Exhibit V

Wildfire Prevention and Risk Mitigation

Mist Resiliency Project
March 2024

Prepared for

NW Natural

Northwest Natural Gas

Prepared by

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Table of Contents

List of Tables

List of Figures

List of Attachments

Acronyms and Abbreviations

CWPP	Community Wildfire Protection Plan
Facility	Mist Underground Natural Gas Storage Facility
I/W	injection and withdrawal
NMCS	North Mist Compressor Station
NWN	Northwest Natural Gas
OAR	Oregon Administrative Rules
ODF	Oregon Department of Forestry
Project	Mist Resiliency Project
RFA	Request for Amendment
WMP	Wildfire Mitigation Plan
WUI	Wildland-Urban Interface

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1.0 Introduction

Northwest Natural Gas (NWN), the Certificate Holder, proposes to amend the Site Certificate for its underground natural gas storage facility at the Mist Resiliency Project (Project) in Columbia County, Oregon. Exhibit V contains information pertaining to areas subject to a heightened risk of wildfire or high-fire consequence areas, as required to meet the submittal requirements in Oregon Administrative Rules (OAR) 345-021-0010(1)(v).

> *OAR 345-021-0010(1)(v) Information about wildfire risk within the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0115, including but not limited to, a draft Wildfire Mitigation Plan that satisfies the requirements of OAR 345-022-0115(1)(b).*

OAR 345-022-0115 is a new standard introduced in 2022 and therefore was not previously addressed in the original Application for Site Certificate or subsequent amendments for the approved Facility.

2.0 Wildfire Analysis Area

In accordance with OAR 345-001-0010(35)(c), the analysis area for wildfire risk is the area within and extending 0.5 miles from the Site Boundary. Based on this guidance, NWN has analyzed the area within the RFA 13 Site Boundary (232 acres), along with a 0.5-mile area surrounding the RFA 13 Site Boundary (Wildfire Analysis Area; 5,528 acres; Figures V-1 through V-6).

3.0 Wildfire Risk – OAR 345-022-0115(1)(a)

> *OAR 345-022-0115(1) To issue a site certificate, the Council must find that:*
>
> > *(a) The applicant has adequately characterized wildfire risk within the analysis area using current data from reputable sources, by identifying:*
>
> *(2) The Council may issue a site certificate without making the findings under section (1) if it finds that the facility is subject to a Wildfire Protection Plan that has been approved in compliance with OAR chapter 860, division 300.*

The Columbia County Community Wildlife Protection Plan (CWPP; Attachment V-1) is a countywide effort of various agencies and local jurisdictions responsible for wildfire suppression and protection to reduce wildland fire risk to communities and the environment (Columbia County 2007). The Columbia County CWPP has been agreed upon and endorsed by a stakeholder group including the Columbia County Board of Commissioners, the District Forester of the Forest Grove District for Oregon Department of Forestry, Scappoose Rural Fire Protection District, Clatskanie Rural Fire Protection District, Columbia River Fire and Rescue, Mist-Birkenfeld Rural Fire

Protection District, and Vernonia Rural Fire Protection District. If the Columbia County CWPP has been approved in compliance with OAR chapter 860, Division 300, OAR 345-022-0115(2) could potentially apply, and the Council may approve this RFA 13 without making the findings under OAR 345-022-0115(1). Without a clear determination, NWN is submitting this Exhibit V for RFA 13 to meet the standard under OAR 345-022-0115(1) as it applies to the Facility.

3.1 Data Sources and Methods – OAR 345-022-0115(1)(a)(E)

OAR 345-022-0115(1)(a)(E) All data sources and methods used to model and identify risks and areas under paragraphs (A) through (D) of this subsection.

Data from the Oregon CWPP Planning Tool (CWPP 2018) were used for the analyses provided in response to OAR 345-022-0115(1)(a) in Sections 3.3 through 3.6 of this exhibit. The Oregon CWPP Planning Tool provides a central location for fire behavior and fire effects data to aid decision makers in charge of reducing wildfire risk in their communities. The map shows the assigned risk classification (extreme, high, moderate, low, and no risk) for every tax lot in the state. For those tax lots that are both within the wildland-urban interface (WUI; see Section 3.5) and classified as high or extreme risk, the owners will receive written notification from Oregon Department of Forestry (ODF) and may be subject to future changes to defensible space and home building codes. The Oregon CWPP Planning Tool does not include the Statewide Wildfire Risk Map required by the 2021 Senate Bill 762 and does not contain property-level wildfire risk and WUI determinations. As of August 4, 2022, the statewide wildfire risk map (released on June 30, 2022, as an outcome of Senate Bill 762) has been temporarily withdrawn for further refinement. The Oregon CWPP Planning Tool datasets presented are from the 2018 Quantitative Wildfire Risk Assessment, which is anticipated to be updated in 2023.

The following Oregon CWPP Planning Tool datasets were used to inform analysis on the following variables:

- Slope;
- Fuel Models;
- Average Flame Length;
- Burn Probability;
- Hazard to Potential Structures; and
- Overall Wildfire Risk.

3.2 Columbia County Wildfire History

Based on the Oregon Wildfire Risk Explorer-Advanced Report (Attachment V-2), wildfire risk within the Site Boundary and Wildlife Analysis Area is average for Columbia County; however, the potential impact of fire within the Area is high, with potential impact representing the exposure or consequence of wildfire on all highly valued assets and resources, including critical infrastructure,

developed recreation, housing, seed orchards, sawmills, historic structures, timber, watersheds, vegetation, and selected wildlife habitat (Attachment V-2).

Between 2008 and 2019, there were 183 fires that occurred in Columbia County, resulting in 255 acres burned (Attachment V-2). On average, 18 fires occurred each year, and most of these fires were considered small. There were two causes of fire: 94.5 percent were human-caused, and 5.5 percent were caused by lightning strikes. Lightning-caused fires tend to burn more acres, as they are often located in more remote areas (Attachment V-2). There were no large fires in Columbia County between 2008 and 2019, with "large fire" defined by the National Wildland Coordinating Group as any wildland fire in timber 100 acres or greater, 300 acres or greater in grasslands/rangelands, or has an Incident Management Team assigned to it (Attachment V-2; NWCC 2023). There are no historic fires recorded during 2008 and 2019 within the Site Boundary (CWPP 2018, NIFC 2022). One 0.25-acre fire was recorded in 2007 at the northernmost edge of the Wildfire Analysis Area, approximately 0.25 miles south of the Lower Columbia River Highway, northwest of Clatskanie town center (Short 2017, CWPP 2018).

3.3 Baseline Fire Risk – OAR 345-022-0115(1)(a)(A)

OAR 345-022-0115(1)(a)(A) Baseline wildfire risk, based on factors that are expected to remain fixed for multiple years, including but not limited to topography, vegetation, existing infrastructure, and climate;

The baseline wildfire risk within the Site Boundary and Wildfire Analysis Area is moderate to low. The primary vegetation types within the Site Boundary have moderate spread rates, and the slope within the Site Boundary is less than 25 percent in 98 percent of acres (Table V-1, Figure V-1) indicating that wildfires are unlikely to spread quickly. Additionally, the burn probability within the Site Boundary and Wildfire Analysis Area is low. However, the potential to impact existing structures in the event of a wildfire is high.

3.3.1 Topography

The northernmost extent of the Site Boundary is approximately 0.25 miles west of Clatskanie, Oregon, and the southernmost section of the Site extends from Mist, Oregon, to the northwest. The Site Boundary sits west of OR-45 between Clatskanie, Oregon, and Mist, Oregon, spanning approximately 7.6 miles north to south. The elevation within the Site Boundary ranges from 461 to 1,576 feet above mean sea level with an average of 1,075 feet. The Wildfire Analysis Area's elevation ranges from 18 to 1,739 feet, with an average of 843 feet. The northern and eastern boundaries of Columbia County are delineated by the Columbia River. The western boundary extends into the Coast Range. Columbia County ranges in elevation from -13 feet to 2,269 feet at the peak of Long Mountain, with an average elevation of 738 feet. Columbia County has the lowest maximum elevation of any county in Oregon. The northern and eastern parts of the county, as well as its coastal valleys, are relatively flat terrain composed of alluvial flood plains and terraces. Low

foothills and mountainous areas merge in the western part of the county. The rolling and steeper uplands of the Coast Range are forested and managed for timber production. (Columbia County 2007).

Potential wildfires would travel quicker on steeper slopes and slower on the flatter portions of land within the Wildfire Analysis Area. Over 98 percent of the Site Boundary and 93 percent of the Wildfire Analysis Area have less than a 25-degree slope (Table V-1, Figure V-1).

Table V-1. Slope

Slope (degrees)	Acres within Site Boundary (Percent of Area)	Acres within Wildfire Analysis Area (Percent of Area)
0-25	227 (98%)	5,160 (93%)
26-50	5 (2%)	367 (7%)
51-75	0	0
Totals	**232 (100%)**	**5,528 (100%)**
Note that totals may not sum correctly due to rounding.		

3.3.2 Vegetation

The broad Fuel Model groups (vegetation types) are derived from data from the Oregon CWPP Planning Tool (CWPP 2018). Fuel Model groups describe the fire-carrying fuel type of the surface fuels. The groups are broad categories (grass, shrub, timber, timber litter, timber understory, and slash/blowdown) of burnable fuels based on descriptions of live and dead vegetation that represent distinct fuel types, size classes, and load distributions (amounts). As shown in Table V-2, the Fuel Model data within the Site Boundary indicates that the vegetation is primarily moderate load humid climate timber-shrub (Fuel Model 162) or high load conifer litter (Fuel Model 185). Fuel Model 162, making up 33 percent of the Site Boundary, is in the timber understory fuel group for which the primary carrier of fire is forest litter, in combination with herbaceous and shrub fuels. Therefore, Fuel Model 162 has a moderate litter load with a shrub component, a moderate spread rate, and low flame length. Importantly, it also has high extinction moisture, indicating that the vegetation in these areas is less susceptible to ignition and combustion, and less likely to sustain fire than in other Fuel Models (NWCG 2021).

High load conifer litter (Fuel Model 185) makes up 21 percent of acres within the Site Boundary. This Fuel Model is in the timber litter fuel group and contains smaller, easily ignitable materials on the forest floor (light slash fuels) as well as dead plant material, such as dead trees, fallen branches, and standing dead trees (mortality fuels; NWCG 2021). Light slash ignites relatively quickly and burns at the forest floor level, contributing to the spread of a surface fire. Alternatively, dead trees and branches (mortality fuels) can serve as larger fuel sources, contributing to the intensity and duration of wildfires. Overall, Fuel Model 185 has a low spread rate and low flame length (NWCG 2021).

The agricultural field (Fuel Model 93) is land in a non-burnable condition such as irrigated annual crops, though this should be considered with caution as the land is sometimes not maintained in a non-burnable condition (NWCG 2021). Finally, as discussed in Exhibit P, about 7 percent of the habitat within the Site Boundary is Category 6 habitat, with no burn potential because the area is urban or a waterbody. Further discussion of Fuel Model groups and Fuel Models which describe the composition and characteristics of fire fuels is provided below under the evaluation of Seasonal Wildfire Risk (Section 3.4).

Table V-2. Fuel Models

Fuel Model #	Fuel Type	Acres within Amended Site Boundary (Percent of Area)	Acres within Wildfire Analysis Area (Percent of Area)
162	Moderate load humid climate timber-shrub	76 (33%)	1,680 (30%)
185	High load conifer litter	48 (21%)	1,016 (18%)
101	Short, sparse dry climate grass	18 (8%)	222 (4%)
102	Low load dry climate grass	18 (8%)	225 (4%)
91	Urban/suburban	15 (6%)	106 (2%)
122	Moderate load dry climate grass-shrub	15 (6%)	359 (6%)
186	Moderate load broadleaf litter	14 (6%)	974 (18%)
121	Low load dry climate grass-shrub	14 (6%)	156 (3%)
161	Light load dry climate timber-grass-shrub	7 (3%)	318 (6%)
165	Very high load dry climate timber-shrub	3 (1%)	116 (2%)
93	Agricultural field	2 (1%)	4 (0.1%)
142	Moderate load dry climate shrub	1 (0.5%)	74 (1%)
183	Moderate load conifer litter	1 (0.5%)	35 (0.6%)
98	Open water	0.3 (0.1%)	46 (0.8%)
143	Moderate load humid climate shrub	0.1 (0.1%)	2 (0.04%)
182	Low load broadleaf litter	0.1 (0.03%)	12 (0.2%)
189	Very high load broadleaf litter	0	171 (3%)
188	Long-needle litter	0	5 (0.1%)
141	Low load dry climate shrub	0	4 (0.1%)
181	Low load compact conifer litter	0	4 (0.1%)
Totals		**232 (100%)**	**5,528 (100%)**
Note that totals may not sum correctly due to rounding.			

3.3.3 Existing Infrastructure

The existing infrastructure within the Site Boundary includes roads, naturally existing underground natural gas storage reservoirs (the Flora, Bruer, and Adams reservoirs), North Mist Compressor Station, Miller Station and existing laydown/storage yards. Roads throughout the area are a mixture of paved, graveled, and dirt roads that would act as firebreaks, mitigating the spread rate and flame lengths occurring within the area.

At the southern end of the Facility, the Site Boundary includes the Bark and Haul and Highway 202 laydown areas, and a buried electrical feed connecting at Miller Station. Miller Station falls within the Wildfire Analysis Area and would be at risk in the event of a fire within the nearby Site Boundary. The Highway 202 laydown yard contains a barn and additional storage sheds within the Site Boundary. The Bark and Haul laydown yard contains various mechanical equipment within the Site Boundary. The surrounding Wildfire Analysis Area includes 10 or fewer residential homes, storage feed sheds, agricultural areas, and mechanical equipment. Mist Grade School also falls within the Wildfire Analysis Area, less than one half mile from the Bark and Haul laydown yard.

The central part of the Facility falling with the Site Boundary for RFA 13 includes the proposed development of the Newton, Stegosaur, Medicine, and Crater storage reservoirs, and the existing NMCS and supporting infrastructure. The Site Boundary extends northward to include two existing laydown yards that would be used during construction. Within the northernmost laydown yard there is a storage shed. There are no other structures currently standing in the northern yards; however, the ODF Clatskanie Guard Station falls within the Wildfire Analysis Area east of the Facility's northernmost laydown yards.

3.3.4 Climate

Columbia County has a modified marine climate with annual precipitation ranging from 40 inches in the eastern portion to 100 inches in the higher elevations of the Coast Range. Average annual precipitation is 61 inches. Winters are relatively wet and mild with warm and dry summers. The summer's warmer and drier weather is associated with gradually lengthening high-pressure systems, which begin generally in June and continue through September (Columbia County 2007). The Wildfire Analysis Area is in the higher elevations of the Coast Range of the County.

Based on available monthly averages of climate data between 1991 and 2020 for the Clatskanie weather station (located 5 miles northeast of the NMCS expansion area), the driest months of the year on average are June, July, and August with precipitation averages of 1.7, 0.6, and 0.7 inches per month, respectively (Table V-3; NOAA 2023). The warmest summer months are July, August, and September with average daily maximum temperatures of 74.7°F, 75.8°F, and 72°F, respectively (Table V-3; NOAA 2023). The total average annual precipitation for the area is 54.7 inches per year, which is indicative of a temperate warm-summer Mediterranean climate (Peel et al. 2007, NOAA 2023). The area only receives approximately 2.3 inches of snow annually, with the coldest month, December, having approximately 0.8 inches of snowfall, an average daily maximum temperature of 46°F, and an average daily minimum temperature of 33°F (Table V-3; NOAA 2023).

Table V-3. Summary of Monthly Temperature and Precipitation at Clatskanie, Oregon, Station (1991 – 2020)

Month	Avg. Max Temperature (°F)	Avg. Temperature (°F)	Avg. Min Temperature (°F)	Avg. Precipitation (inches)
January	46.6	39.8	33.0	8.3
February	50.3	41.5	32.8	5.7
March	54.5	44.9	35.3	6.1
April	58.8	48.6	38.3	4.3
May	64.8	54.4	44.0	2.7
June	68.8	58.6	48.5	1.7
July	74.7	63.5	52.2	0.6
August	75.8	64	52.2	0.7
September	72	59.8	47.6	2.1
October	61.6	51.3	41.1	4.5
November	51.7	43.9	36.1	8.6
December	45.7	39.3	32.8	9.4
Monthly / Annual Average[1]	**60.5**	**50.8**	**41.2**	**54.7**

Source: Clatskanie Station, OR US USC00351643 (NOAA 2023).

Note: The sum of annual precipitation was averaged annually from 1991 through 2020.

3.3.5 Burn Probability

Burn probability is the likelihood of a wildfire greater than 250 acres burning a given location, based on wildfire simulation modeling. This is an annual burn probability, adjusted annually to account for historical burns. The burn probability classes range from non-burnable (including non-burnable groundcover types such as water, agriculture, or urban) to very high burn probability, which indicates greater than a 1 in 50 (2 percent) chance of a wildfire greater than 250 acres in a single year (CWPP 2018).

The annual probability of a >250-acre wildfire erupting within the Site Boundary and Wildfire Analysis Area is very low. There are no regions within the Site Boundary or Wildfire Analysis Area which have moderate, high, or very high burn probabilities (Table V-4, Figure V-3). The Site Boundary and Wildfire Analysis Area have burn probabilities ranging from zero (agricultural areas or water bodies) to low (1 in 10,000 to 1 in 5,000). A vast majority of the land in both the Site Boundary (89 percent) and the Wildfire Analysis Area (87 percent) fall within the very low burn probability regions (<= 1 in 10,000; Table V-4, Figure V-3). The only low burn probability area (1 in 10,000 to 1 in 5,000) in the Site Boundary falls due south of the proposed Newton well pad, directly east of Beaver Creek.

Table V-4. Burn Probability

Burn Probability	Acres within Site Boundary (Percent of Area)	Acres within Wildfire Analysis Area (Percent of Area)
Non-burnable (0)	17 (7%)	549 (10%)
Very Low (<= 1 in 10,000)	207 (89%)	4,811 (87%)
Low (1 in 10,000 to 1 in 5,000)	8 (3%)	167 (3%)
Moderate (1 in 5,000 to 1 in 1,000)	0	0
Moderate (1 in 1,000 to 1 in 500)	0	0
High (1 in 500 to 1 in 100)	0	0
High (1 in 100 to 1 in 50)	0	0
Very High (1 in 50 to 1 in 25)	0	0
Totals	**232 (100%)**	**5,528 (100%)**
Note that totals may not sum correctly due to rounding.		

3.4 Seasonal Fire Risk – OAR 345-022-0115(1)(a)(B)

OAR 345-022-0115(1)(a)(B) Seasonal wildfire risk, based on factors that are expected to remain fixed for multiple months but may be dynamic throughout the year, including but not limited to, cumulative precipitation and fuel moisture content;

NWN assessed the likelihood of seasonal wildfires based on factors that may change throughout the year and over time. These factors include monthly precipitation levels, fuel moisture content of the surrounding vegetation, and average flame length, which is dependent on local weather and fuel conditions. As will be described in the following sections, the seasonal wildfire risk within the Site Boundary and Wildfire Analysis Area could be considered moderate in the summer months and low in the winter months. This is based on higher amounts of rainfall in the winter, moderate to high levels of moisture in the dominant vegetation, and medium rate of fire spread based on average flame length.

3.4.1 Precipitation

Based on available climate data for the Clatskanie Weather Station, located approximately 5 miles northeast of the Site Boundary, the driest months on average include June, July, and August which have averages of 1.73, 0.59, and 0.67 inches per month, respectively (Table V-3; NOAA 2023). All other months range from 2.06 to 9.38 inches of precipitation per month. The total average annual precipitation for the area is 54.66 inches per year (Table V-3; NOAA 2023, Peel et al. 2007). In summary, the summer months with lower amounts of rainfall and warmer temperatures will have a higher wildfire risk compared to the wetter, cooler winter months.

3.4.2 Fuel Moisture Content

Fuel moisture content, or the amount of moisture present in fuels, varies due to fluctuations in weather conditions both over time and during short periods. Higher fuel moisture content makes it more challenging for fires to start and spread. Living plants and dead fuels react differently to changes in weather, and the wetting and drying processes of dead fuels result in significant fluctuations in their moisture content. These changes are affected by various factors such as precipitation, air moisture, surface and air temperatures, wind, and cloudiness, as well as fuel properties like surface to volume ratio, compactness, and arrangement. The moisture content of fuels is constantly changing throughout the days, months, and years (USFS 1970), and it is important to consider current fuel moisture data, along with precipitation history and local weather conditions when assessing seasonal fire risks.

A related and more easily measured concept to fuel moisture content is moisture of extinction: the moisture content of a specific fuel type above which a fire will not propagate itself. When fuel moisture content drops below the moisture of extinction threshold, it increases the potential for fires to ignite and spread. As such, Fuel Models with higher moisture of extinction levels decrease overall fire risk. The moisture of extinction rate also varies seasonally in response to changing weather and environmental conditions. During the wetter seasons, such as spring and early summer, live fuels tend to have a higher moisture content due to increased rainfall and higher humidity levels. This results in a higher moisture of extinction, making the fuels less flammable and reducing the risk of ignition. Conversely, in the drier seasons, like late summer and fall, live fuels become drier as moisture evaporates and is less replenished by rainfall, leading to a lower fuel moisture content that approaches the moisture of extinction threshold, and increases susceptibility to ignition, which can elevate the risk of wildfires.

Based on the Fuel Models with moderate to high moisture of extinction levels present within the Site Boundary and Wildfire Analysis Area, the overall fire risk and initial flammability of most land within the Site Boundary appears to be relatively low. Fuel moisture and moisture of extinction vary with vegetation type. For instance, annual grasses are highly flammable, while broadleaf vegetation is less flammable (USFS 1970). Additionally, live evergreen trees and shrubs can burn despite having a fuel moisture content of over 100 percent. The dominant vegetation types as described by Fuel Models within the Site Boundary are moderate load humid climate timber-shrub (Fuel Model 162, 33 percent of the Site Boundary) and high load conifer litter (Fuel Model 185, 21 percent of the Site Boundary)(Table V-2). Fuel Model 162 has a high moisture of extinction and Fuel Model 185 has a moderate moisture of extinction (NWCG 2021). The moisture of extinction levels for the Fuel Models within the Site Boundary and Wildfire Analysis Area are relatively low but are subject to change according to seasonal weather changes and overall trending changes to the region's climate.

To track the changes to fuel moisture content onsite, the Northwest Interagency Coordination Center Predictive Services is a recommended resource website which provides links to relevant fuel status reports and fuel moisture content predictions. Notably, it also provides linked access to the

National Weather Service's fire weather advisories (such as Red Flag Warning and Fire Weather Watch) and fire behavior advisories for each Predictive Service Area in the Northwest. The Site Boundary is located within Predictive Service Area NW03, along with Portland, Oregon (NIFC 2022). During construction and operation, fire danger forecasts would be monitored. Project activities and mitigation measures would also be adjusted based on annual variations outlined in the NWN's Emergency Response and Recovery Plan and WMP (Attachment V-3), discussed below.

3.4.3 Flame Length

Average flame length is a metric which describes the average length of flames expected based on the local fuel and weather conditions (CWPP 2018). Flame lengths have potential to exceed the mapped values shown, even under normal weather conditions. Flame length is commonly used as a direct visual indication of fire intensity and is a primary factor to consider for firefighter safety and for gauging potential impacts to resources and assets.

A majority of the Site Boundary has a modeled average flame length that is greater than zero and up to 4 feet (50 percent) followed by 4 to 8 feet (26 percent) (Table V-5, Figure V-4; CWPP 2018). The zero-foot average flame length regions within the Site Boundary and Wildfire Analysis Area are largely open water (along the Nehalem River), urban/suburban areas, and agricultural lands. Areas of 4- to 8-foot average flame length are largely made up of Fuel Models 162 and 185, which are dominated by shrubs and conifers (Table V-5; CWPP 2018). In the Wildfire Analysis Area, the average flame length modeled ranges from zero to greater than 11 feet, with greater than zero and up to 4 feet being the most common (54 percent) (Table V-5, Figure V-4; CWPP 2018). Within the Site Boundary there are two relatively large areas with greater than 11-foot flame length along canyons with steeper terrain in the vicinity of the NMCS and the Medicine well pad (Figure V-4). Those areas contain, predominately, Fuel Models 162 and 185, which have low to moderate average flame lengths. The NMCS sits directly west of a steep, shallow canyon, which facilitates larger flames due to wind-channeling and updrafts. The NMCS would be graveled below and surrounding its structures, with the gravel acting as a functional fire break, but could still be affected by large, fast-moving flames from the neighboring canyon. Similarly, the Medicine well pad is at the top of a hill, which has steep slopes close to its base that will facilitate the growth of flames and expedite their speed up the hillside. In conclusion, 83 percent of the Site Boundary and 88 percent of the Wildfire Analysis Area have zero, greater than zero and up to 4 feet, or 4- to 8-foot average flame lengths, suggesting that the Facility's fire spread rate could be considered low to moderate. However, the very high average flame lengths anticipated near the NMCS and the Medicine well pad should be noted.

Table V-5. Average Flame Length

Average Flame Length (feet)	Acres within Site Boundary (Percent of Area)	Acres within Wildfire Analysis Area (Percent of Area)
0	17 (7%)	517 (9%)
>0-4	116 (50%)	2,976 (54%)

4-8	59 (26%)	1,369 (25%)
8-11	10 (4%)	195 (4%)
>11	29 (13%)	471 (9%)
Totals	**232 (100%)**	**5,528 (100%)**
Note that totals may not sum correctly due to rounding.		

3.5 Areas of Heightened Risk and Hazard to Potential Structures – OAR 345-022-0115(1)(a)(C)

OAR 345-022-0115(1)(a)(C) Areas subject to a heightened risk of wildfire, based on the information provided under paragraphs (A) and (B) of this subsection;

Areas of heightened risk are described using the Oregon CWPP Planning Tool Hazard to Potential Structures analysis layer that displays the danger to structures (Table V-6, Figure V-5). The layer indicates the levels of impact that can occur within a 150-meter range from a flammable fuel type in the event of a wildfire, assuming structures exist. It relies on modeled vegetation rather than the building materials used in construction. The Hazard to Potential Structures analysis data layer ranges from low to high risk, based on the flammability and density of vegetation in the area. Low risk of hazard to potential structures means that the vegetation is mostly non-flammable or scarce, and there is a low possibility of damage to nearby structures or residential homes. High risk of hazard to potential structures implies that if a fire breaks out in the vicinity, there is a high likelihood of a building or a residence being destroyed, assuming structures exist (Gilbertson-Day et al. 2018).

Table V-6. Areas of Heightened Risk (Hazard to Potential Structures)

Hazard to Potential Structures	Acres within Site Boundary (Percent of Area)	Acres within Wildfire Analysis Area (Percent of Area)
Very High	0 (0%)	12 (0.2%)
High	15 (6%)	367 (7%)
Moderate	36 (15%)	686 (12%)
Low	178 (77%)	4,238 (77%)
Non-burnable / Very Low	3 (1%)	225 (4%)
Totals	**232 (100%)**	**5,528 (100%)**
Note that totals may not sum correctly due to rounding.		

The hazard to potential structures within the Site Boundary is predominately low (77 percent) and moderate (15 percent) (Table V-6). There are no acres of very high hazard to structures within the Site Boundary, and 12 acres (0.2 percent) within the Wildfire Analysis Area. Existing structures within the Site Boundary that could potentially be impacted include underground pipelines, well pads and supporting infrastructure, underground powerlines, and the NMCS. The northernmost

region of the Site Boundary includes one storage structure in the sorting yard; this section of the Site includes only low and very low hazard to potential structures. There are no additional above-ground structures to be built in the Miller Station, Highway 202, and Bark and Haul laydown yards.

The majority of existing structures in the Site Boundary fall within the NMCS, where the hazard to potential structures is moderate to high. NWN will use this information when planning wildfire risk and mitigation for future Project building locations and identifying building materials.

The WUI is another method for determining potential impact of wildfire on existing structures at a large scale. The Columbia County CWPP describes the boundaries of their WUI, which includes any area where wildfire may have a negative impact on the community by affecting human development or economically or culturally significant vegetation (Attachment V-1). The WUI boundaries take into account the distribution of structures and communities adjacent to or intermixed with wildland fuels. It also includes populated areas at risk, forested areas that obtain critical human infrastructure, and forest areas that are at risk for large-scale fires. The northernmost laydown yards, as well as the Highway 202 laydown yard, Bark and Haul laydown yard, and a small portion of the new buried powerline along Highway 202 falls within the Columbia County WUI and in the Community at Risk delineations (Attachment V-1). The Community at Risk within Columbia County are identified based on population density and assumed values at risk for threats to life, property and infrastructure by wildfire. Additionally, the Newton and Medicine well pads may also cross into the Columbia County WUI. Most land within the Site Boundary and Wildfire Analysis Area is non-WUI listed; the WUI delineations suggest that the impact of wildfire on Columbia County communities is moderate to low across the Site Boundary and Wildfire Analysis Area. Further, the WUI map supports the findings of overall generally low Hazard to Potential Structures findings identified in the preceding section (Table V-6).

3.6 High-Fire Consequence Areas and Overall Wildfire Risk – OAR 345-022-0115(1)(a)(D)

OAR 345-022-0115(1)(a)(D) High-fire consequence areas, including but not limited to areas containing residences, critical infrastructure, recreation opportunities, timber and agricultural resources, and fire-sensitive wildlife habitat; and

High-fire consequence areas are identified using the Oregon CWPP Planning Tool overall wildfire risk data layer (Figure V-6; CWPP 2018). The overall wildfire risk is determined by combining the likelihood and impact of fire on all significant resources and assets that have been mapped (Gilbertson-Day et al. 2018). These resources include critical infrastructure, developed recreation sites, housing unit density, seed orchards, sawmills, historic structures, timber, municipal watersheds, vegetation condition, and habitats for terrestrial and aquatic wildlife (CBI 2020). This dataset considers the likelihood of wildfire greater than 250 acres, the susceptibility of resources and assets to wildfire of different intensities, and the likelihood of those intensities. Risk ratings range from very high, wherein wildfire may be detrimental to one or more resources, to beneficial, where fires may improve resources, such as timber stands or wildlife habitat (CBI 2020).

Most land within the Site Boundary has an overall fire risk rating of high (56 percent) to moderate (16 percent). The overall fire risk for 12 percent of the Site Boundary acreage was listed as No Data, indicating that those regions contained no highly valued resources or assets (such as critical infrastructure or developed recreation areas), or that simulated wildfires did not burn the area due to low historical occurrence or an absence of burnable fuel (Gilbertson-Day et al. 2018; CWPP 2018; Table V-7). Eleven percent of the Site Boundary would exhibit a low benefit or benefit from wildfire; these areas are scattered throughout the southern and central sections of the Site Boundary. There are a few areas making up 1 percent of the Site Boundary that are listed with a very high overall fire risk rating; they are distributed throughout the northern and central sections of the Site Boundary. The largest area with a very high overall fire risk in the Wildfire Analysis Area falls in the town of Mist, Oregon, which lies to the southeast of the Bark and Haul laydown yard. Additionally, a transmission line corridor falls within the northern section of the Wildfire Analysis Area, which has a very high wildfire risk rating (Figure V-6).

According to this overall wildfire risk model, the overall wildfire risk may be considered moderate to high within the Site Boundary.

Table V-7. Overall Wildfire Risk Rating

Overall Fire Risk Rating	Acres within Amended Site Boundary (Percent of Area)	Acres within Wildfire Analysis Area (Percent of Area)
Very High	3 (1%)	137 (2%)
High	130 (56%)	3,059 (55%)
Moderate	36 (16%)	965 (17%)
Low	8 (4%)	466 (8%)
Low Benefit	17 (7%)	352 (6%)
Benefit	8 (4%)	158 (3%)
No Data[1]	28 (12%)	391 (7%)
Total	**232 (100%)**	**5,528 (100%)**

1. There are no highly valued resources or assets (such as critical infrastructure, developed recreation, housing unit density) mapped in the area, or simulated wildfires did not burn the area due to low historical occurrence/absence of burnable fuel (Gilbertson-Day et al. 2018, CWPP 2018).

Note that totals may not sum correctly due to rounding.

4.0 Wildfire Mitigation – OAR 345-022-0115(1)(b)

OAR 345-022-0115(1)(b) That the proposed Facility will be designed, constructed, and operated in compliance with a Wildfire Mitigation Plan approved by the Council. The Wildfire Mitigation Plan must, at a minimum:

(A) Identify areas within the site boundary that are subject to a heightened risk of wildfire, using current data from reputable sources, and discuss data and methods used in the analysis;

(B) Describe the procedures, standards, and time frames that the applicant will use to inspect Facility components and manage vegetation in the areas identified under subsection (a) of this section;

(C) Identify preventative actions and programs that the applicant will carry out to minimize the risk of Facility components causing wildfire, including procedures that will be used to adjust operations during periods of heightened wildfire risk;

(D) Identify procedures to minimize risks to public health and safety, the health and safety of responders, and damages to resources protected by Council standards in the event that a wildfire occurs at the Facility site, regardless of ignition source; and

(E) Describe methods the applicant will use to ensure that updates of the plan incorporate best practices and emerging technologies to minimize and mitigate wildfire risk.

NWN prepared the Draft WMP (Attachment V-3) to meet applicable standards under OAR 345-022-0115(1)(b).

5.0 Conclusion

The data reviewed and presented here demonstrate that wildfire risk and the consequences of fire in the Site Boundary and Wildfire Analysis Area are considered moderate. This rating is due to several factors, including the Project's moderate to high overall wildfire risk (Figure V-6, Section 3.6), as well as the high average flame length and hazard to potential structures in the structure-dense NMCS region of the Facility. However, the Facility also has moderate to low baseline and seasonal fire risk, due to its relatively moist, cool climate conditions, predominately moderate to low spread-rate vegetation, and flat topography. Within the Wildfire Analysis Area, assets that could be impacted by wildfire include residential structures, agricultural areas, distribution/transmission lines and pipelines, roads, forested areas, the ODF Clatskanie Guard Station, Mist Grade School, and the NMCS. If a wildfire did ignite near those assets, the assets would be at risk (Figure V-5). After construction of the Project, additional assets such as updated natural gas compressors and electric power supply lines may be in the path of wildfire, and overall risk of damage to infrastructure within the Site Boundary would increase.

The area with the highest risk of both wildfire and wildfire damage within the Site Boundary falls within the NMCS. The NMCS has an average flame length of greater than 11 feet (Figure V-4), a Fuel Model that contains high-load conifer litter (Section 3.3.2; Figure V-2), steep terrain along a deep canyon which will facilitate larger, faster-moving flames, moderate to high hazard to potential structures (Figure V-5), and an overall wildfire risk rating of high to very high (Figure V-6). The NMCS would be graveled below and surrounding its structures, with the gravel acting as a functional fire break, but may still be affected by surrounding fire. Future development plans would take this information into account when choosing materials for building and when considering necessary precautions for fire safety.

Anticipated post-construction fire risk for the Project is expected to be moderate due to a low probability of ignition and moderate factors such as flame length, fuel moisture content, weather, and topography. It is unlikely that the Project, with mitigation measures considered, will result in an increase in significant wildfire risk as detailed in this exhibit and the attached WMP. Therefore, the Energy Facility Siting Council can conclude that the Project aligns with OAR 345-022-0115.

In summary, a wildfire within the Site Boundary or Wildfire Analysis Area could have impacts on infrastructure and valuable community assets as described in Section 3.3.3, Section 3.5, and Section 3.6. However, since the vast majority of the Site Boundary has a very low burn probability (as described in Section 3.3.5), the overall wildfire risk for this area can be considered moderate. To prevent this moderate risk from becoming exceedingly high, NWN will continuously monitor relevant weather and climate conditions and adhere to the procedures, preventative actions, and preventative programs to minimize wildfire risk as outlined in the Project's dedicated WMP (Attachment V-3).

6.0 References

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Figures

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1:46,000 WGS 1984 UTM Zone 10N 0 1 Miles NOT FOR CONSTRUCTION

Mist Resiliency Project

Site Boundary

Analysis Area (.5 mile Buffer)

Slope

0 - 25 degrees

25-50 degrees

>50 degrees

Reference Map

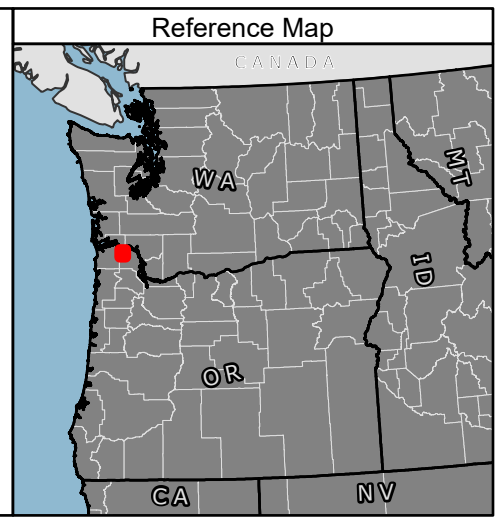

Figure V-1
Slope

COLUMBIA COUNTY, OREGON

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1:46,000

WGS 1984 UTM Zone 10N

0 1 Miles

NOT FOR CONSTRUCTION

Mist Resiliency Project

Figure V-2
Fuel Models

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (.5 mile Buffer)

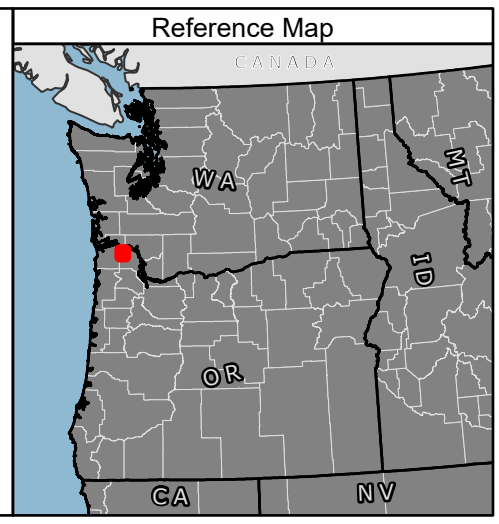
Fuel Models

- Fm101, GR1
- Fm102, GR2
- Fm103, GR3
- Fm121, GS1
- Fm122, GS2
- Fm141, SH1
- Fm142, SH2
- Fm143, SH3
- Fm161, TU1
- Fm162, TU2
- Fm165, TU5
- Fm181, TL1
- Fm182, TL2
- Fm183, TL3
- Fm185, TL5
- Fm186, TL6
- Fm187, TL7
- Fm188, TL8
- Fm189, TL9
- Fm91, NB1
- Fm93, NB3
- Fm98, NB8
- Fm99, NB9

TETRA TECH

NW Natural

Reference Map



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Mist Resiliency Project

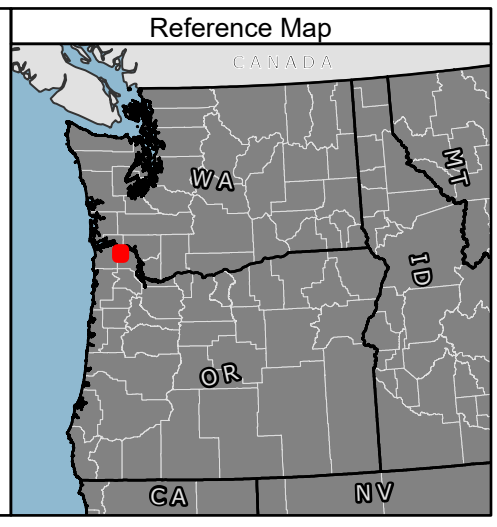
Figure V-3
Burn Probability

COLUMBIA COUNTY, OREGON

Site Boundary
Analysis Area (.5 mile Buffer)
Burn Probability
0
0 - 0.0001 Low (<= 1-in-10,000)
0.0001 - 0.0002 Low (1-in-10,000 to 1-in-5,000)

TETRA TECH NW Natural

Reference Map



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1:48,000 WGS 1984 UTM Zone 10N 0 1 Miles NOT FOR CONSTRUCTION

Mist Resiliency Project

Site Boundary
Analysis Area (.5 mile Buffer)
Average Flame Length
0
>0 - 4 ft
4 - 4 ft
8 - 11 ft
> 11 ft

Reference Map

Figure V-4
Average Flame Length

COLUMBIA COUNTY, OREGON

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Mist Resiliency Project

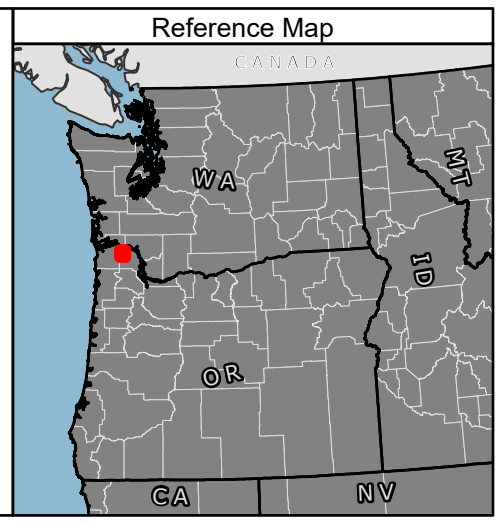
Figure V-5
Hazard to Potential Structures

COLUMBIA COUNTY, OREGON

Site Boundary
Analysis Area (.5 mile Buffer)
Potential Impact to Structures
Very High
High
Moderate
Low
Non-burnable/Very Low

TETRA TECH NW Natural

Reference Map



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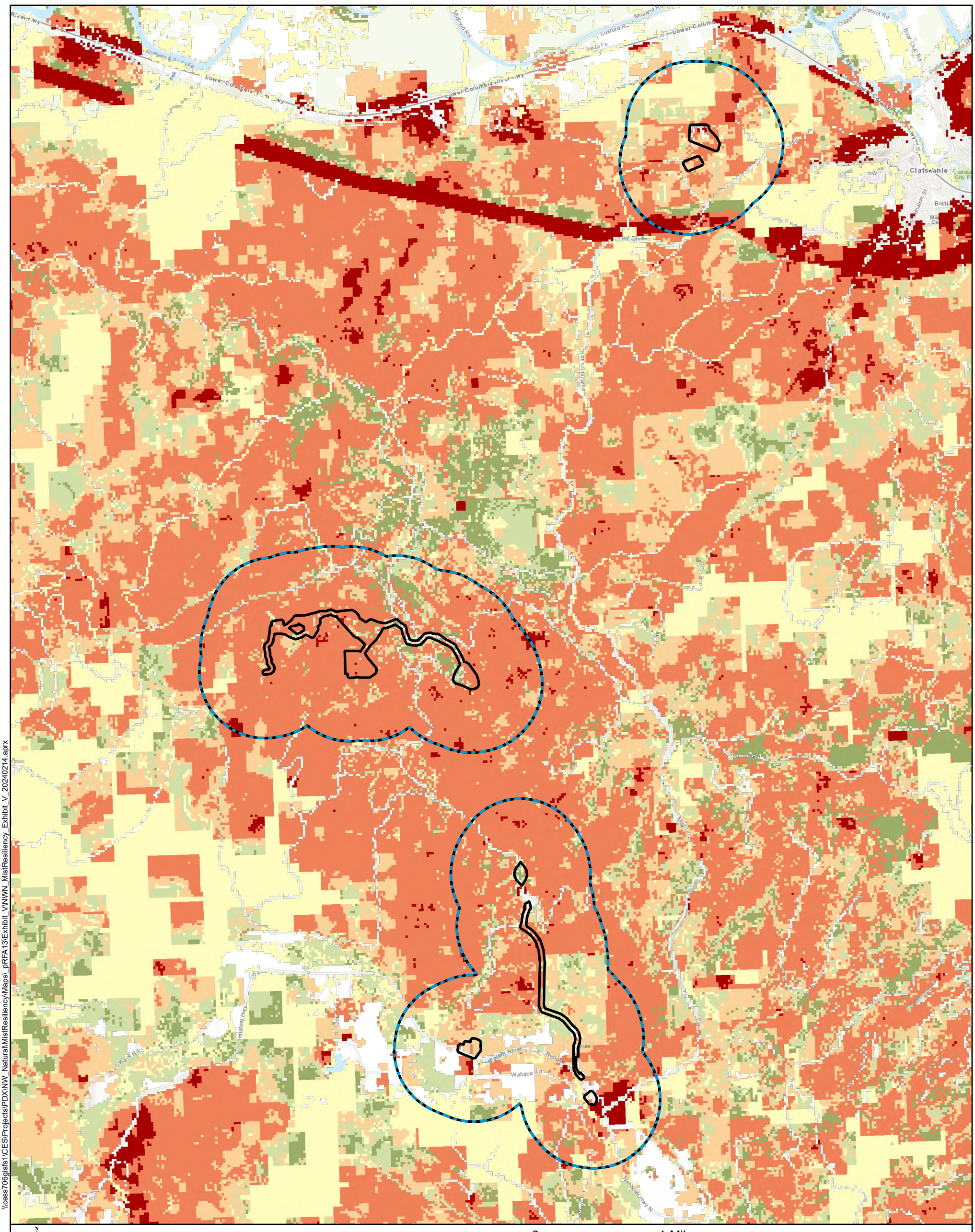

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Mist Resiliency Project

Figure V-6
Overall Wildfire Risk

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (.5 mile Buffer)

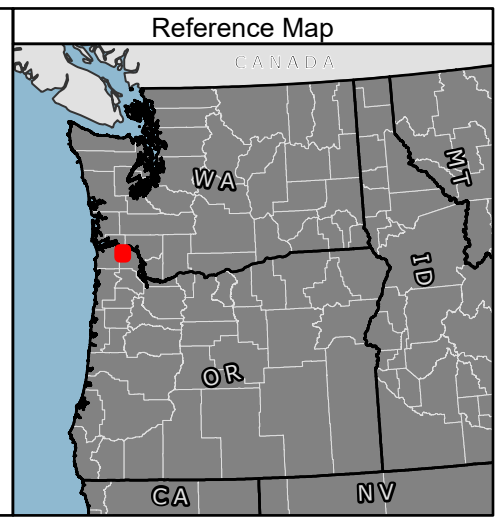
Overall Wildfire Risk

- Very High
- High
- Moderate
- Low
- Low Benefit
- Benefit

TETRA TECH

NW Natural

Reference Map



Attachment V-1. Columbia County CWPP

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Columbia County
Community Wildfire Protection Plan

Columbia County

Oregon

A working document that serves as a resource for the mitigation of wildland-urban interface fire threats through community education and awareness, prioritized hazard and risk reduction and community action partnerships

Version –August 1, 2007

Table of Contents

Community Wildfire Protection Plan Signature Page

The Healthy Forest Restoration Act (HFRA) requires three decision makers mutually agree to the final contents of the Community Wildfire Protection Plan.

