and USFS private inholdings.

The Potential Impact data layers characterize exposure and susceptibility only, and do not include the likelihood of an area burning. This differentiates the Potential Impact layers from Wildfire Risk layers, which account for the burn probability in the risk rating.

The data values reflect a range of impacts from very high to low negative consequences. Positive benefits of wildfire are not mapped in this layer, assuming that any impact of wildfire to human development is negative.



Greater Sisters CWPP potential impact to people and property, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative to people and property (top 5%).	1,250	< 1
High	Potential impact is highly negative (80-95th percentile).	6,875	3
Moderate	Potential impact is moderately negative (50-80th percentile).	10,200	4
Low	Potential impact is slightly negative (0-50th percentile).	10,688	4
No Data	There is no people and property mapped in the area or it is considered non-burnable (urban, agriculture, barren,etc).	232,774	89

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

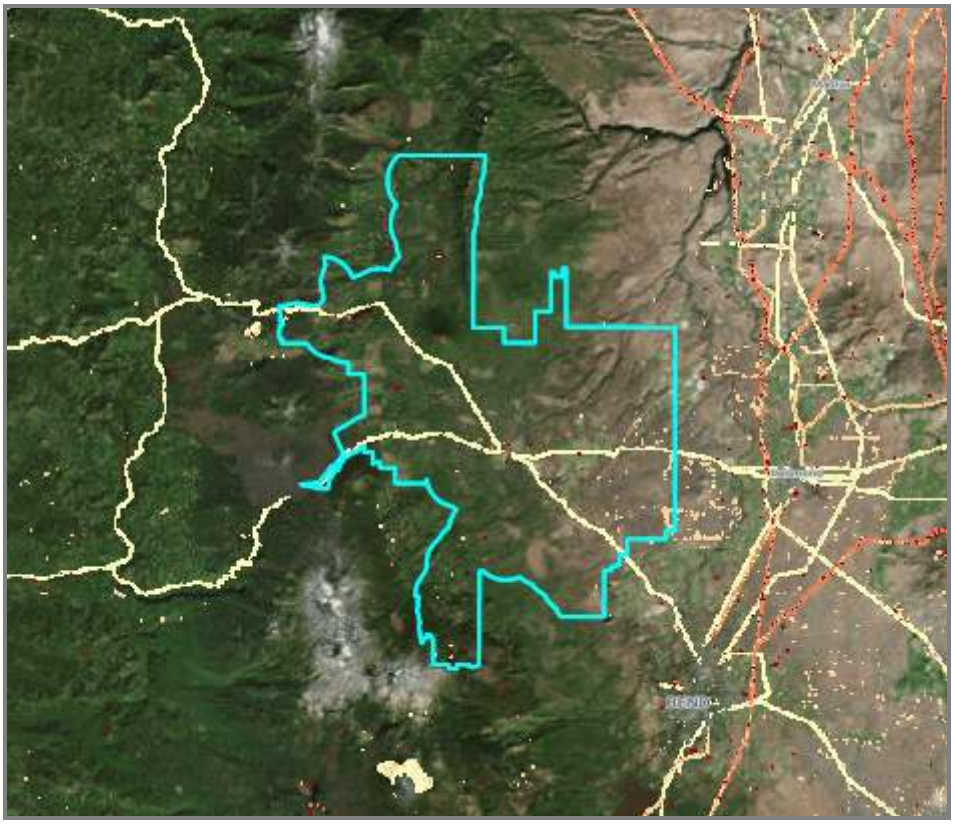
** Values may add up to over 100% due to rounding precision*

POTENTIAL IMPACT TO INFRASTRUCTURE

Potential impact to infrastructure represents the exposure or consequence of wildfire on mapped highly valued assets including critical infrastructure, developed recreation, housing unit density, seed orchards, sawmills, and historic structures.

The Potential Impact data layers characterize exposure and susceptibility only, and do not include the likelihood of an area burning. This differentiates the Potential Impact layers from Wildfire Risk layers, which account for the burn probability in the risk rating.

The resulting values reflect a range of impacts from a very high to low negative consequences. Positive benefits of wildfire are not mapped in this layer, assuming that any impact of wildfire to infrastructure is negative.



Greater Sisters CWPP potential impact to infrastructure, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative (top 5%).	194	< 1
High	Potential impact is highly negative (80-95th percentile).	34	< 1
Moderate	Potential impact is moderately negative (50-80th percentile).	418	< 1
Low	Potential impact is slightly negative (0-50th percentile).	4,489	2
No Data	There is no infrastructure mapped in the area or it is considered non-burnable (urban, agriculture, barren,etc).	256,653	98

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

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Oregon Wildfire Risk Explorer- Advanced Report

Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

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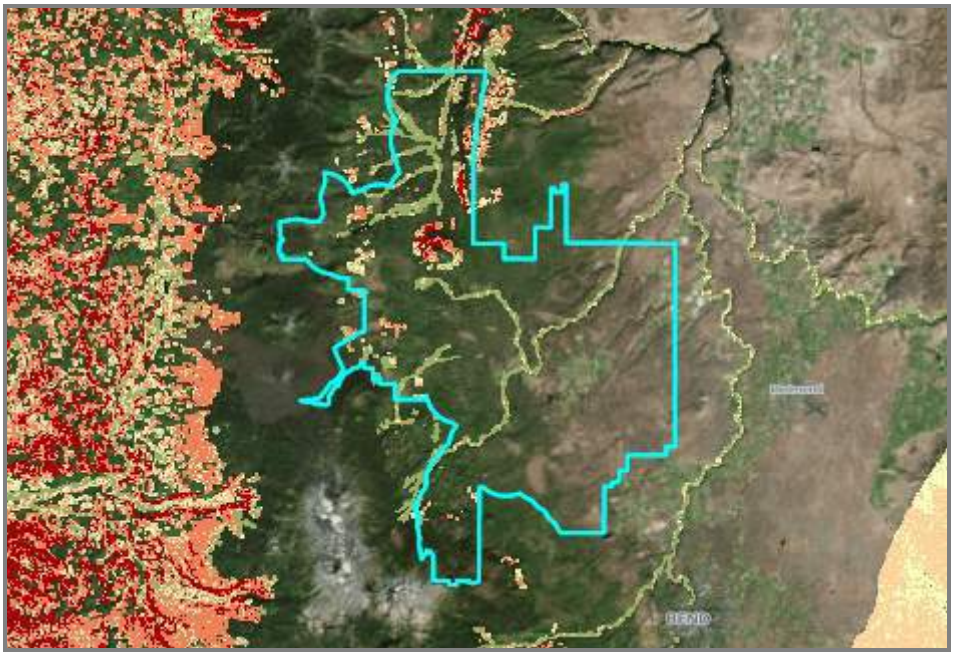
POTENTIAL IMPACT TO WILDLIFE

Potential impact to wildlife represents the exposure or consequence of wildfire on mapped wildlife habitat for the following species: northern spotted owl, marbled murrelet, sage grouse, chinook salmon, coho salmon, steelhead trout, bull trout, redband trout, coastal cutthroat, and Lahontan cutthroat trout.