The applicable local government
The local fire department(s)
The state entity responsible for forest management

Columbia County:

Rita Bernhard
Chair, Board of Commissioners

Tony Hyde, Commissioner

not present
Joe Corsiglia, Commissioner

September 12, 2007

State Forester Representative:

Bob Gustafson
Acting District Forester - Forest Grove District
Oregon Department of Forestry

Fire Districts:

Michael Greisen
Columbia County Fire Chief
Scappoose Rural Fire Protection District

Chief Richard Long
Clatskanie Rural Fire Protection District

Chief Jay Tappan
Columbia River Fire and Rescue

Chief Dave Crawford
Mist-Birkenfeld Rural Fire Protection District

Chief Paul Epler
Vernonia Rural Fire Protection District

Acknowledgements

The Committee would like to thank all those who have participated and engaged in the process; its meetings, discussions, workshops and reviews that brought the Columbia County Community Wildfire Plan planning process to life and to its current stage of completion. In particular, the Columbia County Commissioner's Tony Hyde, Rita Bernhard and Joe Corsiglia who initiated the call to action and the Columbia County Fire Defense Board for their full engagement and support of the process. The Oregon Department of Forestry for its commitment and leadership in the CWPP process. Also, thanks to all the fire district fire staff for their participation in local reviews and the establishment of priorities.

The Plan has laid out a clear mission for action and with continued support this plan will be a valuable working document for the community of Columbia County.

Columbia County greatly appreciates the time, commitment and energy that the following representatives have invested in the Columbia County Community Wildfire Protection Plan:

Columbia County Assessor's Office
Dave Crawford, Mist Birkenfeld Rural Fire District Chief
Paul Epler, Vernonia Rural Fire District Chief
Joe Flori, Columbia County Mapping/GIS
Jacob Graichen, Columbia County Land Development – Planner
Michael Greisen, Scappoose Rural Fire District Chief – County Fire Chief
Terry Grice, Columbia River Fire and Rescue, Assistant Fire Chief
Vicki Harguth, Columbia County Office of Emergency Management (Co-Chair CCCWPPC)
Larry Hurley, Longview Timberlands and Lower Columbia Watershed Council Member
Dave Johnson, Oregon Department of Forestry – Forest Grove District Forester
Kelly Niles, Oregon Department of Forestry – Protection Supervisor
Randolf "Tad" Pederson, Office of State Fire Marshal – Deputy Fire Marshal
Hyla Ridenour Columbia River Fire and Rescue – Community Liaison
Mike Schuft, Oregon Department of Forestry – Salem GIS Section
Mike Simek, Oregon Department of Forestry – Unit Forester (Co-Chair CCCWPPC)
Jay Tappan, Columbia River Fire and Rescue Fire Chief
Ann Walker, Oregon Department of Forestry, National Fire Plan Coordinator
Carl West, Bureau of Land Management – Fire Management Officer
Jim Wolf, Oregon Department of Forestry
Ron Youngberg, Columbia River Fire and Rescue, Division Chief

Executive Summary

The Columbia County Community Wildfire Protection Plan (CWPP) is a strategic planning document that forms a foundation for a realistic assessment of wildfire risks in our county and develops plans or action statements of what we can do as a community to mitigate wildfire threats to life, property, and natural resources.

With the forming of a Columbia County Community Wildfire Protection Plan Committee in April 2005, the process of reviewing local issues and concerns and developing action plans specific to each fire district has evolved. The process has been invaluable toward building an overall understanding of the issues, deepening relationships, building on collaborative efforts and most importantly, developing achievable action plans to address wildfire threats in the wildland urban interface of Columbia County.

The Plan identifies the "Community-at-Risk" (CAR) in Columbia County as the populated areas of the County, both city and rural where natural cover and wildland fires pose a potential threat to people and their homes. Each rural fire district and the area outside of a rural fire district within the county have communities at risk. To develop local priorities, the committee decided that each fire district would become the community center for planning and public outreach efforts. The process began by engaging each fire district regarding assessment factors and utilizing local knowledge regarding community concerns and priorities. Once these areas were identified specific action plans were developed by each district to address the concerns within the wildland-urban interface.

Even before this plan's completion, action plan implementation was initiated. In the Columbia River Fire and Rescue CAR, Grey Cliff residents were invited to a community meeting where partnerships between agencies and a local landscaping business presented material where homeowners could start fire safe landscaping efforts. In addition, the fire district is making an assessment of access roads, reviewing individual homes for fire resistive construction and landscaping practices and offering recommendations. In Scappoose Fire District, the emerging community of Columbia Hills on Callahan Road has been addressed through its forming homeowners association. The developer and the builder understand the issues and are taking actions that support becoming a "Firewise Community". The Mist Birkenfeld Fire District has also approached the Fishhawk Lake Community to become a Firewise Community. These actions are indicative of a successful platform that was laid down during the formulation and process of developing this plan. Much more is to come and this document is a working plan that will adapt to new ideas, innovations and understanding.

The Columbia County Community Wildfire Protection Plan meets the criteria for a CWPP under the National Fire Plan. As such, potential federal and state grants may be available to the Fire Districts, the County and the Oregon Department of Forestry for implementation of the CWPP Plan elements.

Wildland -Urban Interface

Wildfire is a fact of life throughout much of the nation's landscape. Our increasing population and subsequent development into wildfire prone natural landscapes has created a zone known as the wildland-urban interface (WUI). This interface zone; where structures and other human development meet and intermingle with undeveloped forestlands, wildland or other natural cover fuels, poses a tremendous potential risk to life, property, natural and cultural resources. Large wildland fires have been on the rise, in Oregon and nationwide, since the early 1990s. Numerous factors such as extended preclusion of fire and forest health issues have created fuel loads and resulting fire intensities beyond historical levels. Climate changes have also been implicated as a contributing factor to the increasing frequency and intensity of large fires. Fires in the interface are the most dangerous and complicated fire situations our communities and firefighting professionals can face. Columbia County does not have the frequency of fire or the large fire potential as compared to other locations in the State; however, wildfire is a reality in northwest Oregon. The potential for large fire growth can and will develop. Frequency factors indicate a caution, for example just as a 100-year flood event in Columbia County did in 1996, conditions lined up for disastrous results. Normal fire activity levels can present wildfire incidents that pose localized threats to communities and rural populations depending on when and where these fires occur on the landscape. Large wildfires in Columbia County may be a low incidence event, but they are also events that pose the highest risk to life and property. Recognizing these wildfire risks and taking appropriate actions toward mitigation will reduce the vulnerability of our communities and citizens.

The Columbia County Board of Commissioners (CCBOC) are concerned with the potential risk that wildfires pose to the citizens, to critical infra-structure and the natural resources within the county. The CCBOC strongly supports the development of this community wildfire protection plan and implementation of its goals and objectives.

Preparing a Community Wildfire Protection Plan

The [1] National Fire Plan and the Ten-Year Comprehensive Strategy for Reducing Wildland Fire Risks to Communities and the Environment place a priority on working collaboratively within communities to reduce their risk from fires. The National Fire Plan was developed in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities.

The Healthy Forest Restoration Act (HFRA) builds on existing efforts of the Ten-Year Strategic Plan and stresses the need for development of Community Wildfire Protection Plans (CWPP). In Oregon, these community wildfire protection plans are a requirement

[1] National Fire Plan Healthy Forest Restoration Act: http://www.fireplan.gov/

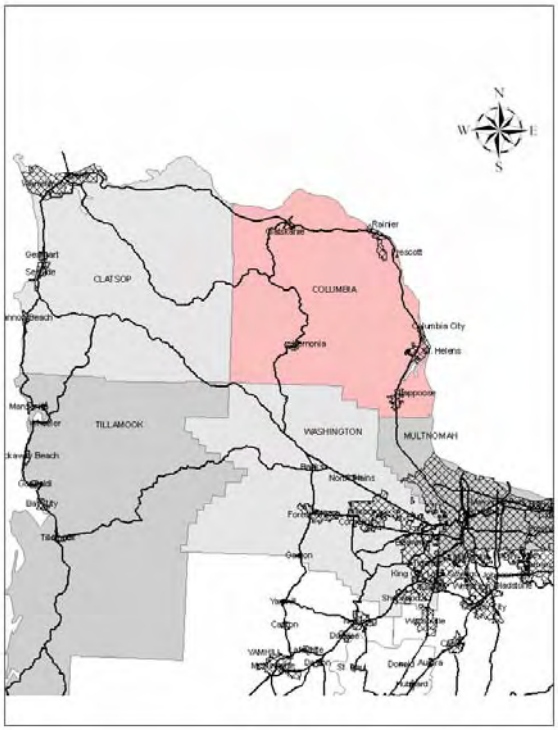
in all National Fire Plan grant processes, including Western States Fire Managers (WSFM) and Community Assistance (CA) grants.

These plans can be simple or as complex as the local community desires. However, there are a few minimum requirements for a CWPP as described in the HFRA.

- ***Collaboration**:* Local and state government representatives, in consultation with federal agencies and other interested parties, must collaboratively develop a CWPP.
- ***Prioritized Fuel Reduction:*** A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.
- ***Treatment of Structural Ignitability:*** A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed in the plan.

This community wildfire protection plan becomes a foundation for understanding wildfire threats relevant to the community. It more importantly serves as a catalyst for action. Action items that serve to involve, educate and protect the community and citizen interests of Columbia County are the goal of this plan.

County Profile



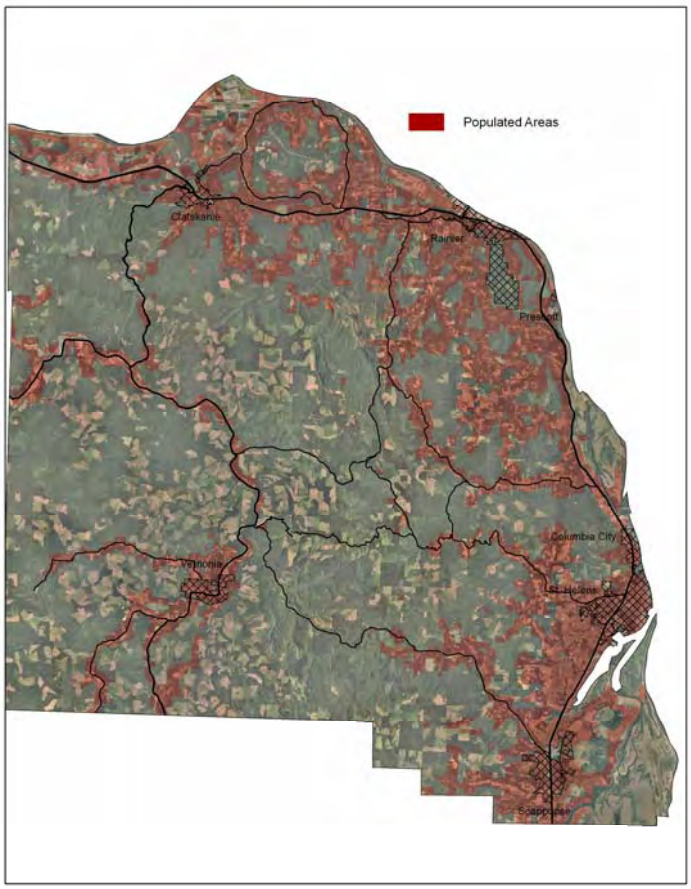
[2]Columbia County is located in the northwest portion of Oregon. The Columbia River is the northern and eastern boundaries. The western boundary extends into the Coast Range. The northern and eastern parts of the county, as well as its coastal valleys, are relatively flat terrain composed of alluvial flood plains and terraces. Low foothills and mountainous areas merge in the western part of the county. The elevation ranges from sea level to 2,240 feet (Buck Mountain). The County has a modified marine climate with annual precipitation ranging from 40 inches in the eastern portion to 100 inches in the higher elevations of the Coast Range. Average annual precipitation is 61 inches. Winters are relatively wet and mild with summers warm and dry. The summer's warmer and drier weather is associated with gradually lengthening high-pressure systems. These begin generally in June and

[2] Soil Survey of Columbia County, Richard T. Smythe, SCS

continue through September. The rolling and steeper uplands of the coast range are forested and managed for timber production. The flood plains and gentler terrain supports increasing rural population density. The primary industries are timber, fishing, water transportation, dairying, horticulture, and recreation.

Total population of Columbia County is 46,971[3]. Of this population, a significant portion lies within the wildland-urban interface and is rural in nature. It is estimated that approximately 21,000 citizens live outside the boundaries of incorporated city limits. This rural population density largely defines the wildland urban interface within Columbia County. Population growth and development continues with a 7.8% increase in population from 2000 to 2004. There are seven incorporated cities within the county and include the following ranked according to population: Saint Helens (11,940), Scappoose (5,840), Vernonia (2,340), Columbia City (1,890), Rainier (1,750),) Clatskanie (1,675), and Prescott (60). Saint Helens is the county seat. Numerous unincorporated communities exist throughout Columbia County including, but not limited to Alston, Birkenfeld, Chapman, Deer Island, Delena, Goble, Mist, Pittsburg, Swedetown, Trenholm, Quincy, Warren, and Yankton.

2005 Color 1 Meter Aerial Photo, Columbia County with Incorporated Cities and Populated Areas

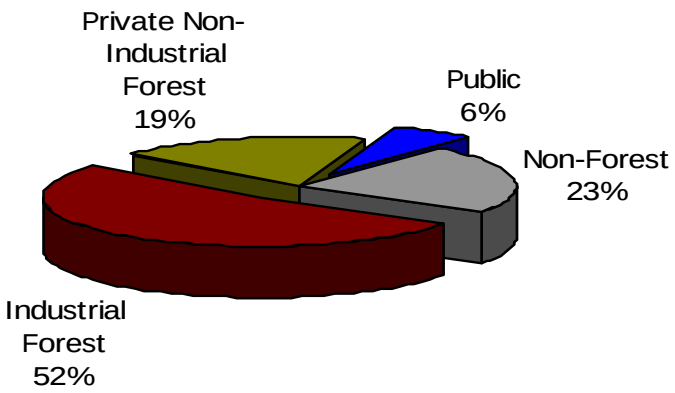


Columbia County is the third smallest county in Oregon with a total area of 688 mi^2. The total land base is 657 square miles or approximately 420,480 acres. However, it ranks fifth[4] in the total timber volume harvested. During the late 1800s and early 1900s, the county's timber resources were extracted to the fullest. Old growth timber has since been replaced with second growth forests. Industrial forest owners and many small non-industrial private forestlands practice intensive forest management on approximately 71% of the land base. Since the time of the first European settlements to the present, forest products remain the county's key industry. Only a small percentage (6%) of the land base is in public ownership. Federal ownership within the

[3] 2004 estimate based on 2000 Census, US Census Bureau
[4] Based on ODF harvest levels – Columbia County

county is significantly less. The Bureau of Land Management (BLM) has approximately 11,030 acres or 2.5% of the land ownership within the county. State forests managed by the Oregon Department of Forestry (ODF) total 6,430 acres. The U.S. Forest Service does not own any land within Columbia County. As a result of this ownership pattern and the history of intensive forest management practices, the county has relatively few areas that pose extreme fire risk due to forest health issues and older forest reserves.

Land Ownership - Columbia County
Figure 1.1



Summary

The potential that wildland fires, both small and large, will threaten life, property and natural resources is a reality. Fire statistics show that fire incident rates, and therefore risks, are prevalent in the WUI areas of the county. Population growth and development continue to encroach into and fragment forests. Therefore, the strategic planning efforts and actions that result from this plan, and the continued maintenance of this plan, will benefit all residents of Columbia County.

This Community Wildfire Protection Plan is endorsed by the Columbia County Commissioners, Columbia County Fire Districts and the Oregon Department of Forestry. These representatives mutually agree to the final contents of this plan. The plan will not be legally binding in any way. The role of this plan is to be a strategic planning tool and therefore a catalyst for actions involving partnerships that accomplish the following stated vision, mission, goals and objectives.

Columbia County Community Wildfire Protection Plan
Mission, Goals and Objectives

Vision Statement:

The Columbia County Community Wildfire Protection Plan seeks to create a locally developed and supported wildfire prevention and mitigation strategy that reduces wildfire risks to people, property, natural resources and the environment.

Mission Statement:

Columbia County is committed to providing real and achievable mitigation actions that engage and educate it citizens about wildfire risks, motivates citizen and community involvement and action toward mitigation of wildfire hazards and establishes a clear understanding of issues relative to protection of life, property and resources within the forestland-urban interface of Columbia County.

Goal:

- The identification and implementation of action items that serve to educate, involve and protect the community and citizen interests of Columbia County as it relates to threats from wildfire.

Objectives:

- Complete a comprehensive wildfire risk assessment for Columbia County using local expertise and knowledge and common risk assessment data and methodologies.
- Provide opportunities for meaningful participation among community members, local, state, and federal agencies.
- Identify and map the Community at Risk (CAR) and establish priority areas within the broader Community at Risk designation.
- Identify and map the boundaries of the Wildland Urban Interface (WUI).
- Identify any developed lands within the county that are not protected by structural fire departments. Address these areas in CWPP and through specific action plans to ensure availability of State's conflagration resources.
- Develop action plans for mitigation of wildfire threats in these priority areas. *The community wildfire protection plan further develops mitigation efforts identified in the FEMA, Natural Hazards Mitigation Plan, Section 9 – Wildfire*
- Identify broad action items-projects for implementation at a countywide level.
- Encourage the development of specific community wildfire protection plans dealing with pre-suppression response planning, evacuation routes, structural vulnerability assessments and mitigation, targeted fuel reduction, local citizen education and involvement.
- Encourage appropriate communities and developments to become "Firewise Communities" under the Firewise Communities/USA® recognition program.
- Encourage citizen understanding, involvement and homeowners shared responsibility in efforts to reduce risk of property damage and threats to life by actively managing the "Home Ignition Zone" as a defensible/survivable space.

- Based on historical fire causes and trends, develop multi-agency fire prevention action plan to address human caused fire risks.
- Educate owners about their fire prevention role to reduce the threat of fires escaping to resource lands.
- Strengthen communication and coordinate participation among public agencies, citizens, non-profit organizations, business and industry.
- Search for pilot project opportunities to engage community and demonstrate values of defensible/survivable space.
- Maintain land development practices and policies that insure education and the required application of fire siting standards in WUI zones.
- Improve county and local opportunities for federal and state funding assistance. Increase probability of federal funding opportunities based on mult-agency, community and business partnership projects.
- Maintain the Columbia County Community Wildfire Protection Plan Committee as a standing steering committee to annually review actions and accomplishments.
- Institute a working document philosophy and make changes to the plan as new information becomes available or priorities change over time.
- Meet or exceed the requirements of the National Fire Plan and FEMA for a county level community wildfire protection plan.

CHAPTER 2: Planning Process

In June of 2005, The Columbia County Community Wildfire Protection Plan Committee was established. The committee has met numerous times in the development of this Plan. The Committee is composed of the following core members:

Vicki Harguth (Co-Chair)	Director – Columbia County Emergency Management
Michael Simek (Co-Chair)	Unit Forester, Oregon Department of Forestry
Michael Greisen	Chief, Scappoose RFD – Columbia County Fire Chief
Terry Grice	Assistant Chief, Columbia River Fire and Rescue
Dave Crawford	Chief, Mist-Birkenfeld RFD
Richard Long	Chief, Clatskanie Rural Fire District
Paul Epler	Chief, Vernonia Rural Fire District
Randolph "Tad" Pederson	Deputy, Office of the State Fire Marshal
Jacob Graichen	Planner, Columbia County Land Development Services
Larry Hurley	Tree Farm Manager, Longview Timber Lower Columbia River Watershed Council Member
Carl West	Fire Management, Bureau of Land Management
Advisory Members	Columbia County Agencies, Businesses and Community

Columbia County Wildfire Protection Plan Framework

A number of models exist for guiding the development of community wildfire protection plans. These models, or templates, serve to address the federal legislation promoting these efforts and provide an opportunity for seeking federal and state grant monies. The CWPP has become the planning standard that ensures priorities and actions are well established within the community. The Columbia County CWPP Committee (CCWPPC) chose the document [1]"*Preparing a Community Wildfire Protection Plan – A Handbook for Wildland-Urban Interface Communities*" as its guiding template. This handbook is also referred to as the Healthy Forest Restoration Handbook.

Table 2-1 Community Wildfire Protection Plan Steps

Community Wildfire Protection Planning Steps
Step 1: Convene Decisions Makers
Step 2: Involve Federal Agencies
Step 3: Engage Interested Parties
Step 4: Establish a Community Base Map
Step 5: Develop a Community Risk Assessment
Step 6: Establish Community Priorities and Recommendations
Step 7: Develop a Action Plan and Assessment Strategy
Step 8: Finalize Community Wildfire Protection Plan

[1] Preparing a Community Wildfire Protection Plan – A Handbook for Wildland-Urban Interface Communities is available at http://www.safnet.org/policyandpress/cwpphandbook.pdf

Step 1: Convene Decision Makers

The Columbia County Community Wildfire Protection Plan Committee (CCCWPPC) has been established as a long term standing committee to develop the countywide Community Wildfire Protection Plan. The Committees mission is to maintain leadership in matters regarding community wildfire planning efforts that ensure protection of our citizens, their communities and natural resources within the wildland urban interface of Columbia County. The Columbia County Fire Defense Board members are also, for the most part, members of the CWPP Committee. The Board has been actively engaged in the process of developing the Columbia County Community Wildfire Protection Plan through it monthly meetings and special workshops.

Step 2: Involve Federal Agencies

Columbia County land base (657 mi ^{2}) is largely composed of private land ownership. The primary federal ownership is the Bureau of Land Management (BLM). It manages approximately 11,000 acres in the south-east central portion of the county. Collaboration with federal partners is essential in meeting the objectives of the Healthy Forest Restoration Act and BLM is an active member of the Columbia County CWPP Committee.

Step 3: Engage Interested Parties

Fire service professionals within Columbia County, as well as the core members of the committee have provided review and specific input into the plan. The CCCWPP Committee designated each structural fire district to represent the “community center” and primary contact for public outreach and involvement. Media articles and local meetings have engaged local citizens regarding the wildland urban interface. Engaging the community will be a continual process during the implementation and revisions to this plan.

Step 4: Establish a Community Base Map

A community base map was developed using best available data from Columbia County, the Oregon Department of Forestry and other geo sources. The Department of Forestry – Columbia Unit developed GIS projects with varied layers for the assessment and public outreach phase. Map products were provided for the assessment phase and community meetings. The base map consists of the following layers: County, city and urban growth boundaries, highway and road layers, 2005 digital aerial photos, local state and federal ownership. In addition, layers showing fire incidence rates and locations, inhabited areas of the county based on population thresholds i.e., defined community at risk, wildland urban interface boundary, slope grid and tax lots. Priority areas within the overall community at risk were digitized based on local input. The color aerial photos (1/2 -1 meter resolution) and their revisions will become the base map standard on which additional layers will be digitized. Future revisions will use best available data and digital aerial photos.

Step 4: Hazard Assessment

An assessment of wildfire hazard was developed using a combination of available statewide assessment data and localized data specific to Columbia County. The assessment process utilized the national standard to assess four factors – *risk, hazard, protection capability, and values including structural vulnerability.* The full rating sheet is available for review in *Appendix C.*

Step 5: Develop a Community Risk Assessment

Risk assessment was conducted using the statewide methodology document entitled *Identifying and Assessment of Communities at Risk in Oregon, October 2004.* The use of this methodology provided a consistent approach to hazard and risk rating. Each priority area within the identified Community at Risk has been rated using this system. Local risk assessment factors based on local fire district expertise and knowledge combined with statistical and GIS based data supported this review. The assessment process included meeting with each fire district and their officers. The statewide assessment data was used as a platform to discuss wildfire hazard ratings and to establish local priorities within each fire district and county non-fire district area. Population density, structural density, structural ignitability, access, response capability and response times, topography and slope, fuels, fire occurrence patterns and density, fire causes and land use patterns were evaluated. See Chapter 3, Wildfire Risk Assessment.

Step 6: Establish Community Hazard Reduction Priorities
Establish Recommendations to Reduce Structural Ignitability

Fire district staff defined priority areas within their district's populated areas or Community-at Risk. Risk assessment factors included such factors as structural density vs. fuels, fuel types and terrain, structural ignitability considerations, access, response times, evacuation routes, etc.

In most areas of the county, accurate assessment data is lacking in regards to structural vulnerability. Obtaining such data will greatly assist in understanding the scope of the structural vulnerability problem within each district and the county. Therefore, action plans do specify data collection as part of defining these issues at the local level. See Chapter 4, Structural Ignitability and Chapter 5, Fuel Reduction Priorities.

Step 7: Develop an Action Plan and Assessment Strategy

Action plans and assessment strategies have been developed and cover both priority areas and the general populated areas of the county called our community at risk. The priority areas are based on assessment ratings. These are the main focus of current action plan efforts of the CWPP included in the document. In addition, other action items are presented in the plan that

are broader in scope and focus on overall support for coordination within the county. See Chapter 7 – General Action Items and Chapter 8 – Specific Action Plans.

Step 8: Finalize the Community Wildfire Protection Plan

Finalization included review by the CCCWPP Committee, ODF National Fire Plan Coordinator and the review and approval by the Columbia County Board of Commissioners, the Oregon Department of Forestry's State Forester's Representative – Forest Grove District Forester and the five (5) Rural Fire Districts within Columbia County.

The CCCWPP will remain a working document that will be modified and adjusted based on local input and updated assessment data as it becomes available. As communities and citizens of the county increase awareness of wildland urban interface issues, the document will reflect new priorities and perhaps new communities at risk. To maintain this level of engagement, the CCCWPP Committee will meet annually to review and document action plan accomplishments, evaluate current priorities and revise the document as needed.

The Columbia County CWPP will be posted on the following web sites:

Primary - Columbia County - http://www.co.columbia.or.us/home.asp
Oregon Department of Forestry - http://oregon.gov/ODF/FIRE/FirePlans.shtml
Columbia County Fire Districts - as developed locally

Fire planning spreads with county growth

❒ Fire safety and forest officials launch plan and education campaign to lower wildfire damage

By Darryl Swan
THE SOUTH COUNTY SPOTLIGHT

During the dry summer months, a carelessly discarded match or rogue lightning strike could ignite Columbia County forested areas that are quickly becoming hot spots for residential development.

And in an extreme scenario — one characterized by pinch-point house access, hot and dry weather, unfavorable atmospheric conditions and a surrounding build-up of woodland debris — fire personnel are making no guarantees they'll respond to all fires.

"Those are the types of fires where we'll have to make a decision," said Ron Youngberg, division chief for the Columbia River Fire and Rescue.

Such scenarios are rare for Columbia County and more likely for areas east of the Cascade Mountains, Youngberg admits, but they do occasionally happen.

A new countywide planning and education effort seeks to encourage homeowners living in identified risk areas to self-manage their homes for fire safety.

"Columbia County is an almost explosive growth area now. We're starting to build houses where there used to be farms and forests," said Mike Simek, the district forester with the Oregon Department of Forestry.

Simek co-chaired a committee formed in 2005 that includes fire personnel throughout the county. The committee's goal was to identify "wildland-urban interface" areas where fires could quickly spread and endanger residents' physical health and property.

The focus is part of a national effort to mitigate the fire danger occurring with increasing growth in forested areas.

"We're under an it-can-never-happen-to-us syndrome in Columbia County."

◆

Ron Youngberg

In response, the committee worked together to draft the Columbia County Community Wildfire Protection Plan, which serves as the local link to the National Fire Plan, Simek said.

The plan was crafted completely with volunteer hours and no grant support, though it could serve as the springboard for future grant opportunities.

"It was the-right-thing-to-do funded," Youngberg said.

Most people living in wildland-urban interface areas are not aware of the inherent fire dangers, and that adequate planning is typically the exception, not the rule, in St. Helens' and Scappoose's at-risk communities, said Youngberg and Scappoose Fire Chief Mike Greisen.

Though the plan is not set for approval by the Columbia County commissioners until July, segments of it will be implemented regardless of formal approval.

Identified in the plan are around 15 areas considered "communities at risk," a bulk of which are areas in or near St. Helens and Scappoose.

The plan looks at fuel supplies, fire history, topography and the possibility of structural ignition in the identified risk areas.

Historically, Columbia County wildfires have been of low or moderate intensity, perhaps driving skepticism into the possibility a larger fire posing higher damage risks could occur.

"We're under an it-can-never-happen-to-us syndrome in Columbia County," Youngberg said.

The Grey Cliffs neighborhood in St. Helens is one of the first communities targeted for an educational campaign, kicking off with a May 9 meeting at the Elks Lodge.

South of Scappoose, the growing Columbia Hills development with its proposed 140 residential lots is a second community at risk, Greisen said.

In 2002, Oregon, Arizona and Colorado had their largest wildfires on record, burning 835 homes, according to information from the National Fire Protection Association.

"There is an increasing pattern of fires. Larger and larger fires," Simek said.

Is your home safe from wildfires?

The following are good safety tips for securing your house from the possibility of wildfire damage:

- Maintain a 30-foot non-combustible zone around your house.
- Add fire-resistive plants such as flowering dogwoods, rhododendrons and hostas into your landscaping scheme.
- Remove or thin overcrowded and weakened trees, and prune low-hanging branches.
- Keep a neat, mowed lawn, and be sure to trim back weeds.
- Keep your woodpile and excess building materials 30 feet from your home.
- Clear needles, leaves and plant debris from your roof and deck.
- Make sure the street sign and home address is visible from the road.
- Draft an emergency checklist and action plan detailing what to do in the event of a fire.

For more information on protecting your house from wildland-urban interface fires, visit www.firewise.org.

South County Spotlight Article Introducing Community Wildfire Protection Planning Efforts

CHAPTER 3: Wildfire Risk Assessment

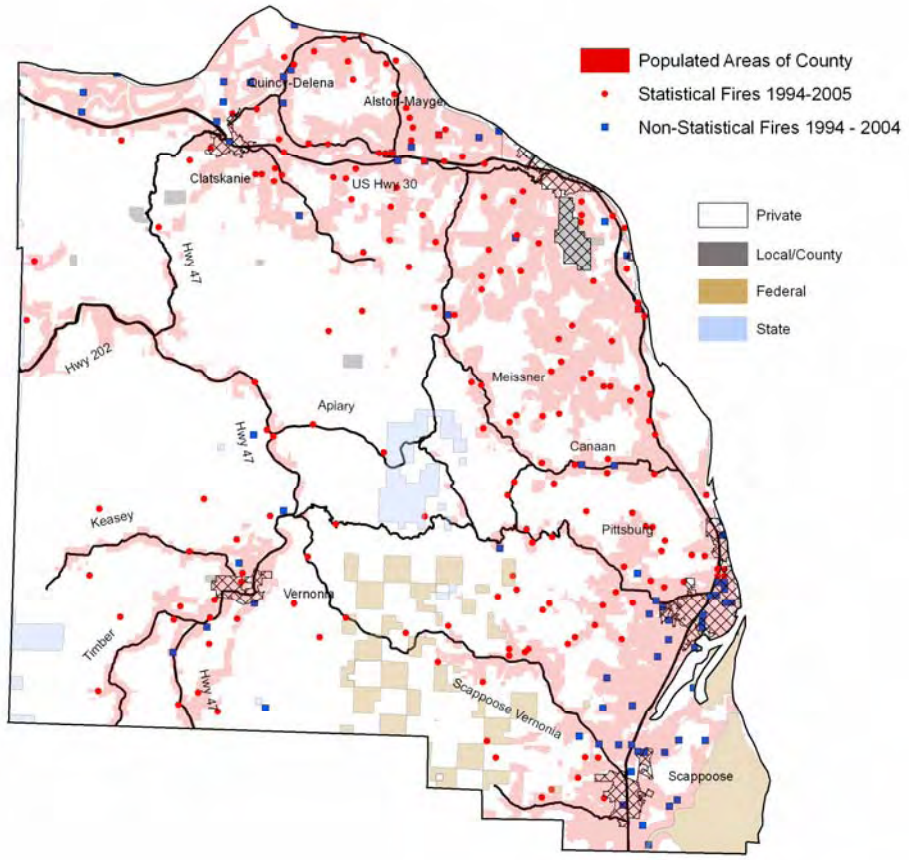
The development of a wildfire risk assessment is essential to understanding the potential threats of wildfire within our local community. Through the wildfire risk assessment process, the core committee, fire service professionals and community members have gained an understanding of the potential threats. The assessment is intended to help define locations within the county that are higher priority for mitigation work.

The Healthy Forest Restoration Act, The National Fire Plan, FEMA's Disaster Mitigation Act of 2000, the National Association of State Foresters and the Oregon Department of Forestry have all established methodologies for conducting a comprehensive wildfire risk assessment. The methodology used for the Columbia County CWPP follows the Oregon Department of Forestry's guidance titled "Identifying and Assessment of Communities at Risk in Oregon".

Risk: ***What is the likelihood of a wildland fire occurring in Columbia County?***
What are the causes of the fires that are occurring?
Do we have other potential ignition risks on the horizon?
What is our prevention capacity to offset these hazards?

Fire Occurrence:

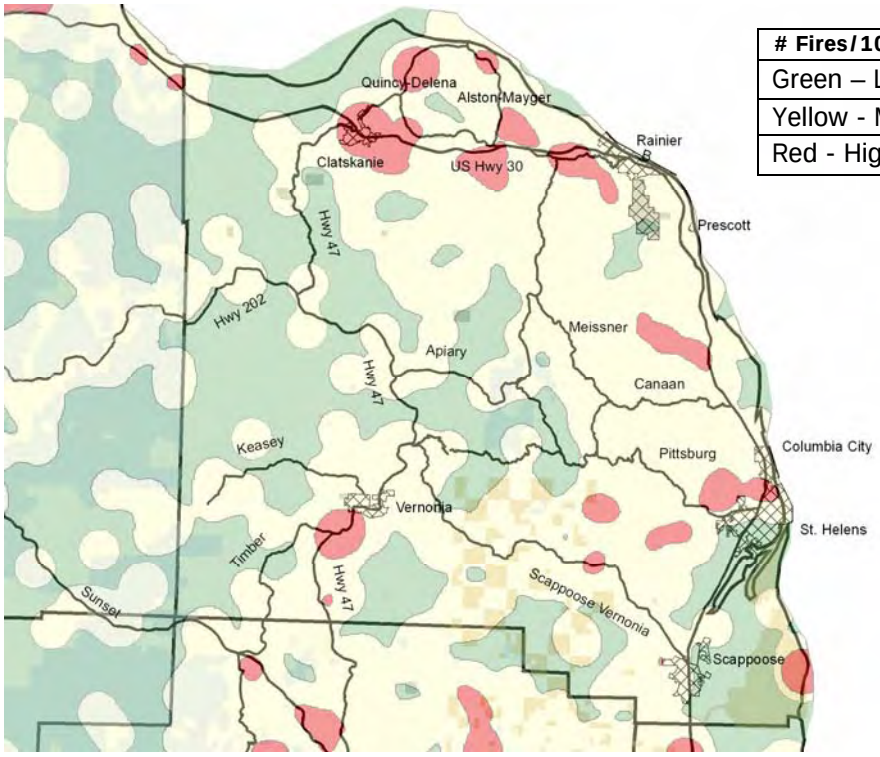
Figure 4.2, [1]Statistical Fires, Natural Cover 1994 – 2005



[1]Source ODF, "Statistical Fires" are reportable fires in natural cover fuels or threatening to spread to natural cover fuels.

The fire occurrence adjective class rating is broken into an incident rate of low, moderate and high. Fire rates are based on the number of fires per 1000 acres per 10 years. This density measure allows a better understanding of the frequency of fires on the landscape. Most wildland fires in Columbia County occur in the more populated and rural wildland interface areas of the county. These WUI areas also represent the greatest risk to life safety and property.

Figure 4.2: Fire Incident Rate - Adjective Rating



# Fires/1000 acres/10 years	
Green – Low	0.0 -0.1
Yellow - Moderate	0.1 - 1.1
Red - High	1.1+

Recent Large Fires in Columbia County and Vicinity:

Fire Name	***Location***	***Size (Acres)***	***Fuel Type***	***w/i WUI***	***Year***	***Cause Category***	***Vicinity of Homes***	
Scappoose Airport	*Scappoose Airport*	*200*	*Grass/Agriculture*	***Yes***	*2000*	*Burning*	*Yes*	
Pebble Creek	*South of Vernonia*	*165*	*Logging Slash/Timber*	***Yes***	*1987*	*Hunter/Smoking*	*Yes*	
Keasey Dam	*West of Vernonia*	*117*	*Logging Slash Reproduction.*	*No*	*1989*	*Recreationist/Campfire*	*No*	
Emerald Forest		*37*	*Logging Slash*	*No*	*1994*	*Equipment/Logging*	*Yes*	
Kerry Road	*West of Clatskanie*	*31*	*Fell/Buck, Slash, Reproduction*			*Equipment/Logging*	*No*	
Wolden Road		*31*	*Reproduction*	***Yes***	*1999*	*Debris Burning*	*Yes*	
Lost Creek Road		*20*	*Reproduction*	***Yes***	*1999*	*Debris Burning*	*Yes*	
Stone Road	*West of St. Helens*	*5*	*Logging Slash*	***Yes***	*1995*	*Burning*	*Yes*	
Pittsburg Road	*South of Liberty Hill*	*5*	*Scrub Oak/Grass*	***Yes***	*2006*	*Recreationist/unknown*	*Yes*	

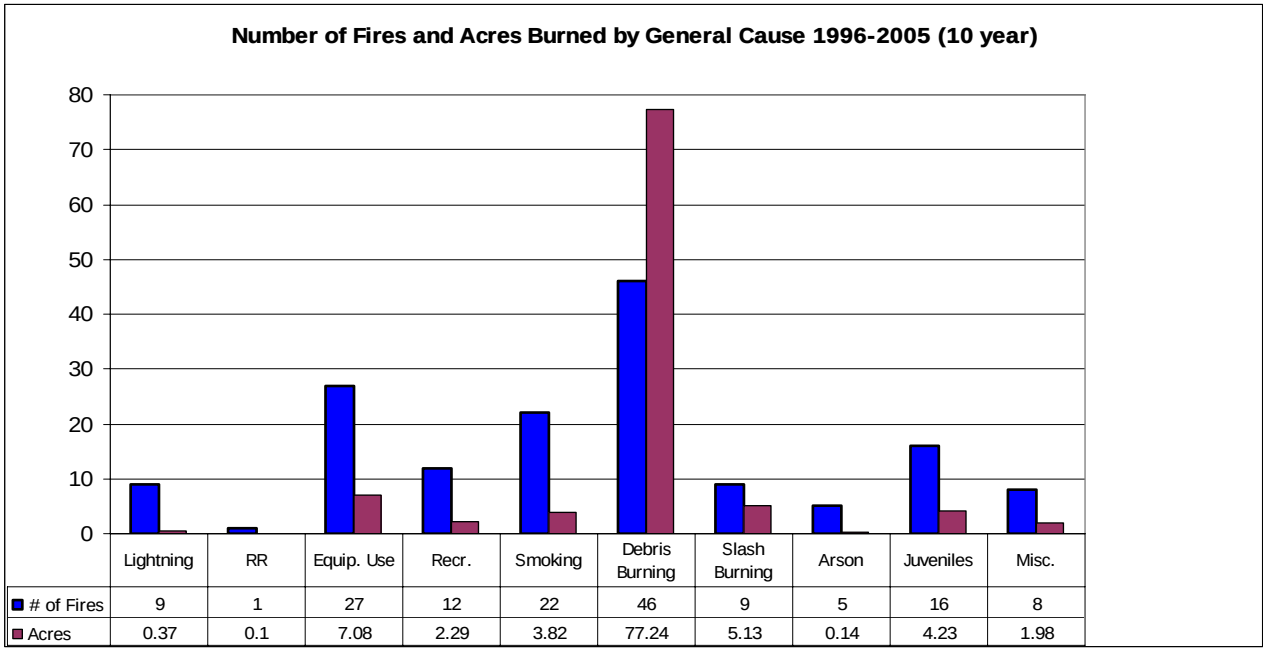
Additional fires of significance in NW Oregon occurred in 1987 near Dalles Oregon including the ***5000 acre Rockhouse Creek Fire*** and the ***1000 acre Shady Lane Fire***. These fires indicate the potential for large fire growth within northwest Oregon forests.

Ignition Risk:

Historical and potential ignition hazards are important to understand in the development of prevention strategies. Targeted prevention efforts through outreach, education and enforcement can minimize exposure to fires and therefore the threat to communities.

The risk is variable with potential for fires to occur from many types of ignition sources. These causes clearly indicate a risk as a result of human activity resulting from backyard burning and land clearing type of fires.

Table 4-3: 10-Year Number of Fires and Acres Burned by General Cause Category (1996 -2005)



	Lightning	RR	Equip. Use	Recr.	Smoking	Debris Burning	Slash Burning	Arson	Juveniles	Misc.
# of Fires	9	1	27	12	22	46	9	5	16	8
Acres	0.37	0.1	7.08	2.29	3.82	77.24	5.13	0.14	4.23	1.98

Prevention capacity is the ability of local agencies and the public to successfully address and mitigate potential risk of human fire starts. Within Columbia County and throughout the State of Oregon, debris burning is the number one human caused fire category. In the early 90's, the Columbia County Fire Defense Board adopted a "Burn Ban" policy to be implemented during the fire season. Over time this effort has greatly reduced the number of fires and therefore reduced the risk exposure. The burn ban continues to be an effective measure in reducing the risk of escaped debris burning fires during the critical fire season period. Educating landowners regarding burning regulations and other fire prevention requirements are on-going. The Fire Districts and the Oregon Department of Forestry continue to address local fire potential from human caused activities and have numerous programs to target these priorities. Increased participation and coordination between agencies is a stated goal to bolster countywide prevention efforts.