The Potential Impact data layers characterize exposure and susceptibility only, and do not include the likelihood of an area burning. This differentiates the Potential Impact layers from Wildfire Risk layers, which account for the burn probability in the risk rating.

The data values reflect a range of impacts from a very high negative consequences, where wildfire is detrimental (for example, sensitive habitat with fire-intolerant species), to a positive impacts of wildfire, where wildfire will produce an overall benefit (for example, improving wildlife habitat for fire-dependent species).



Greater Sisters CWPP potential impact to wildlife habitat, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative (top 5%).	1,267	< 1
High	Potential impact is highly negative (80-95th percentile).	2,922	1
Moderate	Potential impact is moderately negative (50-80th percentile).	1,692	< 1
Low	Potential impact is slightly negative (17-50th percentile).	910	< 1
Low Benefit	Potential impact is slightly beneficial to wildlife at low flame lengths (8-17th percentile).	1,534	< 1
Benefit	Potential impact is beneficial, with a cumulative positive impact on wildlife habitat (0-8th percentile).	10,211	4
No Data	There is no wildlife habitat mapped in the area, or it is considered non-burnable (urban, agriculture, barren,etc).	243,250	93

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

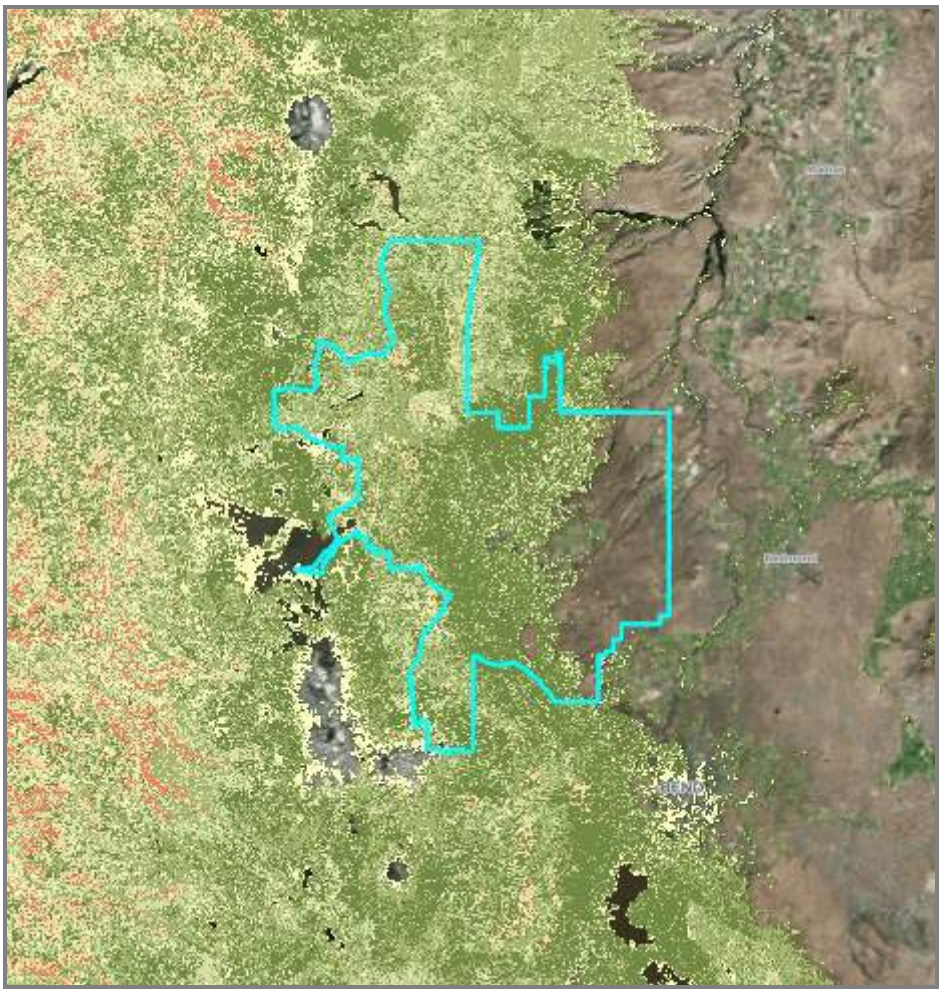
** Values may add up to over 100% due to rounding precision*

POTENTIAL IMPACT TO FOREST VEGETATION

Potential impact to forest vegetation represents the exposure or consequence of wildfire on mapped forest vegetation. This layer provides information about departure of current vegetation condition relative to historical vegetation and reference conditions, and considers the natural role of fire to specific fire regime groups.

The Potential Impact data layers characterize exposure and susceptibility only, and do not include the likelihood of an area burning. This differentiates the Potential Impact layers from Wildfire Risk layers, which account for the burn probability in the risk rating.

The data values reflect a range of impacts from a very high negative rating, where wildfire will move the landscape further from historical or desired conditions, to positive, where wildfire will bring the landscape closer to historical or desired conditions. Note that wildfire impacts on rangeland and grassland vegetation were not simulated due to a lack of spatial data and adequate characterization of wildfire impacts on vegetation outside of forested communities.



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Greater Sisters CWPP

261,806 Acres: (409 Sq. Miles)

Generated: April 9, 2019

Greater Sisters CWPP potential impact to forest vegetation, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative (top 3%). Fire has a highly detrimental effect on the landscape, moving the landscape further from historical/desired conditions.	80,001	31
High	Potential impact is highly negative (87-97th percentile). Fire has a detrimental effect on the landscape, moving the landscape further from historical/desired conditions.	58,569	22
Moderate	Potential impact is moderately negative (52-87th percentile). Fire will move the landscape further from historical/desired conditions.	24,964	10
Low	Potential impact is slightly negative (19-52th percentile). Fire will move the landscape further from historical/desired conditions.	5,725	2
Low Benefit	Potential impact is slightly beneficial to forest vegetation at low flame lengths, potentially producing a "fuel treatment" effect (0.6-19th percentile).	4,631	2
Benefit	Potential impact is beneficial, with a cumulative positive impact on forest vegetation (0-0.6th percentile). There is potential for fire to bring the landscape closer to	2	< 1
No Data	There is no vegetation mapped in the area, or it is considered non-burnable (urban, agriculture, barren,etc).	87,896	34

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

FIRE REGIME GROUPS

A fire regime is a description of the general characteristics of a fire area, including frequency, intensity, size, pattern, season, and severity of effects of wildfire in an ecosystem over an extended period of time, dependent on topography, weather, vegetation, and fire history. How intensely a fire burns determines the effects and severity. Overall impacts of fires will depend on the historical fire regime and the influence of changes to that regime through changes in forest structure, composition, and processes.

Existing vegetation has departed from historical conditions in some areas, which affects the current fire environment. This departure depicts relative degrees of alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. The potential impact to forest vegetation layer (and other potential impact layers) shows the areas where wildfire will move the landscape further from historical conditions, and where there are opportunities to use managed fire, active management, or other fuel treatments to bring the landscape closer to historical conditions.

Historically, higher fire frequency areas have lower fire severities. Vegetation in these areas is considered adaptive or resilient to fire due to this frequency. Examples include Ponderosa pine forests and dry mixed conifer forests. Lower frequency fire regime areas generally have higher severities, with vegetation and ecosystem elements usually considered sensitive due to their lack of exposure to fire. Examples include coastal forests, subalpine forests, alpine meadows, and many stream headwaters and riparian areas (see Existing vegetation).

Fire frequency suggests how often wildfire occurs (see Burn probability and Fire history data layers). Fire severity tells us how much impact wildfires are likely to have on the vegetation and other elements of an ecosystem (see Potential Impact data layers. The living and dead vegetation below forest canopies (shrubs, grasses, leaf litter, dead tree snags, etc.) also influences fire behavior (intensity and spread) and severity (impacts or effects). See Fuel models and Flame length data layers).

The national classification of fire regime groups commonly used includes five groups of fire frequency and severity pairs: I - frequent fire (0-35 years), low severity; II - frequent fire (0-35 years), stand replacement severity; III - 35-100+ years, mixed severity; IV - 35-100+ years, stand replacement severity; and V - 200+ years, stand replacement severity. Oregon has all of these historical fire regimes.

Maps of fire regime groups from LANDFIRE can be found here:
https://www.landfire.gov/geoareasmaps/2012/CONUS_FRG_c12.pdf.

Find more information about fire regime groups here: https://www.landfire.gov/frg.php.

Fire Regime table for major vegetation areas (in the Pacific Northwest):
https://www.fs.fed.us/database/feis/fire_regime_table/fire_regime_table.html#PacificNorthwest

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Greater Sisters CWPP

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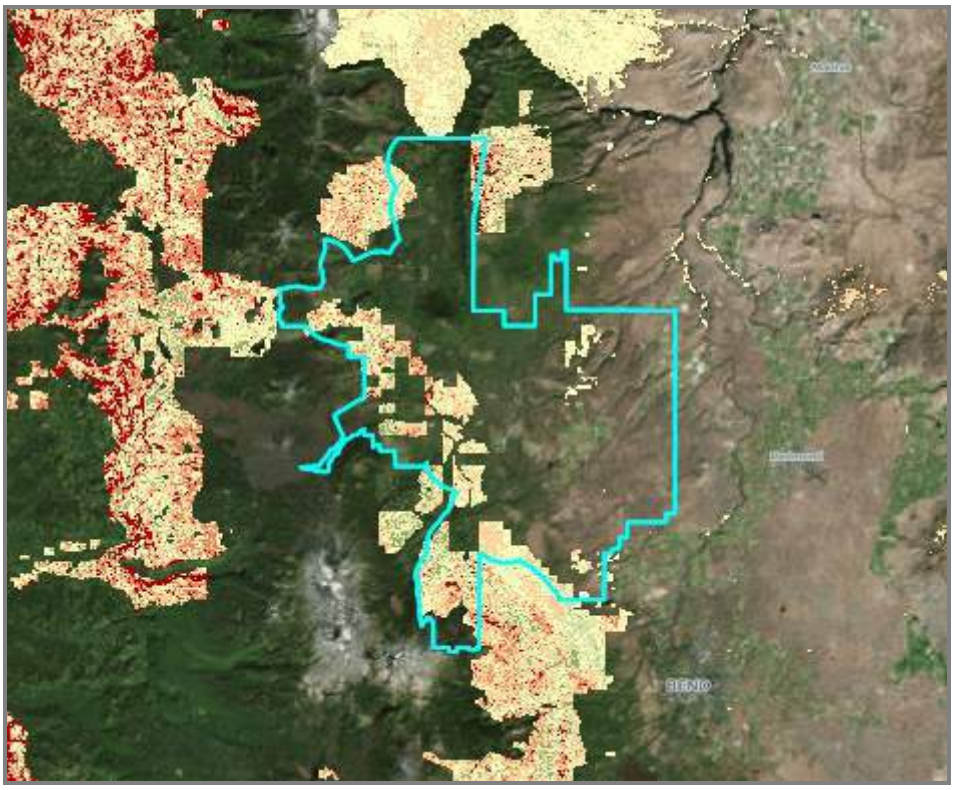
POTENTIAL IMPACT TO TIMBER RESOURCES

Potential impact to timber resources represents the exposure or consequence of wildfire on mapped highly valued timber on US Forest Service, Tribal, private lands, BLM, and state-managed lands.

The Potential Impact data layers characterize exposure and susceptibility only, and do not include the likelihood of an area burning. This differentiates the potential impact layers from Wildfire Risk layers, which account for the burn probability in the risk rating.