Hazard: ***What is the "[2] resistance to control" once a wildfire starts? Key factors are Fuels, Weather and Topography***

Weather Hazard Factor:

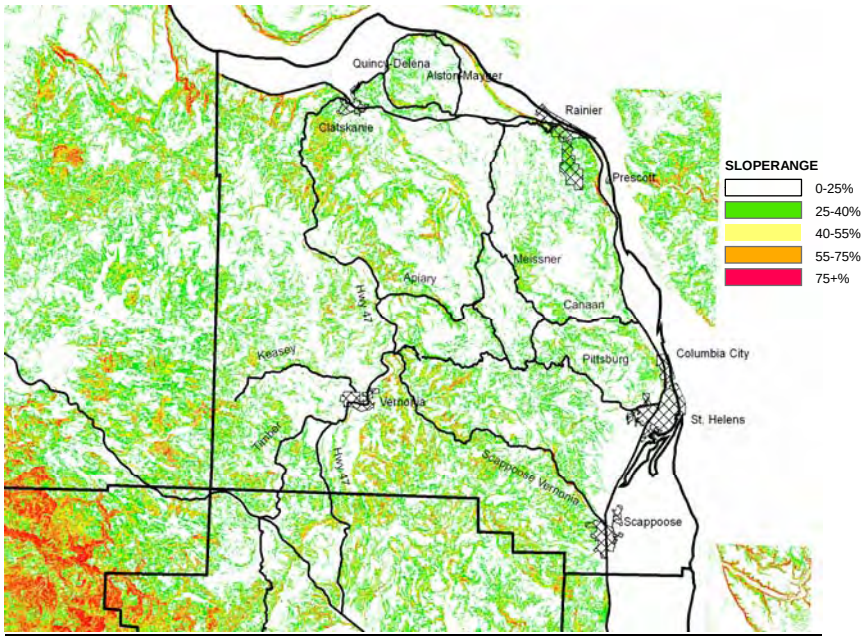
This factor is based on the number of days that forest fuels are capable of producing a significant fire event. The rating is based on fire danger indices provided by the Oregon Department of Forestry using the National Fire Danger Rating System (NFDRS). In Columbia County, the overall weather rating under the statewide assessment is in the moderate category. Coastal areas including Clatsop County have a weather rating of Low in comparison. "Red Flag" conditions in Northwest Oregon are associated with low fuel moistures and low humidity east wind events. These conditions represent potential fire weather extremes during the months of August, September and October.

Weather Hazard Factor 1 = Low **2 = Moderate** 3 = High

Topography Factor: *Slope, Aspect and Elevation Considerations*

The overall characterization for slope factor within the Columbia County WUI is low to moderate (0-40% slope) in rural residential areas**.** However, areas where communities, individual or groups of structures are adjacent to steep slopes, fuel reduction and fire resistive landscaping within the "Home Ignition Zone" and localized community to parcel fuel reduction and evacuation planning becomes critical. Assessment factors of slope were considered when identifying priority areas within the overall community-at-risk or populated areas of the county.

Figure 4-3: Slope Class



[2] Resistance to control is a term used to indicate the level of effort required to control a wildfire. Where fuels are moderate to heavy, slopes are steep, topography is complex and fire weather conditions extreme, resistance to control is very high. Where fuels are light and topography less complex, resistance to control is low.

Natural Vegetation Factor:

The statewide assessment data was used to determine the natural vegetation and the associated hazards. GAP vegetation types along with expert hazard evaluation provided the overall hazard rating for the State of Oregon. In Columbia County, the hazard is presented as **Moderate** based on overall composition of natural vegetation and its fire potential including crown fire potential.

Local Fuels Data:

Columbia County does not have large-scale forest health damaged stands such as insect infestation areas, windthrow, or older unmanaged or decadent stands with heavy dead and downed debris. Laminated root rot pockets and bear damage are found throughout the county but they do not present a significant forest health issues in relation to fire potential. Swiss needle cast is confined to within 18 miles of the coastline. Timber stands of conifer and conifer-hardwood mix are common throughout Columbia County. Fires within timbered stands are confined to understory vegetation with mixed severity to the overstory. Timber fires involving crowning are rare due to current land management practices and the narrow window of extreme fire weather and fuels. Logging slash from forest management harvest activities are the primary forest fuel under normal fire season conditions. Slash concentrations are variable and across the landscape both in time and space. Current aerial photography is the best available data for evaluating natural vegetation, concentration of slash or recently harvested sites. Landowners, either through scarification or burning treat many areas of slash thereby reducing the hazard. Modern forest utilization often leaves light slash loadings. Other areas involving grass, brush and scrub oak stands around St. Helens are prone to fire.

Protection Capabilities:

What are risks associated with wildfire protection capabilities including the capacity to undertake fire prevention measures?

The protection capacity on a statewide basis was determined on the absence or presence of structural and wildland fire agencies. In Columbia County, both the structural fire districts and a wildland fire protection district exist. Five structural fire districts cover major portions of the county. These fire districts cover approximately 95% of the structures and development within the county. In addition, mutual aid agreements between local districts and surrounding fire districts in adjacent counties bolster the capabilities of fire responses. Once these mutual aid resources have been exhausted, additional resources are made available under the State's Conflagration Act. The Columbia County Fire Chief would direct these requests to the Office of the State Fire Marshal (OSFM). Volunteer firefighter availability is a significant factor in determining availability of firefighting resources beyond initial attack efforts. A large wildfire incident threatening life and property would require significant mutual aid response within and from resources outside the county. Oregon Department of Forestry utilizes a coordinated response based on local, area and statewide resources to meet the demands of the fire situation. In larger fire situations, an ODF Area or State incident management team would be assigned as well as a State Fire Marshal Team to manage Conflagration resources.

Structural Fire Districts within Columbia County

- Clatskanie Fire Rural Fire District
- Columbia River Fire and Rescue
- Mist-Birkenfeld Rural Fire District
- Scappoose Rural Fire District
- Vernonia Rural Fire District

Wildland Fire Protection District

- Oregon Department of Forestry

Mutual Aid Agreements

- Between all Columbia County Fire Districts and ODF
- Scappoose RFD and Portland Fire Bureau
- Tualatin Valley Fire and Rescue and Columbia County Fire Districts/ODF
- Scappoose RFD and Sauvie Island RFD
- Conflagration Resources

Columbia County Fire Departments and Agencies

Clatskanie Rural Fire Department

- Main Station @ Clatskanie,
- Two volunteer sub-stations at Alston and Quincy
- Paid Staff, 3 Chief Officers, 3 Firefighters
- 24 volunteers

Columbia River Fires and Rescue

- 3 Staffed Stations: St. Helens Main , Fairgrounds and Rainier
- 4 Volunteer Sub-Stations: Columbia City, Deer Island, Goble and Fernhill
- Paid Staff: 5 Chief Officers, 36 Firefighters
- Volunteers: 50

Mist-Birkenfeld Rural Fire Department

- Main at Hwy. 202 near Banzer Road
- 3 Sub-stations Fishhawk, Peterson and Sager Creek
- Paid Staff: Two Chief Officers
- 45 Volunteers

Scappoose Rural Fire Department

- 1 Staffed Station: Main @ Scappoose
- 2 Sub-stations at Chapman and Holbrook (Multnomah Co.)
- Paid Staff: 3 Chief Officers and 9 Firefighters
- Volunteers: 45

Vernonia Rural Fire Department

- Main at Vernonia
- One (1) Full-Time Chief
- 25 Volunteers

Oregon Department of Forestry – Columbia Unit

Main @ Columbia City

- 2 Seasonal Staffed Guard Stations, Pittsburg and Clatskanie Areas
- 3 Full-Time Fire, 5 support/firefighters
- 12 Seasonal Firefighters

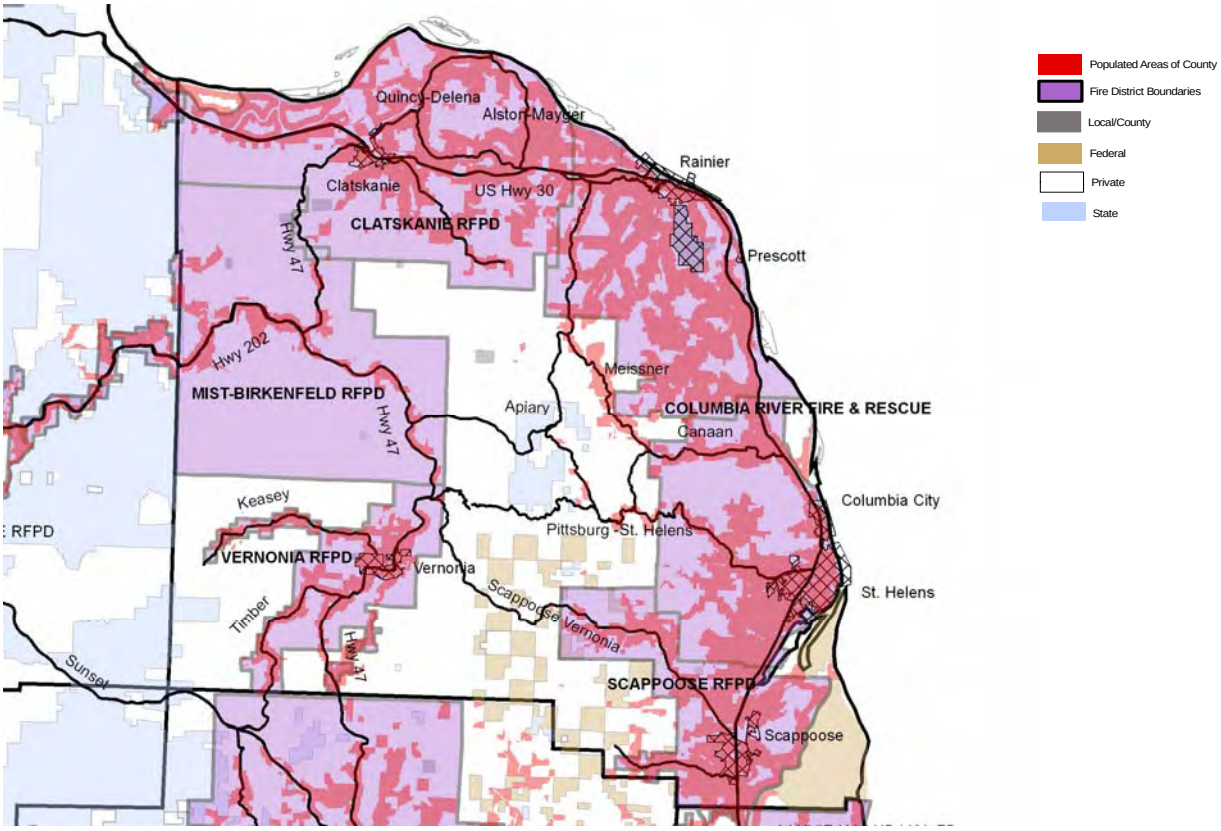
For a complete listing of fire fighting resources by fire district and local ODF unit, refer to Appendix B.

Fire Response:

Fire response factors were evaluated using the following criteria:

- Areas inside a fire district with structural response under 10 minutes (0 points)
- Areas inside a fire district with structural response over 10 minutes (8 points)
- Areas outside of a fire district with wildland response under 20 minutes (15 points)
- Areas outside of a fire district with wildland response over 20 minutes (36 points)

Response time for structural protection is a major factor in determining priorities. The staffing of the fire district, whether career or volunteer plays an important part in the availability of resources and response times. Though the assessment process, fire staff placed emphasis on this factor in determining local fire district priorities.



Community Preparedness:

Community preparedness is evaluated on the following:

- Community has an organized stakeholder group, community fire plan, phone tree, mitigation efforts (0 points)
- Effort is through agency, primarily mailings, informational material available (2 points)
- No effort (4 points)

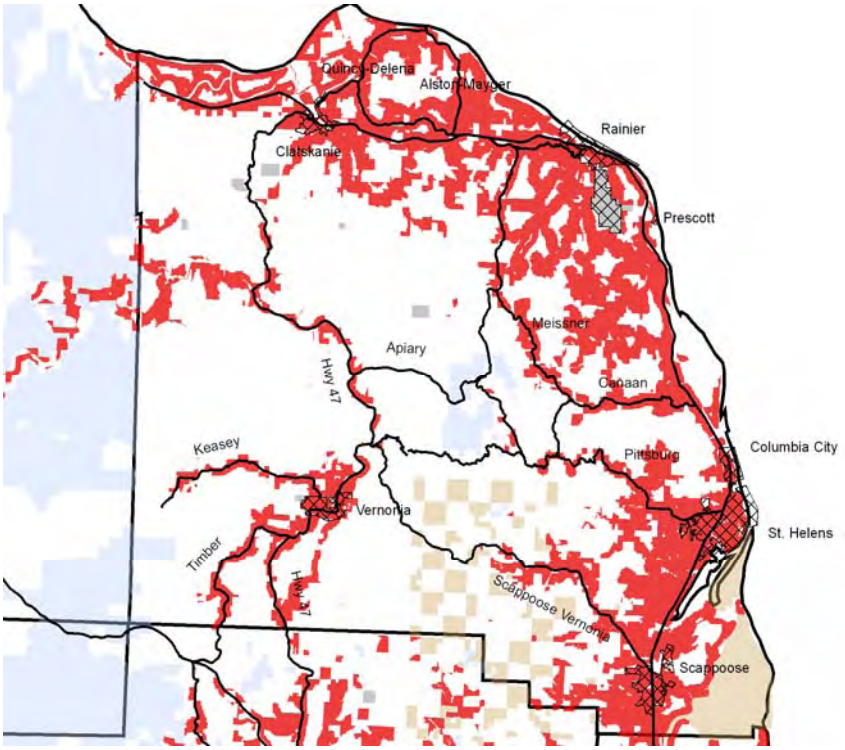
The current status of community preparedness is not well developed within the county with perhaps the exception of Fishhawk Lake. Numerous efforts to distributed mailings, fire-siting requirements via land development services, fire driveway and public road standards and public outreach by agencies are occurring. This CWPP identifies priority areas or focus areas within the county to develop increased community involvement, shared responsibility and preparedness.

Values Protected:

What are the human and economic values associated with communities or landscapes?

Overall values to human life are based on areas of human population density thresholds of 28 persons per square mile. Property values are also implied using population density and tax-lot layers assuming dwelling densities of 1 dwelling per 40 acres. These factors define the coarse mapping layer for the "Community-at-Risk" within Columbia County.

Figure 1: Populated Areas, Values at Risk Areas – Columbia County



Other community values include essential infrastructure, resource lands; primarily timber producing land, municipal watersheds, critical wildlife habitat, significant recreation and scenic areas. The social, environmental and economic values associated with communities and landscapes will be evaluated on a local level and incorporated into future revisions to this plan.

Structural Vulnerability:

What is the likelihood that structures will be destroyed by wildfire?

Assessment of structural vulnerability is best accomplished by on-site visits and data collection methods. A number of projects have been identified within priority areas of the Community-at-

Risk/WUI. These projects identify the need to have this on-site assessment as a measure of the potential vulnerability. Factors such as the type of roofing, fuel reduction around structures and access routes, fire safe landscaping and access are key elements in this evaluation. Homeowner understanding and participation is essential to reduce a home's vulnerability to wildfire.

Stone Road Fire – 1995, Columbia County

CHAPTER 4: Structural Ignitability

Structural Ignitability deals with the home itself and its immediate surroundings; also know as "The Home Ignition Zone". Whether or not a home is vulnerable to ignition from a low, moderate or high intensity wildfire depends on a number of factors. Low intensity fires can destroy homes with high ignitability whereas low ignitability homes can survive high intensity fires. Most actions to reduce home ignition potential are directed to the home itself and its immediate surroundings within 100 feet. Under some circumstances reducing fire intensity, and therefore the home ignition risk, may involve extending the zone further.

[1]

The **home ignition zone** includes the home and an area surrounding the home within 100 to 200 feet. The potential for ignition depends on the home's exterior materials and design and the amount of heat to the home from the flames within the home ignition zone. Firebrand ignitions also depend on the home ignition zone either by igniting the home directly or igniting adjacent materials that heat the home to ignition. To view full publication Wildland-Urban Fire – A Different Approach by Jack D. Cohen; go to the following URL: http://www.nps.gov/fire/download/pub_pub_wildlandurbanfire.pdf

The minimum requirements for a CWPP as described in the Healthy Forest Restoration Act (HFRA) is that the CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed the plan. This plan addresses structural ignitability within Columbia County's Community-at-Risk.

[1] Image and Text Source: Wildland-Urban Fire A Different Approach; Jack D. Cohen, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station – Fire Sciences Laboratory

General Principles in All Action Plans:

- Obtain structural ignitability intelligence through local assessments.
- Educate homeowners about structural ignitability and measures that can be taken to reduce a structures ignition potential from a wildfire.
- Motivate fuel reduction and fire safe landscaping practices within the "Home Ignition Zone" utilizing in all areas of the WUI.
- Utilize established programs to support community and homeowner education and public outreach.
- Utilize opportunities for media coverage and other public outreach actions involving demonstration projects.
- Seek technical and financial assistance opportunities for addressing fuel reduction efforts, structural ignitability issues and support of demonstration projects.
- Encourage maintenance of the "Home Ignition Zone" over time to keep home ignition risk low for the surrounding conditions.
- Seek opportunities for community debris disposal collection sites that recycle or compost vegetative materials vs. burning.
- Ensure all new development meets fire resistive construction and landscaping codes.
- Assist in maintaining, reviewing and updating appropriate ordinances for all new dwelling construction within WUI.
- Continue to provide Columbia County Land Development Services input through timely review and comments to land use applications.
- Implement Oregon's Forestland –Urban Interface Act legislation within Columbia County.

Columbia County Land Development Services:

Existing Development:

Generally, uses in existence prior to zoning and other land use laws are considered to be "grand-fathered," meaning, though they may not comply with current development standards they are still considered to be legal. Typically, standards such as fuel-free breaks for fire protection, as noted below, cannot be retroactively applied to preexisting "grand-fathered" development. Without governmental regulatory authority to impose fire safety regulations on "grand-fathered" development, such standards can only be implemented given a property owner's own initiative and desire. This emphasizes the importance of public outreach and education regarding fuel reduction and fire safe landscaping practices to reduce structural ignitability, which is the primary focus of this plan.

New Development:

Development within areas in a forest or agriculture/forest zone, Primary Forest (PF) or Forest Agriculture (FA) zones in Columbia County, are subject to both local ordinances and State laws that require primary and secondary fuel-free breaks for fire protection around dwellings. The fuel-free breaks are required for accessory structures (e.g. a detached garage on the same site as a dwelling). In addition, dwellings require appropriate construction practices that help to minimize fire risks. These standards are implemented though conditions of land use decisions (e.g. Conditional Use Permits) if they are required and through the Building Permit process.

Primary guidance is found in the publication Land Use Planning Notes (March 1991): *Recommended Fire Siting Standards for Dwellings and Structures and Fire Safety Design Standards for Roads* http://www.oregon.gov/ODF/STATE_FORESTS/FRP/docs/LUPNote1.pdf In addition, Columbia County has adopted Equivalents to Fire Buffers, Board Order No. 239-97, which provides "equivalents" with respect to fuel-free break requirements where these can not be fully met on small lots of record zoned Primary Forest or Forest-Agriculture.

Another common reference is the publication *Living with Fire, Pacific Northwest Version*. This publication is available at http://www.fs.fed.us/r3/publications/documents/livingwithfire.pdf

Currently, there is no mechanism to ensure that all properties required to have fuel-free breaks for fire protection, maintain them or other safe landscaping practices after all permits have been obtained to occupy the dwelling. In addition, such fire safety standards are not required for Rural Residential zoned properties (the RR zones in Columbia County) where wildfire risks can be just as significant as in forest zones. As such, public outreach and education are just as important for newer development as with "grand-fathered" development, especially since standards can be forgotten when properties change hands.

When adjacent to forest resource lands, Land Partitions, Subdivisions and other development within rural zoning shall be evaluated and timely comment provided regarding fire wise development. These reviews should address roads and access, appropriate siting, fire resistive construction, structural ignitability and adequate defensible landscapes. In addition, use of and access to water suitable for fire protection (e.g. lake, pond, stream or swimming pool) should be considered.

Fire Safety Design Standards for Roads

Columbia County and the Columbia County Fire Defense Board have established standards for new development fire access roads and driveways. These standards address adequate access for firefighting equipment including maximum grade, road width, turning radius, road surface, bridge design, culverts and other road access issues. The standards promote consistent application as it relates to interpretation of the International Fire Code, Oregon Fire Code and County ordinances. The Columbia County Fire Services have the authority and responsibility to process requests for review and the approval of all fire apparatus access roads and

driveways. The Oregon Fire Code, Section 501.3 and the Zoning and Development Ordinance of Columbia County, Oregon require roadway/driveway improvements to a construction or mobile home prior to issuance of a building permit. Land Development Services requires fire service approval of driveways if they exceed 150-feet in length or have steep slopes. This plan recognizes the importance of properly designed and maintained structural fire apparatus access roads. The picture is an example of a road that serves multiple residences. It's inadequate width and roadside clearance is problematic as it relates to fire response ingress and evacuation egress. In situations that involve roads built prior to the development of fire access standards, local communities and fire services need to seek local options and alternatives.

The Wildland-Urban Interface Protection Act of 1997 (SB 360)

The Oregon Forestland Urban-Interface Act of 1997, commonly known as Senate Bill 360, addresses the growing problem of wildland fires burning homes. The State's population continues to expand rapidly, with many Oregonians moving into forested areas where risk of fire is common. The Act responds to several escalating issues:

- Wildland fires burning homes
- Firefighters risking their lives on conflagrations
- Rising suppression costs

The Act has been implemented in numerous counties throughout Oregon. Implementation processes continue on a county by county basis with northwest Oregon slated within the next 5 years. Under the Act, a local county classification committee identifies areas within the county that fall into forestland-urban interface classifications. In general, these properties are within an Oregon Department of Forestry protection boundary, are 10 acres in size or smaller, improved with one or more structures and grouped with other improved properties that are in a density of at least four structures per 40 acres. Once initiated within Columbia County, the landowner needs to take measures to reduce a property's vulnerability to wildland fire. In most cases this means:

- Establishing a fuel break around structures and along driveways
- Removing tree limbs within 10 feet of the chimney
- Ensuring that flammable material is removed from beneath exterior wooden decks
- Moving or enclosing firewood piles during the months of fire season

Under this Act, property owners are mailed a package with standards that need to be met to certify. Upon completion of the standards, the landowner responds to the Department of Forestry with a signed self certification form, which satisfies the landowner's fuel reduction responsibility. Re-certification occurs every 5 years. The Act is a voluntary program, however, up to $100,000 of certain suppression costs can be brought against the landowner if the following applies: a landowner does not certify, a fire originates on the property, the fire spreads within the protection zone around a structure or driveway that does not meet the standards and extraordinary costs are incurred for suppression costs.
More information on the Forestland-Urban Interface Act is available at the following url:
http://www.oregon.gov/ODF/FIRE/SB360/sb360.shtml

Structural Ignitability Concepts:

Important Factors for structural ignitability evaluation include those found in *Identifying and Assessment of Communities at Risk in Oregon.* The general categories for evaluation include the following elements:

- **The Structure Itself -** Roofing, roofing assembly, building materials and building set-backs on slopes.
- **Defensible Space -** Distances 30 to 100 feet or more, separation between adjacent homes
- **Fire Access -** Roads and driveways (distance), ingress and egress issues, road width and condition.

STRUCTURAL TRIAGE CHECKLIST

INCIDENT / CONFLAGRATION NAME _____

ADDRESS_____ STRUCTURE ( ) of ( )

GPS COORDINATES _____ Latitude _____ Longitude

Range _____ Township _____ Section _____

DRIVEWAY	ROOF
Too Narrow or Steep to back in YES Branches overhanging driveway NO Down dead fuels line driveway ****IF RED / YES - UNDEFENSIBLE ****	Already Involved in Fire YES NO *** IF RED / YES – UNDEFENSIBLE ****

DRIVEWAY – Dead End or longer than 200 feet	YES NO	STRUCTURE TYPE
ROOF – COMBUSTIBLE – (Asphalt Shingles or Wood)	YES NO	___ Single Story
ROOF – WOOD SHAKES	YES NO	___ Two Story
TREES – Overhanging Roof	YES NO	___ Wood Frame ___ A Frame
TREES / BRUSH – NOT Thinned in area within 30 feet of structure	YES NO	___ Log Home ___ Other
VEHICLES – Parked Outside within 30 feet of Structure	YES NO	___ Full Time Residence ___ Vacation Home ___ Out Building ___ Business
SLOPE - More than 20% anywhere within 30 feet Of Structures	YES NO	___ Govt. Building
SLOPE – More than 40% anywhere within 30 feet Of Structures	YES NO	___ Other Hazards;
DECK / STILT – Not enclosed underneath (to ground)	YES NO	_____
POWER LINE – Overhead within 30' of Structure	YES NO	_____

0-2 YES	3-5 yes	6-7 YES	8-10 YES
Doesn't Need Defending	Defend Aggressively	Defend Cautiously	UNDEFENSIBLE

Triage Officer _____ Unit # _____ Date _____ Time _____

COMMENTS / NOTES ON BACK

The checklist above is used by structural fire departments on large fires where multiple homes are threatened or potentially threatened under extreme wildfire conditions. Often this is used in an attempt to pre-plan property protection priorities. This form indicates what homes can and can not be safely protected from the perspective of a firefighter. It also indicates the importance of the "Home Ignition Zone" and those contributing factors of the structure itself and its surroundings that make a home defensible or survivable.

Numerous publications and web based resources are available to assist the owner in understanding the important concepts involved and managing the "Home Ignition Zone" to the extent required in protecting your property and your safety. *Appendix A* has a list of web resources that are valuable to the owner, from downloadable checklists to video based demonstrations.

Photo: Living with Fire Publication Photo

CHAPTER 5: Fuel Reduction Priorities

Fuel Reduction Priorities within the Wildland -Urban Interface

The highest priority for fuel reduction within Columbia County will be at the homeowner level within the home ignition zone, i.e., the structure itself and the surrounding landscape. Homeowner associations and other organized communities and businesses may develop fuel reduction priorities based on local plans and initiatives. Fuel modification and reduction actions around structures in the wildland urban interface will reduce the potential ignitability of these structures given an adjacent wildland/brush fire threat. These concepts are covered in more detail in Chapter 4, Structural Ignitability.

This plan recognizes that most land ownership within the county is private. Where priority fuel reduction projects are identified by communities beyond the single ownership, information exchange and cooperative partnerships will be the focus to move any fuel reduction projects to reality.

Fuel modification and reduction priorities identified at the community level are recognized as an important element in any localized planning effort. Emerging developments will be encouraged to develop fire wise communities that evaluate the need for fuel reduction efforts within and around the community. This also includes escape routes and other critical traffic corridors. Existing communities, through the evolving development of local plans, will identify strategies for community level involvement and cooperative fuel reduction projects. As projects are identified, they will be added to this document by way of appendix.

The Greater Chapman community is an area where federal lands are proximal to and within the WUI boundary. Fuel reduction efforts in this community and involving adjoining federal lands (Bureau of Land Management) will be a priority. Due to the relationship to federal lands and the priority of this community within Columbia County, grant opportunities and strategic fuel reduction efforts will be a priority especially during harvest level planning efforts. Fuels management will take into account slopes and drainages and where these present elevated risks to the community. Opportunities for Stewardship Contracts under the BLM will be considered utilizing the established application and review process. Refer to the Greater Chapman specific action plan, Chapter 8.

The Scappoose Municipal Watershed is another area where federal lands (Bureau of Land Management) are within or proximal to a valued community resource. Fuel reduction within and adjacent to the watershed may be considered based on local assessments.

Additional areas that involve potential fuel reduction projects are in and adjacent to the Columbia Hills Development Community, Grey Cliffs Community and the Liberty Road area of St. Helens.

Adjoining industrial and non-industrial private forestlands are managed as resource lands using acceptable forest practices. Properties with structures adjoining resource lands shall be encouraged to manage fuel reduction efforts on property under their control, i.e., under the homeowners control. This places the emphasis and responsibility on the individual homeowner for ensuring adequate fuel modification/reduction efforts that reduce structural ignitability and therefore structural survivability.

CHAPTER 6: Monitoring and Evaluation

The maintenance of this Community Wildfire Protection Plan (CWPP) will be directed by the Columbia County Office of Emergency Management in conjunction with the Columbia County Fire Defense Board and core committee members on the Community Wildfire Protection Plan Committee. The Plan will be reviewed and updated annually to review and document accomplishments, to re-evaluate priorities for general and specific action items, to evaluate new information as it relates to community at risk identification, fuel reduction priorities and the reduction of structural ignitability throughout the county. The annual review, at a minimum will also allow an evaluation of grant application opportunities and recommended submissions as well as posting edits to the master document. The chair(s) of the CWPP Committee will be responsible for facilitating the review and editing the master document. As a working document, updates and new action items will be added as they develop as well as documenting plan accomplishments.

A complete revision of the CWPP is recommended on a five year basis to incorporate the annual review edits and to evaluate other major changes involving development and population growth within the county, changes in fire risk assessment factors and fuel modification priorities, fire prevention and protection capacity, action planning and other essential redesign elements based on best available information and technologies.

Public Outreach

The continued and progressive involvement of the public is needed to accomplish many of the elements of this CWPP. It is important that every opportunity be taken to collect and disseminate information to the citizens of Columbia County. Allowing for continuing and full participation by citizens and local groups will strengthen collaboration efforts and ensure key issues and actions remain focused and achieving the mission of the Plan.

Copies of the CWPP will be available on the internet as well as at each Library within Columbia County. Development of a county website that provides citizens an opportunity to send comments to the CWPP chair(s) is proposed for development. Web links can be found in Chapter 2 of this document as well as common and useful web sites under Appendix A.

CHAPTER 7: General Action Planning Item Worksheets

The following completed action item worksheets were developed as part of the CWPP planning process. The action items apply to efforts identified as important and support local and countywide CWPP implementation. In comparison, Chapter 8 deals with action plans addressing specific geographic areas of the Community-at-Risk or prioritized areas within a Community-at-Risk population.

Each action item includes a list of key issues that will be addressed. Additional worksheets are available for adding important action items as they arise. This Chapter, as well as the overall plan, is a working document meant to facilitate continued strategic planning efforts. Additions and or relevant changes are encouraged as CWPP implementation will likely be a catalyst for new and innovative ideas.

The following action item worksheets are numbered for reference only. These do not reflect priority. Priorities will be established by the Fire Defense Board.

Columbia County CWPP Action Item # 1

Proposed Action Title/Description:

- Create and maintain county web-site dealing with wildland urban interface issues and to promote the Columbia County Community Wildfire Protection Plan (CWPP). Develop key links to other sites that Columbia County citizens can use to create and maintain fire resistive structures and landscapes within the "home ignition zone". Continue design elements to make relevant to Columbia County and other regional CWPP efforts.

Rationale for Action Item:

- Public education and outreach is critical to success.
- Allows timely updates with new information
- Easy reference source for local community

Implementation Proposals:

- Establish appropriate material content using local web designer
  - Post Columbia County Community Wildfire Protection Plan
  - Tips to reduce structural ignitability and implement fire safe landscaping
  - Post pictures of "model" homes and landscapes done in local area
  - Post maps
  - Provide information on homeowner fire prevention
  - Provide additional links to Fire Districts, ODF, OSFM, BLM, Firewise®/USA, KOG etc.
- Committee review of content and develop maintenance standards
- Publicize local web page as opportunities come up

Lead Organization(s):

- Columbia County - Office of Emergency Management/CWPP Committee/Fire Defense Board

Cooperating Partners: Fire Districts, Oregon Department of Forestry, Office of State Fire Marshal, BLM

Timeline: (Short Term) July 1 – January 1, 2008

Estimated Cost: **$**1,500 Annual

Columbia County CWPP Action Item # 2

Proposed Action Title/Description:

- Re-establish and maintain fire prevention leadership through the Columbia County Fire Prevention Cooperative.
- Revisit function and scope of activities to include coordinated fire prevention reporting and strategic fire prevention planning. Develop coordinated fire prevention action and public outreach campaigns

Rationale for Action Item:

- Increase coordinated fire prevention capacity, develop countywide priorities.
- Reduce wildfire ignition risk in WUI.
- Increased density of homes shown to increase ignition risks, address issues.
- Homeowner and citizen engagement in fire prevention is shared responsibility with fire agencies.
- Provide consistent fire prevention and regulation messages county wide

Implementation Proposals:

- Seek Columbia County Fire Defense Board support and appropriate staff leadership to initiate a fully functioning Fire Prevention Cooperative.
- Utilize public information officers to assist in development of targeted public outreach programs.
- Review available homeowner fuels reduction and landscaping programs that may be appropriate for Columbia County.
- Develop local strategic campaign for CAR areas.
- Consider grant applications to assist in support of fire prevention program delivery.

Lead Organization(s):

- Fire Defense Board...Columbia County Fire Prevention Cooperative

Cooperating Partners:

- Fire Districts/Oregon Department of Forestry
- Office of Oregon State Fire Marshal
- News Media
- Citizen Groups
- Communities

Timeline: (Short Term) 1 year, June 2007 – June 2008

Estimated Cost: $ Production costs and in kind service. Contracted services for media production. Seek grant opportunities by coordinating fire district grant applications.

Columbia County CWPP Action Item # 3

Proposed Action Title/Description:

- Obtain GIS data for planning efforts within the WUI
  - Obtain and/or digitize structures (address points and/or structure footprints) within Columbia County
  - Obtain associated data regarding structural vulnerability
  - Obtain current digital aerial photography – annual or other updates
  - Obtain improved contour elevation GIS layer
  - Obtain LiDAR data if available, multiple natural hazards mitigation uses/benefits.
  - Maintain localized community GIS layers regarding defensible space to assist in development of community plans
  - Establish and maintain hydrant and water source layer
  - Develop emergency services based GIS user system/program/protocols/map production capacity…

Rationale for Action Item:

- The data will enhance on-the-ground structural vulnerability assessments.
- Improve accuracy of WUI boundary and communities at risk (structural density) areas.
- The data will provide efficiency in operational response and functioning.
- The Data provides better information for many areas of natural hazard mitigation risk assessment and planning efforts

Implementation Proposals:

- Collaborate with all county GIS users to identify current and available sources of data needs
- Consider contracting for data needs
- Consider grant for priority data needs, RARE Program, other

Lead Organization(s):

- Columbia County/C911CD

Cooperating Partners:

- Fire Districts/Oregon Department of Forestry/Office of State Fire Marshal
- Columbia 911 Communications District
- Public Utility Districts
- Major Landowners

Timeline: (Short – Long Term)

Estimated Cost: $$$

Columbia County CWPP Action Item # 4

Proposed Action Title/Description:

- Complete rural addressing and potential data collection, coordinate with local fire district efforts

Rationale for Action Item:

- Coordinated with GIS Action Item for structure layer needs
- Improve emergency response, provides multiple benefits
- Could include structural vulnerability data collection

Implementation Proposals:

- Coordinate county wide addressing issues, completion

Lead Organization:

- Fire Districts, Columbia County – Land Development Services

Cooperating Partners:

-

Timeline: (Long Term) 2 year +

Estimated Cost: $$$

Columbia County CWPP Action Item # 5

Proposed Action Title/Description:

- Design and incorporate structural vulnerability data collection process that is consistent countywide and is collected as a master data-set

Rationale for Action Item:

- Currently, no vulnerability assessment data has been collected in Columbia County.
- Action plans currently identify need for assessments to clarify scope of structural vulnerability and address issue.
- Road access, roof and building material, defensible space and overall home ignition zone conditions should be evaluated as part of this risk assessment.
- Incorporate data into countywide layer - evaluate data and update CWPP/priority areas and action plans

Implementation Proposals:

- Begin with a realistic defined community area (community at risk) and collect data using countywide methodology.
    - Create database relating to fuel loads and lack of fire resistive landscaping measures in targeted areas.
    - Create database relative to driveway access and road conditions. Include but not limited to: excessive grade, inadequate width and surface, encroachment into road with failures or vegetation, limited or lack of turnouts, condition and load capacity of bridges, turn-arounds or hammerhead or lack of at terminus, water supplies, and other restrictive conditions.
    - Create database to identify the number of residences outside rural fire protection districts
    - Continue to coordinate with County Road Department and Land Development Services regarding assessment data.
- Bring both structural point data and structural vulnerability data into GIS layer. Map based on L-M-H thresholds or other accepted standards. Evaluate data implications.
-

Lead Organization:

- Columbia County Fire Defense Board/Office of State Fire Marshal

Cooperating Partners:

- Oregon Department of Forestry

Timeline (Short Term) 2 year

Estimated Cost:

Columbia County CWPP Action Item # 6

Proposed Action Title/Description:

- Provide CWPP Assessment GIS layers/data to Columbia County Mapping Section.

Rationale for Action Item:

- Central location for data-sets/layers that allow uses for other planning and natural hazard mitigation efforts.

Implementation Proposals:

- Upon completion of CWPP, provide county with project layers/data

Lead Organization:

- Oregon Department of Forestry/Community Wildfire Protection Committee

Cooperating Partners:

Timeline: Short Term July 1 – October 1, 2007

Estimated Cost: N/A, In Kind

Columbia County CWPP Action Item # 7

Proposed Action Title/Description:

- Engage homeowner insurance companies to promote incentives that reward fire resistive structure and landscaping practices within the home ignition zone.

Rationale for Action Item:

- HFRA goals of collaboration, fuels reduction and structural ignitability reduction
- Comments regarding insurance companies as an important element in promoting reduction of risk on private property.
- Lower premiums with lower potential losses from wildfire

Implementation Proposals:

- Contact local insurance companies and determining if incentive can be provided if homeowners meet standard.
- Explore methods to validate and ensure maintenance of home ignition zone

Lead Organization(s):

- Oregon State Fire Marshal, Fire Districts

Cooperating Partners: ODF, Insurance Companies

Timeline (Short Term) 1 year or by June 2009

Estimated Cost: $

Columbia County CWPP Action Item # 8

Proposed Action Title/Description:

- Formalize the Columbia County Community Wildfire Protection Committee to oversee implementation, identify and coordinate funding opportunities, act as the Local Wildfire Coordinating Group in establishing funding priorities, and sustain the implementation and revisions of the Community Wildfire Protection Plan.

Rationale for Action Item:

- Leadership in mitigation of wildfire hazards within Columbia County.
- Establish countywide community at risk priorities.
- Collaboration, Fuels Reductions and Structural Vulnerability as defined in HFRA
- Support future actions under SB360, Wildland Urban-Interface Classification Committee
- National Fire Plan – Grant opportunities

Implementation Proposals:

- Ensure County Homeland Security and Emergency Management leadership representation
- Establish CWPP review process, reports to Committee and process for updates
- Determine Chair for upcoming year.

Lead Organization:

- Columbia County

Cooperating Partners:

- Membership representation on the Columbia County CWPP Committee

Timeline: Ongoing – Long Term

Estimated Cost:

Columbia County CWPP Action Item # 9

Proposed Action Title/Description:

- Develop consistent countywide administration and enforcement of open burning regulations.

Rationale for Action Item:

- Major cause of escaped fires within the WUI is open burning of yard and land clearing debris
- Consistent and accurate message to public.

Implementation Proposals:

- Develop issue paper for Fire Defense Board discussion
- Draft basic outline of concepts that address the issue(s)
- Consider intergovernmental agreements, options
- Utilize education campaign, DVD or other media, see Clatskanie CAR Action Plan (Alston-Delena)

Lead Organization:

- Columbia County Fire Defense Board

Cooperating Partners:

- State Fire Marshal, Columbia County Law Enforcement Agencies

Timeline: (Long Term)

Estimated Cost: $$$

Columbia County CWPP Action Item # 10

Proposed Action Title/Description:

- Implement cost share or other incentive programs to assist landowners with fuel removal and disposal projects that occur within the home ignition zone and travel corridors.

Rationale for Action Item:

- Reduction of structural ignitability within Community at Risk (CAR)
- Increased participation with cost share approach
- Support for special needs population

Implementation Proposals:

- Apply for grant for funding of pilot project(s).
- Focus on high priority areas of Community at Risk
- Educate local landscape contractors and expand service availability for homeowners
- Pursue local opportunities for recovery and use by local composting facility/other bio fuel industry
- Explore partnerships with local business and industry

Lead Organization:

- Fire Districts, Oregon Department of Forestry

Cooperating Partners:

- Columbia County, Columbia County Waste Management, Local Landscaping Businesses

Timeline: Long Term

Estimated Cost: $$$ Based on obtaining grant for project(s). Focus on high priority areas

Columbia County CWPP Action Item # 11

Proposed Action Title/Description:

- Evaluate Land Development Services ordinances relating to fire siting standards, obtain understanding, acceptance and support and provide input to ensure accuracy and consistency of application.

Rationale for Action Item:

- Bolster understanding of land development processes as relates to fire siting standards and exceptions.
- Equivalents to the primary and secondary fire breaks requires revisiting to identify issues and concerns with application.
- Address other concerns and issues with Land Development Services
- Introduce LDS staff to the Community Wildfire Protection Plan.

Implementation Proposals:

- Schedule a meeting with Land Development Services to review processes and identify issues.

Lead Organization:

- Fire Defense Board/Columbia County Land Development Services

Cooperating Partners:

-

Timeline: Short Term

Estimated Cost: $$$

CHAPTER 8: Action Planning- Communities at Risk

The Communities at Risk (CAR) within Columbia County are identified based on population density and assumed values at risk for threats to life, property and infrastructure. These are defined broadly and may be refined further in future revisions of this plan.

Communities at Risk are identified within the jurisdictional boundaries of each Rural Fire Protection District in the county. Public outreach, planning and implementation of action plans are based on these community centers, i.e., RFPDs. CAR outside a structural fire protection district are identified within the county (outside structural fire protection district) designation. Oregon Department of Forestry will take lead in cooperation with closest structural fire district.

Clatskanie Rural Fire Protection District - Community at Risk

- All populated areas within the District

Priority Areas

- City of Clatskanie and vicinity
- Alston – Delena
- Palm Creek – Cedar Grove
- Upper Swedetown

Columbia River Fire and Rescue Protection District – Community at Risk

- All populated areas within the CRF&R District

Priority Areas

- City of St. Helens – Grey Cliffs
- Smith-Robinette-Columbia City
- Canaan – Meissner

Mist-Birkenfeld Rural Fire Protection District – Community at Risk

- All populated areas within the District

Priority Areas

- Fishhawk Lake

Scappoose Rural Fire Protection District – Community at Risk

- All populated areas within the District

Priority Areas

- Chapman and Vicinity
- Columbia Hills Development – Callahan Road
- JP West, Mtn. View (West Hills of Scappoose), Pisgah, Siercks
- Panorama Terrace

Vernonia Rural Fire District – Community at Risk

- All populated areas within the District

Priority Areas

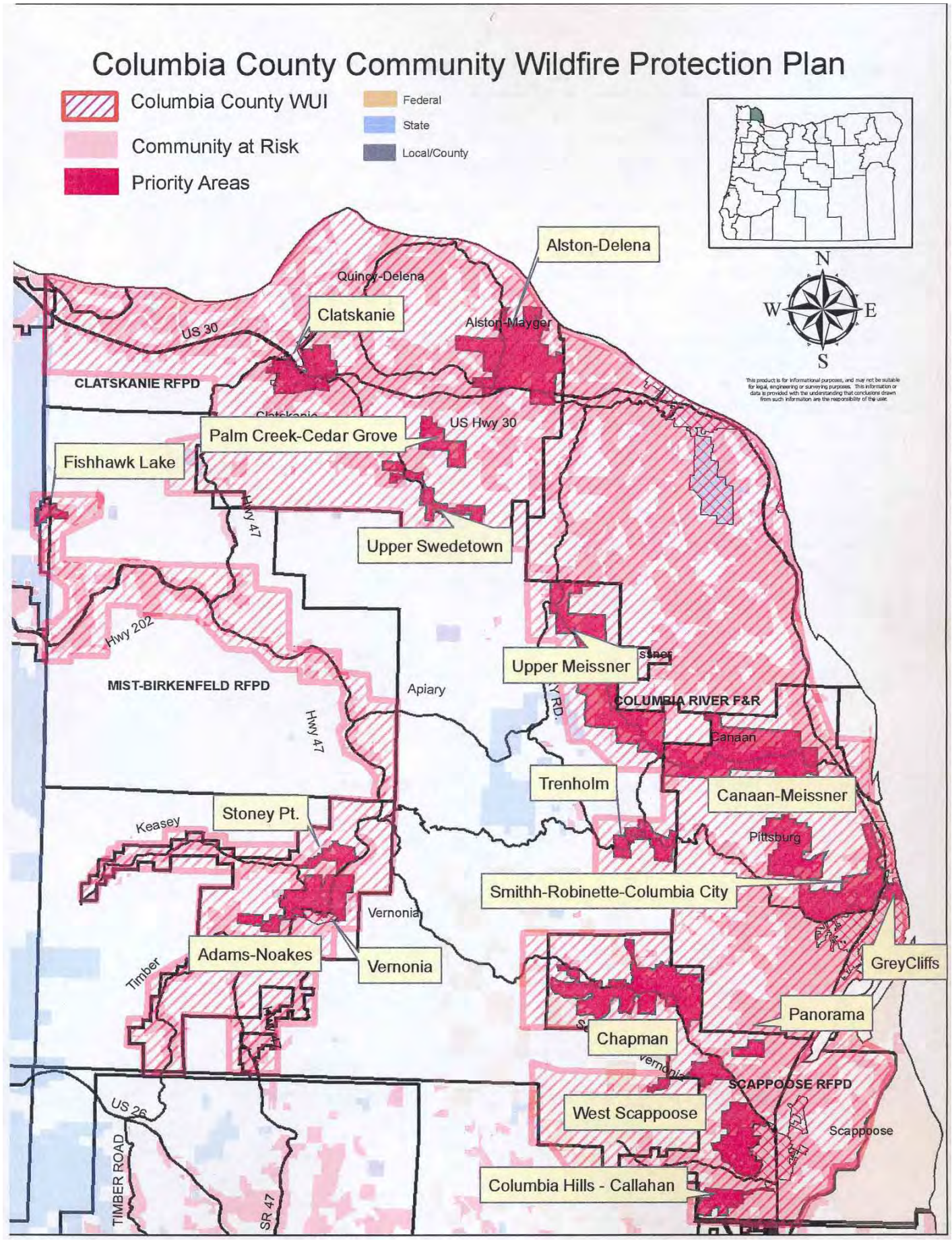
- City of Vernonia
- Adams (Elk Run), Noakes and Stoney Point Roads

County (Outside Structural Protection District) – Community at Risk

Priority Areas

- Upper Meissner
- Trenholm/Upper Pittsburg

Columbia County Community Wildfire Protection Plan



Community-At-Risk Assessment Matrix – Scoring Factors

Summary – Assessment Factors	Point Breakdown
RISK	
▪ Fire Occurrence (# Fires/1000 Ac./Year)	0-20
▪ Home Density (rural/suburban/urban)	0-10
▪ Ignition Risk Potential	0-10
HAZARD	
▪ Weather Zone (Coastal/Interior only)	0-20
▪ Topography (Slope/Aspect/Elevation)	0-10
▪ Natural Vegetation (Fuel Models)	0-30
▪ Crown Fire Potential (Passive/Active/Independent)	0-10
PROTECTION CAPABILITY	
▪ Scoring dependent on organized structural response to no structural or wildland fire protection	0-36
▪ Community Preparedness	0-4
▪	
VALUES PROTECTED	
▪ Home and population density	0-30
▪ Community Infrastructure	0-20
▪	
STRUCTURAL VULNERABITY	
▪ Flammable Roofing (A/B/C/Non-Rated)	0-30
▪ Building Materials	
▪ Building Set-Backs	
▪ Defensible Space (<30 ft. – >100 ft.)	0-30
▪ Fire Access (roads and driveways, ingress/egress, road width, all season condition, fire service access, street signs)	0-30

The complete assessment form used for prioritization of Communities-At-Risk is found in Appendix C.

Assessment Scores

	Community at Risk Designations	
	All Incorporated Cities in Columbia County Populated Rural Areas w/i RFPDs Populated Rural Areas Outside RFPDs w/i County	
Priority	**Scappoose RFPD Populated Areas - CAR**	**Infrastructure / Other**
197	Scappoose RFPD - Greater Chapman	Scappoose Watershed
182	Scappoose RFPD - Callahan Road	
177	Scappoose RFPD - JP West / Mtn. View/Pisgah/Siercks	
150	Scappoose RFPD - Panorama Terrace	
148	Scappoose RFPD - General WUI	
Priority	**Columbia River Fire & Rescue Populated Areas - CAR**	**Infrastructure / Other**
185	Columbia River Fire & Rescue - Gray Cliffs / City of St. Helens	
175	Columbia River Fire & Rescue - Smith / Robinette Road	
156	Columbia River Fire & Rescue - Cannan / Meissner Road	
152	Columbia River Fire & Rescue - General WUI	
Priority	**Vernonia RDPD Populated Areas - CAR**	**Infrastructure / Other**
163	Vernonia RFPD - City Perimeter WUI	City Planning: Education
149	Vernonia RFPD - Adams / Noakes / Stoney Point Road	
144	Populated Rural Areas w/I VRFPD	
Priority	**Mist-Birkenfeld RFPD Populated Areas - CAR**	**Infrastructure / Other**
141	Mist-Birkenfeld RFPD - Fishhawk Lake	Facilitate Fishhawk Community Plan
133	Mist-Birkenfeld RFPD - General WUI	
Priority	**Populated WUI Areas**	**Infrastructure / Other**
172	Clatskanie RFPD - City of Clatskanie/UGB/Vicinity	Conyers Creek Watershed
163	Clatskanie RFPD - Alston/ Delena	Roaring Creek Watershed
160	Clatskanie RFPD - Palm Creek / Cedar Grove Road	Midland Watershed
148	Clatskanie RFPD - Upper Swedetown Road	Marshland Watershed
146	Clatskanie RFPD - General WUI	Benson Pt. Microwave
Priority	**County (Outside Structural Fire Protection)**	
173	County – Upper Meissner	
161	County – Trenholm / Upper Pittsburg	

Columbia County Ranking – Priority Areas

Local Priority Thresholds

<130 =Low / 130 – 174 = Moderate / 175+ = High

County Wide Priority Ranking			
Points	**Priority Area**	**Community at Risk (CAR)**	**Comment**
197	Greater Chapman	Scappoose RFPD CAR	Top priority for SRFPD
185	Grey Cliffs/City of St. Helens	Columbia River F&R CAR	Top priority for CRF&R
182	Columbia Hills - Callahan Road	Scappoose RFPD CAR	
177	West Scappoose	Scappoose RFPD CAR	
175	Smith/Robinette/Columbia City	Columbia River F&R CAR	
173	Upper Meissner	Outside Structural – County CAR	Top priority Outside Structural Fire - County
172	City of Clatskanie/UGB	Clatskanie RFPD CAR	Top priority for CRFPD
163	City of Vernonia	Vernonia RFPD CAR	Top priority for VRFPD
163	Alston-Delena	Clatskanie RFPD CAR	
161	Trenholm/Upper Pittsburg	Outside Structural – County CAR	
160	Palm Creek/Cedar Grove	Clatskanie RFPD CAR	
156	Cannan-Meissner	Columbia River F&R CAR	
152	General WUI-CRF&R	Columbia River F&R CAR	
149	Adams/Noakes/Stoney Point	Vernonia RFPD CAR	
148	General WUI-SRFPD	Scappoose RFPD CAR	
148	Upper Swedetowm	Clatskanie RFPD CAR	
144	General WUI - VRFD	Vernonia RFPD CAR	
141	Fishhawk Lake	Mist-Birkenfeld RFPD CAR	Top priority of M/BRFPD
133	General WUI –M/BRFPD	Mist-Birkenfeld RFPD CAR	

Clatskanie RFD

CAR

Columbia County Community Wildfire Protection Plan
Clatskanie RFPD CAR

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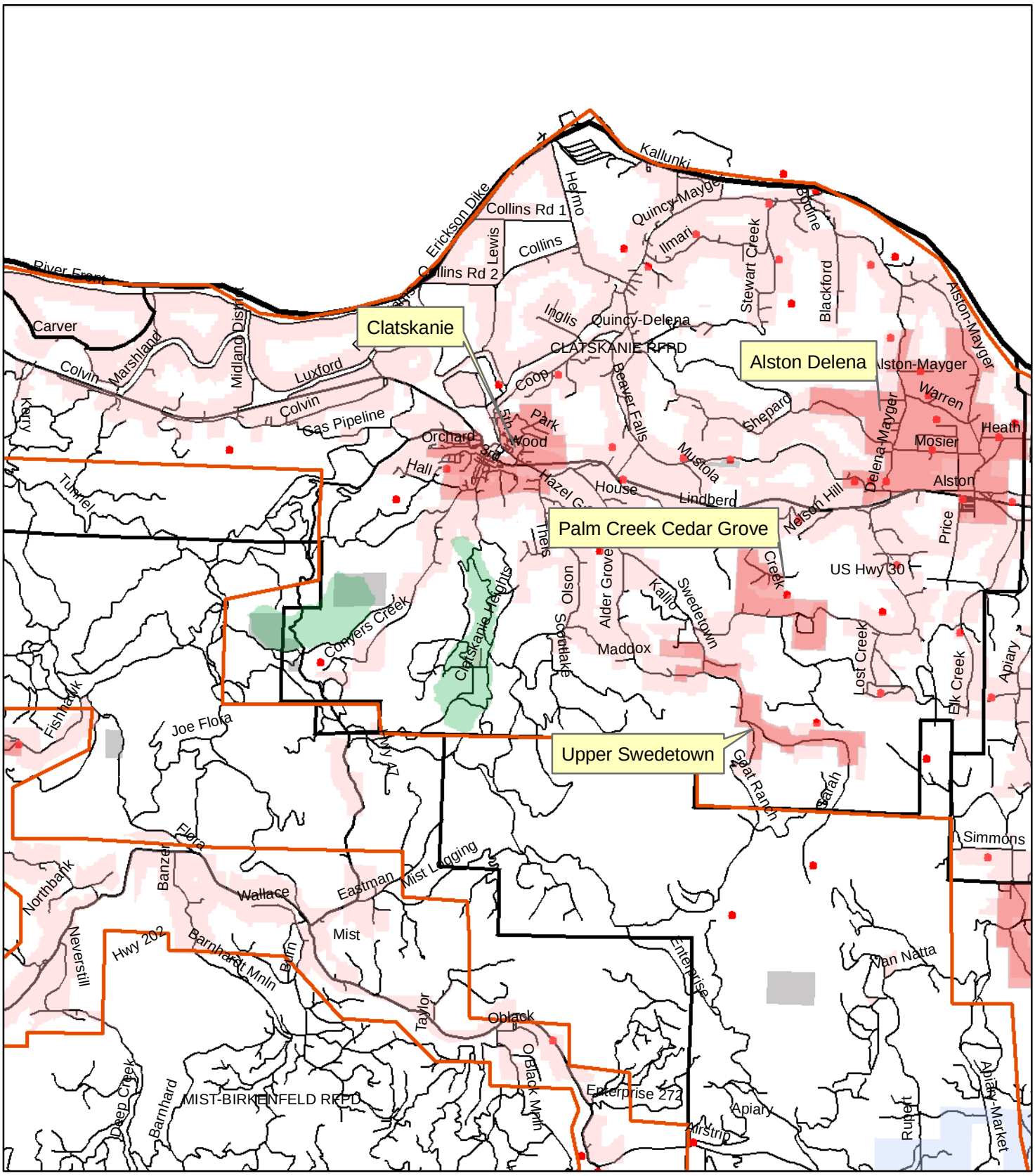
- Priority Areas
- RFPD Boundary
- Stat_Fires 94-05
- WUI Boundary
- Federal
- State
- Community at Risk
- Clatskanie Watershed



Columbia County Community Wildfire Protection Plan
City of Clatskanie - Clatskanie RFPD CAR

Clatskanie
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
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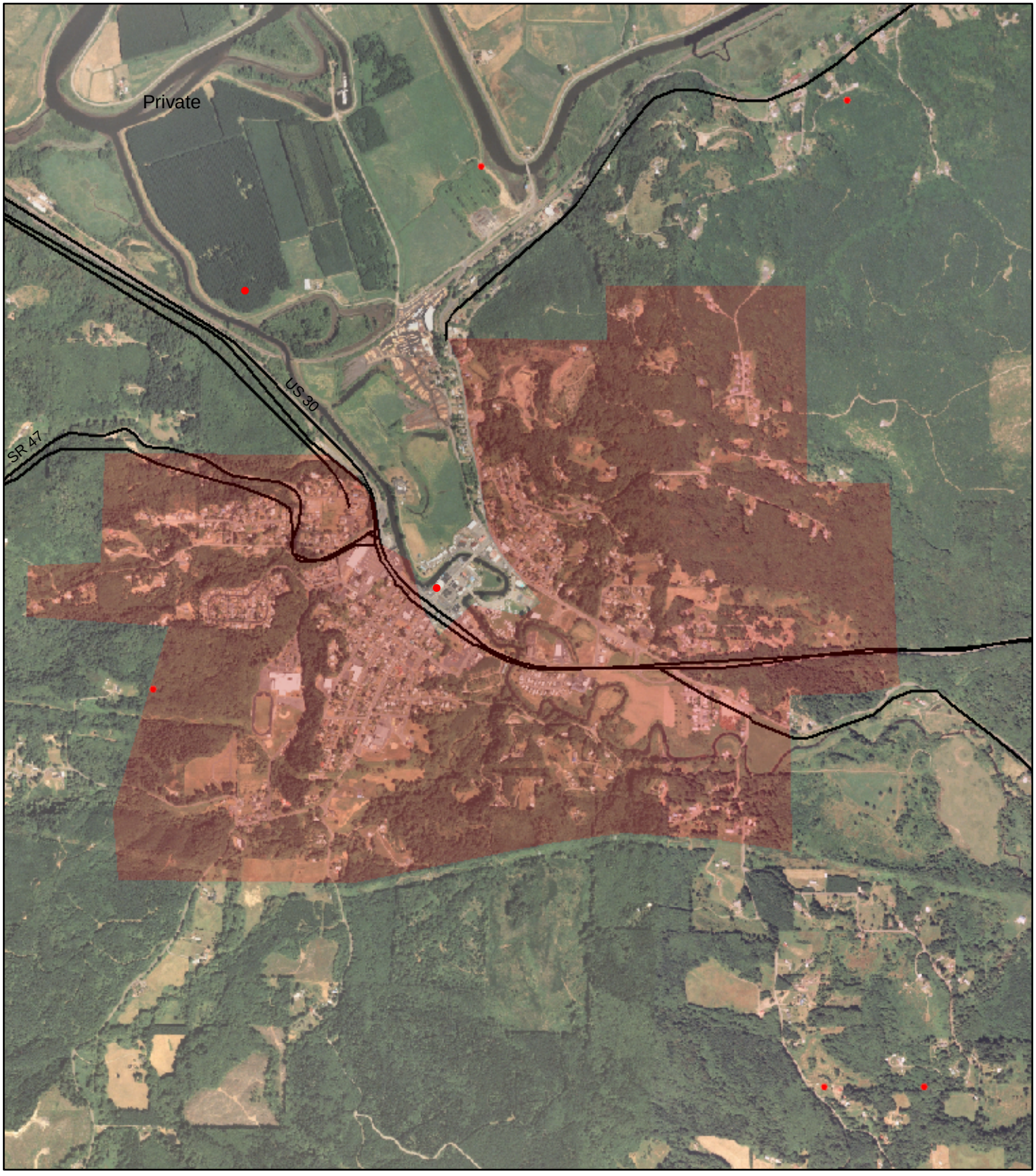

CAR Name: City of Clatskanie and UGB - Clatskanie RFPD CAR

Priority Category: 172

Description: City of Clatskanie and other areas with potential growth within and surrounding the Urban Growth Boundary. Located in the northwest corner of Columbia County, Clatskanie has a population of 1,674. Areas along the perimeter of the City/UGB that are exposed to potential wildfire threats encroaching on residential areas. Specific areas of concern include Clatskanie Heights, Upper Orchard Street and Haven Acres. City of Clatskanie municipal watershed is included in the WUI boundary.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
26	40	8	45	53	**172**
Moderate	Moderate	Low	High	Moderate	

Communities at Risk - Focus Areas: Clatskanie and surrounding population

Structural Fire Protection Agency: Clatskanie Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

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Perimeter residences adjoining forest and natural cover fuels, steeper slopes
Single road access in some areas, problematic ingress/egress in emergency situations
Limited water supply issues
Structures in canyon topography, i.e., Upper Orchard
Homes lacking defensible space through fuel reduction, fire safe landscaping and practices that reduce structural ignitability within the "Home ignition Zone"

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Identify and target priority areas within city for homesite triage assessment/data collection, e.g., upper orchard canyon.	2007 - 2008	Clatskanie RFPD/
Implement localized education campaign to encourage homeowners to reduce structural ignitability through fuel reduction and fire safe landscaping practices within the "Home Ignition Zone".	2007 - 2010	Clatskanie RFPD/ ODF, Local Media
Develop evacuation routes and complete a pre-planned response plan with map references for specific areas. Identify problematic areas, implement possible measures for resolution.	2007 - 2010	Clatskanie RFPD/ Community

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Partner with local government, businesses and community to provide central collection site for clean-up of vegetation removed from "Home Ignition Zone". Consider biomass utilization by chipping, recycling etc.	2007-2009	Clatskanie RFPD/ Community

Columbia County Community Wildfire Protection Plan
Alston Delena - Clatskanie RFPD CAR

Alston Delena
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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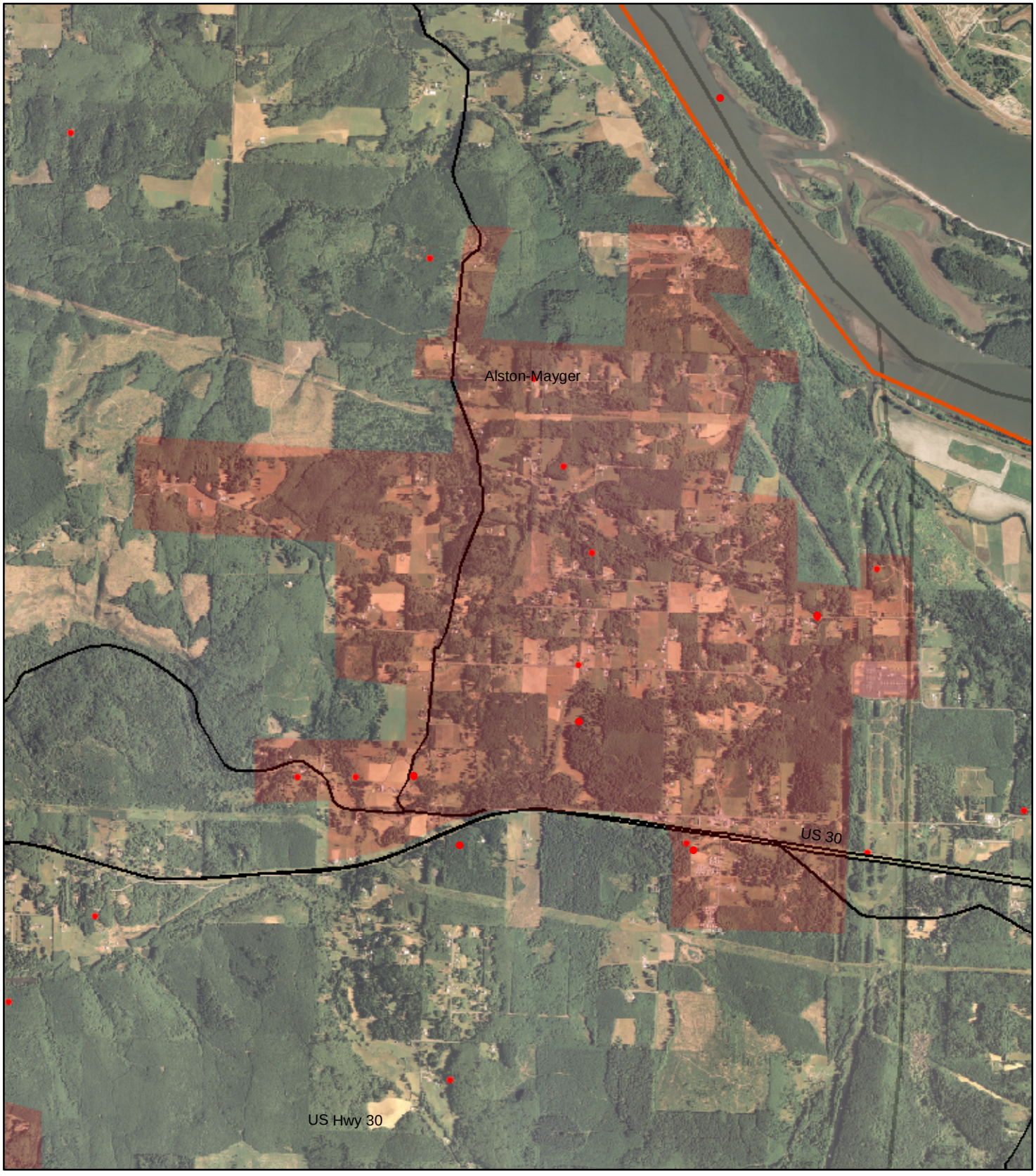

CAR Name: Alston/Delena - Clatskanie RFPD CAR

Priority Category: Mod - 163

Description: Higher density rural residential area north of Highway 30 in the Delena-Alston area. Population with a history of backyard burning and other debris disposal burning escapes. Population intermix with pastures and forestland. Development expected to continue and often times involves areas that were harvested and contain brush and slash fuel types. A volunteer based sub-station is located at Alston withith limited response capacity. Extended response times from main station. Education regarding reducing homeowner/landowner related fire ignition risks are a priority.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
25	46	15	22	55	**163**
High	Moderate	Moderate	Moderate	Moderate	

Communities at Risk - Focus Areas: Alston - Delena Area

Structural Fire Protection Agency: Clatskanie Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Backyard, debris and land clearing burning escapes.
Influx on new owners lacking knowledge of safe burning practices and regulations.
Increase fragmentation of forestland through development with homes adjacent or within brush or slash areas.
Homes lacking defensible space through fuel reduction, fire safe landscaping and practices that reduce structural ignitability within the "Home ignition Zone"

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Develop educational DVD regarding safe burning practices within Columbia County. In addition, education material on general fire prevention issues, fire resistive structures and fire safe landscaping within the 'Home Ignition Zone".	2007-2009	Fire Defense Board - Clatskanie RFPD/ ODF, Land Development Services, Community Partners.
Develop burn permit process that requires educational requirements be completed prior to issuance of permit. Joint on-site inspections with any burning of land clearing debris (CRFPD and ODF).	2007 - 2009 Ongoing	Clatskanie RFPD, Fire Defense Board/ ODF
Develop broad level education campaign and outreach for achieving defensible space, fire safe landscaping and reduced structural ignitability. Include local signing campiagn consistent with countywide approach.	2007-2010	Clatskanie RFPD/ ODF, Fire Defense Board

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Implement a plan for structural triage data collection. Utilize countywide format for data collection. Address issues identified in process.	2007 - 2010	Clatskanie RFD/ ODF
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2007 - Ongoing	Clatskanie RFD/ ODF, Forest Industry, Local Landowners
Identify locations for future water sources. Develop agreements with property owners and install necessary infrastructure.	2007 - Ongoing	Clatskanie RFD/ ODF, Forest Industry, Local Landowners
Address RR5 Zoning issues where primary and secondary fuels reduction and fire resistive construction requirements are not required. Work with Land Development Services, provide timely comment/recommendations.	2007 - Ongoing	Clatskanie RFD/ Land Development Services, ODF

Columbia County Community Wildfire Protection Plan
Palm Creek/Cedar Grove - Clatskanie RFPD CAR

Palm Creek/Cedar Grove
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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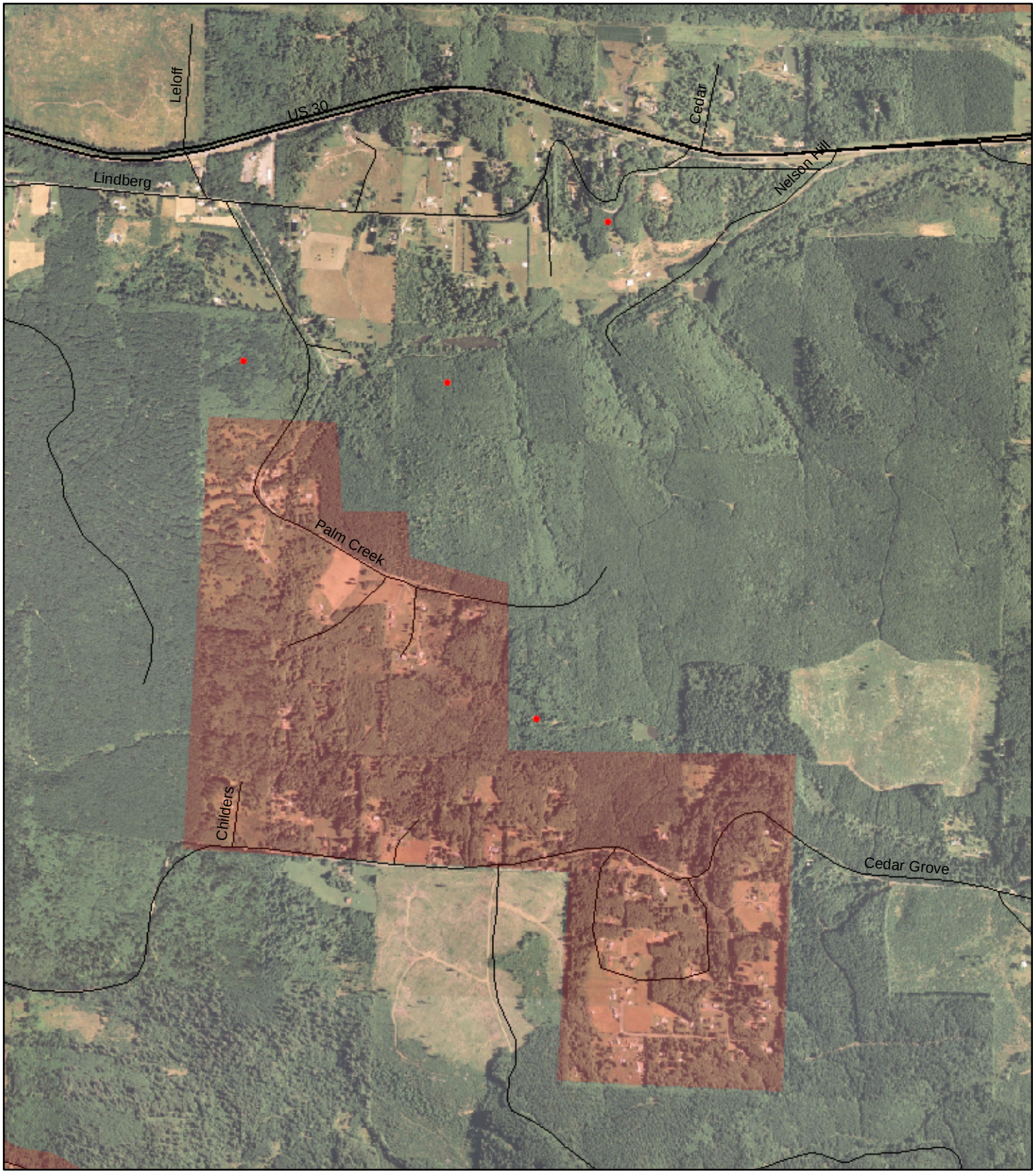

CAR Name: Palm Creek/Cedar Grove - Clatskanie RFPD CAR

Priority Category: Mod - 160

Description: Rural population of higher density RR5 zoned properties with adjacency to intensively managed forest lands. Residence locations positioned at top of slopes with surrounding terrain and fuels.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
22	47	14	22	55	**160**
Moderate	Moderate	Moderate	Moderate	Moderate	

Communities at Risk - Focus Areas: Palm Creek/Cedar Grove Rural Homes

Structural Fire Protection Agency: Clatskanie Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Lacking defensible space through fuel modification/reduction and fire safe landscaping practices
Forest and other natural cover fuels adjacent to properties, local topography relationship to structures
Human caused ignition risks in the WUI
RR5 zoning and lack of primary and secondary fuel reduction requirement with new development.

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Implement localized education campaign to encourage homeowners to reduce structural ignitability through fuel reduction and fire safe landscaping practices within the "Home Ignition Zone".	2007 - 2010	Clatskanie RFD/ ODF
Consider partnerships for fuel reduction in home ignition zones and non-burning alternatives such as chipping, recycle etc.	2007 - 2010	Clatskanie RFD/ ODF
Conduct local structural ignitability assessment and document using structural triage form.	2007 -2010	Clatskanie RFD/ ODF

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Address RR5 Zoning issues where primary and secondary fuels reduction and fire resistive construction requirements are not required. Work with Land Development Services, provide timely comment.	2007 - Ongoing	Clatskanie RFD/ Land Development,ODF
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2007 - 2009	Clatskanie RFD/ ODF
Identify locations for future water sources. Develop agreements with property owners and install necessary infrastructure.	2007 - 2009	Clatskanie RFD/ ODF

Columbia County Community Wildfire Protection Plan
Upper Swedetown - Clatskanie RFPD CAR

Swedetown
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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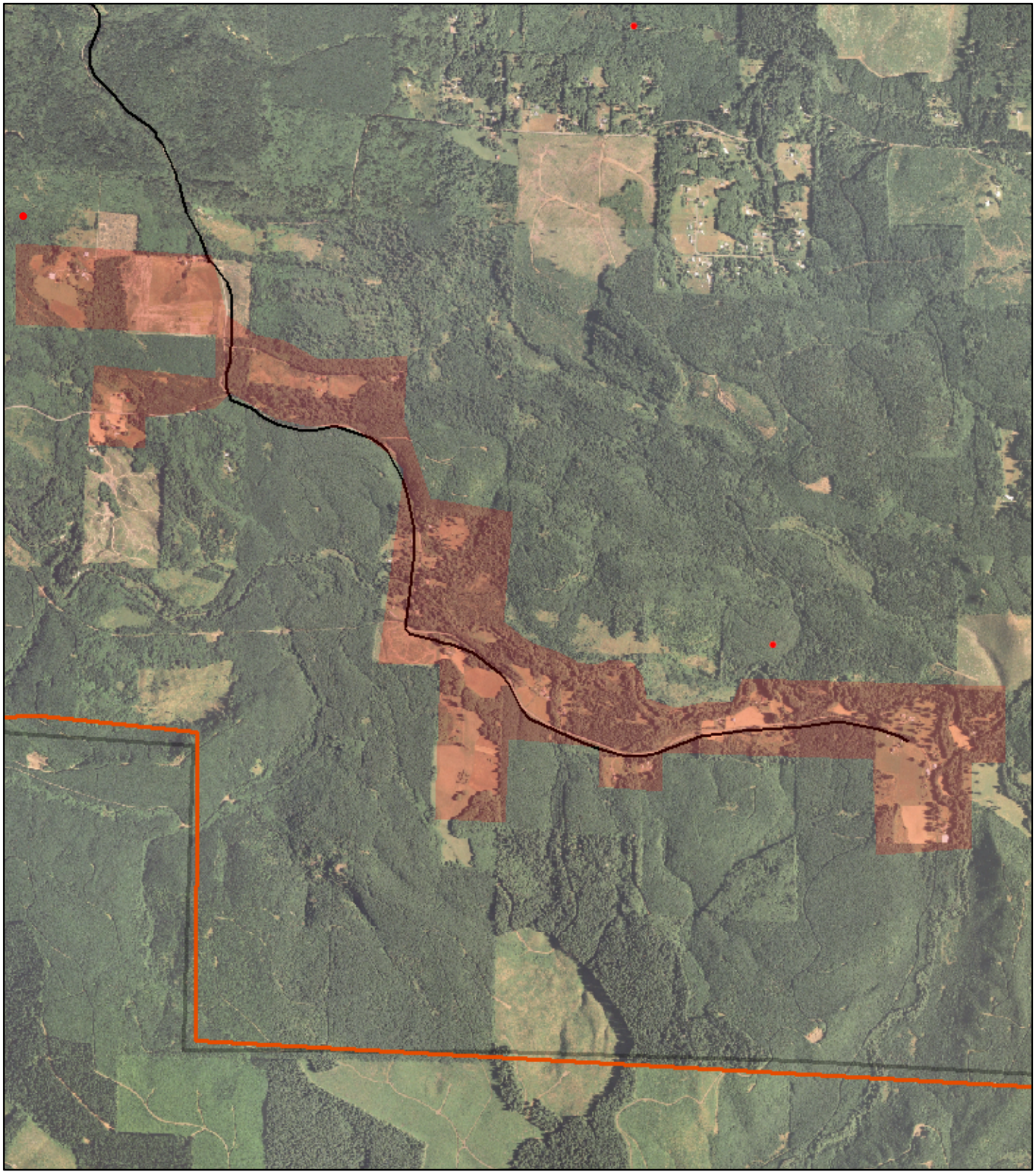

WUI Name: Upper Swedetown - Clatskanie RFPD CAR

Priority Category: Mod. -148

Description: Rural residential area in the south eastern section of the Clatskanie RFPD following Swedetown Creek drainage and extending into managed forest lands. Extended response times due to the distance from the main fire station. Intensive forest management activities occur around and within this rural community of homeowners.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
10	47	17	14	60	**148**
Low	Moderate	High	Low	Moderate	

Communities at Risk - Focus Areas: Upper Swedetown Road

Structural Fire Protection Agency: Clatskanie Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Forest and other natural cover fuels adjacent to properties - intensive forest management activity area
Extended response times form fire station
Homes lacking defensible space through fuel reduction, fire safe landscaping and evaluation of structural ignitability within the "Home ignition Zone"

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Implement localized education campaign to encourage homeowners to reduce structural ignitability through fuel reduction and fire safe landscaping practices within the "Home Ignition Zone". Conduct triage assessment.	2007-2009	Clatskanie RFD/ ODF
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2007-Ongoing	Clatskanie RFD/ ODF
Identify locations for future water sources. Develop agreements with property owners and install necessary infrastructure.	2007 - Ongoing	Clatskanie RFD/ ODF

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators

CAR Name: General CAR - Clatskanie RFPD CAR

Priority Category: Mod. - 146

Description:

Populated residential areas within the overalll CRFPD CAR areas .
Additional "Priority or Focus Areas" to be identified as part of ongoing evaluation.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
17	44	14	16	55	**146**
Moderate	Moderate	Moderate	Moderate	Moderate	

Communities at Risk - Focus Areas: General Community at Risk - CRFPD

Structural Fire Protection Agency: Clatskanie Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Homes lacking defensible space through fuel reduction, fire safe landscaping and practices that reduce structural ignitability within the "Home ignition Zone"
Forest and other natural cover fuels adjacent to properties
Human caused ignition risks in the WUI

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Develop broad level education and outreach for achieving defensible space, fire safe landscaping and reduced structural ignitability.	Ongoing	Clatskanie RFD/ ODF, Columbia County Land Development , Columbia County County Emergency Management, Columbia County Fire Prevention Cooperative, CEPA, Community Leaders, Media
Provide information and Discuss "Home Ignition Zone" and other critical factors to consider as part of driveway inspection meetings.	Ongoing	Clatskanie RFD/
Leverage local or other pilot projects within the county to "showcase/publicize" reduction of risk in the home ignition zone.	Ongoing	Clatskanie RFD/ ODF, County Fire Districts, Columbia County Fire Prevention Cooperative, Media
Provide local educational resources via local web-sites, provide access to the Columbia County CWPP and education materials. Provide local inspections based on request.	2007 - 2008	Columbia County Emergency Management/ Fire District, ODF

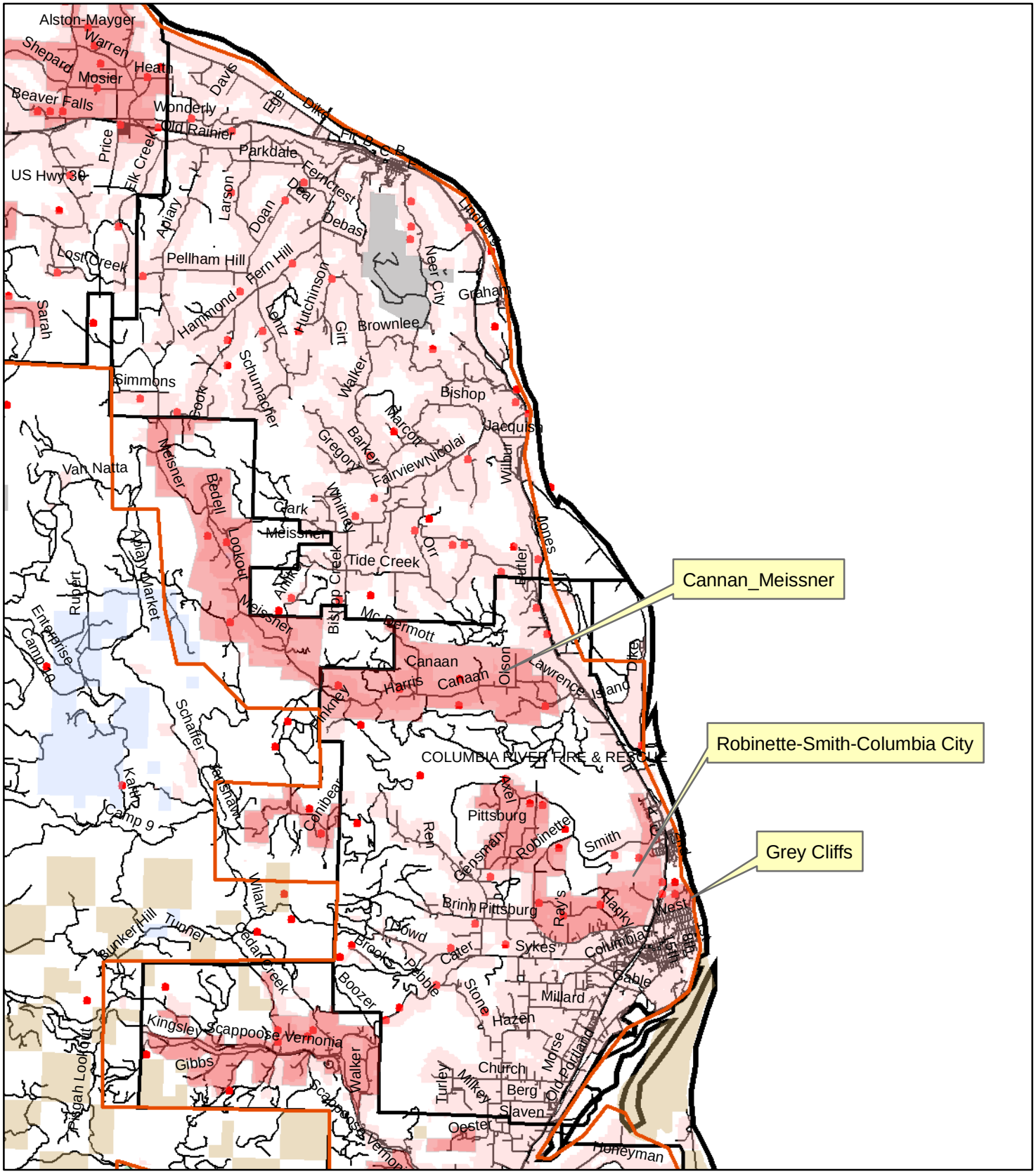
WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Monitor Measure 37 development. Provide timely information to County Planning on issues of increased density and fire assocaited risks within the WUI	Ongoing	Clatskanie RFD/ ODF
Locate and map all significant structures including driveways and other access infrastructure.	2007 - Ongoing	Clatskanie RFD, Contractor(s), Joint county wide mapping project, other agencies.
Identify existing water sources. Develop flow rate data, map to GIS. Share data with fire agencies.	2007 - Ongoing	Clatskanie RFD/ ODF
Identify locations for future water sources. Develop agreements with property oweners and install necessary infrastructure. Share data with other fire agencies.	2007 - Ongoing	Clatskanie RFD/ ODF
Continue program for addressing of residences. Meet needs of emergency response.	2007 - Ongoing	Clatskanie RFD/ ODF
Consider implementation of SB360 within Columbia County	2010 - ?	Clatskanie RFD/ ODF

Columbia River Fire and Rescue

CAR

Columbia County Community Wildfire Protection Plan
Columbia River Fire and Rescue RFPD CAR

Priority Areas
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State
Community at Risk



Columbia County Community Wildfire Protection Plan
Grey Cliffs - Columbia River Fire and Rescue CAR

Grey Cliffs
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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CAR Name: Grey Cliffs/City of St. Helens - Columbia River Fire & Rescue CAR

Priority Category: High - 185

Description: Gray Cliffs and the City of St. Helens have occluded WUI areas within the city limits. Gray Cliffs is a residential population on the north side of the city. Though close to fire service response, ingress and egress is problematic under fire emergency and evacuation situations. Engaging the local community and developing a specific plan focusing on fuel reduction around homesites, evacuation planning and pre-planning fire response strategies make this an ideal community to engage. May serve as an excellent pilot project to jump start defensible space and landscaping throughout city and county, other communities.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	300
30	41	4	45	65	**185**
High	Moderate	Low	High	High	

Communities at Risk - Focus Areas: Grey Cliffs/City of St. Helens

Structural Fire Protection Agency: Columbia River Fire and Rescue

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Incidence of fire is high due to intermix of city population and forested/natural cover areas.
Fuel model has oak, conifer and grass models that have high fire intensity potential.
Strong north winds funnel along river for potential rapid fire spread.
Limited one way ingress/egress-evacuation may be difficult with limited secondary routes.
Homes lacking defensible space/fire safe landscaping around structures, evaluation of structural ignitability.
Bolster fire prevention efforts related to neighborhoods and juvenile fire starts as well as residential fire prevention precautions.

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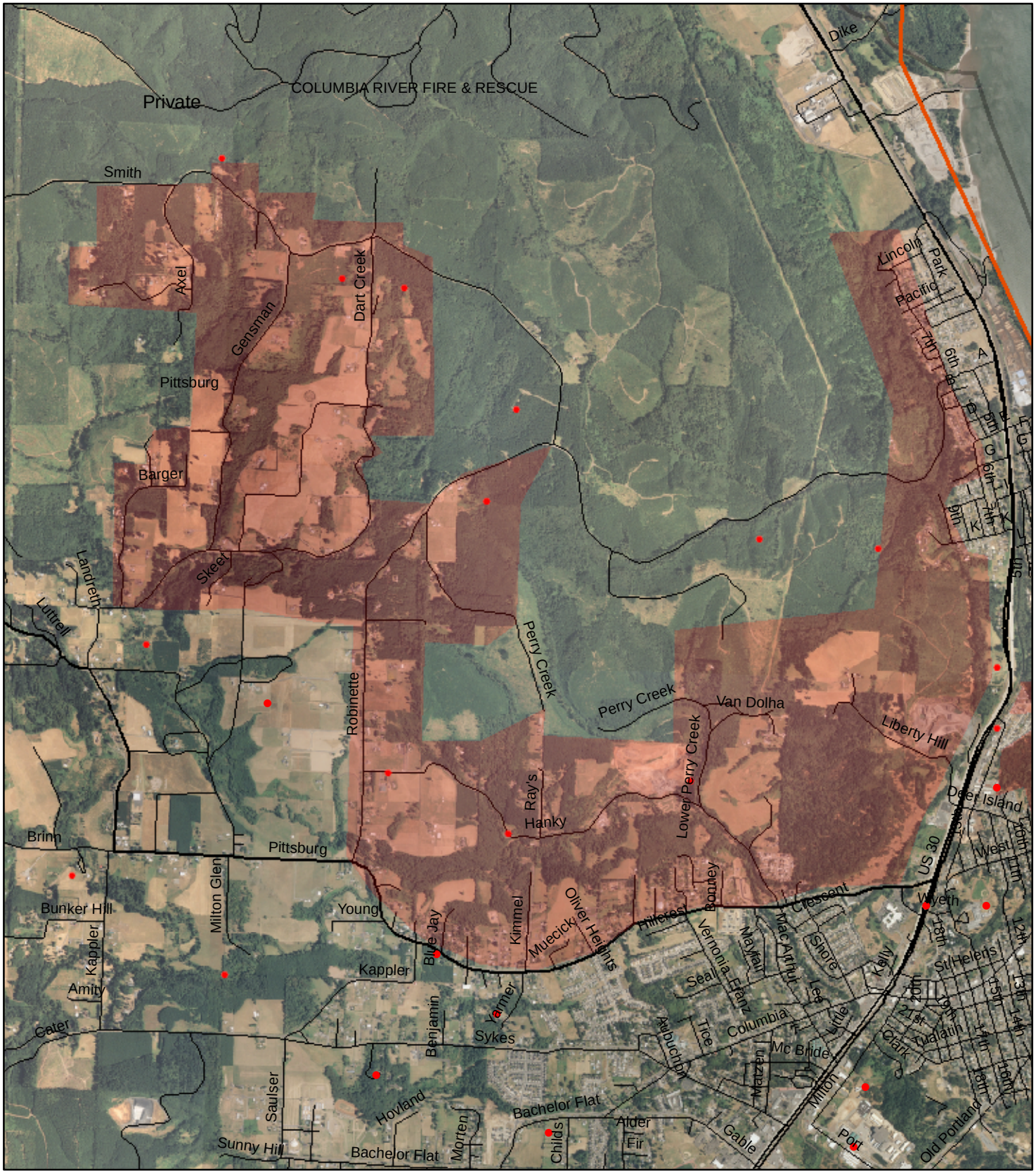
WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Schedule Grey Cliffs Community meeting. Engage local residents by framing WUI issues at the local level.	May-07	Columbia River Fire & Rescue, City of St. Helens, ODF and Community
Initiate homesite assessment data collection. Consider access, structural ignitability, defensible space, fuel modification corridors. Develop database and GIS layers.	2007 - 2008	Columbia River Fire & Rescue, City of St. Helens, GPS/GIS Contractor
Develop evacuation routes and complete a pre-planned response plan with map references. Identify problematic areas, implement possible measures for resolution.	2007	Columbia River Fire and Rescue, City of St. Helens Police, City of St. Helens, ODF

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Seek partnerships and apply for grant to facilitate fuel reduction and fire safe landscaping efforts. Develop pilot project and use media to "showcase" throughout county.	2007 - 2009	Columbia River Fire & Rescue/ City of St. Helens, ODF
Partner with biomass, composting or other recycle service for homeowner fuel reduction disposal opportunities.	2007 - 2009	Columbia River Fire & Rescue/ City of St. Helens, Columbia County, Local Industry Partners, ODF
Implement WUI education and fire safe landscaping program for community. Implement annual maintenance campaigns/programs and monitor success.	2007 -2009	Columbia River Fire and Rescue/ City of St. Helens, ODF, County Extension
Provide clear addressing of all streets and structures. Meet needs of emergency response and owners concerns.	2007 -2009	Columbia River Fire and Rescue/ City of St. Helens, Community
Encourage City to improve Botanical Gardens by reducing invasive vegetation and ladder fuels.	2007 - 2008	Columbia River Fire and Rescue/ City of St. Helens, Local Volunteer Groups
Work towards improving access to current City road standards.	2007 - 2010	Columbia River Fire & Rescue/ City of St. Helens
Develop and implement targeted fire prevention efforts for juvenile fire starts and other human caused fires in the area.	2007-2008	Columbia River Fire and Rescue/ Columbia County Fire Prevention Cooperative, City of St. Helens Police, Community, Juvenile Firesetters Program Agencies,ODF
Evaluate homes along canyons/native vegetation areas within St. Helens exposed to fire risk. Target these homeowners to encourage fuel reduction/fire safe landscaping/structural vulnerability reduction.	2007-2010	Columbia River Fire and Rescue/City of St. Helens

Columbia County Community Wildfire Protection Plan
Robinette- Columbia City Columbia River Fire and Rescue CAR

Robinette Columbia City
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State



CAR Name: Smith-Robinette/Col. City - Columbia River Fire & Rescue CAR

Priority Category: High -175

Description: Urban and rural residential areas northwest of St. Helens, Oregon. Area is adjacent to City of St. Helens and City of Columbia City UGB's. Area has potential for increased rural to suburban densities. Some high density portions of cities have increased fire exposure, especially west side perimeter areas, specific rural areas and west Columbia City.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	300
25	46	12	27	65	**175**
Moderate	Moderate	Moderate	Moderate	High	

Communities at Risk - Focus Areas: Smith-Robinette, Columbia City I

Structural Fire Protection Agency: Columbia River Fire and Rescue

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Lacking structural ignitability and access assessment, scope of issue
Lacking defensible space through fuel modification/reduction and fire safe landscaping practices
Forest and other natural cover fuels adjacent to properties
Human caused ignition risks in the WUI
This area is subject to multiple Measure 37 Claims and may increase in density in the future.