The data values reflect a range of impacts from a very high negative rating, where wildfire is detrimental (for example early seral stage and/or sensitive forests), to positive, where wildfire may produce an overall benefit (for example, understory thinning treatment for fire-adapted species).



Greater Sisters CWPP potential impact to timber resources, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative (top 5%).	779	< 1
High	Potential impact is highly negative (80-95th percentile).	3,629	1
Moderate	Potential impact is moderately negative (50-80th percentile).	13,546	5
Low	Potential impact is slightly negative (19-50th percentile).	14,714	6
Low Benefit	Potential impact is slightly beneficial to timber resources at low flame lengths (9-19th percentile).	3,566	1
Benefit	Potential impact is beneficial, with a cumulative positive impact on timber resources (0-9th percentile).	2,698	1
No Data	There are no timber resources mapped in the area, or it is considered non-burnable (urban, agriculture, barren,etc).	222,855	85

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

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Oregon Wildfire Risk Explorer- Advanced Report

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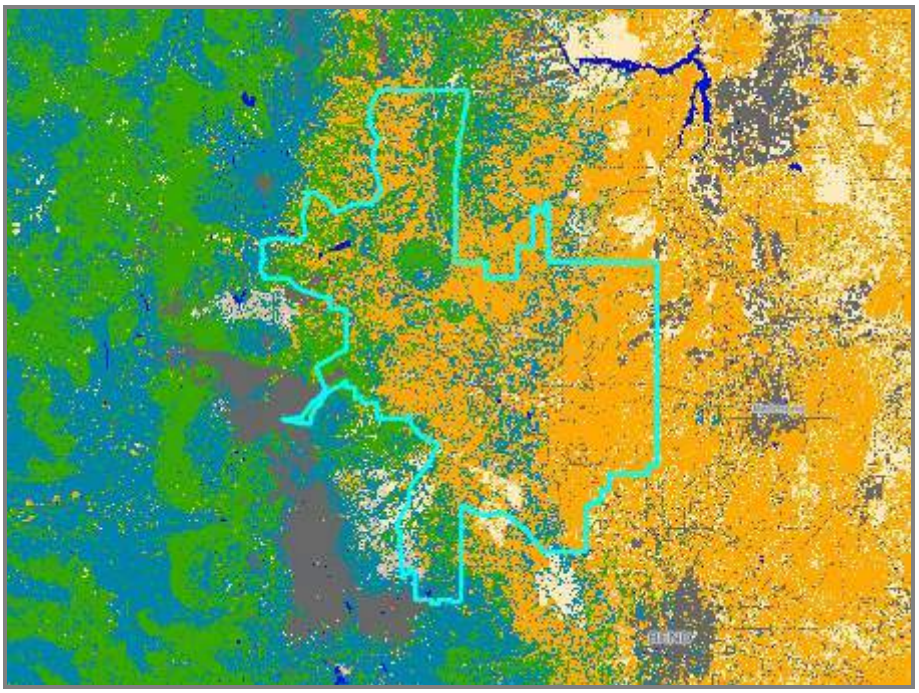
FUEL MODEL GROUPS

Fuel models describe the fire-carrying materials that make up surface fuels, such as such as grasses, shrubs and litter (see next page). Fuel models are developed from climate characteristics, existing vegetation type, cover, height, and other vegetation characteristics, and help us understand the fuels igniting and carrying fire. These fuel models can be grouped into broad categories of burnable fuels based on descriptions of live and dead vegetation that represent distinct fuel types, size classes, and load distributions (amounts), shown in the map and chart below.

Fuels and other elements of the fuelscape in the risk assessment were extensively reviewed and refined by local expert consultation, and the fuelscape was updated to account for wildfires that occurred through 2017.



Greater Sisters CWPP fuel model groups (see next page for descriptions of codes)

Category	Description	Acres	%*
Grass	Fuel models 101-104, (GR1; GR2; GR3; GR4)	10,759	4
Grass/Shrub	Fuel models 121-123, (GS1; GS2; GS3)	143,619	55
Non-burnable-other	Fuel Models 91-93,99, (NB1; NB2; NB3; NB9)	10,496	4
Non-burnable-water	Fuel Models 98, (NB8)	852	< 1
Slash-blowdown	Fuel Models 202, (SB2)	0	0
Shrub	Fuel Models 141-147, (SH1; SH2; SH3; SH4; SH5; SH6; SH7)	7,252	3
Timber Litter	Fuel Models 181-189, (TL1; TL2; TL3; TL4; TL5; TL6; TL7; TL8; TL9)	48,112	18
Timber-Understory	Fuel Models 161-163, 165, (TU1; TU2; TU3; TU5)	40,697	16

Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

** Values may add up to over 100% due to rounding precision*

Table of Fuel Model Groups

40 Scott and Burgan Fire Behavior Fuel Models Description and Data Dictionary https://www.landfire.gov/fbfm40.php
https://www.landfire.gov/DataDictionary/f40.pdf