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Provide a general signage campaign within area, e.g., "Fire Free/ Get in the Zone" or "It can happen here!"	2007 - 2010	Columbia River Fire and Rescue/ Columbia County Fire Prevention Cooperative, ODF, Fire Defense Board
Locate and map all significant structures including driveways and other access infrastructure. Develop GIS and database.	2007 - 2009	Columbia River Fire and Rescue/ Contractor(s), Columbia County
Initiate homesite assessment data collection. Consider access, structural ignitability, defensible space, fuel modification corridors. Develop database and GIS layers.	2007 - 2009	Columbia River Fire and Rescue/ ODF, Contractor(s), CRPUD
Develop plan to address defensible space issues. Divide area geographically into WUI management zones targeting one zone annually, revisit on an ongoing scheduled basis.	2007 - 2010	Columbia River Fire and Rescue/ ODF/Land Development Services
Implement established WUI education/outreach program for fire safe landscaping including inspections, publications and targeted mailings. Provide annual maintenance reminders/opportunities and monitor success.	2007 - 2009	Columbia River Fire and Rescue/ODF/Land Development Services

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2007 - 2010	Columbia River Fire and Rescue/ODF
Identify locations for future water sources. Develop agreements with property owners and install necessary infrastructure.	2007 - 2010	Columbia River Fire and Rescue/ODF
Anticipate development progression and provide planning for fire safe communities. Consider/plan for future fire station location, apparatus and staffing.l.	2007 - 2010	Columbia River Fire and Rescue/Land Development Services
Increase inventory of Type 2, 3 and 6 Engines.	TBD	Columbia River Fire and Rescue/
Work with McNulty Water to develop adequate fire flows based on density.	2007 -2010	Columbia River Fire and Rescue/McNulty PUD
Monitor Measure 37 development. Provide timely comments and information to County Land Development on issues of fire safe development within the WUI.	Ongoing	Columbia River Fire and Rescue/ODF/Land Development Services
Ensure Fire Code requirements for infrastructure (roads and water delivery) are enforced.	Ongoing	Columbia River Fire and Rescue/City and County Planning
Improve Smith Road access from Columbia City	2007 - 2010	County Road Department/Columbia River Fire and Rescue

Columbia County Community Wildfire Protection Plan
Cannan - Meissner Columbia River Fire and Rescue CAR

- Cannan Meissner
- RFPD Boundary
- Stat_Fires 94-05
- WUI Boundary
- Federal
- State

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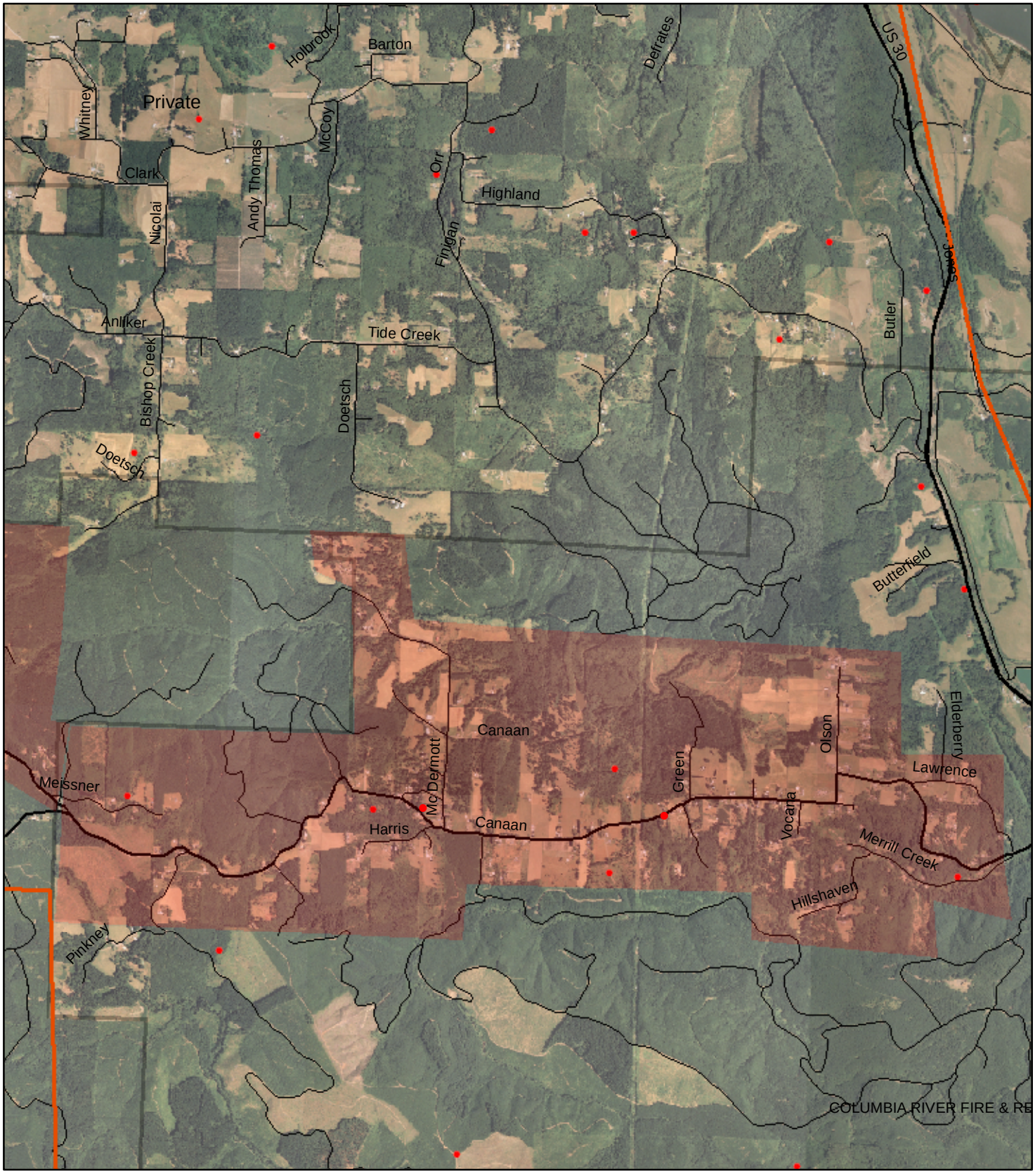

CAR Name: **Cannan-Meissner - Columbia River Fire & Rescue CAR** **Priority Category:** **Mod - 156**

Description: The Cannan-Meissner area is a rural residential area west of Deer Island along major county roads. Response times are extended and it includes some response areas under structural protection contracts. Many properties are located near ridgeline and are exposure to potential upslope fire runs of increased intensity. Many of the homes are located within active managed resource lands with exposure to logging slash fuels.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	300
18	46	12	15	65	**156**
Moderate	Moderate	Moderate	Low	High	

Communities at Risk - Focus Areas: Cannan -Meissner

Structural Fire Protection Agency: Columbia River Fire and Rescue

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

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Lacking structural ignitability and access assessment, scope of issue
Lacking defensible space through fuel modification/reduction, fire safe landscaping , and structural ignitabiity reduction practices
Forest and other natural cover fuels adjacent to properties - higher elevations, exposure to winds and steep slope
Area is subject to multiple Measure 37 claims and may increase in homesite density in the future.

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Initiate homesite assessment data collection. Consider access, structural ignitability, defensible space, fuel modification corridors. Develop database and GIS layers.	2008 - 2010	Columbia River Fire and Rescue/ Contractor(s)
Develop plan to address defensible space issues. Divide area geographically into WUI management zones targeting one zone annually, revisit on an ongoing scheduled basis	2008 - 2010	Columbia River Fire and Rescue/ ODF
Implement established WUI education/outreach program for fire safe landscaping including inspections, publications and targeted mailings. Link annual maintenance education and monitor success.	2008 Ongoing	Columbia River Fire and Rescue/

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2008 -2010 Ongoing	Columbia River Fire and Rescue/ODF
Identify locations for future water sources. Develop agreements with property oweners and install necessary infrastructure.	2007 - 2010 Ongoing	Columbia River Fire and Rescue
Evaluate need for and increase inventory of Type 2, 3 and 6 Engines	TBD	Columbia River Fire and Rescue/
Recruit, maintain adequate Volunteer staffing for Deer Island and Goble Stations.	Ongoing	Columbia River Fire and Rescue/
Monitor Measure 37 development. Provide timely comments and information to County Land Development on issues of fire safe development within the WUI.	Ongoing	Columbia River Fire and Rescue, ODF/
Target educational efforts and inspections where fuel adjacency (forest slash) is a concern by property owners and communities. Stress actions homeowners can take to reduce structural ignitability of their home.	Ongoing	Columbia River Fire and Rescue and ODF/ Forest Industry
Annex rural populated areas that are outside structural fire protection district into the CRF&R District.	2010	Columbia River Fire and Rescue/

CAR Name: General CAR - Columbia River Fire & Rescue CAR

Priority Category: Mod - 152

Description: Populated residential areas within the CRFR WUI adjacent to natural cover and forest fuels.
Additional "Priority or Focus Areas" to be identified as part of ongoing evaluation.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
15	42	14	19	62	**152**
Moderate	Moderate	Moderate	Moderate	High	

Communities at Risk - Focus Areas: Urban/Rural Residential within CRFR-WUI

Structural Fire Protection Agency: Columbia River Fire and Rescue

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:
Lacking structural ignitability and access assessment within the home ignition zone
Lacking defensible space through fuel modification/reduction and fire safe landscaping practices
Forest and other natural cover fuels adjacent to properties
Human caused ignition risks in the WUI

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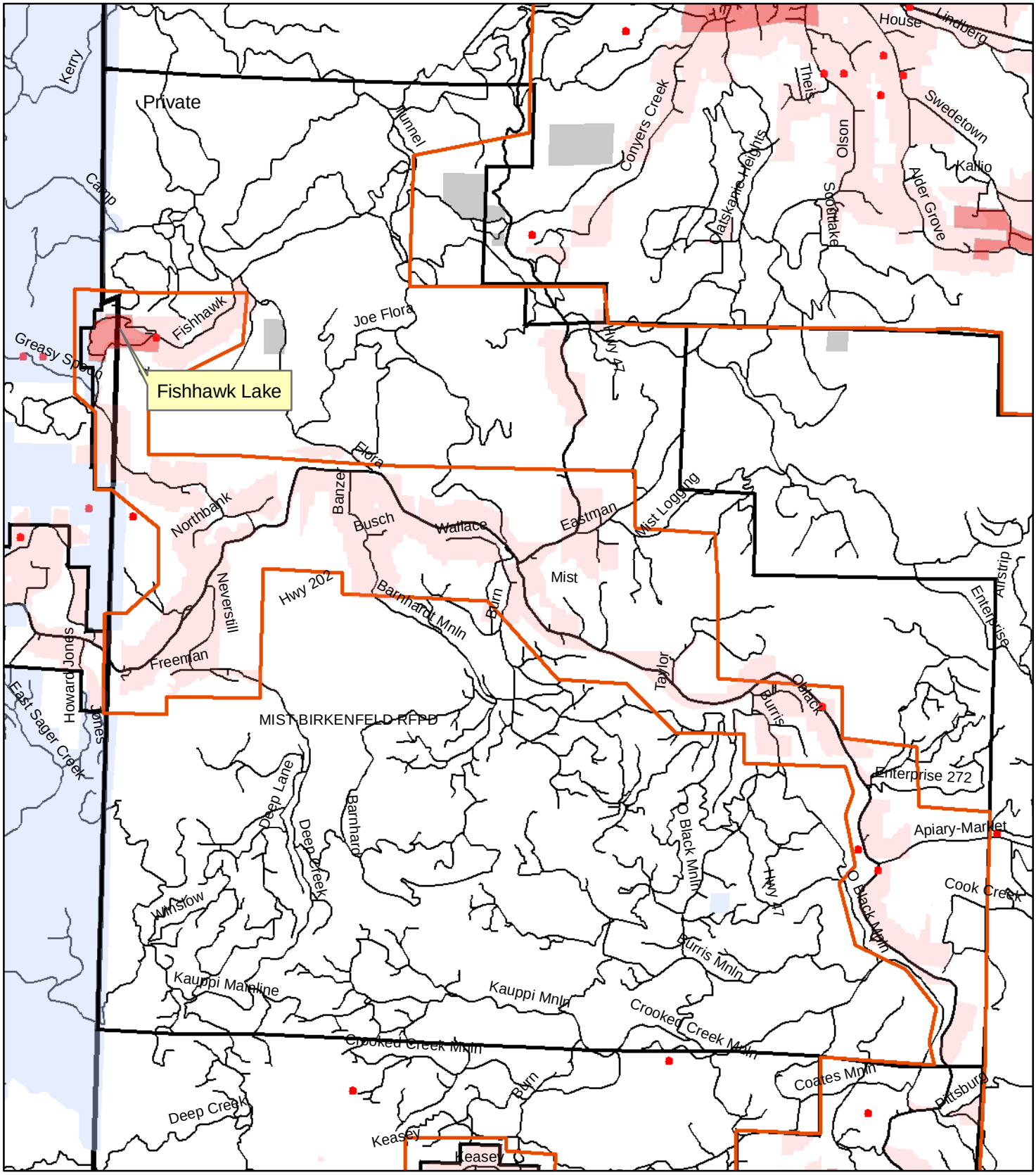
WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Develop broad level education and outreach for achieving defensible space, fire safe landscaping and reduced structural ignitability.	Ongoing	Columbia River Fire and Rescue/ ODF, Columbia County Land Development , Columbia County County Emergency Management, CEPA, Community Leaders, Media
Leverage other pilot projects within the county to "showcase/publicize" reduction of risk in the home ignition zone.	Ongoing	Columnia River Fire and Rescue, ODF, County Fire Districts, Columbia County Fire Prevention Cooperative, Media
Provide local educational resources via local web-sites, provide access to the Columbia County CWPP and education materials. Provide local inspections based on request.	2007	Columbia County Emergency Management/Fire District, ODF

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Monitor Measure 37 development. Provide timely information to County Planning on issues of increased density and fire assocaited risks within the WUI	Ongoing	Columbia River Fire and Rescue/ODF
Locate and map all significant structures including driveways and other access infrastructure.	2007 - 2009	Columbia River Fire and Rescue, Contractor(s), Joint county wide mapping project, other agencies.
Identify existing water sources. Develop flow rate data, map to GIS.	Ongong	Columbia River Fire and Rescue/ODF
Identify locations for future water sources. Develop agreements with property oweners and install necessary infrastructure.	Ongoing	Columbia River Fire and Rescue
Consider implementation of SB360 within Columbia County	2010	Columbia River Fire and Rescue

Mist-Birkenfeld

CAR

Columbia County Community Wildfire Protection Plan
Mist Birkenfeld RFPD CAR



Columbia County Community Wildfire Protection Plan
Fishhawk Lake - Mist Birkenfeld RFPD CAR

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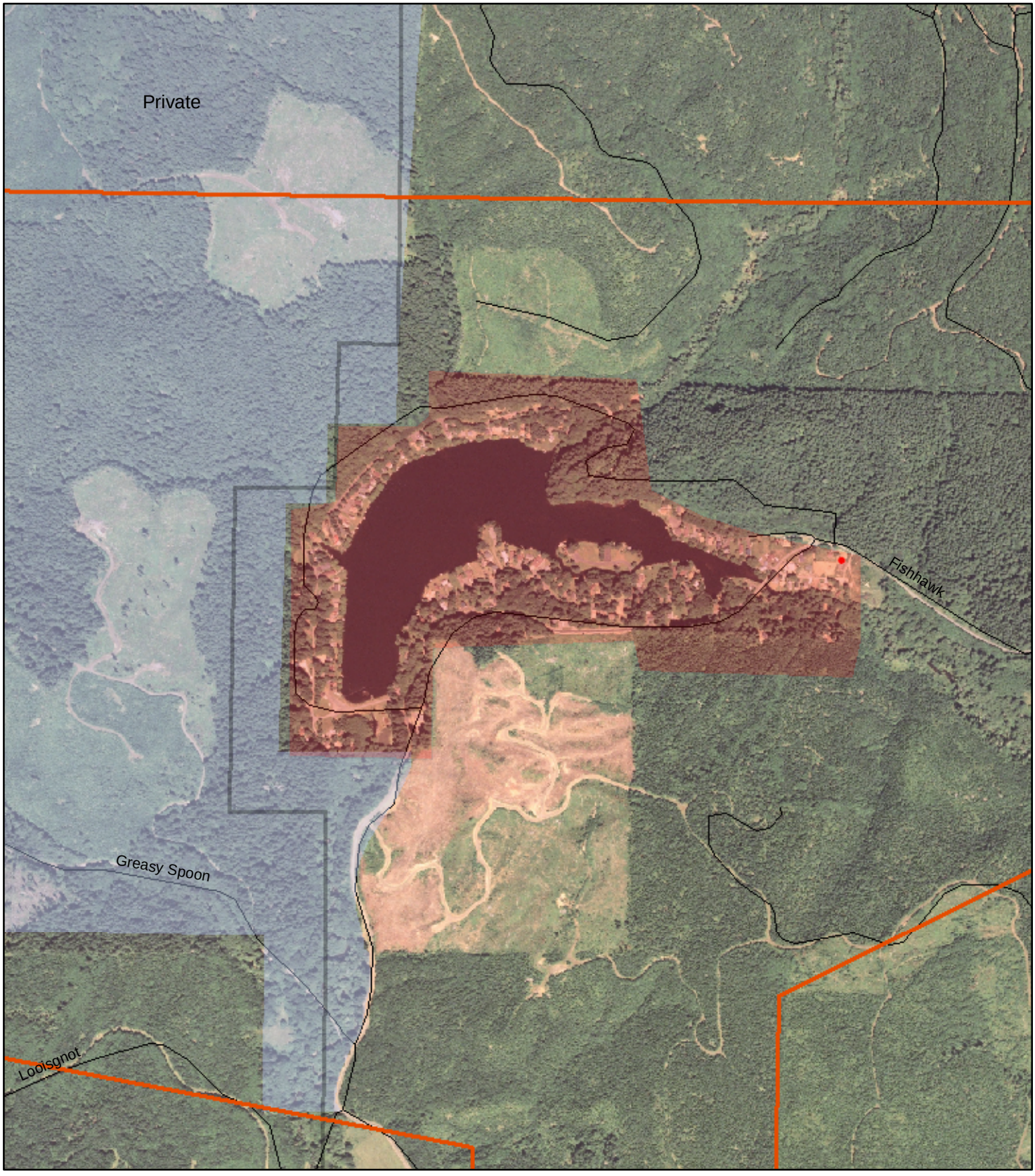
- Fishhawk Lake
- RFPD Boundary
- Stat_Fires 94-05
- WUI Boundary
- Federal
- State



CAR Name: Fishhawk Lake - Mist Birkenfeld RFPD CAR

Priority Category: Mod - 141

Description: Fishhawk Lake Estates is a community surrounding Fishhawk Lake in the NW portion of Columbia County and NE portion of Clatsop County. The community has a well developed homewoners association named Fishhawk Lake Recreation Club, Inc. The community does maintain a fire prevention steward and administers a program for approved campfire use. Community is well organized and able to adopt fuel reduction measures around the home ignition zones of vulnerable properties. There are **XX** homes in the Fishhawk Lake Estates surrounding the lake and associated properties. The development is surrounded primarily by private industrial and state forest ownership.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
20	43	5	28	45	**141**
Moderate	Moderate	Low	Moderate	Moderate	

Communities at Risk - Focus Areas: Fishhawk Lake Community

Structural Fire Protection Agency: Mist Birkenfeld RFD

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Structural ignitability assessment required to evaluate scope of issue
Lacking defensible space and fire safe landscaping around perimeter of inhabited structures
Evacuation, safety areas and escape routes not identified
Comprehensive pre-suppression plans not developed for community
Community safety areas not identified
Some homes within or adjacent to steep slopes, forest fuels.

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Schedule Fishhawk Lake Association meeting. Encourage participation in FireWise/USA® Program.	2007	Mist-Birkenfeld RFD/Oregon Dept. of Forestry/Fishhawk Lake Association
Distribute the publications to residences in area to support community presentation, FIREWISE or other. Support communities planning efforts.	2007-2008	Mist-Birkenfeld RFD/ Fishhawk Lake Association,ODF
Initiate homesite asessment data collection. Consider access, structural ignitability, defensible space fuel modification.	2007-2008	Mist-Birkenfeld RFD, Fishhawk Association

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Develop evacuation routes and complete a pre-planned operations and response plan.	2008	Mist-Birkenfeld RFD/Oregon Dept. of Forestry/Fishhawk Lake Association
Implement pilot project show casing a homesite with fire resistive contruction and fire resistive landscaping practices.	2007 - 2009	Mist-Birkenfeld RFD/Oregon Dept. of Forestry/Fishhawk Lake Association
Incorporate maintenance requirements of Home Ignition Zone as part of Association standards/requirements.	2007-2009	Mist-Birkenfeld RFD - Fishhawk Lake Association/
Consider zoning implications and requirements that structural ignitability be considered in current and future development and construction.	2007 - 2010	Mist-Birkenfeld RFD/ Columbia and Clatop County Land Development, Fishhawk Lake Association

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Locate and map all significant structures including driveways and other access infrastructure.	2007 - 2010	M-B RFD/ Contractor(s), Joint county wide mapping project, other agencies.
Target educational efforts and inspections where fuel adjacency (forest slash) is a concern by property owners and communities. Stress actions homeowners can take to reduce structural ignitability of their home.	2007 - Ongoing	M-B RFD-ODF/ Forest Industry
Identify existing water sources. Develop flow rate data, map to GIS.	2007 - 2010	M-B RFD/ ODF
Identify locations for future water sources. Develop agreements with property owners and install necessary infrastructure.	2007 - 2010	M-B RFD/ ODF

CAR Name: General WUI - Mist- Birkenfeld RFPD - CAR

Priority Category: 133

Description:
Rural populations within fire district...
Includes portions along Old Vespar 77 Road in Clatsop County within MBRFPD

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
13	40	14	17	49	**133**
Low	Moderate	Moderate	Moderate	Moderate	

Communities at Risk - Focus Areas: General Community at Risk M-B RFPD

Structural Fire Protection Agency: Mist-Birkenfeld RFD

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:
Homes lacking defensible space through fuel reduction, fire safe landscaping and practices that reduce structural ignitability within the "Home ignition Zone"
Forest and other natural cover fuels adjacent to properties
Human caused ignition risks in the WUI

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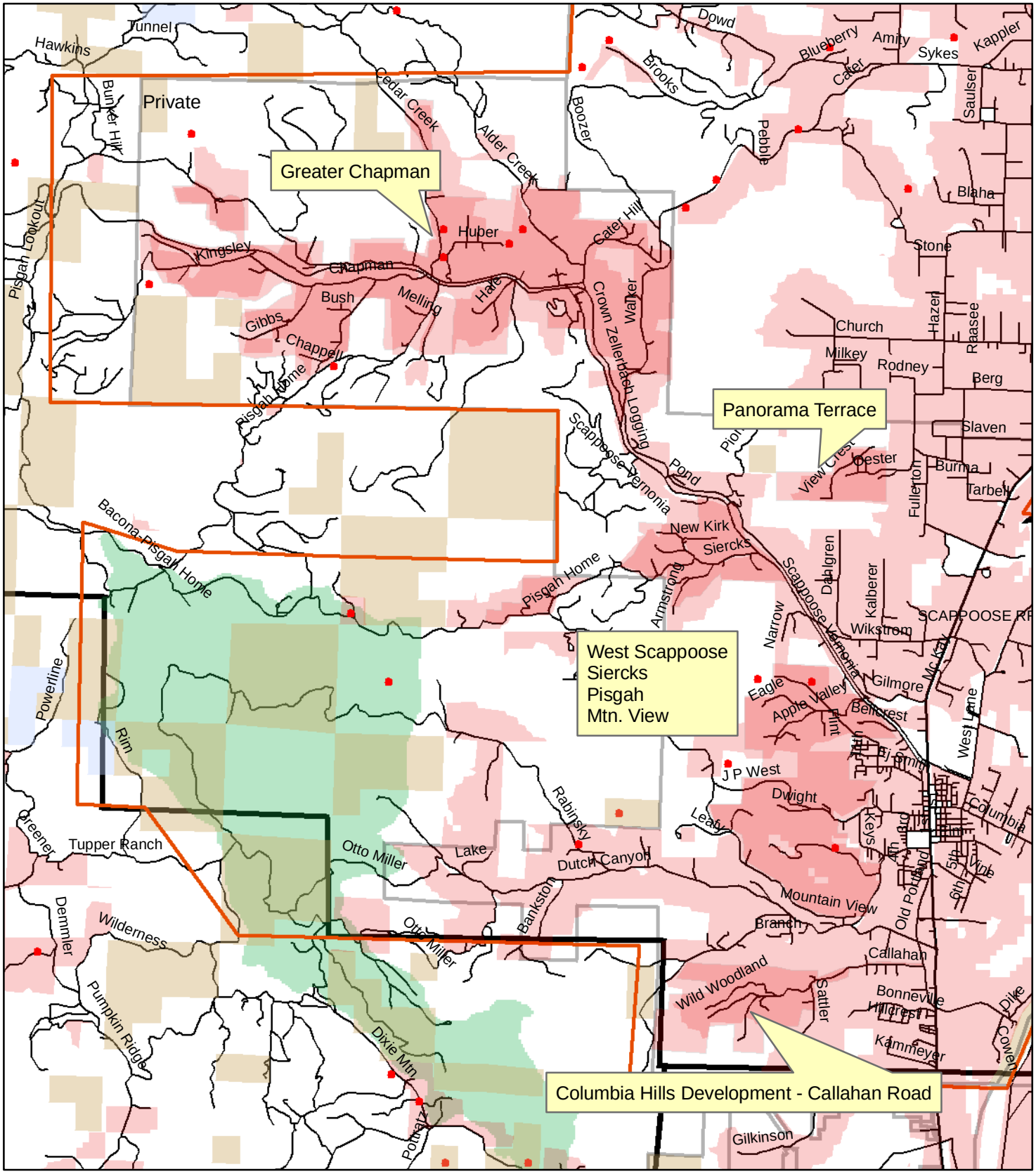
WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Implement established WUI education/outreach program for reduction of structural ignitability and fire resistive landscaping concepts. Include inspections with action checklists and other educational publications to homeowners.	2007 -2009	M-B RFD/ ODF, Fire Defense Board, Columbia County County Emergency Management, Columbia County Fire Prevention Cooperative, Media
Provide information and discuss "Home Ignition Zone" and other critical factors to consider as part of driveway inspection meetings or issuance of burning permits. Provide structural ignitability inspections based on request.	2007 - Ongoing	M-B RFD/
Identify other priority or focus areas of rural development to target for stuctural ignitabiity assessment.	2008 -2010	M-B RFD/ ODF

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Locate and map all significant structures including driveways and other access infrastructure.	2007 - 2010	M-B RFD/ Contractor(s), Joint county wide mapping project, other agencies.
Target educational efforts and inspections where fuel adjacency (forest slash) is a concern by property owners and communities. Stress actions homeowners can take to reduce structural ignitability of their home.	2007 - Ongoing	M-B RFD-ODF/ Forest Industry
Identify existing water sources. Develop flow rate data, map to GIS.	2007 - 2010	M-B RFD/ ODF
Identify locations for future water sources. Develop agreements with property owners and install necessary infrastructure.	2007 - 2010	M-B RFD/ ODF

Scappoose RFD

CAR

Columbia County Community Wildfire Protection Plan
Scappoose RFPD CAR



Columbia County Community Wildfire Protection Plan
Greater Chapman - Scappoose RFPD CAR

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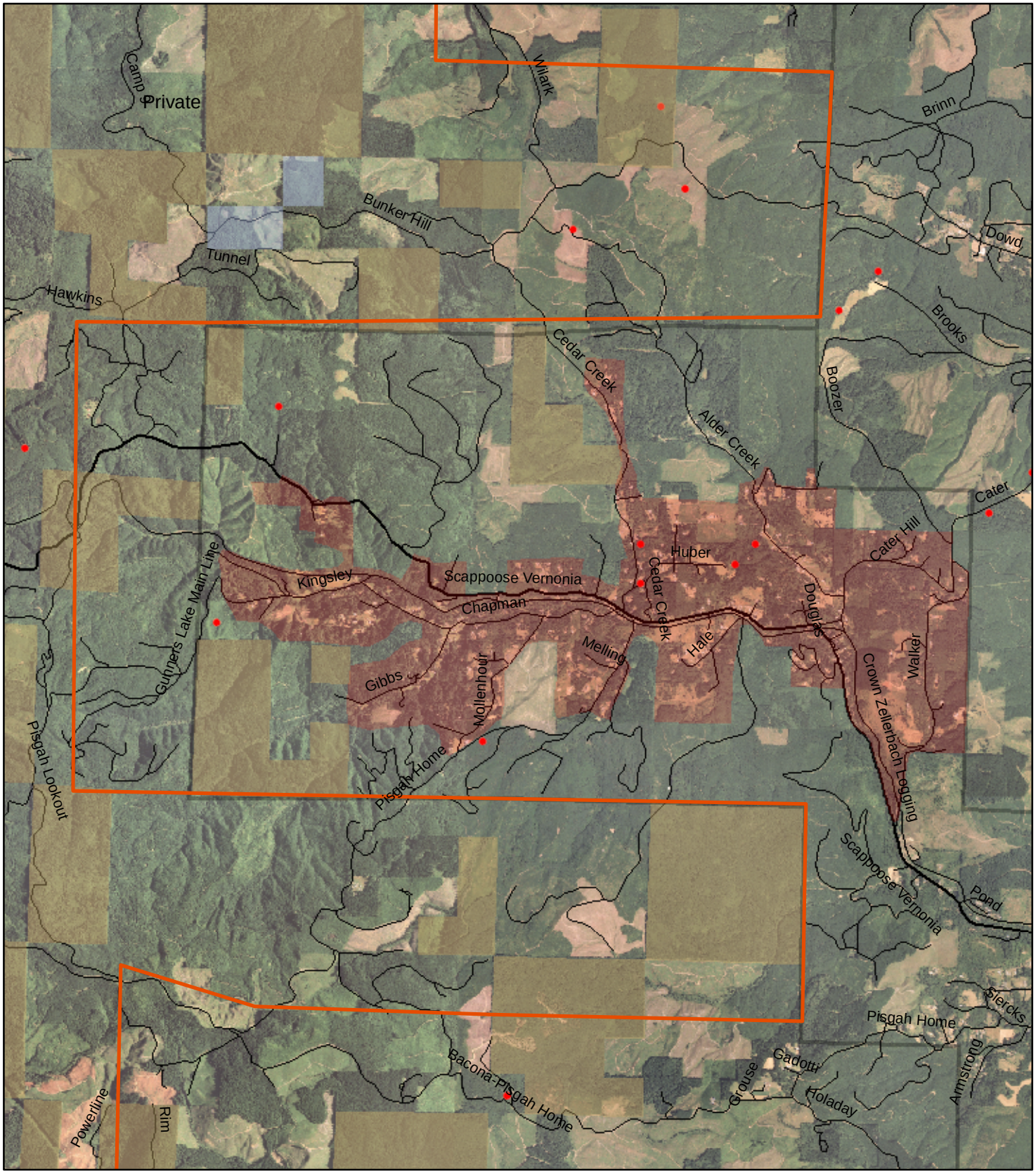
Greater Chapman
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State



CAR Name: Greater Chapman - Scappoose RFPD CAR

Priority Category: High-197

Description: Chapman and vicinity is a community of approximately **400** residences with a rural residential density in the moderate to high category. Development continues in parcels of smaller privately owned tax lots. The community lies in the western edge of the Scappoose RFPD with extended response times from the main station. A volunteer sub-station is located at Chapman with limited response capacity. Intensive forest management activities occur around and within this community. Public roads and adjacent BLM lands provide public access and some limited and dispersed recreational activities. Includes adjoining areas of rural development including Alder Creek.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
30	45	14	43	65	**197**
Moderate	Moderate	Moderate	High	High	

Communities at Risk - Focus Areas: Chapman Community and Vicinity

Structural Fire Protection Agency: Scappoose Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

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Lacking structural ignitability and access assessment, scope of issue
Lack of defensible space, fire safe landscaping and structural ignitability in the home ignition zone
Evacuation routes and safety areas not identified
Pre-fire operations plan not developed
Forest and other natural cover fuels adjacent to properties - higher elevations, exposure to winds and steep slope

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Schedule Chapman community meeting. Engage local residents by framing WUI issues at the local level.	2008	Scappoose RFD/ ODF, BLM, Landscape Contractors, Local Nursery
Initiate structural triage assessment data collection for structural ignitability and defensible space. Digitize structures using 200X 1/2 meter resolution aerial photos and incorporate survey data. Map addresses and ownership.	2008 - 2010	Scappoose RFD/ ODF, Grant Resource Contractor
Develop pre-planned fire operations plan including evacuation routes/process, identifying and mapping of all roads and bridges. Fully implement road signage and addressing.	2008	Scappoose RFD/ ODF, Columbia County Sheriff's Office

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Develop local campaign, including signs, for achieving and maintaining defensible space/fire resistive landscaping and reduced structural ignitability awareness within the "Home Ignition Zone"	2008-2010	Scappoose RFD/ ODF, Fire Defense Board, Fire Prevention Cooperative
Seek partnerships and apply for grant to facilitate fuel reduction and fire safe landscaping efforts. Include cost-share programs to support efforts. Develop pilot project and use media to "showcase" throughout county.	2008 - 2010	Scappoose RFD/ ODF. Local Landscape Contractors and Nurseries, Local Industries/Businesses
Partner with biomass, composting or other recycle service for homeowner fuel reduction disposal opportunities.	2008 - Ongoing	Scappoose RFD/ ODF, Columbia County,Local industry, ODF
Recruit and maintain volunteer resources for Chapman Station.	Ongoing	Scappoose RFD/
Locate and develop helicopter landing zone(s)	2007-2008	Scappoose RFD/
Provide clear addressing of all streets and structures. Meet needs of emergency response.	2007 -2010	Scappoose RFD/
Address human caused fire stars with community and develop targeted fire prevention efforts.	2008-2010	Scappoose RFD/ ODF, Columbia County Fire Prevention Cooperative, Local Community, Media
Develop an education DVD or other media regarding burning responsibilities, regulations and fire prevention.	2008 - 2010	Fire Defense Board-Scappoose RFD/ ODF, Columbia County Fire Prevention Cooperative, Media
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2007 -2009 Ongoing	Scappoose RFD/ ODF, BLM, Forest Industry
Target educational efforts and inspections where fuel adjacency (forest slash) is a concern by property owners and communities. Stress actions homeowners can take to reduce structural ignitability of their home.	Ongoing	Scappoose RFD/ ODF, BLM, Forest Industry
Address RR5 Zoning issues where primary and secondary fuels reduction and fire resistive construction requirements are not required. Work with Land Development Services, provide timely comment.	2007 - Ongoing	Scappoose RFD/ Land Development Services, ODF
Consider Implemention of SB360	2010	Columbia County/ Scappoose RFD, ODF

Columbia County Community Wildfire Protection Plan
Callahan/Columbia Hills - Scappoose RFPD CAR

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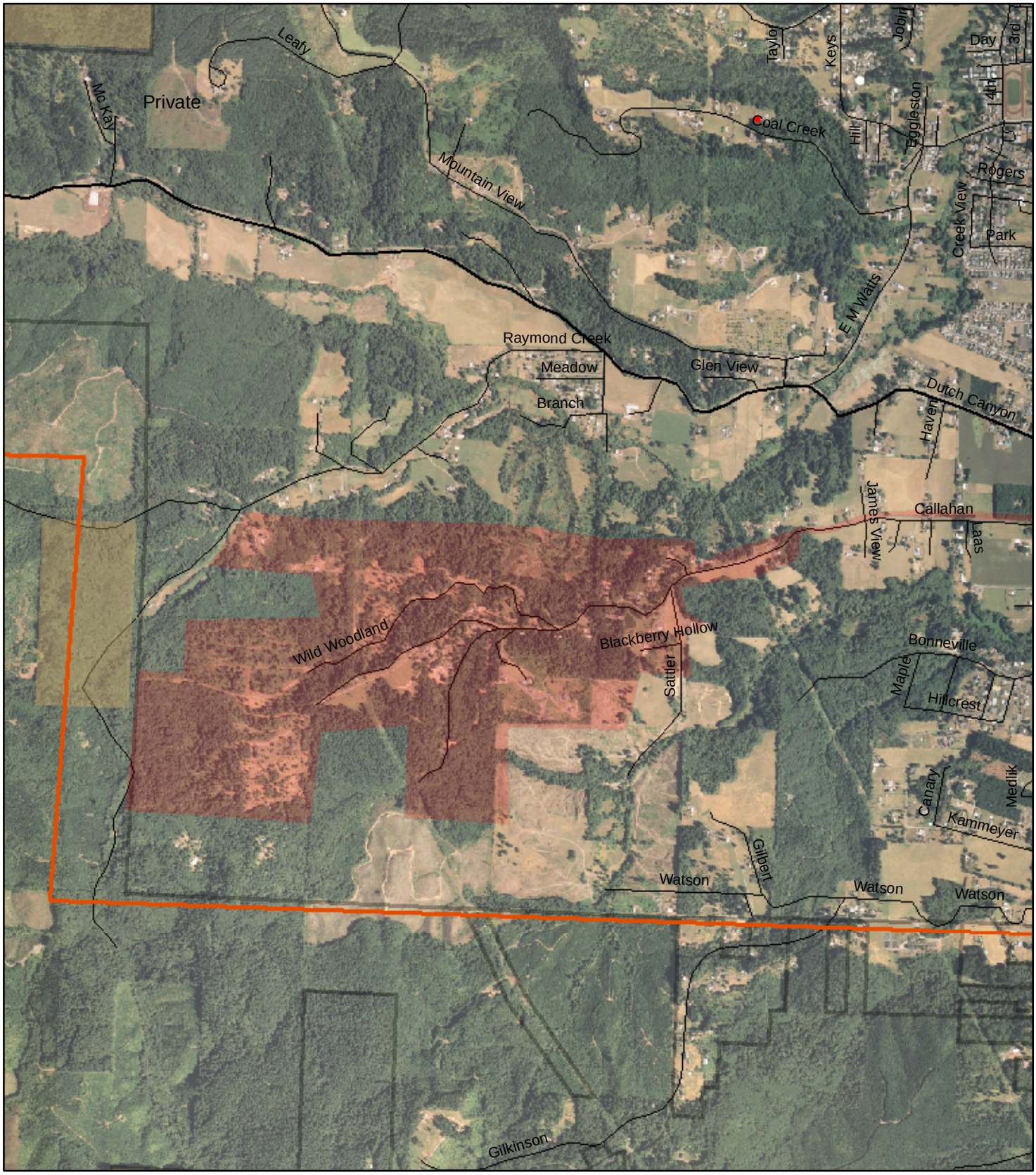
- Callahan-Columbia Hills
- RFPD Boundary
- Stat_Fires 94-05
- WUI Boundary
- Federal
- State



CAR Name: Callahan-Hillcrest Development - Scappoose RFPD CAR

Priority Category: Mod. - 182

Description: Callahan Road is is in the south portion of Scappoose RFPD. Current and future development in the area is a concern with major development planned (Columbia Hills Sub-Division). Only one road serves for ingress and egress to this developing area. Input into future development considerations and locations of shaded fuel breaks as well as structural ignitability, access and defensible homesite landscaping are factors . Potential for 140 homesites. Includes other residential areas along Callahan Road.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
23	43	11	40	65	**182**
Moderate	Moderate	Moderate	High	**High	

Communities at Risk - Focus Areas: Callahan Road/Columbia Hills Dev.