Group	Description
Grass Fuel models 101-104, (GR1; GR2; GR3; GR4)	GR1: Short, sparse dry climate grass is short, naturally or heavy grazing, predicted rate of fire spread and flame length low GR2: Low load, dry climate grass primarily grass with some small amounts of fine, dead fuel, any shrubs do not affect fire behavior GR3: Low load, very coarse, humid climate grass continuous, coarse humid climate grass, any shrubs do not affect fire behavior GR4: Moderate load, dry climate grass, continuous, dry climate grass, fuelbed depth about 2 feet
Grass/Shrub Fuel models 121-123, (GS1; GS2; GS3)	GS1: Low load, dry climate grass-shrub shrub about 1 foot high, grass load low, spread rate moderate and flame length low GS2: Moderate load, dry climate grass-shrub, shrubs are 1-3 feet high, grass load moderate, spread rate high, and flame length is moderate GS3: Moderate load, humid climate grass-shrub, moderate grass/shrub load, grass/shrub depth is less than 2 feet, spread rate is high and flame length is moderate
Non-Burnable-Other	Fuel Models 91-93, 99, (NB1; NB2; NB3; NB9) NB1: Urban NB2: Snow/Ice NB3: Agriculture NB9: Barren
Non-burnable-Water	Fuel Model 98, (NB8): Water
Slash-blowdown	Fuel Model 202, (SB2): Moderate load activity fuel or low load blowdown, 7-12 t/ac, 0-3 inch diameter class, depth about 1 foot, blowdown scattered with many still standing, spread rate and flame low
Shrub Group Fuel Models 141-147, (SH1; SH2; SH3; SH4; SH5; SH6; SH7)	SH1: Low load dry climate shrub, woody shrubs and shrub litter, fuelbed depth about 1 foot, may be some grass, spread rate and flame low SH2: Moderate load dry climate shrub, woody shrubs and shrub litter, fuelbed depth about 1 foot, no grass, spread rate and flame low SH3: Moderate load, humid climate shrub, woody shrubs and shrub litter, possible pine overstory, fuelbed depth 2-3 feet, spread rate and flame low SH4: Low load, humid climate timber shrub, woody shrubs and shrub litter, low to moderate load, possible pine overstory, fuelbed depth about 3 feet, spread rate high and flame moderate SH5: High load, humid climate grass-shrub combined, heavy load with depth greater than 2 feet, spread rate and flame very high SH6: Low load, humid climate shrub, woody shrubs and shrub litter, dense shrubs, little or no herbaceous fuel, depth about 2 feet, spread rate and flame high SH7: Very high load, dry climate shrub, woody shrubs and shrub litter, very heavy shrub load, depth 4-6 feet, spread rate somewhat lower than SH6 and flame very high

Timber Litter Group Fuel Models 181-189, (TL1; TL2; TL3; TL4; TL5; TL6; TL7; TL8; TL9)	TL1: Low load compact conifer litter, compact forest litter, light to moderate load, 1-2 inches deep, may represent a recent burn, spread rate and flame low TL2: Low load broadleaf litter, broadleaf, hardwood litter, spread rate and flame low TL3: Moderate load conifer litter, moderate load conifer litter, light load of coarse fuels, spread rate and flame low TL4: Small downed logs moderate load of fine litter and coarse fuels, small diameter downed logs, spread rate and flame low TL5: High load conifer litter, light slash or dead fuel, spread rate and flame low TL6: Moderate load broadleaf litter, spread rate and flame moderate TL8: Large downed logs, heavy load forest litter, larger diameter downed logs, spread rate and flame low TL8: Long needle litter, moderate load long needle pine litter, may have small amounts of herbaceous fuel, spread rate moderate and flame low TL9: Very high load broadleaf litter, may be heavy needle drape, spread rate and flame moderate
Timber-Understory Group Fuel Models 161-163, 165, (TU1; TU2; TU3; TU5)	TU1: Low load dry climate timber grass shrub, low load of grass and/or shrub with litter, spread rate and flame low TU2: Moderate load, humid climate timber-shrub, moderate litter load with some shrub, spread rate moderate and flame low TU3: Moderate load, humid climate timber grass shrub, moderate forest litter with some grass and shrub, spread rate high and flame moderate TU5: Very high load, dry climate shrub, heavy forest litter with shrub or small tree understory, spread rate and flame moderate

This report was generated from the Advanced Oregon Wildfire Risk Explorer map viewer: tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfireplanning. 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.

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

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.

Appendix B
Glossary of Terms

- **Cohesive Strategy:** In 2009, Congress passed the Federal Land Assistance, Management, and Enhancement (FLAME) Act and called for a National Cohesive Wildland Fire Management Strategy, also known commonly as the Cohesive Strategy, to address wildland fire related issues across the nation in a collaborative, cohesive manner. The Cohesive Strategy was finalized in 2014 and represents the evolution of national fire policy: To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire. The primary, national goals identified as necessary to achieving the vision are: **Resilient landscapes**: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives. **Fire-adapted communities**: Human populations and infrastructure can withstand a wildfire without loss of life and property. **Wildfire response**: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

- **Crown Fires:** A fire that advances from top to top of trees or shrubs more or less independent of a surface fire. Crown fires are sometimes classed as running or dependent to distinguish the degree of independence from the surface fire.

- **Defensible Space:** Defensible Space, in the context of fire control, is the natural and landscaped area around a structure that has been maintained and designed to reduce wildfire danger by using vegetation that is fire resistant.

- **Deschutes Collaborative Forest Project:** In 2010, a collaborative group of local agencies and organizations formed a proposal for funding a large, collaborative forest restoration and hazardous fuels reduction project on public lands managed by the Deschutes National Forest. This landscape level project is known as the Deschutes Collaborative Forest Project (DCFP).

- **Dispersed Campgrounds & Recreational Sites:** Campsites or recreational sites members of the public use that are outside of a designated campground or developed recreation site. These sites do not have trash removal or facilities such as tables and fire pits. For more information on how to use dispersed recreational sites visit: http://www.fs.usda.gov/
- **Fire Adapted Community:** One of the tenents of the Cohesive Strategy. A Fire Adapted is one that acknowledges and takes responsibility for its wildfire risk, and implements appropriate actions at all levels. Deschutes County is a pilot community for the Fire Adapted Communities Learning Network. For more information visit:

http://www.facnetwork.org

- **Fire Break:** A gap in vegetation or other combustible materials that acts as a barrier to slow or stop the progress of a wildfire.

- **Fire Prone Area:** A geographic area that can support a wildfire due to weather and vegetation.

- **Fire Resiliency:** A landscape or geographic location that is able to withstand wildfire without suffering catastrophic effects, such as loss of life, home loss or damage and/or environmental damage.

- **Fire Return Interval:** The time between fires in a defined area or landscape.

- **Fire Suppression Costs:** The financial figure that is incurred during any operations by fire fighting agencies to suppress (or put out), a wildland fire.

- **FireFree:** A local program in Central Oregon that uses ten steps to educate property owners on how to defend their home from wildfire. FireFree also provides two annual events where homeowners can dispose of debris created from wildfire preparedness activities.

- **Firewise USA®:** A national program that provides a process that empowers neighbors to work together in reducing their wildfire risk. The National Fire Protection Association sponsors the Firewise USA® program.

- **Hazardous Fuel Reduction:** Reducing vegetation that could accelerate a wildland fire.

- **Hazardous Fuels:** Any fuel or vegetation that will sustain or accelerate a wildland fire.

- **High Intensity:** Fire intensity represents that energy releases during various phases of the fire. High intensity fires are damaging to certain vegetation and ecosystems that are not adapted to them. Much of the lower elevation forests in Central Oregon are adapted to lower intensities.

- **Overstory:** Also called the canopy. Made up of the tallest trees that stand over the rest of the plants in the landscape.

- **Pacific Northwest Coordination Center:** The Northwest Interagency Coordination Center (NWCC) is the Geographic Area Coordination Center for the Northwest Region, which includes the States of Oregon and Washington. Located

in Portland, OR, the NWCC serves as the focal point for interagency resource coordination, logistics support, aviation support and predictive services for all state and federal agencies involved in wildland fire management and suppression in the region. Cooperating agencies include the: Bureau of Land Management, US Forest Service, Oregon Dept of Forestry, US Fish and Wildlife Service, Bureau of Indian Affairs, Washington Dept. of Natural Resources and the National Park Service.

- **Resilient Landscapes:** A landscape that is able to recover quickly or repel disturbances that may be a departure from normal circumstances.

- **Silvicultural Treatments:** A planned series of treatment that aide in achieving the goals set forth by a diverse set of values. Silviculture is the practice of controlling the establishment, growth, composition, health and quality of forests to meet diverse needs and values.

- **Stand Dynamics:** The underlying physical and biological forces that shape and change a particular area or forest stand.

- **Structural Ignitability:** Also known as Structural Vulnerability; which refers to the probability of a home igniting during a large wildfire.

- **Structural Vulnerability Factors:** Factors that can increase or decrease a home's probability of igniting during a large wildfire. Examples include: roof composition, roof cleanliness, vent covers, deck composition & cleanliness, etc.

- **Thick Bark Pine:** a local species is Ponderosa Pines. Their thick bark makes them a fire resistant species. The lower elevation forests that were/are dominated by Ponderosa Pines are adapted to low intensity fire that would burn through as often as every ten years.

- **Tree Crowns:** See overstory. Also known as the tree canopy.

- **Understory:** The layer of vegetation beneath the main canopy of a forest.

- **Wildfire Preparedness:** Changing behaviors and/or processes to reduce the impact a wildfire may have on the population.

- **Wildland Fire:** Any non-structural fire that occurs in vegetation or natural fuels. An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

- **Wildland Fuels:** Vegetation that is located in an area in which development is essentially non-existent, except for roads, railroads, powerlines, and similar transportation facilities. Structures, if any, are widely scattered.

- **Wildland Urban Interface (WUI):** The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Describes an area within or adjacent to private and public property where mitigation actions can prevent damage or loss from wildfire. Much of Deschutes County is considered Wildland Urban Interface.

Appendix C
Post Fire Recovery

During the Fire Contacts

Deschutes County 911 Non-Emergency Line	(541) 693-6911
American Red Cross (Central and Eastern Oregon Chapter)	(541) 382-2142

Web links for Fire and Evacuation Information:

- Central Oregon Fire Information — Central Oregon Fire Info
- Deschutes County Emergency Blog — Deschutes County Emergency Info
- Central Oregon Interagency Twitter Feed — twitter.com/CentralORFire
- Deschutes County Sheriff's Twitter Feed — twitter.com/DeschutesSO
- Evacuation Guide — Ready, Set, Go
- Emergency Notifications — Deschutes County Alerts

Post-Fire Recovery Community Issues to Consider

Following a wildfire, communities may be facing a host of issues. The complexities involved in mid and long-term strategies for economic, environmental and social recovery may be daunting. Learning from the experiences of others is helpful. Considering relevant questions like:

- How soon can or should schools reopen?
- Can debris removal efforts be expedited? If so, what is the cost and who will pay for it?
- Does the impact warrant inviting the Oregon DOJ Charitable Activities Section regulators to send a team to ensure crooks and scam artists don't take advantage of vulnerable residents?
- Are emergency grants available to restore basic public services?
- What system(s) can be used to equitably and efficiently distribute the donations that a community receives following a catastrophic fire?
- What resources are available for small businesses attempting to reestablish? Do new programs need to be created?
- How will tourism be affected?

Deschutes County Long-Term Recovery Efforts

The Deschutes County Sheriff's Office Emergency Management Team, working with residents and community stakeholders, is developing a Disaster Recovery Framework. The Framework is part of a suite of plans that address various elements of emergency management. It aims to establish guidelines for how the Deschutes County Community will work together to restore, rebuild, and reshape the

physical, social, economic and natural environment in the months and years following a disaster or emergency.

After the Fire Resources for Affected Residents

Fire Management Assistance (FMAG) is available to States, local and tribal governments, for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster. The Fire Management Assistance declaration process is initiated when a State submits a request for assistance to the Federal Emergency Management Agency (FEMA) Regional Director at the time a "threat of major disaster" exists. The entire process is accomplished on an expedited basis and a FEMA decision is rendered in a matter of hours.

The Fire Management Assistance Grant Program (FMAGP) provides a 75 percent Federal cost share and the State pays the remaining 25 percent for actual costs. Before a grant can be awarded, a State must demonstrate that total eligible costs for the declared fire meet or exceed either the individual fire cost threshold - which is applies to single fires, or the cumulative fire cost threshold, which recognizes numerous smaller fires burning throughout a State. Eligible firefighting costs may include expenses for field camps; equipment use, repair and replacement; tools, materials and supplies; and mobilization and demobilization activities.

FEMA Individual Assistance (FEMA IA) has created a set of tools to help those facilitating their community's recovery. Community Services Programs deliver a variety of services to assist in disaster recovery. Disaster Housing Resources provides links to access information on multiple disaster housing programs and strategies. FEMA Voluntary Agency and Donations Coordination delivers information, support and guidance during disaster recovery. The National Emergency Child Locator Center and National Mass Evacuation Tracking System are both tracking databases that can be activated during disasters and assist in reunifying family members. The National Shelter System is a database that supports the agencies responsible for Mass Care and Emergency Assistance. For information on these tools follow this link to FEMA's site.

FEMA Public Assistance (FEMA PA) mission's to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President.

Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee (usually the State) determines how the non-Federal share (up to 25%) is split with the sub-grantees (eligible applicants).