*** Development...Anticipated if not pre-empted*

Structural Fire Protection Agency: Scappoose Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Wildland fire exposure within and adjacent to development
Evacuation and escape routes not identified, dead end road to development
Lack of homeowner education regarding fire risks, prevention capacity in community
Development without defensible space and shaded fuel break considerations

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Consider fire siting standards for RR5 zoned areas or other land development requirements.	2007-2008	Columbia County Land Development Services/ Fire Defense Board
Meet with developers and land development services regarding structural ignitability, defensible space and shaded fuel break considerations. Consider requirements of roads and water supply. Assist developer in production of fire plan as required by County.	2007 - 2008	Scappoose RFD/ ODF, Land Development Services, Builder-Owner
Work with developer to provide model fire siting/construction practices/fire safe landscaping" showcase". Involve media for broader community education.	2007 - Ongoing	Scappoose RFD/ ODF, Land Development Services, Builder-Owner/Homeowners, Hillcrest Homeowners Association, Media, Local Nursery

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Initiate early contact with homeowners association regarding "Firewise Communities/USA®" program and encourage application, participation and recognition as Firewise Community.	2007	Scappoose Rural Fire District -ODF/ Homeowners, Hillcrest Homeowners Association
Provide support to emerging community and homeowners association for all fire safety and planning events. Assist in development of codes, covenants and restrictions.	Ongoing	Scappoose RFD - ODF/
Develop pre-planned fire operations plan including evacuation routes, roads, addressing, bridge locations and restrictions, water supply locations, staging areas,, structura triage data etc. Identify problematic areas and implement measures for resolution.	2007 - Ongoing	Scappoose RFD/ ODF

Columbia County Community Wildfire Protection Plan
West Scappoose - Scappoose RFPD CAR

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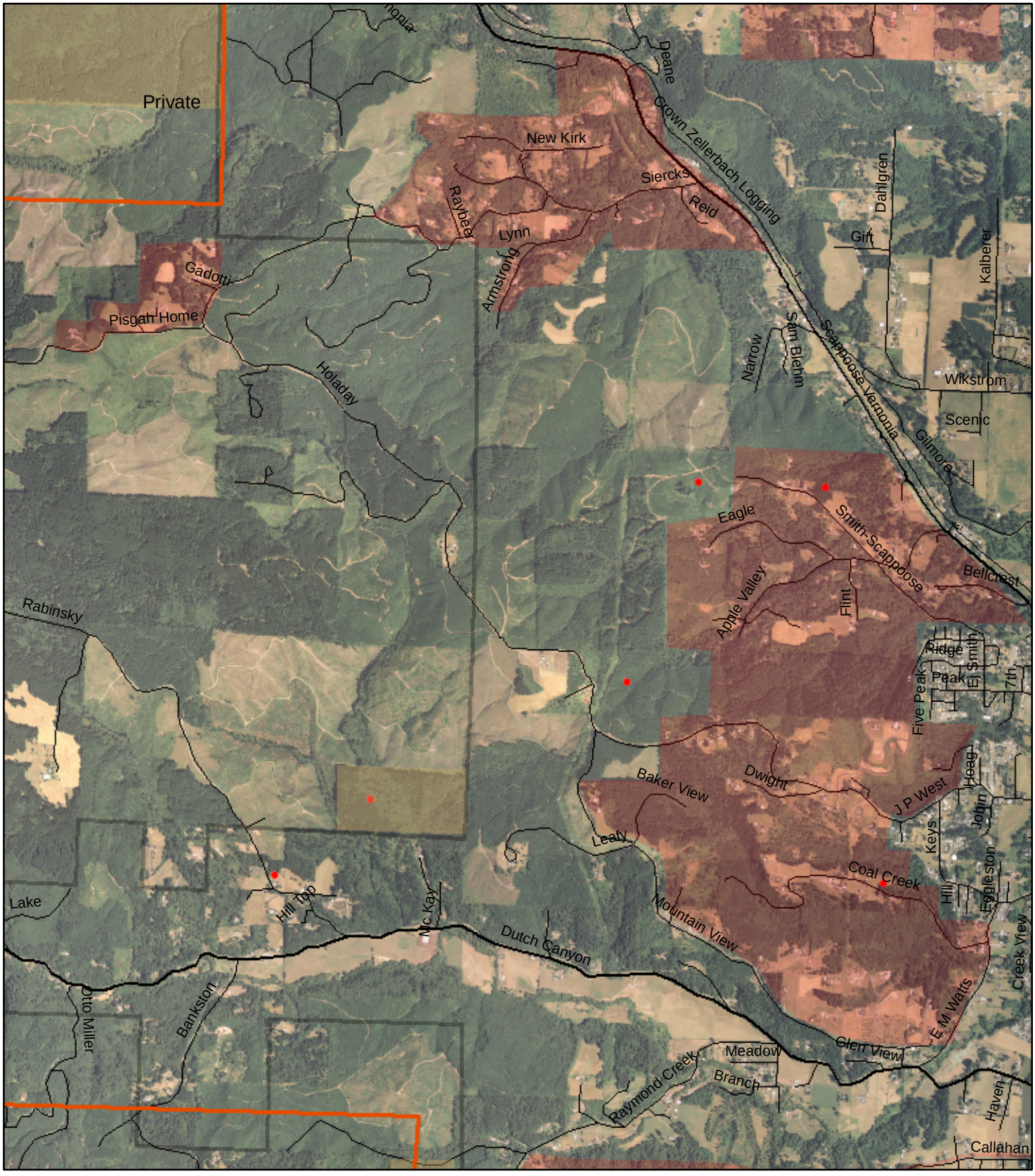
West Scappoose
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State



CAR Name: **JP West/Mtn. View/Pisgah/Apple Valley/Siercks - Scappoose RFPD CAR** **Priority Category:** **Mod - 177**

Description: Rural residential and some sub-division development in the west hills of Scappoose (West Scappoose) and to the west ridgeline of Mtn. View Road. Steeper slopes and intermix of land use activities increases the hazards for this area. Existing homes and future development require assessment and practical application of fuel modification/fire safe landscaping within the home ignition zone. Additional areas along Apple Valley, Siercks and Pisgah Home Roads with residential areas adjacent to resource lands.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
20	49	12	31	65	**177**
Moderate	Moderate	Moderate	High	Moderate	

Communities at Risk - Focus Areas: JP West/Mtn.View/Siercks/Pisgah/Apple V

Structural Fire Protection Agency: Scappoose Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Homes lacking defensible space through fuel reduction, fire safe landscaping and practices that reduce structural ignitability within the "Home ignition Zone"
Forest and other natural cover fuels adjacent to properties
Steeper slopes and exposure to intermix of land use

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Implement localized education campaign to encourage homeowners to reduce structural ignitability through fuel reduction and fire safe landscaping practices within the "Home Ignition Zone".	2008 - 2010	Scappoose RFD/ ODF
Conduct local structural ignitability assessments using structural triage form, collect data. Provide owners input and reference material regarding improvements to reduce structural ignitability.	2008 - 2010	Scappoose RFD/ ODF, Grant Resource Contractor
Consider partnerships for fuel reduction in home ignition zones and non-burning alternatives such as chipping, recycle etc.	2007 - 2010	Scappoose RFD/ ODF, Columbia County, Waste Management, Composting Recycle Industry

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Provide local educational resources via local web-sites, provide access to the Columbia County CWPP and education materials.	2007 - 2008	Columbia County Emergency Management/ Fire District, ODF
Locate and map all significant structures including driveways and other access infrastructure. Provide clear addressing of all driveways.	2007 - 2010	Scappoose RFD/ Contractor(s), Joint county wide mapping project, other agencies.
Identify existing water sources. Develop flow rate data, map to GIS.	Ongong	Scappoose RFD/ ODF, Forest Industry
Identify locations for future water sources. Develop agreements with property oweners and install necessary infrastructure.	Ongoing	Scappoose/ ODF, Forest Industry
Address RR5 zoning issues where primary and secondary fuels reduction and fire resistive construction requirements are not required. Work with Land Development Services, provide timely comment.	2007 - Ongoing	Scappoose RFD/ Land Development, ODF

Columbia County Community Wildfire Protection Plan
Panorama Terrace - Scappoose RFPD CAR

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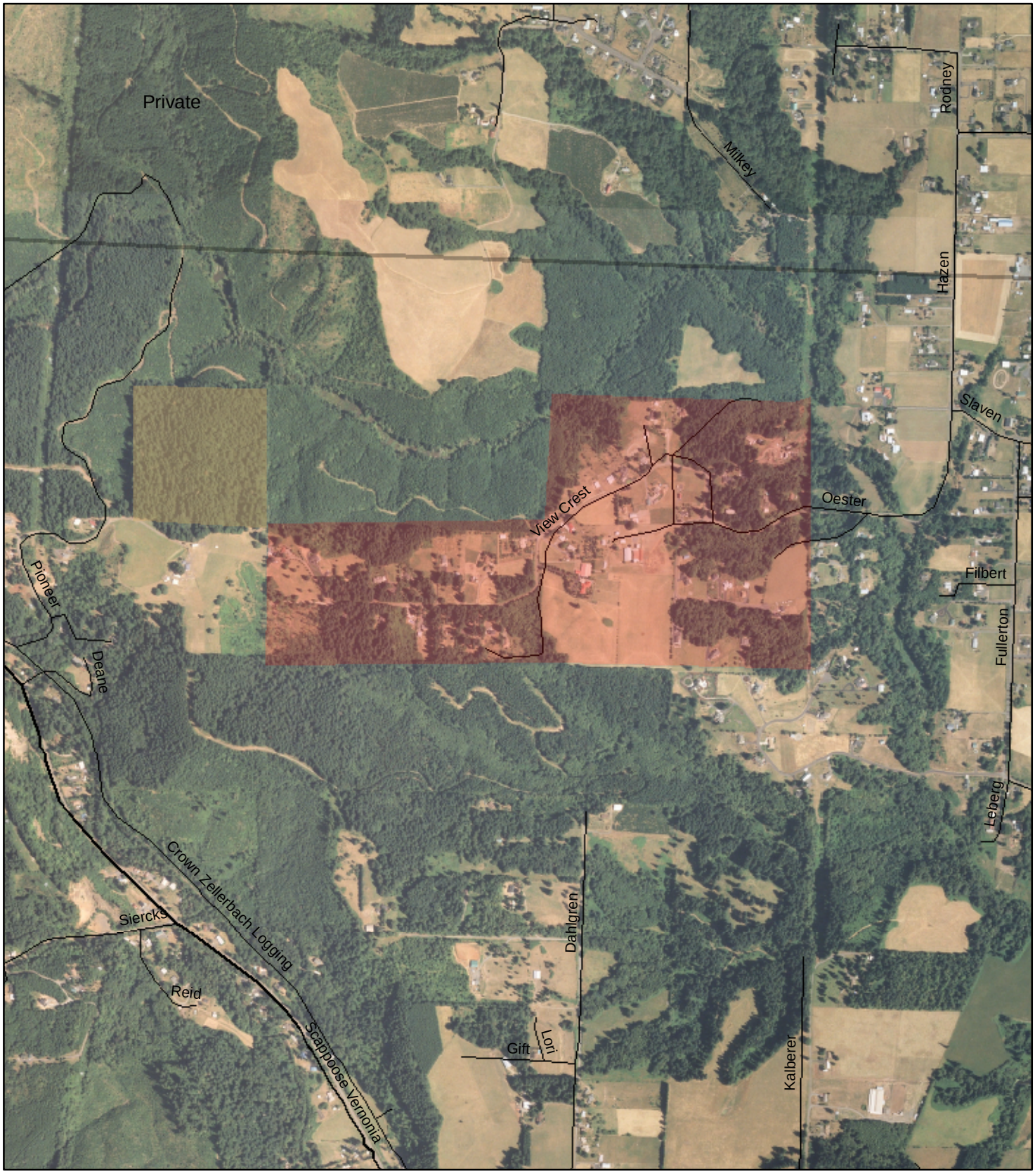
- Panorama Terrace
- RFPD Boundary
- Stat_Fires 94-05
- WUI Boundary
- Federal
- State



CAR Name: Panorama Terrace - Scappoose RFPD CAR

Priority Category: Mod - 150

Description: Rural population with a higher density of structures with dead-end road system. Proximity to industrial forest lands and active forest management. Intermi of fields and forest. Defined development where assessment and education could be delivered. Two elevated tanks provide water supply to hydrants in area.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
19	41	14	16	60	**150**
Moderate	Moderate	Moderate	Moderate	Moderate	

Communities at Risk - Focus Areas: Panorama Terrace

Structural Fire Protection Agency: Scappoose Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Lacking structural ignitability and access assessment, scope of issue
Lacking defensible space through fuel modification/reduction, fire resistive landscaping ,and structural ignitabiity reduction practices
Forest and other natural cover fuels adjacent to properties
Dead-end road system and west side homes exposed to slope
Fire operations plan not developed

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Implement localized education campaign to encourage homeowners to reduce structural ignitability through fuel reduction and fire safe landscaping practices within the "Home Ignition Zone".	2008 - 2010	Scappoose RFD/ Contractor(s)
Conduct local structural ignitability assessments using structural triage form, collect data. Provide owners input and reference material regarding improvements to reduce structural ignitability.	2008 -2010	Scappoose RFD/
Develop evacuation routes and complete a pre-planned response plan. Address potential evacuation and safe location for farm animals. Identify other problematic areas, implement possible measures for resolution.	2008 -2010	Scappoose RFD/ ODF, Columbia County Sheriff's Office

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2008 -2010 Ongoing	Scappoose RFD/ ODF
Identify locations for future water sources. Develop agreements with property oweners and install necessary infrastructure.	2007 - 2010 Ongoing	Scappoose RFD/

CAR Name: General CAR - Scappoose RFD CAR

Priority Category: Mod - 157

Description:

Populated residential areas within the SRFPD CAR-WUI .
Additional "Focus Areas" to be identified as part of ongoing evaluation or as priorities change.
WUI boundary includes Scappoose municipal watershed.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
15	45	14	19	64	**157**
Moderate	Moderate	Moderate	Moderate	High	

Communities at Risk - Focus Areas: Urban/Rural Residential within SRFPD-WUI

Structural Fire Protection Agency: Scappoose Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Lacking structural ignitability and access assessment within the home ignition zone
Lacking defensible space through fuel modification/reduction and fire safe landscaping practices
Forest and other natural cover fuels adjacent to properties
Human caused ignition risks in the WUI

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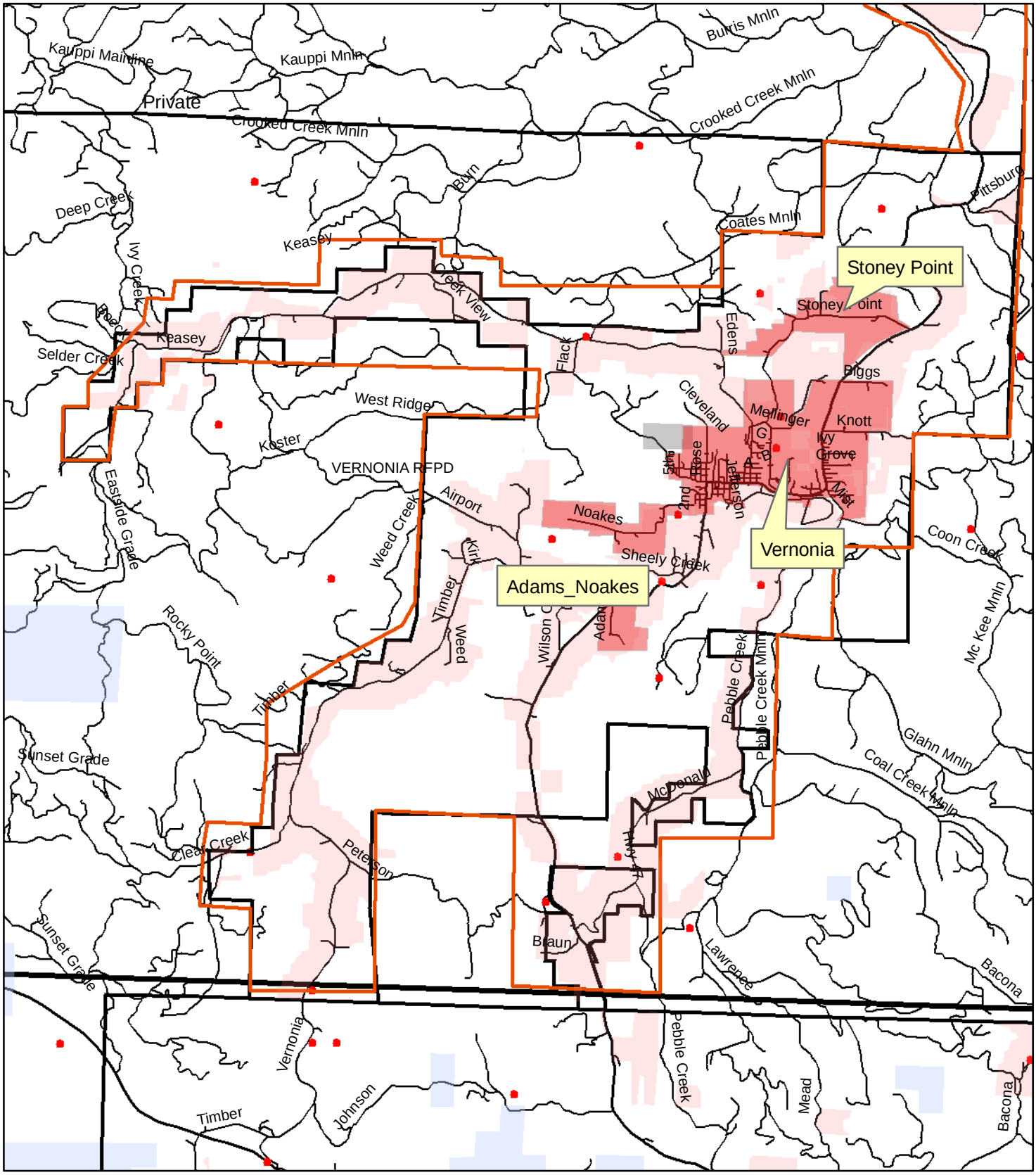
WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Develop broad level education and outreach for achieving defensible space, fire safe landscaping and reduced structural ignitability within the "Home Ignition Zone".	2007 - Ongoing	Scappoose RFD/ ODF, Fire Prevention Cooperative
Provide local educational resources via local web-sites, provide access to the Columbia County CWPP and education materials. Provide local inspections based on request.	Ongoing	Scappoose RFD/ Columbia County Emergency Management/Fire Districts, ODF
Locate and map all significant structures including driveways and other access infrastructure.	2007 - 2009	Scappoose Rural Fire Protection District/ Contractor(s), Joint county wide mapping project, other agencies.

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Identify existing water sources. Develop flow rate data, map to GIS.	Ongong	Scappoose RFD/ ODF
Identify locations for future water sources. Develop agreements with property oweners and install necessary infrastructure.	Ongoing	Scappoose RFD/
Provide clear addressing of all streets and structures. Meet needs of emergency response.	2007 -2009	Scappoose RFD/
Monitor Measure 37 development and other rural residential developments. Provide timely information to County Planning on issues of increased density and fire assocaited risks within the WUI	Ongoing	Scappoose RFD/
Consider implementation of SB360 within Columbia County	2010	Columbia County/ Fire Defense Board, CWPP Committee

Vernonia RFD

CAR

Columbia County Community Wildfire Protection Plan
Vernonia RFPD CAR



Columbia County Community Wildfire Protection Plan
City of Vernonia - Vernonia RFPD CAR

Vernonia
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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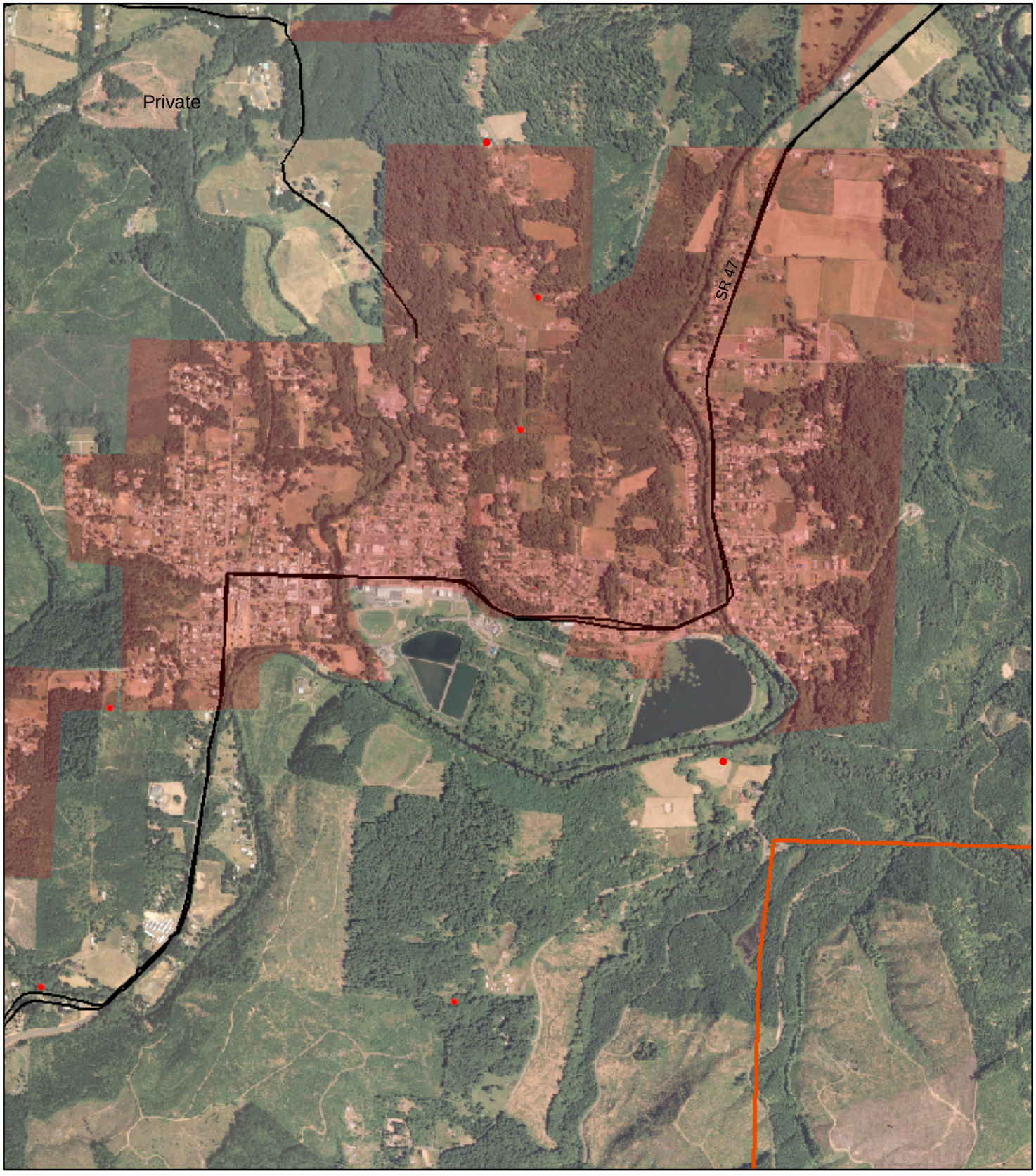

CAR Name: City of Vernonia - Vernonia RFD CAR

Priority Category: Mod - 163

Description: Vernonia is a small community located within the Nehalem River Valley and has a population estimated at 2,340. Located in the SW section of the County, the city is located within the heart of timber producing resource lands. Areas within the city limits contain natural cover fuels that could threaten adjacent homes in the event of a wildfire. The perimeter dwellings of the city have exposures from adjacent natural cover and forest fuels.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
21	46	6	45	45	**163**
Moderate	Moderate	Low	High	Moderate	

Communities at Risk - Focus Areas: City of Vernonia/UGB and Vicinity

Structural Fire Protection Agency: Vernonia Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Lacking structural ignitability and access assessment, scope of issue
Lacking defensible space through fuel modification/reduction and fire safe landscaping practices
Forest and other natural cover fuels adjacent and surrounding city perimeter
Human caused ignition risks in the WUI
Occluded areas within the city where steep slopes and natural cover fuels can present fire hazards to properties

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Schedule Town Hall presentation and exhibit to engage community regarding CWPP and local issues/action plans	2007	Vernonia RFD/ City of Vernonia, ODF
Develop and implement an awareness and education campaign for the OA Hill area between State St. and Texas Ave. Conduct structural triage assessment as part of education campaign dealing with structural ignitability and maintenance of the "Home Ignition Zone".	2007-2009	Vernonia RFD/ City of Vernonia, ODF
Implement other targeted education efforts to encourage homeowners to reduce structural ignitability through fuel reduction and fire safe landscaping practices within the "Home Ignition Zone". Target perimeter and finger streets that are adjacent to natural cover and forest fuels.	2008-2009	Vernonia RFD/ City of Vernonia, ODF

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Establish a community event that facilitates collection of yard or other vegetation debris removed from the Home Ignition Zone. Incorporate local business and industry in seeking opportunities and partnerships. Utilize non-burning alternatives.	2008-2009	Vernonia RFD/ City of Vernonia, ODF, Waste Management, Chamber of Commerce, Businesses, Landscaping Contractors
Coordinate with City of Vernonia Planning regarding growth and development issues relative to structural ignitability and adequate fire safe landscaping around homes. Provide comments in a timely manner.	Ongoing	Vernonia RFD/ City of Vernonia, Developers and Contractors
Develop an exhibit with handouts and other materials relating to Home Ignition Zone and preparing homes in the interface for wildfire readiness. Utilize volunteer organization for public outreach at the Vernonia Jamboree.	2008-2010	Vernonia RFD/ ODF, Local Volunteer Organizations, Event Organizers, Sponsors

Columbia County Community Wildfire Protection Plan
Adams/Noakes/Stoney Point - Vernonia RFPD CAR

Adams/Noakes/Stoney Pt
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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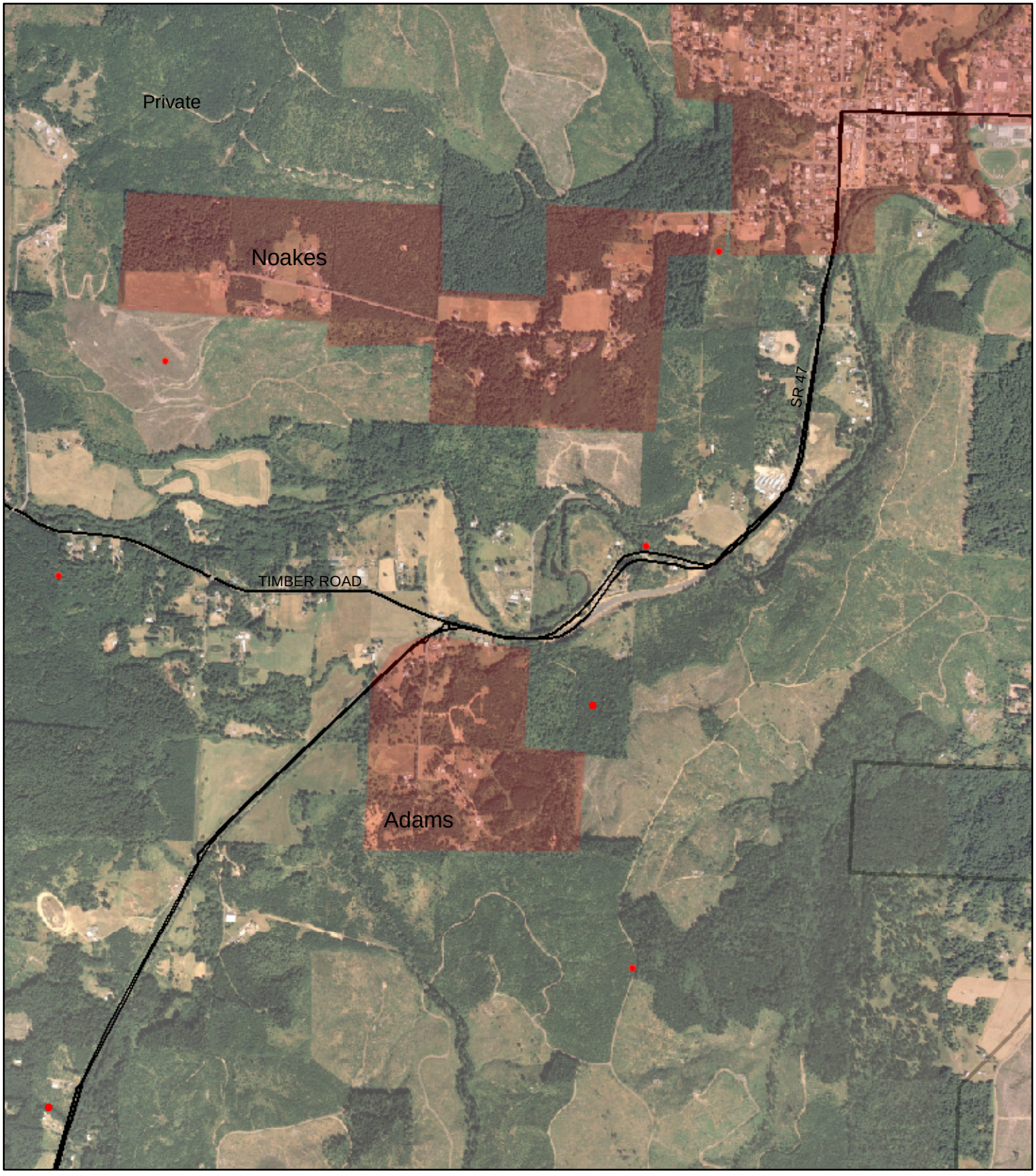

Columbia County Community Wildfire Protection Plan
Adams/Noakes/Stoney Point - Vernonia RFPD CAR

Adams/Noakes/Stoney Pt
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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WUI Name: Adams/Noakes/Stoney Point - Vernonia RFD WUI

Priority Category: Mod - 149

Description: Rural residential concentrations on Adams Road (Elk Run), Noakes Road and Stoney Point Roads.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
22	47	10	20	50	**149**
Moderate	Moderate	Moderate	Moderate	Moderate	

Communities at Risk - Focus Areas: Adams/Noakes/Stoney Point Roads, Rural Residential Areas

Structural Fire Protection Agency: Vernonia Rural Fire Protection District

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Lacking structural ignitability and access assessment, scope of issue
Lacking defensible space through fuel modification/reduction and fire safe landscaping practices
Forest and other natural cover fuels adjacent to properties
Human caused ignition risks in the WUI

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Implement localized education campaign to encourage homeowners to reduce structural ignitability through fuel reduction and fire safe landscaping practices within the "Home Ignition Zone".	2007 - 2010	Vernonia RFD/ ODF
Conduct local structural ignitability assessments using structural triage form, collect data. Provide owners input and reference material regarding improvements to reduce structural ignitability.	2008-2010	Vernonia RFD/ ODF
Address RR5 Zoning issues where primary and secondary fuels reduction and fire resistive construction requirements are not required. Work with Land Development Services, provide timely comment/recommendations.	2007 - Ongoing	Vernonia RFD/ Land Development Services, ODF

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
During driveway inspections and burn permit inspections, provide information and publications to owners regarding reducing structural ignitability within the Home Ignition Zone. Ensure adequate address signage district wide.	2007-Ongoing	Vernonia RFD/ ODF
Consider partnerships for fuel reduction in home ignition zones and non-burning alternatives such as chipping, recycle etc.	2007 - 2010	Vernonia RFD/ ODF
Partner with Oregon State Parks - Linear Park regarding fire prevention signing and kiosk opportunities.	2007 - Ongoing	Vernonia RFD & ODF/ Oregon State Parks,
Identify existing water sources. Develop flow rate data, map to GIS. Joint project and information sharing with ODF.	2007 - 2009	Vernonia RFD/ ODF, Forest Industry, Local Landowners
Identify locations for future water sources. Develop agreements with property owners and install necessary infrastructure.	2007 - 2009	Vernonia RFD/ ODF, Forest Industry, Local Landowners

CAR Name: General WUI - Vernonia RFD CAR

Priority Category: Mod - 144

Description: All rural residential areas within the fire district exposed to natural cover and wildland fire threats.
Additional "Focus Areas" to be identified as part of ongoing evaluation or as priorities change.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
16	44	14	17	53	**144**
Moderate	Moderate	Moderate	Moderate	Moderate	

Communities at Risk - Focus Areas: Rural Residential in WUI

Structural Fire Protection Agency: Vernonia Rural Fire Department

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:
Homes lacking defensible space through fuel reduction, fire safe landscaping and practices that reduce structural ignitability within the "Home ignition Zone"
Forest and other natural cover fuels adjacent to properties
Human caused ignition risks in the WUI

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Develop broad level education and outreach for achieving defensible space, fire safe landscaping and reduced structural ignitability.	Ongoing	Vernonia RFD/ ODF, Columbia County Land Development , Columbia County County Emergency Management, Columbia County Fire Prevention Cooperative, CEPA, Community Leaders, Media
Provide information and discuss "Home Ignition Zone" and other critical factors to consider as part of driveway inspection meetings or issuance of burning permits. Provide structural ignitability inspections based on request.	Ongoing	Vernonia RFD/
Leverage local or other pilot projects within the area to "showcase/publicize" reduction of risk in the home ignition zone.	Ongoing	Vernonia RFD/ ODF, County Fire Districts, Columbia County Fire Prevention Cooperative, Media

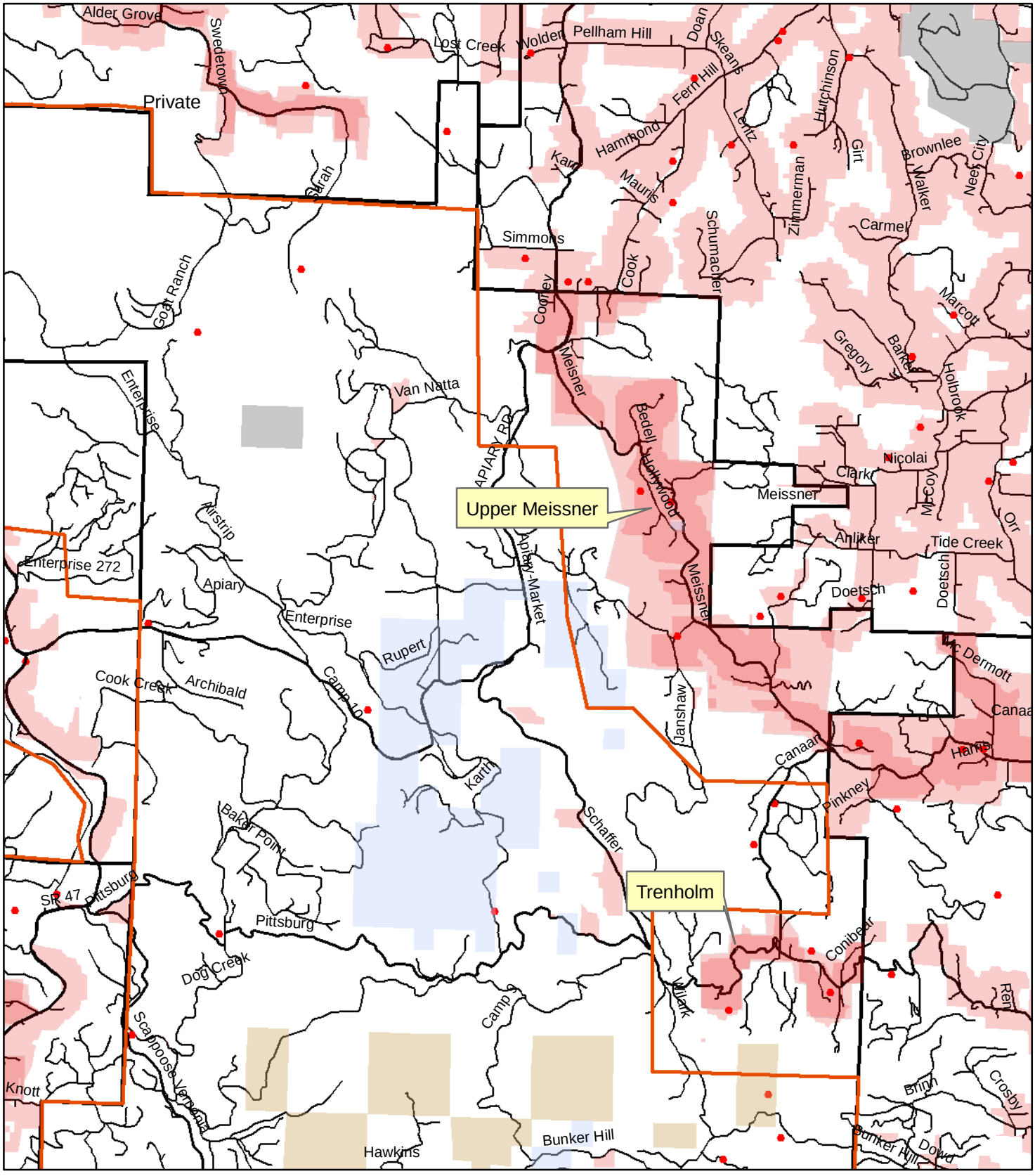
WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Provide local educational resources via local web-sites, provide access to the Columbia County CWPP and education materials.	2007 - 2008	Columbia County Emergency Management/ Fire District, ODF
Locate and map all significant structures including driveways and other access infrastructure.	2007 - 2010	Vernonia RFD/ Contractor(s), Joint county wide mapping project, other agencies.
Identify existing water sources. Develop flow rate data, map to GIS.	Ongong	Vernonia RFD/ ODF
Identify locations for future water sources. Develop agreements with property oweners and install necessary infrastructure.	Ongoing	Vernonia RFD/
Monitor Measure 37 development. Provide timely information to County Planning on issues of increased density and fire assocaited risks within the WUI	Ongoing	Vernonia RFD/ ODF, Land Development Services
Consider implementation of SB360 within Columbia County	2010	Fire Defense Board

County

CAR

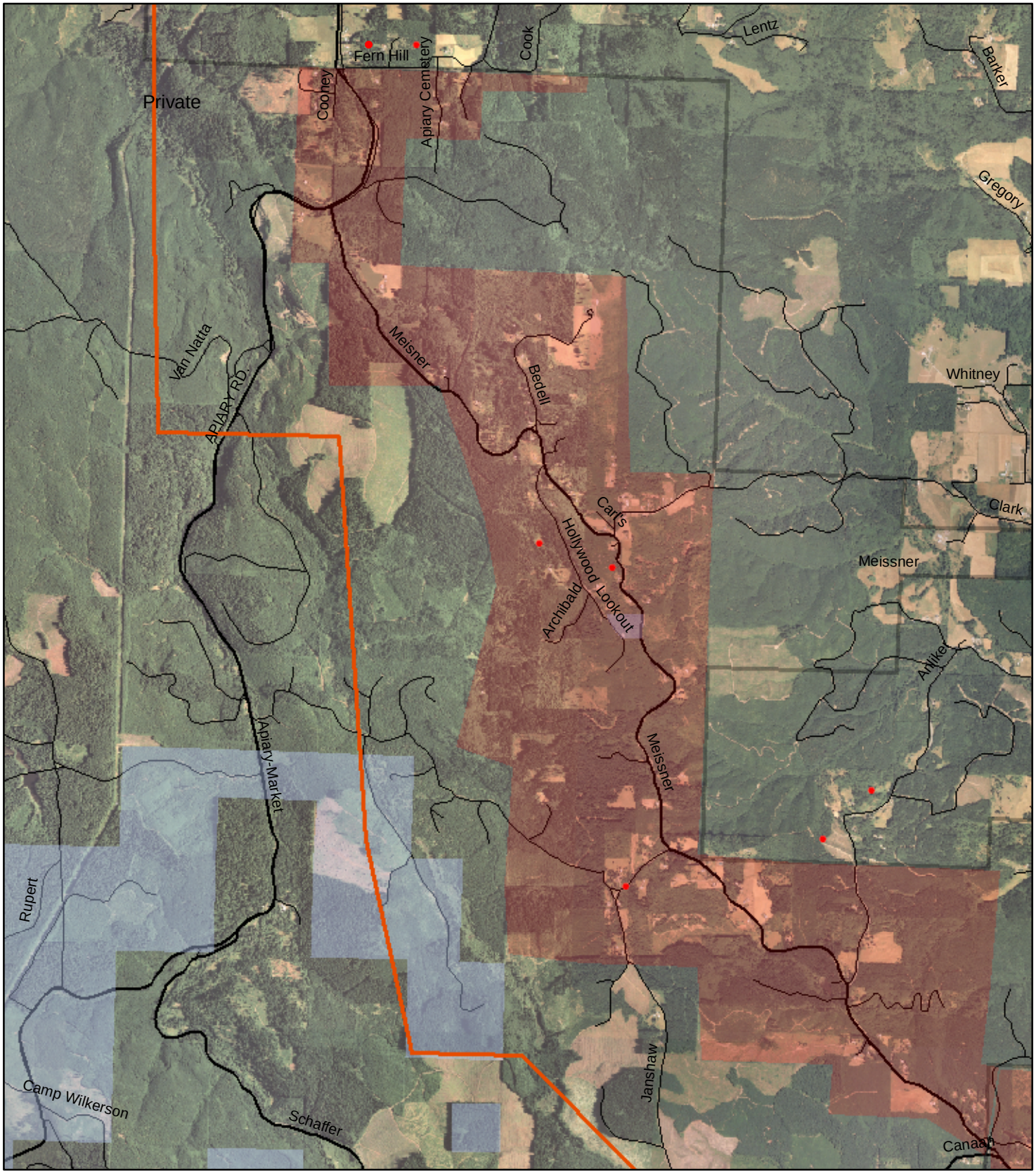
Columbia County Community Wildfire Protection Plan
Columbia County (Outside RFD) CAR

Upper Meissner/Trenholm
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State
Community at Risk



Columbia County Community Wildfire Protection Plan
Upper Meissner Columbia County (Outside RFD) CAR

Upper Meissner
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State



CAR Name: Meissner - County CAR (Outside Fire District)

Priority Category: High - 173

Description: Rural residential density in the upper Meissner Road area that is outside structural fire protection boundaries. Some properties are under contract with CRF&R but the majority are not. These properties require longer response times. These structures are within forest resource lands and forest management activities often are conducted within or adjacent to these homes.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
18	41	34	15	65	**173**
Moderate	Moderate	High	Low	High	

Communities at Risk - Focus Areas: Upper Meissner_No Structural Protection

Structural Fire Protection Agency: None, some contracts with CRF&R

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Area outside structural fire protection boundary, extended response if response provided
Lacking structural ignitability and access assessment, scope of issue
Lacking defensible space through fuel modification/reduction, fire safe landscaping , and structural ignitability reduction practices
Forest and other natural cover fuels adjacent to properties

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Initiate homesite assessment data collection. Consider access, structural ignitability, defensible space, fuel modification corridors. Develop database and GIS layers.	2007 - 2010	ODF/ Contractor's)
Implement established WUI education/outreach program for reduction of structural ignitability and fire resistive landscaping concepts. Include inspections with action checklists and other educational publications to homeowners.	2007-2008 Ongoing	ODF/Columbia River Fire & Rescue
Target educational efforts and inspections where fuel adjacency (forest slash) is a concern by property owners and communities. Stress actions homeowners can take to reduce structural ignitability of their home.	Ongoing	ODF/ Forest Industry

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
CRF&R to consider annexation of rural populated areas that are outside structural fire protection district into the District.	2010	Columbia River Fire & Rescue/
Identify and inventory water sources in area into GIS database. Share data with countywide database	2007 - 2010	ODF/
Utilize countywide sign campaign directed at location to increase awareness and action by homeowners	2007 - 2009	ODF/ Columbia River Fire & Rescue
Monitor Measure 37 development. Provide timely comments and information to County Land Development on issues of fire safe development within the WUI.	Ongoing	Columbia River Fire & Rescue, ODF/
Consider Implementing SB 360, The Wildland Urban Interface Act	2012	ODF/Columbia County/Fire Districts

Columbia County Community Wildfire Protection Plan
Trenholm - Columbia County (Outside RFD) CAR

Trenholm
RFPD Boundary
Stat_Fires 94-05
WUI Boundary
Federal
State

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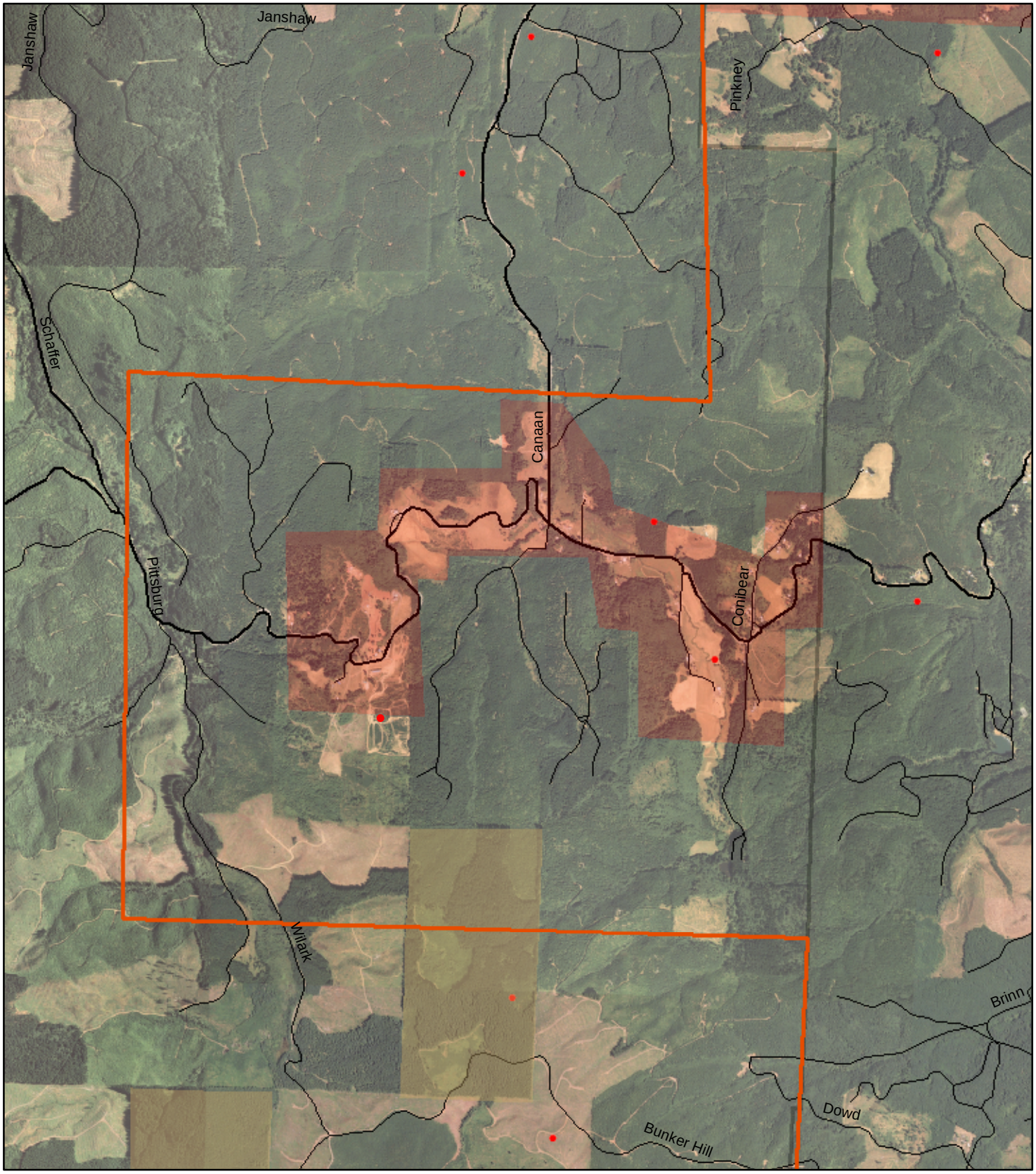

CAR Name: Trenholm/U.Pittsburg Road - County CAR (Outside Fire District)

Priority Category: Mod -161

Description: Rural residential density in the upper Pittsburg Road area that is outside structural fire protection boundaries. These properties require longer response times. These structures are within forest resource lands and forest management activities often are conducted within or adjacent to these homes.