Small Business Disaster Loans through the Small Business Administration (SBA). SBA provides low-interest disaster loans to businesses of all sizes, private non-profit organizations, homeowners, and renters. SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.

Oregon VOAD (Voluntary Organizations Active in Disaster) is a group of faith-based, community service organizations with disaster relief roles related to short and long-term recovery from disasters.

Functions include but are not limited to: damage assessment, cleanup, building repair, donations management, child care, clothing, communication, counseling, disaster welfare inquiry, financial assistance, food, human relations, mass care, sheltering, transportation, volunteer staffing, warehousing and bulk distribution. ORVOAD coordinates disaster planning with member agencies to ensure reduction of duplication and an increase in effective delivery of services.

Natural Resources Conservation Services (NRCS) may provide funding they are allocated to help with fire recovery efforts for agricultural and private, non-industrial forestland owners. Program and application announcements will be made as funding becomes available. Please check this site frequently for updates.

American Red Cross Casework: Providing Emergency Assistance is trains Red Cross caseworkers how to conduct effective client interviews and provide appropriate assistance to help meet a client's immediate disaster-caused or disaster-aggravated needs.

Fire Recovery Safety Tips

REMEMBER – use caution and good judgment. Hazards may still exist, even though the fire is controlled.

ELECTRICAL

Electrical Safety Facts

General: An important part of the disaster recovery is hazard recognition. Should you come across damaged or fallen power poles or lines, contact your local electrical power authorities. DO NOT TOUCH THE DOWNED WIRES. In the cleanup area, be especially careful when cutting trees and operating heavy equipment around power lines. Vegetation and power poles may have lost stability due to fire damage.

If a power line or pole should fall next to you while working in the area, *do not walk – hop out of the area.* (Using this technique, you will be less likely to be a conductor of electricity).

Electricity is always trying to go somewhere. It goes easily through conductors; it does not go easily through non-conductors.

Conductors	Non-Conductors
Metal	Rubber
Water	Glass
Wet Things	Plastic
Things In Water (including animals/pets)	

One of the most important fixtures in the conduction of electric current are utility poles. The fire or fire suppression actions may have dislodged or broken some of these poles, causing the wires to sag or break, resulting in extremely hazardous conditions. Do not touch anything at the scene.

Trees can also be dangerous conductors of electricity. When a tree falls or grows into contact with power wires, the electric power diverts and finds a path to the ground through the branches and the trunk. Anyone who comes into contact with these trees is subject to tragic consequences, since electric power can easily jump from the tree to the person.

Electrical Safety Tips

- Do not overload circuits; don't operate several large appliances at the same time on the same circuit.
- Do not use extension cords to plug in many items on one outlet.
- Turn off appliances when you finish using them. Provide adequate air circulation around all

appliances to prevent over-heating. Keep appliances clean, repaired and serviced.

- Check wires and plugs regularly. Replace worn or frayed wires. Do not run cords under carpets or across doorways.
- Be careful when replacing fuses or breakers. Keep the area near the circuit box dry and turn the main switch off before changing the fuse/breaker.
- Temporary lines should be removed from service.

Electrical Locations To Avoid

- Electrical meters and service lines coming into the home or other outbuildings.
- Any power supply line which appears to sag, show bare wire, or have insulation missing.
- Secured power sub-stations or any area identified as high voltage.
- Downed power lines.

Emergency Procedures for an Electrical Fire

- Call the fire department.
- Shut off power supply at the breaker if possible.

Restoring Electric Power

If, upon returning to your residence, there is no electrical power, please check to make sure the main breaker is on. If the breakers are on and power is still not present, please call to report the power outage to your local electrical power authorities.

Reporting problems like a down or broken wire will speed up the process of power restoration.

- Stand off to one side of the breaker box when turning on the main breaker. Do not stand directly in front of the box.
- If any smells of hot electrical insulation or sparking occurs, turn of the breaker immediately and call an electrician.
- If electrical lights or appliances appear brighter than normal, turn off main breaker. The service entrance needs to be checked.

To Change A Fuse

Try to find the cause of the blown fuse, and correct it by disconnecting the defective appliance or appliances causing the overload or short circuit. Shut off the main power switch when you change the fuse.

- Do not replace fuses with a higher amp rating fuse than you removed.
- Turn on the main switch to restore the power.

- If the fuse blows again, leave it alone and contact a certified electrician. Other problems may exist and should be investigated to remove the possibility of an electrical fire.

To Reset A Circuit Breaker

Try to find the cause of the overload or short circuit and correct it by disconnecting the defective appliance or appliances. Turn the switch to "on" to reset and restore power. If breaker trips again leave it alone, and contact a certified electrician. Other problems may exist and should be found to remove the possibility of an electrical fire.

Special Information of Fuses & Circuit Breakers

Fuses and circuit breakers shut off the current whenever too much current tries to flow through a wire because of:

- A short circuit, possibly caused by a bare wire touching the ground;
- Overloading, possibly caused by too many lights or appliances on one circuit; or
- By defective parts in an appliance.

Know where the main circuit or fuse box is located in your house. Be sure you can locate the main switch; it controls all of the power coming into the house and is usually inside the circuit box. In some cases, however, it may be located outside of the house. Fuse or circuit boxes generally are labeled to designate which area of the house the circuits or fuses serve.

DRINKING WATER

Restoring Water Systems

Unless impacted by a fuel spill, the fire should not have affected wells at undamaged homes. If your house was damaged, your water system may potentially have become contaminated with bacteria due to loss of water pressure. In this case it is recommended that the well be disinfected and the water be tested before consumption. To disinfect your water system, pour ½ - 1 cup of chlorine bleach inside the well casing and turn on all faucets until a chlorine scent in noticed. Allow the chlorine solution to remain in the system overnight. The following morning, open all faucets and flush the system until free of chlorine smell.

If you have a public use well or water system, contact the Deschutes County Public Health Department for specifics on testing prior to consumption of any water. The Drinking Water Program administers and enforces drinking water quality standards for approximately 175 public water systems within Deschutes County. More information can be found on their website at https://www.deschutes.org/health/page/drinking-water

Oregon implements drinking water protection through a partnership of DEQ (Department of Environmental Quality) and the OHA (Oregon Health Authority). The program provides information about drinking water, and helps Oregonians get involved in protecting drinking water quality. In general, for questions regarding groundwater sources, contact OHA. Contact DEQ for questions about protecting public water supplies using surface water.