Hazard Assessment Factors

Risk 0 - 40	Hazard 0 - 80	Protection Capability 0 - 40	Values at Risk 0 - 50	Structural Vulnerability 0 - 90	Total Value
Fire Occurrence Ignition Risk	Fuels/Weather/Topography	Fire Response Prevention Capacity Community Preparedness	Life Property Infra-Structure	Structure - Roofing etc. Defensible Space Fire Access	
15	41	34	7	64	**161**
Moderate	Moderate	High	Low	High	

Communities at Risk - Focus Areas: Trenholm/Upper Pittsburg

Structural Fire Protection Agency: None or individual owner contract basis

Wildland Fire Protection Agency: Oregon Department of Forestry

Specific Hazard Issues:

Area outside structural fire protection boundary, extended response if response provided
Lacking structural ignitability and access assessment, scope of issue
Lacking defensible space through fuel modification/reduction, fire safe landscaping , and structural ignitabiity reduction practices
Forest and other natural cover fuels adjacent to properties

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WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Initiate homesite assessment data collection. Consider access, structural ignitability, defensible space, fuel modification corridors. Develop database and GIS layers.	2007 - 2009	ODF/ Contractor(s), Columbia River Fire & Rescue
Implement established WUI education/outreach program for reduction of structural ignitability and fire resistive landscaping concepts. Include inspections with action checklists and other educational publications to homeowners.	2007-2009 Ongoing	ODF/Columbia River Fire & Rescue
Target educational efforts and inspections where fuel adjacency (forest slash) is a concern by property owners and communities. Stress actions homeowners can take to reduce structural ignitability of their home.	Ongoing	ODF/ Forest Industry

WUI - Specific Projects	Timeframe	Lead Agency/Cooperators
Consider annexation of rural populated areas that are outside structural fire protection district into the CRF&R District.	2010	Columbia River Fire & Rescue/
Utilize countywide sign campaign directed at location to increase awareness and action by homeowners	2007 - 2009	ODF/ Columbia River Fire & Rescue
Inventory local water source locations into GIS database. Digitize home locations	2007 -2009	ODF/
Consider Implementing SB 360, The Wildland Urban Interface Act	2012	ODF/Columbia County/Fire Districts

Appendix

APPENDIX A

Columbia County Community Wildfire Protection Plan
Web Resource Links:

Firewise
http://www.firewise.org

Firewise Landscape and Construction Checklist *(pdf format)*
http://www.firewise.org/usa/files/fwlistsz.pdf

Living with Fire
http://www.fs.fed.ur/r3/publications/documents/livingwithfire.pdf

Columbia County
http://www.co.columbia.or.us/home.asp

Oregon Department of Forestry
http://www.odf.state.or.us
Oregon Forestland-Urban Interface Protection Act
http://oregon.gov/ODF/FIRE/SB360/sb360.shtml
Oregon Wildfire Protection Plans
http://www.oregon.gov/ODF/FIRE/FirePlans.shtml
Recommended Fire Siting Standards for Structures (Land Use Planning Notes, 1991)
http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/prev/Structure_Road.asp?id=3070101

Oregon State University Extension Service
http://www.cof.orst.edu/cof/extended/extserv/wildlandfire/

Office of State Fire Marshal
http://egov.oregon.gov/OSP/SFM/Conflag_and_Wildland.shtml

Fire Free
http://www.firefree.org/

Keep Oregon Green
http://www.keeporegongreen.com

National Fire Plan
http://www.fireplan.gov/

Bureau of Land Management Fire Prevention
http://www.blm.gov/or/index.htm

APPENDIX B

Columbia County Community Wildfire Protection Plan
Fire District Suppression Resource Capacity

Clatskanie Rural Fire Department

- Main Station @ Clatskanie,
- Three volunteer sub-stations at Alston, Quincy
- Paid Staff, 3 Chief Officers, 3 Firefighters
- 24 volunteers

APPARATUS #/NAME	TYPE	MAKE	TANK CAPACITY	PUMP CAPACITY MAX.
E 481	I	Pierce	1000	1500
E 486	I	Mac	1000	1000
E 487	I	Mac	1000	1750
E 488	I	Pierce	2500	1500
WT 485	2	Freightliner	4000	400
B 481	3	GI 2.5	800	550
B 482	3	GI 2.5	800	95
B 484	2	Ford	600	750
UTILITY 486	7	Chevrolet	150	25
UTILITY 482		Ford 4x4 PU		
COMMAND		Chevrolet	N/A	N/A
R 481		Freightliner	N/A	N/A
M 482		Lifeline	N/A	N/A
M 483		Lifeline	N/A	N/A

Columbia River Fires and Rescue

- 3 Staffed Stations: St. Helens Main , Fairgrounds and Rainier
- 4 Volunteer Sub-Stations: Columbia City, Deer Island, Goble and Fernhill
- Paid Staff: 5 Chief Officers, 36 Firefighters
- Volunteers: 50

APPARATUS # NAME	TYPE	MAKE	TANK CAPACITY	PUMP CAPACITY MAX.
S471	1	Pierce/Squrt 50'	500	1500
E471Z	1	Pierce/Dash	1000	1500
E472	1	Peirce	750	1500
E494	1	Pierce	750	1500
E471	2003	Pierce/Contender	1000	1500
E491 *	2003	Pierce/Contender	1000	1500
S491	1	Peirce/Squrt 65'	500	1500
E4921 AWD *	6	Peirce	200	450
E4723	6	Mallory	250	120
E4926	6	Chev 1 ton	200	120
WT471	2	GMC	2500	750

WT496	2	International	2500	1250
WT494	2	International	2500	1250
WT491	2	Ford	3000	1000
R471		Freightliner	RESCUE	N/A
R472		Ford	RESCUE	N/A
M471		Ford	Ambulance	N/A
M472		Ford/Lifeline 4x4	Ambulance	N/A
M471Z		Ford/Lifeline	Ambulance	N/A
M471Y		Ford	Ambulance	N/A
M491Z		Chev 4X4	Ambulance	N/A
FB471		Monarch-J2609	BOAT	500

Mist-Birkenfeld Rural Fire Department

- Main at Hwy. 202 near Banzer Road
- 3 Sub-stations Fishhawk, Peterson and Sager Creek
- Paid Staff: 2 Chief Officers
- 45 Volunteers

APPARATUS #/NAME	TYPE	MAKE	TANK CAPACITY	PUMP CAPACITY MAX.
E461	I	Seagraves	1000	1250
E462	III	Chev/Mallory	500	130
E463	II	Ford/Western States	1000	1000
E4621	VI	Chev 4 X 4	250	70
E4623	VI	Ford 4 X 4	200	50
E4624	VI	Chev 4 X 4	200	70
WT461	II	Ford/Western States	3000	750
WT464	II	Ford/Mallory	4000	400
300 gpm portable				
600 gpm portable				

Scappoose Rural Fire Department

- 1 Staffed Station: Main @ Scappoose
- 2 Sub-stations at Chapman and Holbrook (Multnomah Co.)
- Paid Staff: 3 Chief Officers and 9 Firefighters
- Volunteers: 45

APPARATUS #/NAME	TYPE	MAKE	TANK CAPACITY	PUMP CAPACITY MAX.
E 431	I	Spartan	1000	1500
E 432	I	Kenworth	2000	1250
E 433	I	Freightliner	750	1500
E 435	I	Freightliner	750	1500
E 436	II	Ford	1000	1000
E4320	VI	Gmc 4x4	200	120
E4330		F550 4x4	300	120
WT 431	II	Freightliner	3000	750
WT 436	II	White	3000	750

R 431		Ford 4x4	RESCUE	N/A
U 432		Dodge 4x4		N/A
M 431		Ford Iii	AMBULANCE	N/A
M 432		Ford Iii	AMBULANCE	N/A
M 433		Gmc I 4x4	AMBULANCE	N/A
FIREBOAT 43	Fireb		1200 GPM	
RESCUE B 43	Ridge	Inflatable boat		

Vernonia Rural Fire Department

- Main at Vernonia
- One (1) Full-Time Chief
- 25 Volunteers

APPARATUS #/NAME	TYPE YEAR	MAKE	TANK CAPACITY	PUMP CAPACITY MAX.
E 450	99	Ford Suburban	COMMAND	
E 451	I 76	Ford	1500	1000
WT/ENG 452	I 82	Ford	2000	1250
E 4540	VI 05	GMC	750	350
E 454	I 99	Freightliner	1000	1500
R 457	99	Ford 4 X 4	RESCUE	N/A
U 4530	VI 91	Ford 4 X 4	280	200

Oregon Department of Forestry – Columbia Unit

Main @ Columbia City

- 2 Seasonal Staffed Guard Stations, Pittsburg and Clatskanie Areas
- 3 Full-Time Fire, 5 support/firefighters
- 12 Seasonal Firefighters

APPARATUS #/NAME	TYPE YEAR	MAKE	TANK CAPACITY	PUMP CAPACITY MAX.
E4250	III 05	International 2t	600	180 GPM 152 PSI
E4251	III 96	Ford 2t	500	180 GPM 152 PSI
E4252	III 92	Gmc 2t	500	180 GPM 152 PSI
E4220	VI X 95	Ford 4 X 4	200	180 GPM 152 PSI
E4221	VI X 97	Ford 4 X 4	200	180 GPM 152 PSI
E4222	VI X 97	Ford 4 X 4	200	180 GPM 152 PSI
4202 STAFF	2006	Chev 4 X 4 Pu		

APPENDIX C

Assessment Rating Form

RISK

Fire Occurrence: # Fires/1000 acres/10year			Points
Low	0 - .1		5
Moderate	.1 - 1.1		10
High	1.1+		15
Home Density: # Homes/10 acres			
	0 - .9	rural	0
	1 - 5.0	suburban	5
	5.1+	urban	10
Other Risk Factors: Ignition risk potential			
	<1/3		0
	1/3 - 2/3		5
	>2/3		10

(refer to page 4, Identifying and Assessment of Communities at Risk in Oregon

TOTAL		
Low	0 - 13	
Moderate	13 - 27	
High	27 - 40	

HAZARD

Weather Zone				
Coastal			0	
Interior			20	
SW/East			40	
Topographic				
Slope	0-25%		0	
	26-40%		2	
	>40 %		3	
Aspect	N-NW-NE		0	
	W-E		3	
	S-SW-SE		5	
Elevation	5001+		0	
	3501-5000		1	
	0-3500		2	
Natural Vegetation				
Non-Forest			0	
FM 1/6/8			5	
FM 2/6			15	
FM 3/4/10			30	
Crown Fire Potential	Passive - Low		0	
	Active - Moderate	4	5	
	Independent - High		10	

TOTAL	
Low	9
Moderate	40
High	60
Extreme	80

PROTECTION CAPABILITY

Fire Response	
Oganized structural response < 10 minutes	0
Inside fire district, structural response > 10	8
No structural protection, wildland <20	15
No structural response and wildland > 20	36
Community Preparedness	
Organized stakeholder group, CWPP	0
Primarily agency efforts (mailings,firewise)	2
No Effort	4

TOTAL	

Low	0-9
Moderate	10-16
High	17-40

VALUES PROTECTED

Home Density: # Homes/10 acres		
0 - .9	rural	2
1 - 5.0	suburban	15
5.1+	urban	30
Community Infrastructure		
None		0
One present		10
More than one present		20

TOTAL	

Low	0-15
Moderate	16-30
High	31-50

STRUCTURAL VULNERABILITY

		LOCAL	NFPA
Structure			
	Flamable roofing	0-30	
	Roofing Assembly		0-20
	Class A		0
	Class B		5
	Class C		10
	Non-rated		20
	Building Materials		0-10
	Building setbacks		
Defensible Space		0-30	
	>100 ft.		1
	71-100		3
	30-70		10
	<30		25
Fire Access			
	Roads and Driveways	0-30	
	Ingress/Egress		0-7
	Road Width		0-4
	All season condition		0-4
	Fire service access		0-5
	Street signs		0-5

TOTAL	

Low	0-30
Moderate	31-60
High	61-90

Default Values, Basis

Columbia County Community Wildfire Protection Plan

Columbia County WUI

Community at Risk

Priority Areas

• Non-Stat Fires 94-04

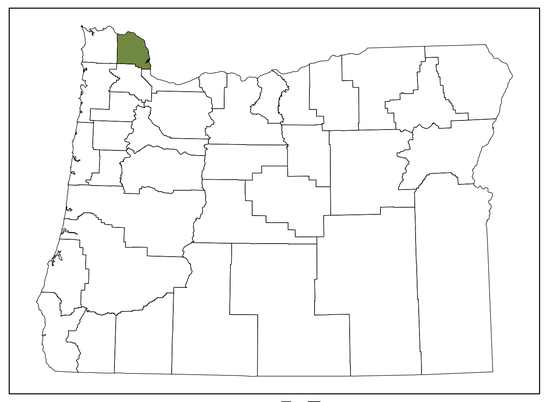
• Stat Fires 94-05

Federal

State

Local/County

Municipal Watershed



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This product is for informational purposes, and may not be suitable for legal, engineering or surveying purposes. This information or data is provided with the understanding that conclusions drawn from such information are the responsibility of the user.

Attachment V-2. Oregon Wildfire Risk Explorer-Advanced Report

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Oregon Wildfire Risk Explorer- Advanced Report

Columbia County

441,190 Acres: (689 Sq. Miles)

Generated: September 8, 2023

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

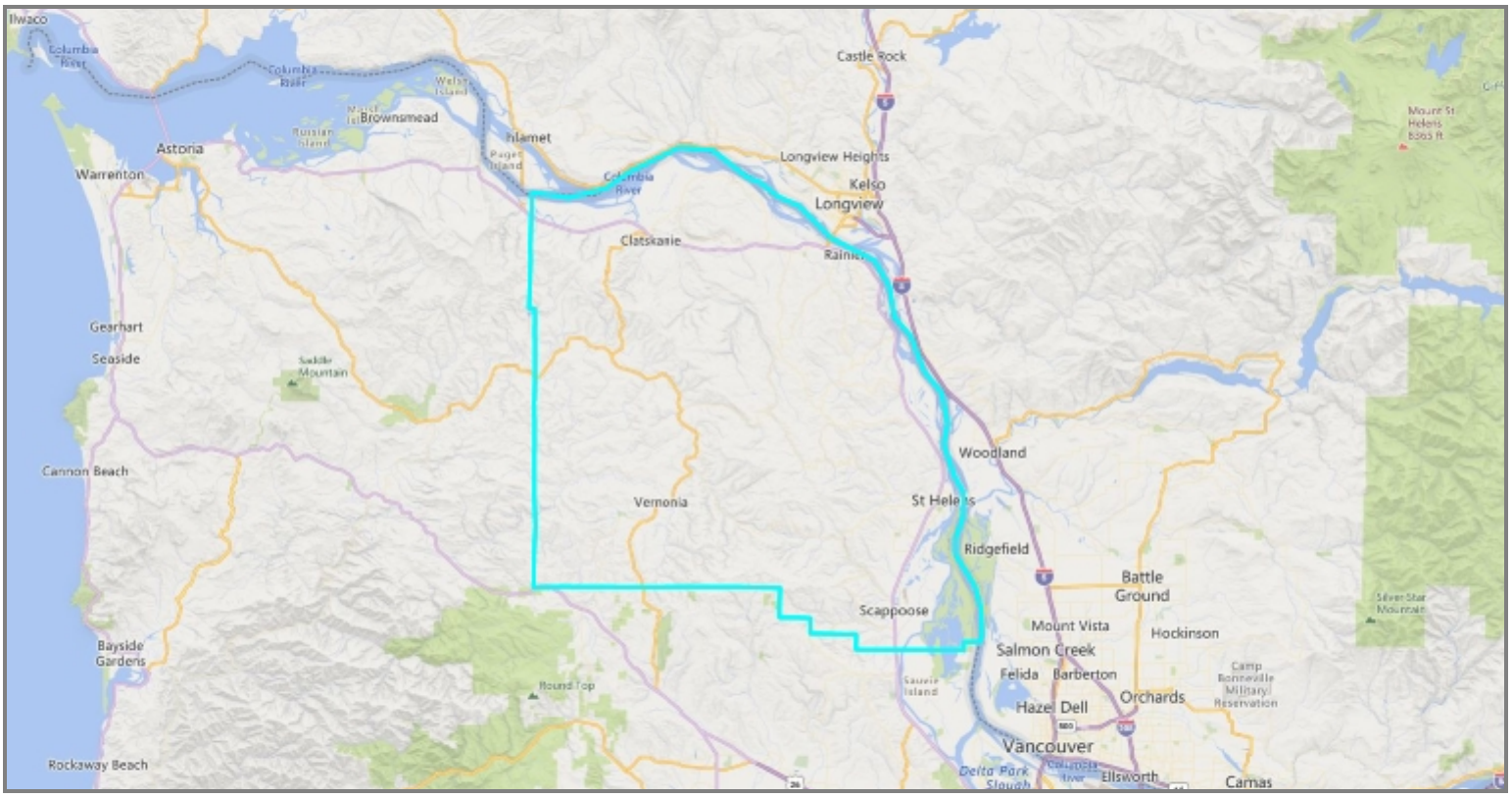
INTRODUCTION

This report summarizes wildfire risk in Columbia County 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.

Columbia County in Oregon

Columbia County Reference Map



REPORT CONTENTS

Oregon Wildfire Risk Explorer- Advanced Report

Columbia County

441,190 Acres: (689 Sq. Miles)

Generated: September 8, 2023

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 https://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 - https://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.

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

Columbia County

441,190 Acres: (689 Sq. Miles)

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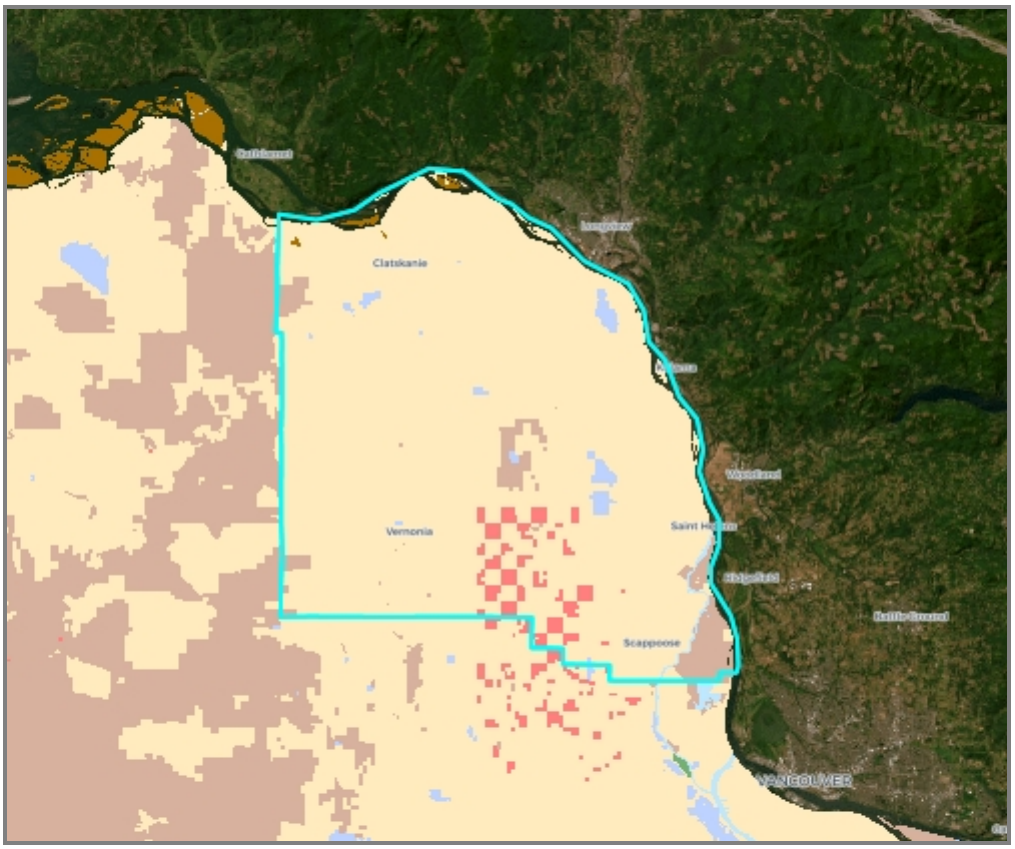
LAND OWNERSHIP AND MANAGEMENT

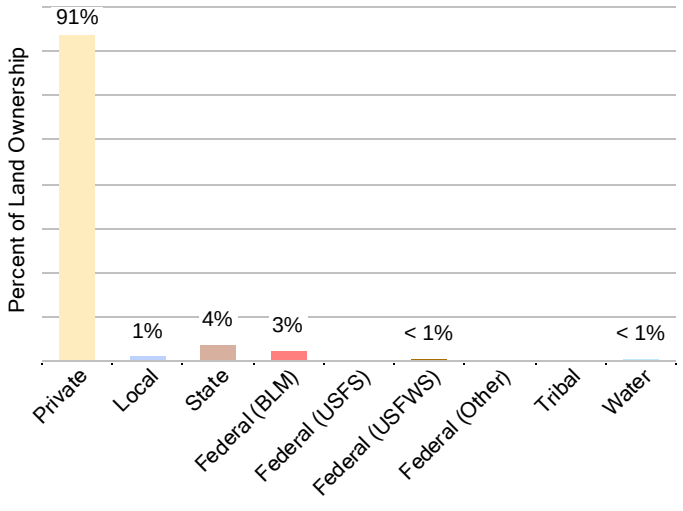


Knowing the land ownership and management in an area is important for hazard planning and awareness when wildfires occur. Oregon has a complete and coordinated wildfire management system between local, private, tribal, state, and federal agencies. These entities participate to fight fire in local areas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

Columbia County

	Major Landowner/Manager	Acres
	Private	390,361
	Local	5,399
	State	17,960
	Bureau of Land Management (BLM)	10,846
	US Forest Service (USFS)	0
	US Fish & Wildlife (USFWS)	1,171
	Other Federal	0
	Tribal	0
	Water	1,255



Source: Bureau of Land Management, 2015

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

Oregon Wildfire Risk Explorer- Advanced Report

Columbia County

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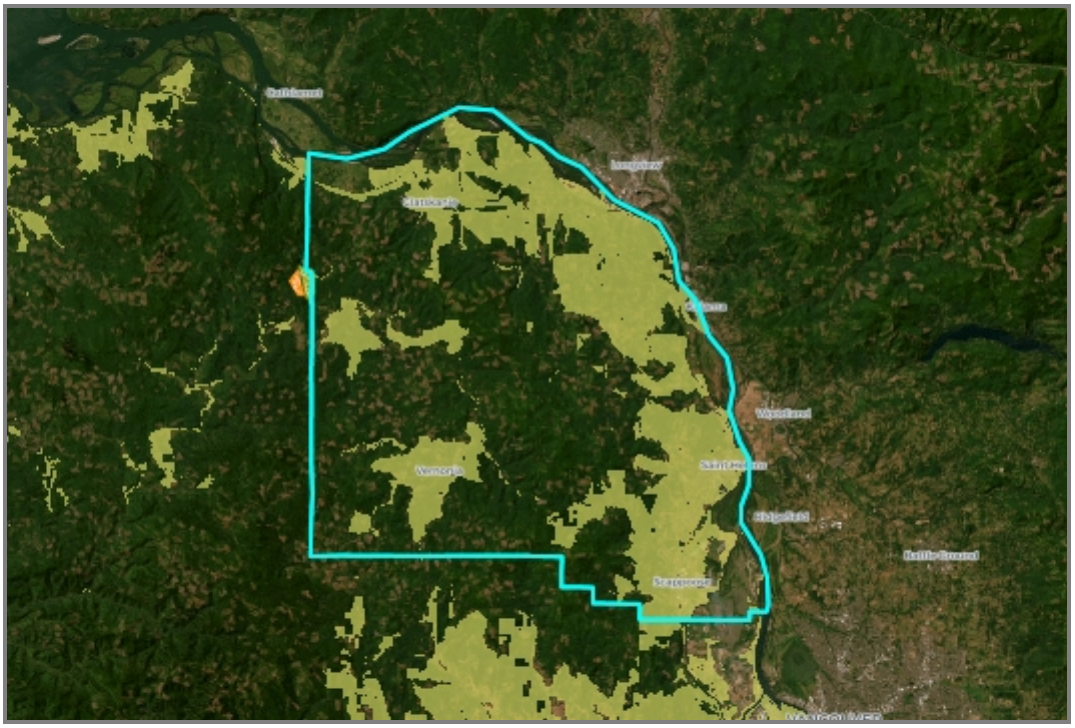
OREGON WUI COMMUNITY HAZARD RATINGS

Counting locally identified communities and neighborhoods, there are up to 6.9 million acres of Wildland Urban Interface (WUI) areas in Oregon. These areas were identified using a base WUI dataset from Radeloff, V.C., et. al, 2017 (published by USFS RDA), which incorporated 2010 census and 2011 land cover data. Locally mapped communities from Community Wildfire Protection Plans (CWPPs) from 2008 through 2013 were associated with the WUI geography. Department of Land Conservation & Development 2017 Oregon Land Use Zoning was also included for recent residential and developed or developing rural growth since the 2010 census. A cross-check was also made with the "100 Communities at Risk" report from the QWRA. Note that this WUI acreage contrasts with the 2.4 million acres from the West Wide Risk Assessment (Where People Live/Wildland Development Areas). The source Radeloff et. al WUI data used census block housing counts and land cover as opposed to WWRA Landscan night lights and housing densities. Acreage is larger in this Oregon WUI due to some rural areas having built environments along roads that spline two or more large census blocks, and we erred on the side of inclusion to add those entire areas to the dataset and not disrupt the original WUI geography. Also very small rural town centers that can potentially be encompassed by catastrophic wildfire, are kept whole in the Oregon WUI dataset.

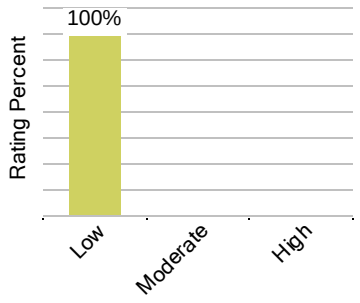
Burn Probability from the QWRA was used to assign a wildfire hazard rating to the built environment and homes in these areas. Hazard levels are based on modeled vegetation, not on building construction materials or ingress/egress issues. For a comprehensive analysis of wildfire risk and understanding of the potential threat of wildfire to your community, view the WUI combined with local fire starts and information in your Community Wildfire Protection Plan. A Community Wildfire Protection Plan (CWPP) is the product of collaboration between local communities and agencies interested in reducing wildfire risk and addressing response in a comprehensive plan. It also allows counties to prioritize and mitigate high risk areas, enhance safety and better protect themselves and their forested landscapes from wildfire.

Even in areas where risk is high, defensible space and Firewise USA® principles can be incredibly useful in minimizing the risk to homes in the Wildland Urban Interface.

Columbia County

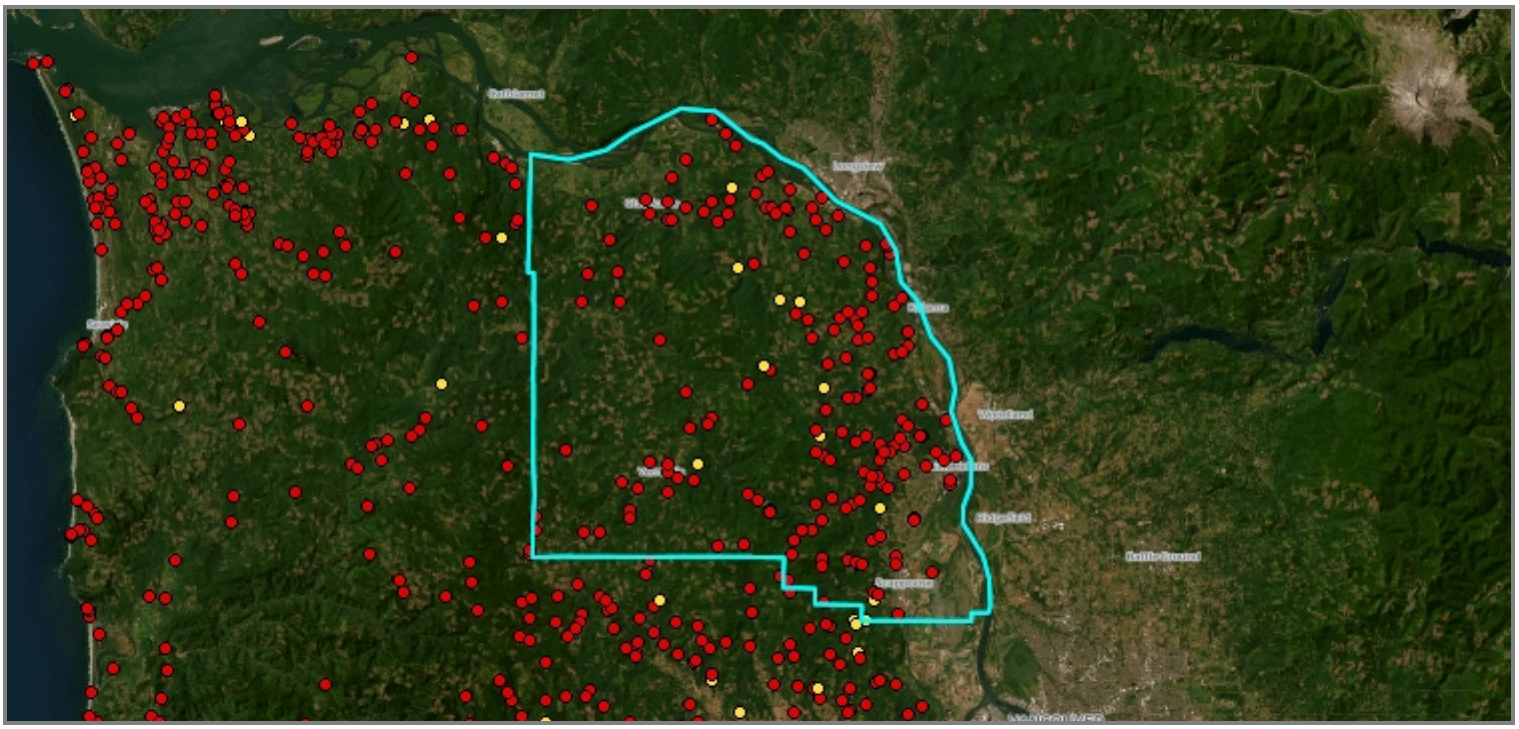


WUI Hazard Area Acres in Columbia County



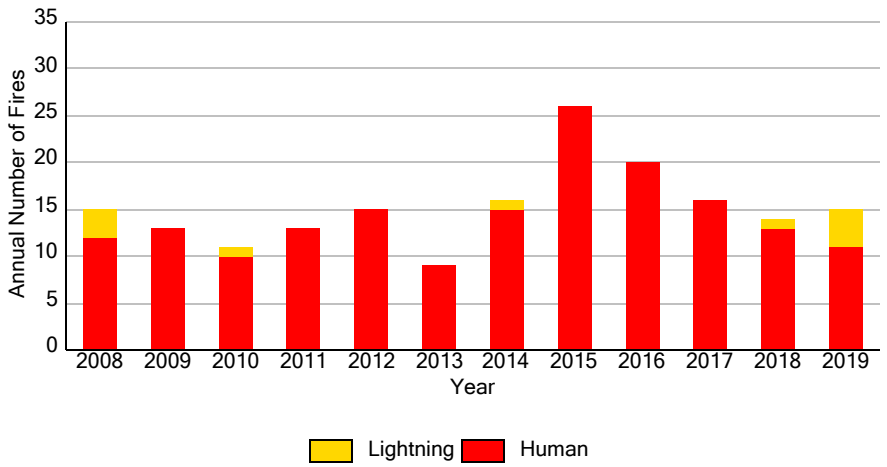
	Rating	Acres
	Low	149,524
	Moderate	0
	High	0
	Firewise Site	

FIRE HISTORY - FIRE IGNITIONS



Columbia County fire starts between 2008-2019

Total Acres Burned	255
Total Number of Fires	183
Average Acres Burned Per Year	25
Average Fires Per Year	18
Percent Lightning Caused	5.5%
Percent Human Caused	94.5%



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, 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 some large wildfires that have occurred in your area.

Perimeter

Wildfires in Columbia County

No large fire perimieters in this area of interest.

Source: National Interagency Fire Center: https://www.nifc.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

Columbia County

441,190 Acres: (689 Sq. Miles)

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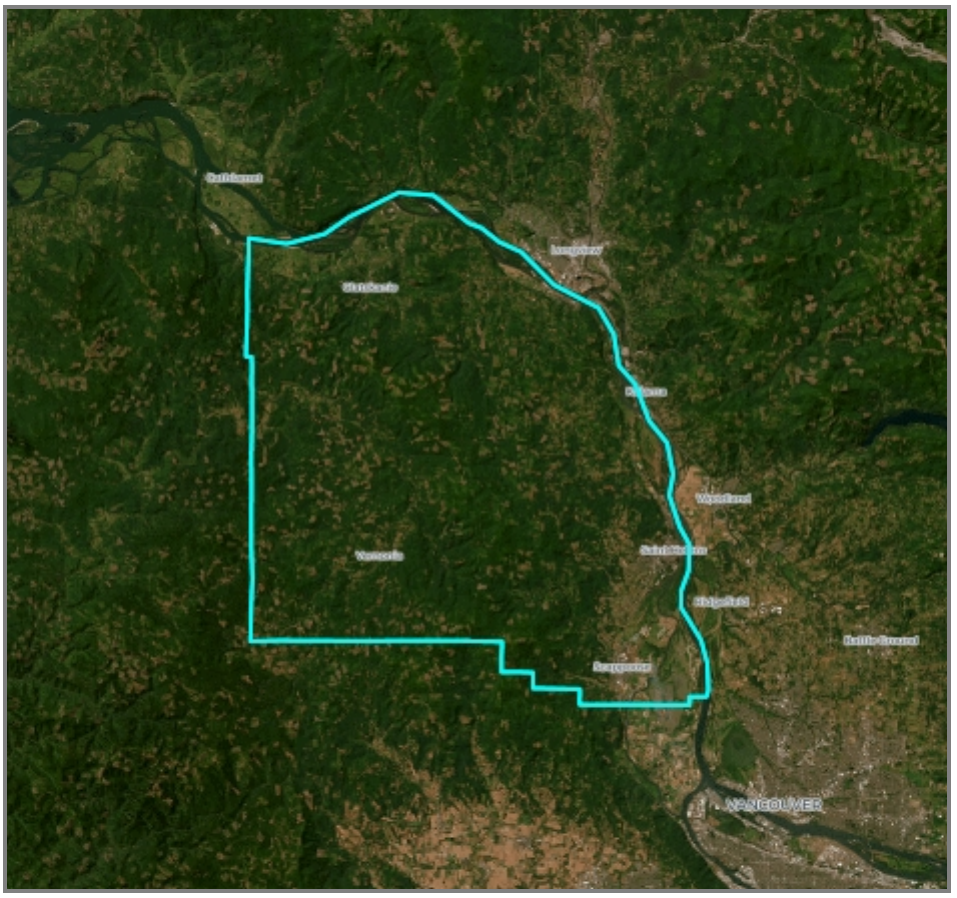
HOUSING DENSITY - WHERE PEOPLE LIVE

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.



Columbia County housing density

Category	Acres	%*
<1 house per 40 acres	30,894	7
1 per 40 acres to 1 per 20 acres	23,599	5
1 per 20 acres to 1 per 10 acres	25,822	6
1 per 10 acres to 1 per 5 acres	18,521	4
1 per 5 acres to 1 per 2 acres	9,984	2
1 per 2 acres to 3 per acres	6,826	2
> 3 per acres	862	< 1

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

Columbia County

441,190 Acres: (689 Sq. Miles)

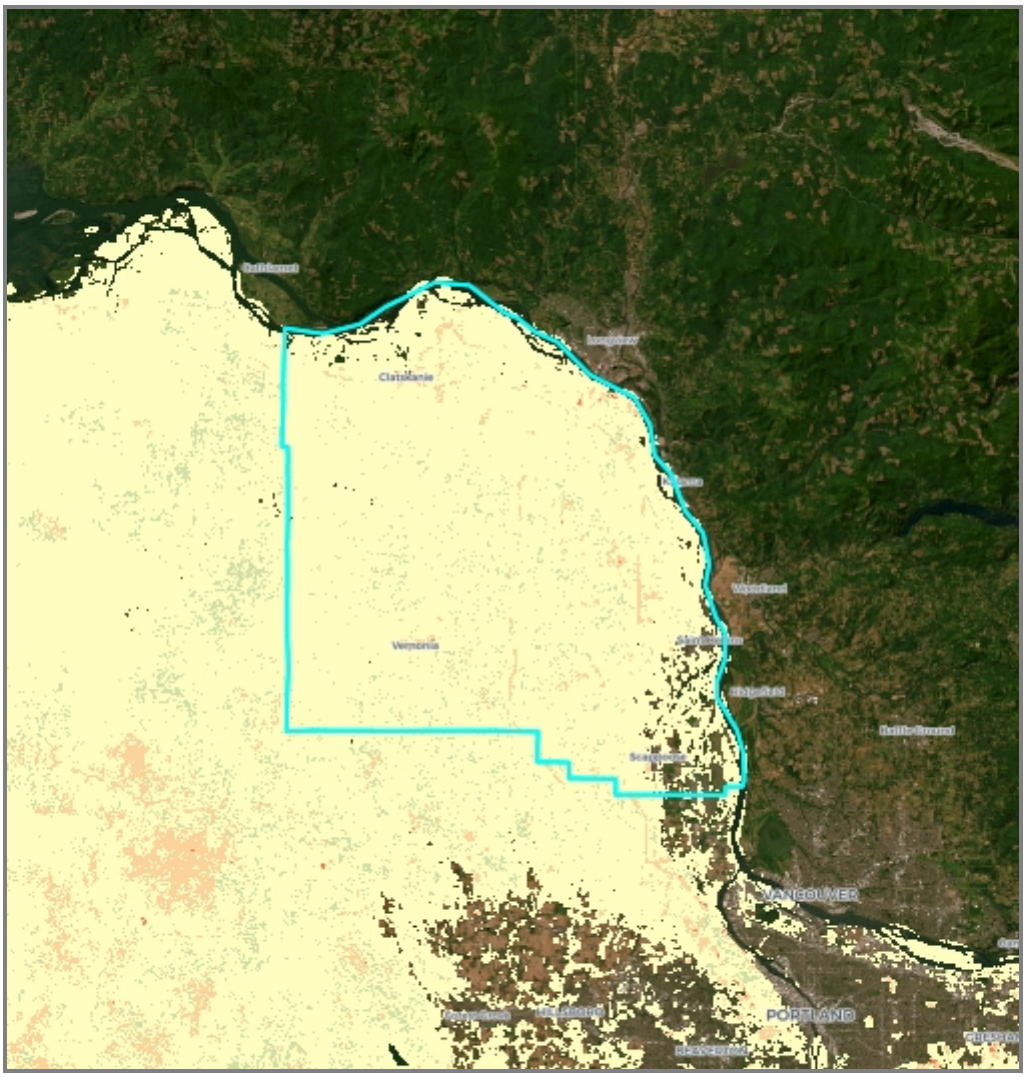
Generated: September 8, 2023

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

Columbia County

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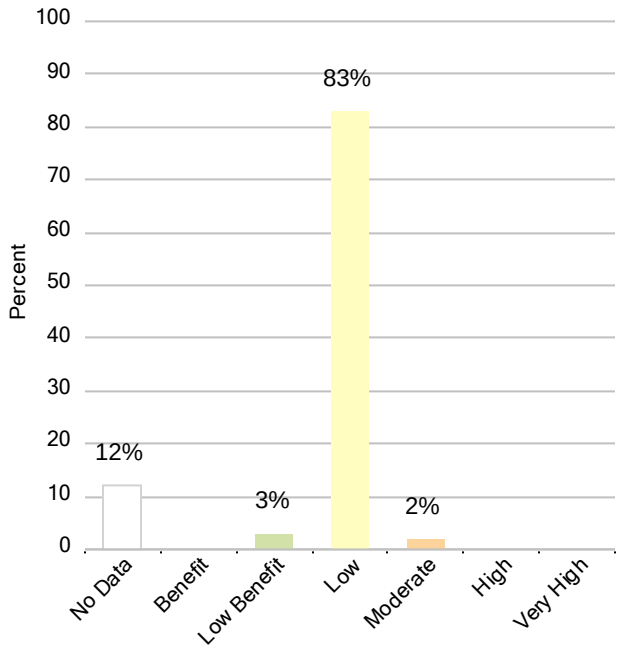
Generated: September 8, 2023

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 Columbia County: 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	167	165	0	2	0	0	0	0	0
Moderate	9,831	9,129	156	116	427	0	3	0	0
Low	352,447	327,123	4,574	10,574	9,287	0	889	0	0
Low Benefit	12,970	11,017	527	440	976	0	10	0	0
Benefit	0	0	0	0	0	0	0	0	0
No Data	50,326	42,931	126	6,842	155	0	272	0	0
Total Area	425,741	390,365	5,383	17,974	10,845	0	1,174	0	0

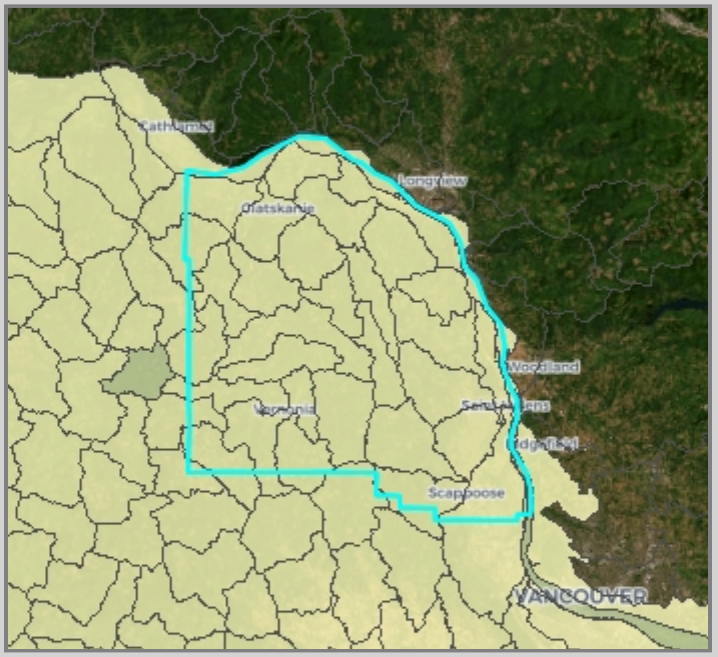
Overall wildfire risk in Columbia County *



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 Columbia County: 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.