For questions about regulations, water quality, treatment plants, and testing, contact OHA who is the primacy agency for the implementation of the federal Safe Drinking Water Act in Oregon.

OHA's webpages provide the most useful info for consumers about drinking water protection:

https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/Pages/index.aspx

Information specific for private domestic wells is here:

https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/SOURCEWATER/DOMESTICWELLSAFETY/Pages/index.aspx

SOLID WASTE

Removing Debris

Cleanup of your property can expose you to potential health problems from hazardous materials. Wet down any debris to minimize health impacts from breathing dust particles. The use of a two-strap dust particulate mask with nose clip and coveralls will provide the best minimal protection. Leather gloves should be worn to protect your hands from sharp objects while removing debris.

Hazardous materials such as kitchen and bathroom cleaning products, paint, batteries, contaminated fuel and damaged fuel containers must be handled properly. Contact your local County Officials for specific handling restrictions and disposal options.

All hazardous materials should be labeled as to their contents if known!

HEATING FUELS

Checking Propane Tanks

Propane suppliers recommend homeowners contact them for an inspection prior to reusing their system. If the fire burned the tank, pressure relief valve probably opened and released the contents of the tank. Tanks, brass and copper fittings, and lines may be heat-damaged and unsafe. Valves should be turned off and remain closed until the propane suppliers inspect the system.

Checking Home Heating Oil Tanks

Heating oil suppliers recommend homeowners contact them for an inspection prior to reusing their system. The tank may have shifted or fallen from the stand and fuel lines may have kinked or weakened. Heat from the fire may have caused the tank to warp or bulge. Non-vented tanks are more likely to bulge or show signs of stress. The fire may have loosened or damaged fittings and filters. If the tank is intact and heating oil remains in the tank, the heating oil should still be good. If you have questions on the integrity of the tank, fuel lines, tank stand, or the fuel, or need assistance in moving the tank or returning it to service, contact your fuel supplier.

MISCELLANEOUS SAFETY AWARENESS

Ash Pits

Holes created by burned trees and stumps create ash pits, which are full of hot ashes. Mark them for your safety, as they can stay hot for many days following the fire, causing serious burns. Warn your family and neighbors, especially children. Tell them to watch for ash pits and to not put hands or feet in these holes—they are hot!

Evaluation of Trees Damaged by Fire

The following information will assist you in evaluating any trees that have been scorched or burnt by the fire. Identification of the type of tree affected is important and can easily be done. Two basic types of trees exist in this area: deciduous and evergreen. Deciduous trees are broad leaf trees that lose their leaves in the fall.

In this area we have a variety of deciduous tree species. Evergreen trees have needles and in this area we mainly have Ponderosa Pine, Lodgepole Pine and Western Juniper.

First: visually check the tree stability. Any tree weakened by fire may be a hazard. Winds are normally responsible for toppling weakened trees. The wind patterns in your area may have changed as a result of the loss of adjacent tree cover. Seek professional assistance before felling trees near power lines, houses or other improvements.

If the tree looks stable:

- Visually check for burnt, partially burnt or broken branches and tree tops that may fall.
- Check for burns on the tree trunk. If the bark on the trunk of the tree has been burned off or scorched by very high temperatures completely surround the tree's circumference, the tree will not survive. This is because the living portion of the tree (cambium) was destroyed. The bark of the tree provides protection to the tree during fire. Bark thickness varies based upon tree species: check carefully to see if the fire or heat penetrated the bark. Where fire has burnt deep into the tree trunk, the tree should be considered unstable until checked.
- Check for burnt roots by probing the ground with a rod around the base of the tree and out away from the base several feet. The roots are generally six to eight inches below the surface. If you find that the roots have been burned you should consider this tree very unstable; it could easily be toppled by wind.

If the tree is scorched

- A scorched tree is one that has lost part or all of its needles. Leaves will be dry and curled. Needles will be a light red or straw colored. Healthy deciduous trees are resilient and may possibly produce new branches and leaves, as well as sprouts at the base of the tree. Evergreen trees, particularly long-needled trees, may survive when partially scorched. An evergreen tree that has been damaged by fire is subject to bark beetle attack. Please seek

professional assistance concerning measures for protecting evergreen trees from bark beetle attack.

Residual Smoke In Fire Interior

Smoke may be present on the interior of the fire for several days following containment. This occurs as a result of stumps, roots, and other surface materials being exposed to changing temperatures and wind conditions. Smoke volume from these materials may fluctuate depending on weather conditions. This activity should not pose a risk and smoke will continue to dissipate until materials are fully consumed or extinguished by fire crews or weather.

Flooding Risk

With the recent large high intensity wildfires in Oregon certain locations within burned areas, or downhill and downstream of burned areas are much more susceptible to flash flooding and debris flows. Even areas that are not traditionally flood prone are at risk due to changes to the landscape caused by wildfire. Rainfall that would normally be absorbed will run off extremely quickly after a wildfire, as burned soil can be as water repellant as pavement. As a result, much less rainfall is required to produce a flash flood. A good rule of thumb is, if you can look uphill from where you are and see an area burned by wildfire, you are at risk.

Preparing for Flooding

In the event of moderate to heavy rainfall, do not wait for a flash flood warning in order to take steps to protect life and property. Thunderstorms that develop over the burned area may begin to produce flash flooding and debris flows before a warning can be issued. If you are in an area vulnerable to flooding and debris flows, plan in advance and move away from the area. There may be very little time to react once the storms and rain start.

- Have an evacuation/escape route planned that is least likely to be impacted by Flash Flooding or Debris Flows
- Have an Emergency Supply Kit available
- Stay informed before and during any potential event; knowing where to obtain National Weather Service (NWS) Outlooks, Watches and Warnings via the NWS Pendleton Website, Facebook, Twitter, or All Hazards NOAA Weather Radio
- Be alert if any rain develops. Do not wait for a warning to evacuate should heavy rain develop.
- Call 911 if you are caught in a Flash Flood or Debris Flow
- Contact local officials for additional risk information and potential mitigation efforts
- Contact The US Army Corps of Engineers regarding their Silver Jackets Program