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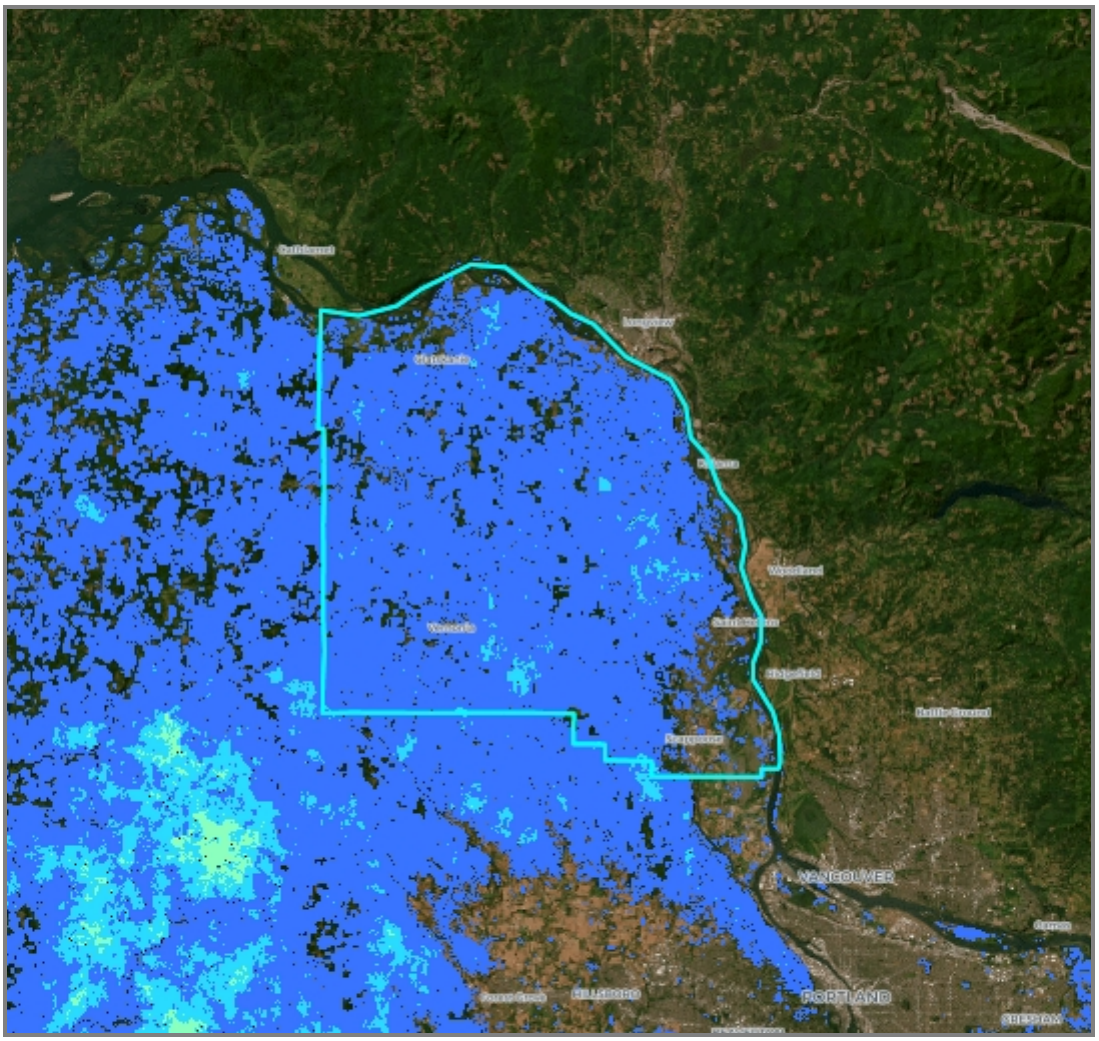
BURN PROBABILITY

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-Very High High	Between 1 in 500 and 1 in 50 chance of a wildfire >250 acres in a single year (29th to 96th percentile).
Moderate-High 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-Moderate 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.

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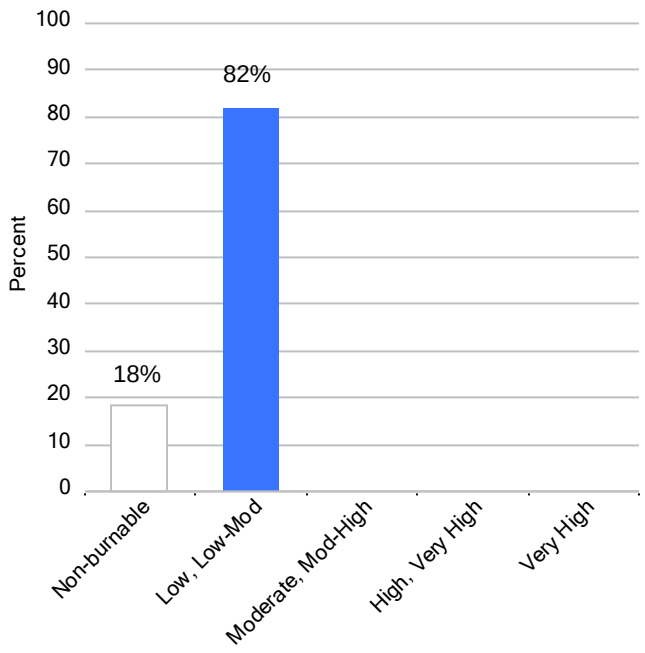
This page contains additional information about burn probability, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale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

Burn probability in Columbia County: 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, Very High	0	0	0	0	0	0	0	0	0
Moderate, Mod-High	0	0	0	0	0	0	0	0	0
Low, Low-Mod	349,385	323,511	5,235	9,766	10,371	0	502	0	0
Non-Burnable	76,289	66,787	149	8,208	473	0	672	0	0
Total Area.	425,674	390,298	5,384	17,974	10,844	0	1,174	0	0

Burn probability in Columbia County *



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 Columbia County: 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.

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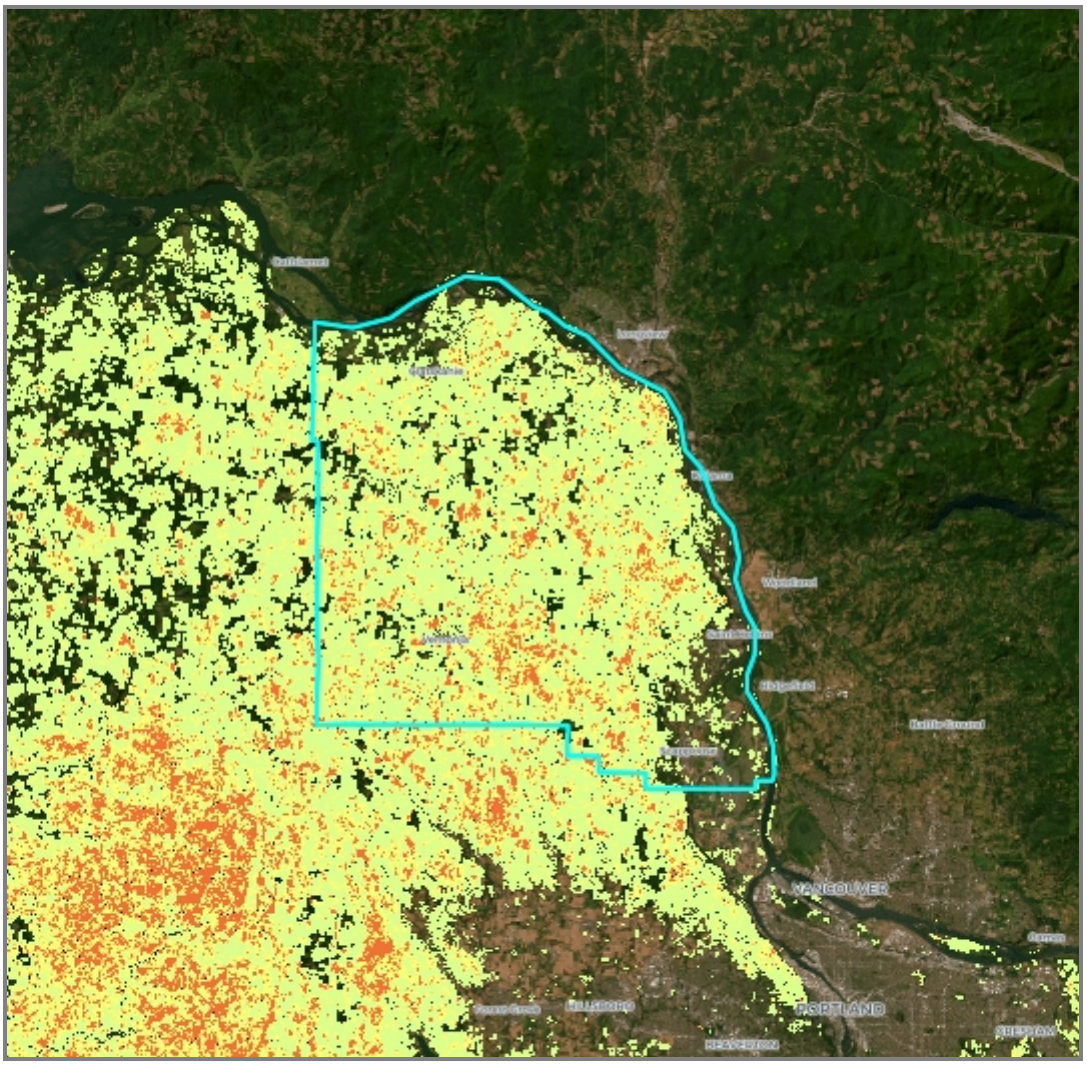
FIRE INTENSITY - FLAME LENGTHS

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

Columbia County

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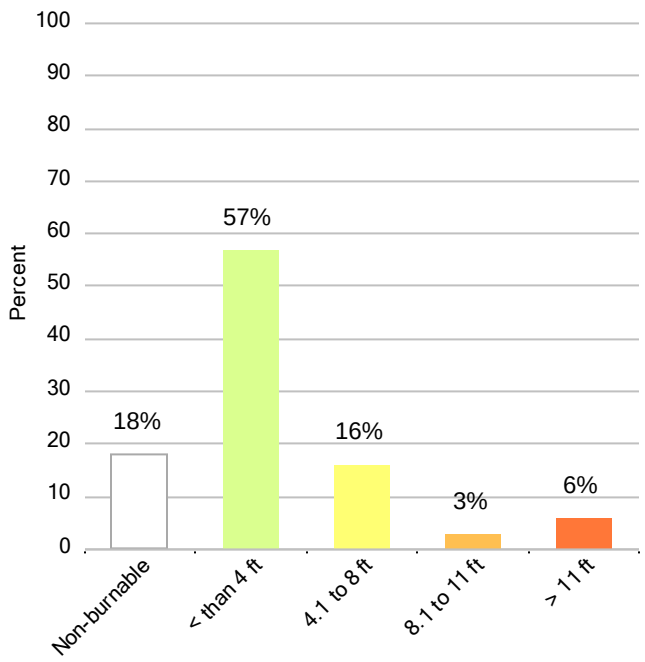
This page contains additional information about fire intensity, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale prioritization.

Columbia County average fire intensity - flame lengths estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
> 11 ft	26,516	23,854	534	493	1,635	0	0	0	0
8 - 11 ft	10,833	9,820	199	206	608	0	0	0	0
4 - 8 ft	69,069	63,428	1,383	1,596	2,633	0	29	0	0
> 0 - 4 ft	242,967	226,409	3,119	7,472	5,494	0	473	0	0
Non-burnable	76,289	66,787	149	8,208	473	0	672	0	0
Total Area	425,674	390,298	5,384	17,975	10,843	0	1,174	0	0

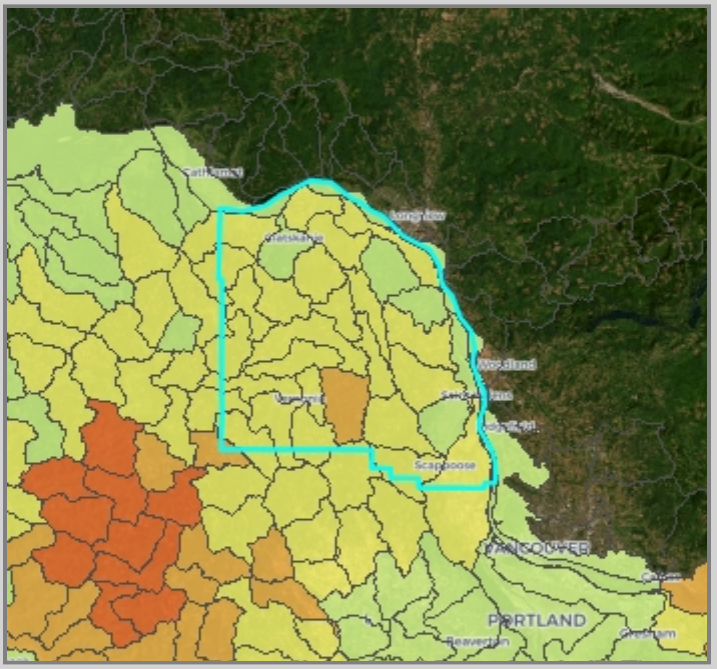
Fire intensity - flame length in Columbia County *



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

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

Fire intensity in Columbia County: 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.

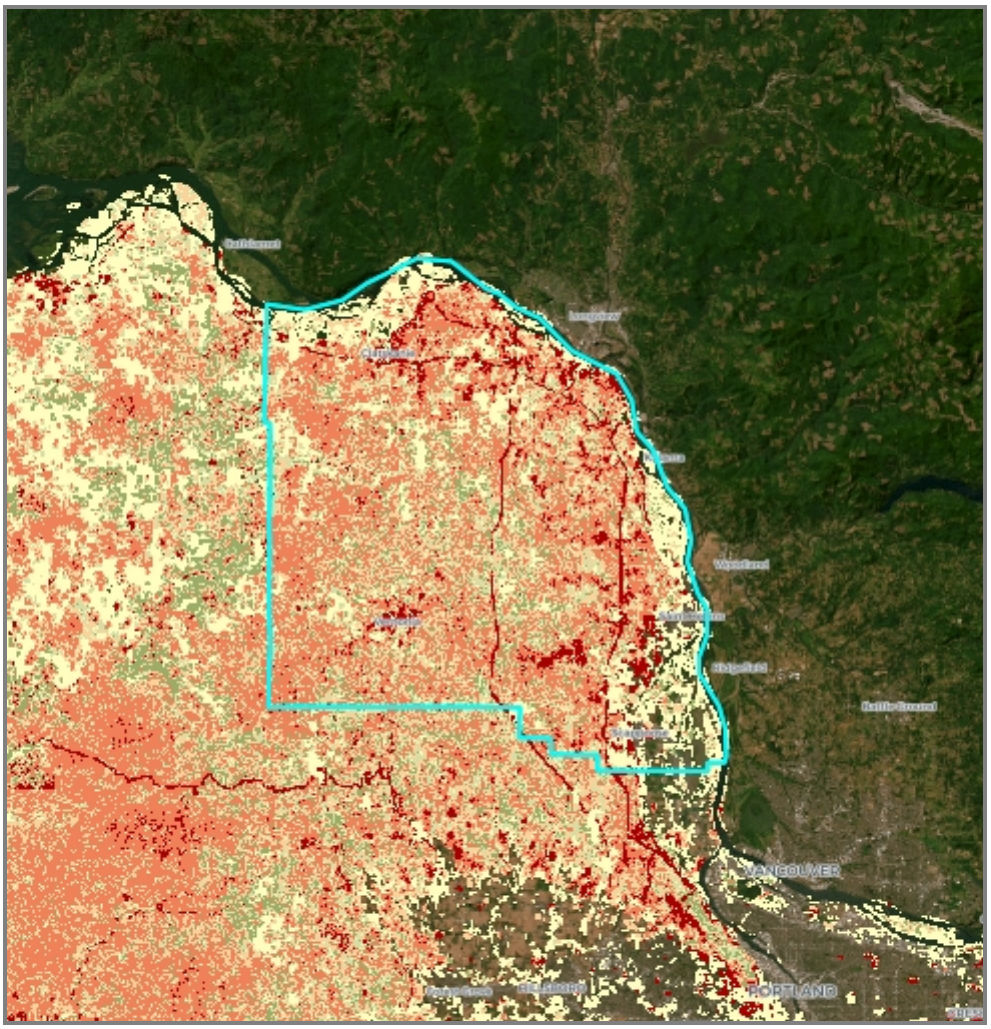


OVERALL POTENTIAL IMPACT

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

Columbia County

441,190 Acres: (689 Sq. Miles)

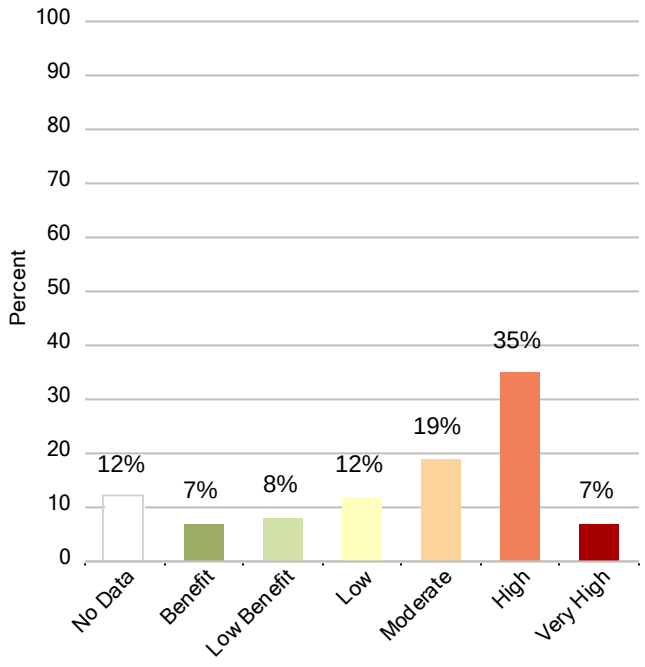
Generated: September 8, 2023

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.

Columbia County overall potential impact estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
Very High	28,129	26,963	211	263	673	0	19	0	0
High	150,712	144,037	564	2,392	3,710	0	9	0	0
Moderate	81,781	74,705	2,056	2,919	1,991	0	110	0	0
Low	52,550	48,043	558	2,646	787	0	516	0	0
Low Benefit	33,924	29,740	1,236	1,510	1,318	0	120	0	0
Benefit	28,318	23,946	633	1,401	2,210	0	128	0	0
No Data	50,326	42,931	126	6,842	155	0	272	0	0
Total Area	425,740	390,365	5,384	17,973	10,844	0	1,174	0	0

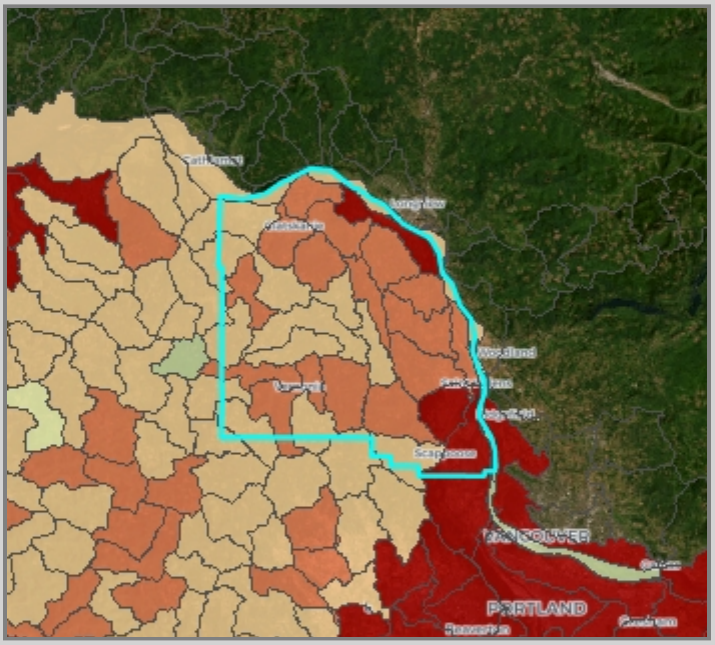
Overall potential impact in Columbia County *



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

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

Overall potential impact in Columbia County: 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.

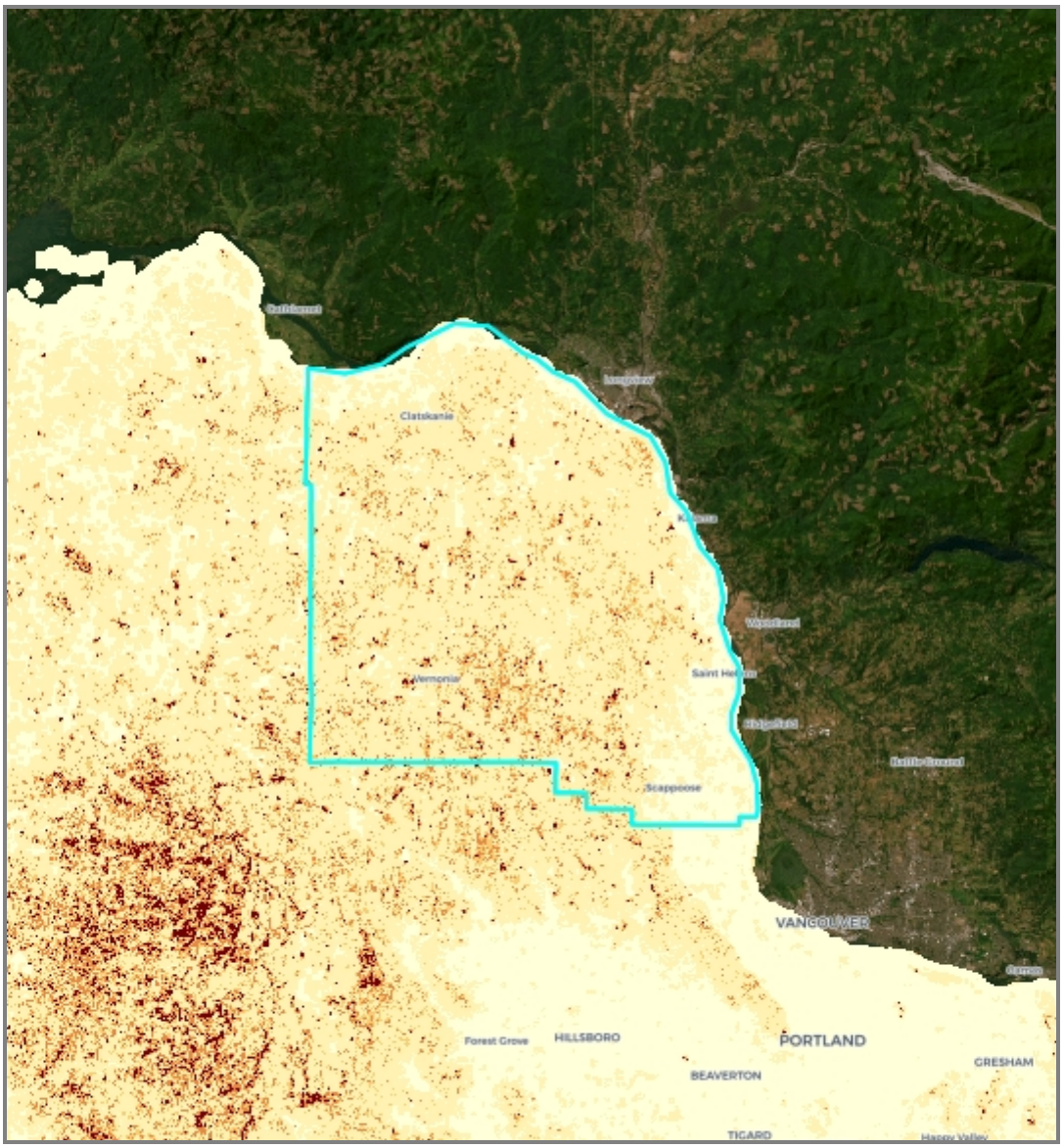


HAZARD TO POTENTIAL STRUCTURES

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

Columbia County

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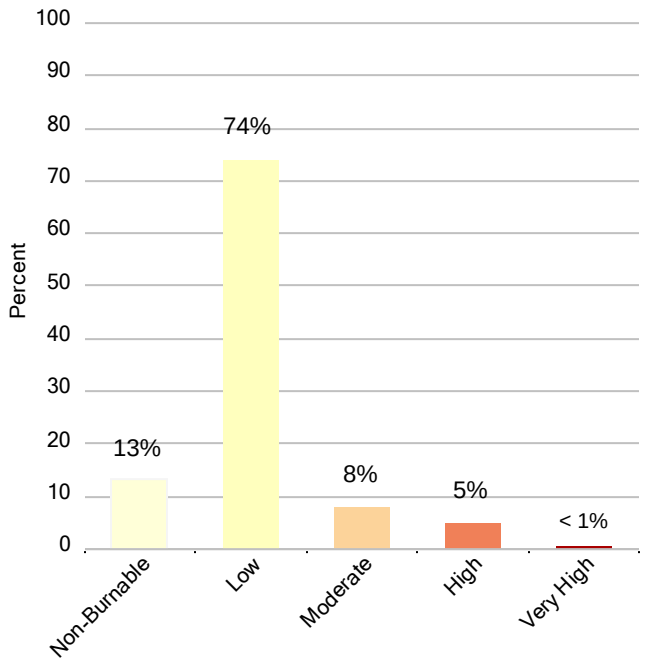
This page contains additional information about hazard to potential structures, including a table of classes by ownership to determine the distribution of categories across ownerships, and a chart of overall percentages of classes across the area. The inset box displays sub-watershed summaries for landscape-scale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

Hazard to potential structures in Columbia County: estimated acres by ownership

Category	Total	Private	Local	State	BLM	USFS	USFWS	Other Fed	Tribal
Very High	3,128	2,856	11	56	205	0	0	0	0
High	20,605	18,526	328	454	1,297	0	0	0	0
Moderate	33,557	30,579	676	731	1,571	0	0	0	0
Low	313,424	291,444	4,313	9,400	7,618	0	649	0	0
Non-Burnable	54,961	46,894	56	7,332	153	0	526	0	0
Total Area	425,675	390,299	5,384	17,973	10,844	0	1,175	0	0

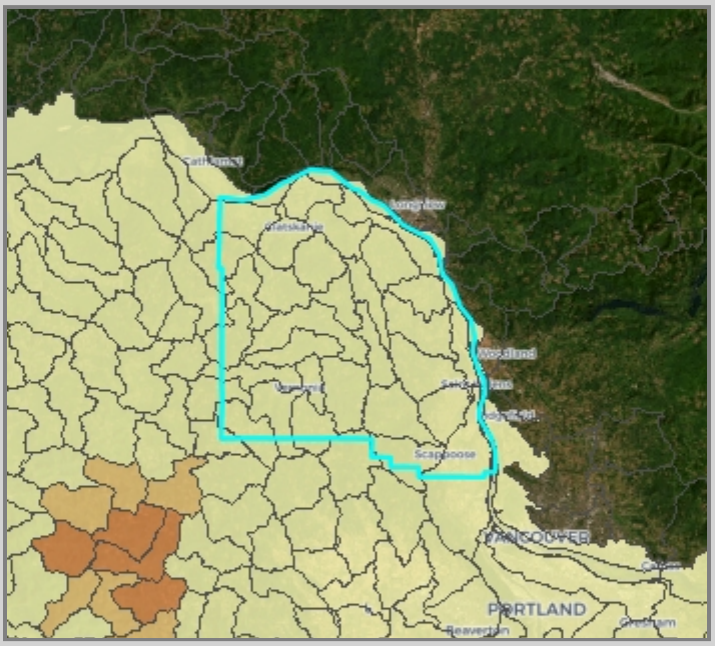
Hazard to potential structures in Columbia County *



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 Columbia County: 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.

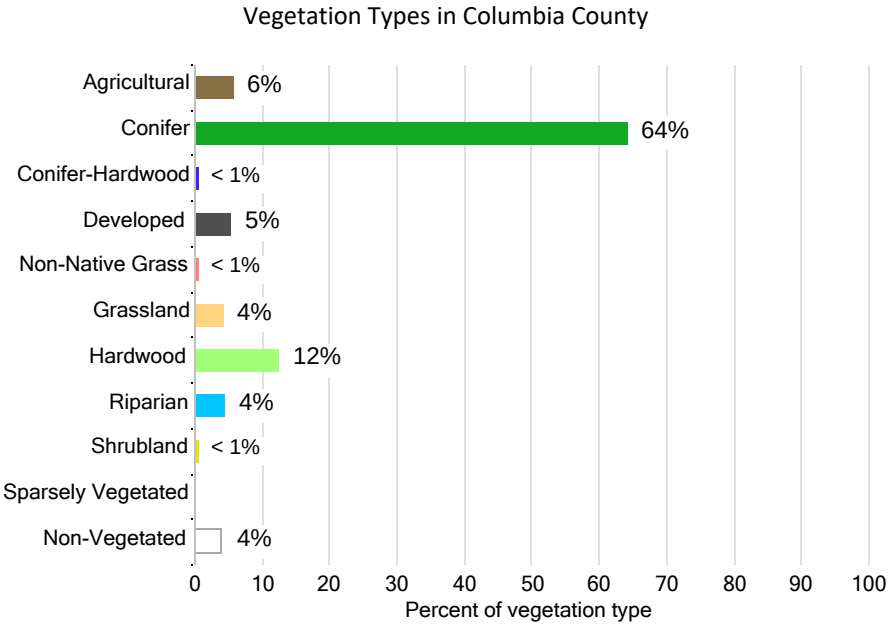


EXISTING VEGETATION TYPE

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.



Columbia County vegetation type

Category	Description	Acres	%*
Non-vegetated or recently disturbed	Non-vegetated	17,544	4
Agricultural	Agricultural	24,910	6
Conifer	Conifer	282,896	64
Conifer-Hardwood	Conifer-Hardwood	436	< 1
Developed	Developed	22,867	5
Exotic Herbaceous	Non-Native Grass	< 1	< 1
Grassland	Grassland	18,443	4
Hardwood	Hardwood	54,319	12
Riparian	Riparian	19,315	4
Shrubland	Shrubland	138	< 1
Sparsely Vegetated	Sparsely Vegetated	0	0

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

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Oregon Wildfire Risk Explorer- Advanced Report

Columbia County

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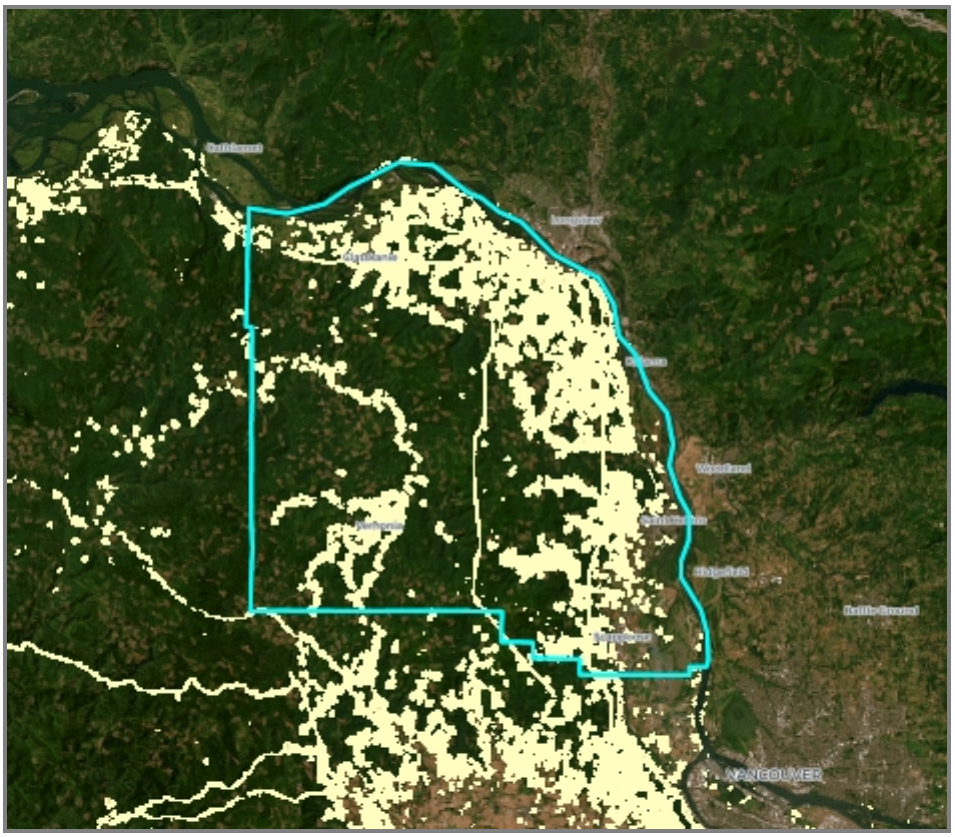
WILDFIRE RISK TO ASSETS

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 Columbia County

Category	Description	Acres	%*
Very High	Wildfire risk is very highly negative to all combined mapped assets (top 5%).	0	0
High	Wildfire risk is highly negative (80-95th percentile).	0	0
Moderate	Wildfire risk is moderately negative (50-80th percentile).	86	< 1
Low	Wildfire risk is slightly negative (0-50th percentile).	91,806	21
No Data	There are no highly valued resources or assets mapped in the area, or it is considered non-burnable.	349,303	79

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

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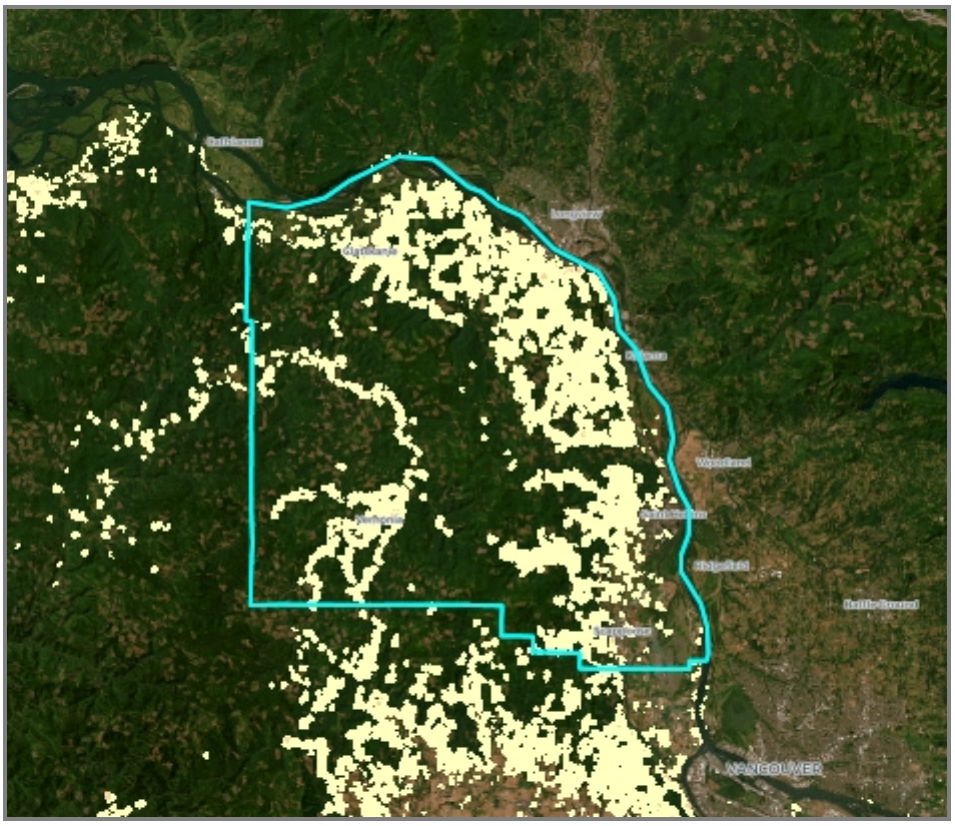
WILDFIRE RISK TO PEOPLE AND PROPERTY

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 Columbia County

Category	Description	Acres	%*
Very High	Wildfire risk is very highly negative to people and property (top 5%).	0	0
High	Wildfire risk is highly negative (80-95th percentile).	0	0
Moderate	Wildfire risk is moderately negative (50-80 percentile).	606	< 1
Low	Wildfire risk is slightly negative (0-50 percentile).	83,932	19
No Data	There are no highly valued resources or assets mapped in the area, or it is considered non-burnable.	356,659	81

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

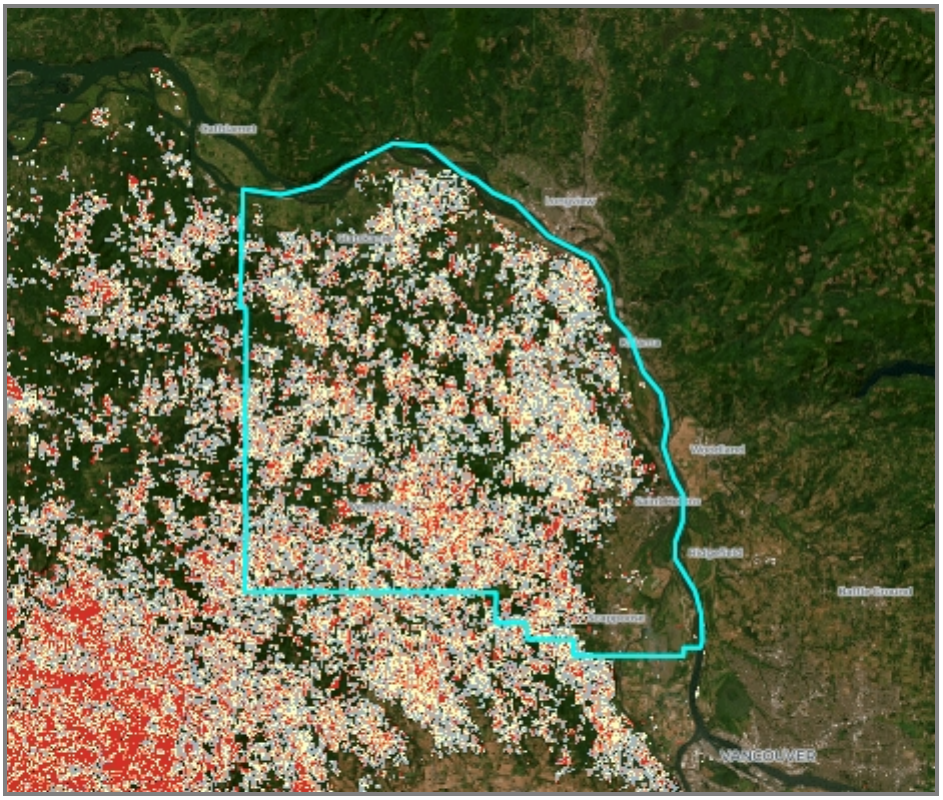
** Values may add up to over 100% due to rounding precision*

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).



Columbia County 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'.	23,611	5
50-75%	If a fire occurs, there is a high (50-75%) chance that flame lengths will be greater than 4'.	47,221	11
25-50%	If a fire occurs, there is a moderate (25-50%) chance that flame lengths will be greater than 4'.	64,668	15
0-25%	If a fire occurs, there is a low (<25%) chance that flame lengths will be greater than 4'.	108,524	25
0%	This area contains non-burnable fuel types such as water, urban, agriculture, barren rock, etc.	195,987	44

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

Columbia County

441,190 Acres: (689 Sq. Miles)

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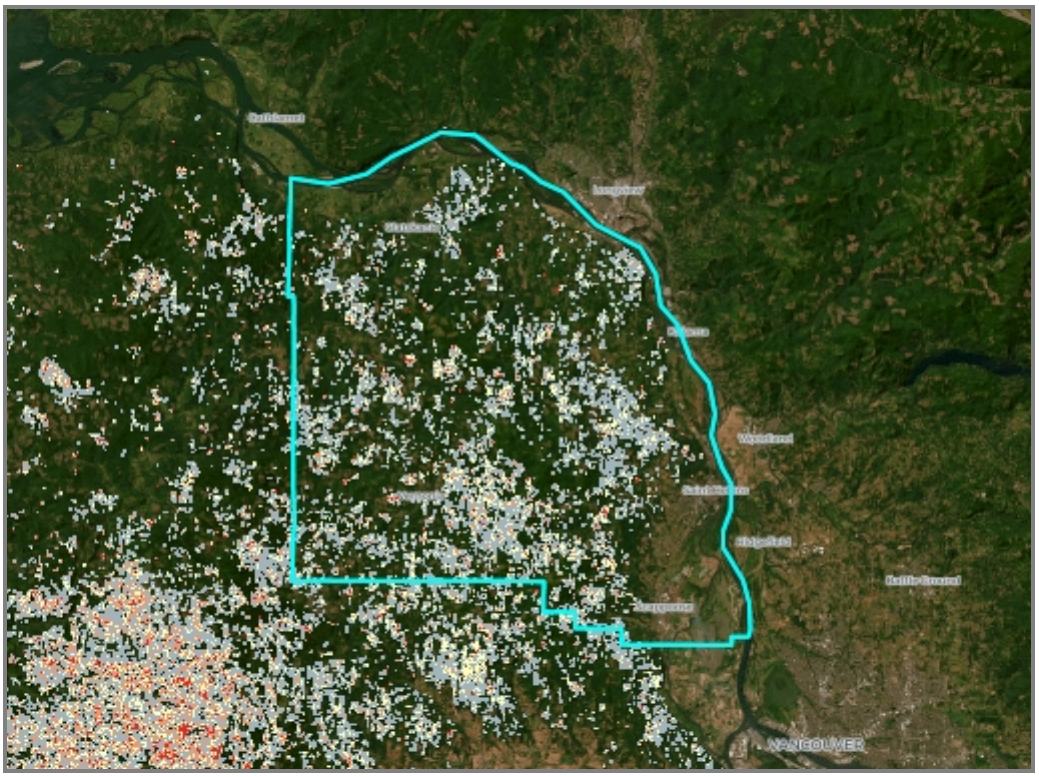
PROBABILITY OF EXCEEDING 8 FOOT FLAME LENGTHS

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.



Columbia County 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'.	1,579	< 1
50-75%	If a fire occurs, there is a high (50-75%) chance that flame lengths will be greater than 8'.	7,067	2
25-50%	If a fire occurs, there is a moderate (25-50%) chance that flame lengths will be greater than 8'.	18,783	4
0-25%	If a fire occurs, there is a low (<25%) chance that flame lengths will be greater than 8'.	85,052	19
0%	This area contains non-burnable fuel types such as water, urban, agriculture, barren rock, glacial areas, etc.	327,530	74

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

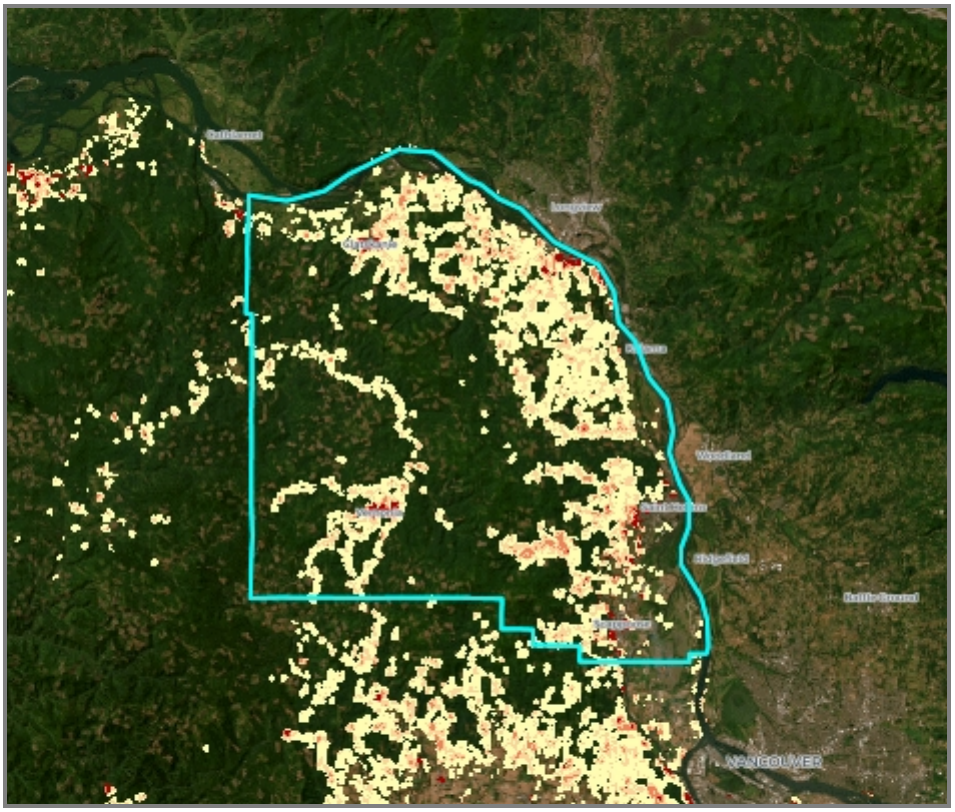
** Values may add up to over 100% due to rounding precision*

POTENTIAL IMPACT TO 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.



Columbia County 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%).	1,394	< 1
High	Potential impact is highly negative (80-95th percentile).	4,854	1
Moderate	Potential impact is moderately negative (50-80th percentile).	23,111	5
Low	Potential impact is slightly negative (0-50th percentile).	55,179	13
No Data	There is no people and property mapped in the area or it is considered non-burnable (urban, agriculture, barren,etc).	356,659	81

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

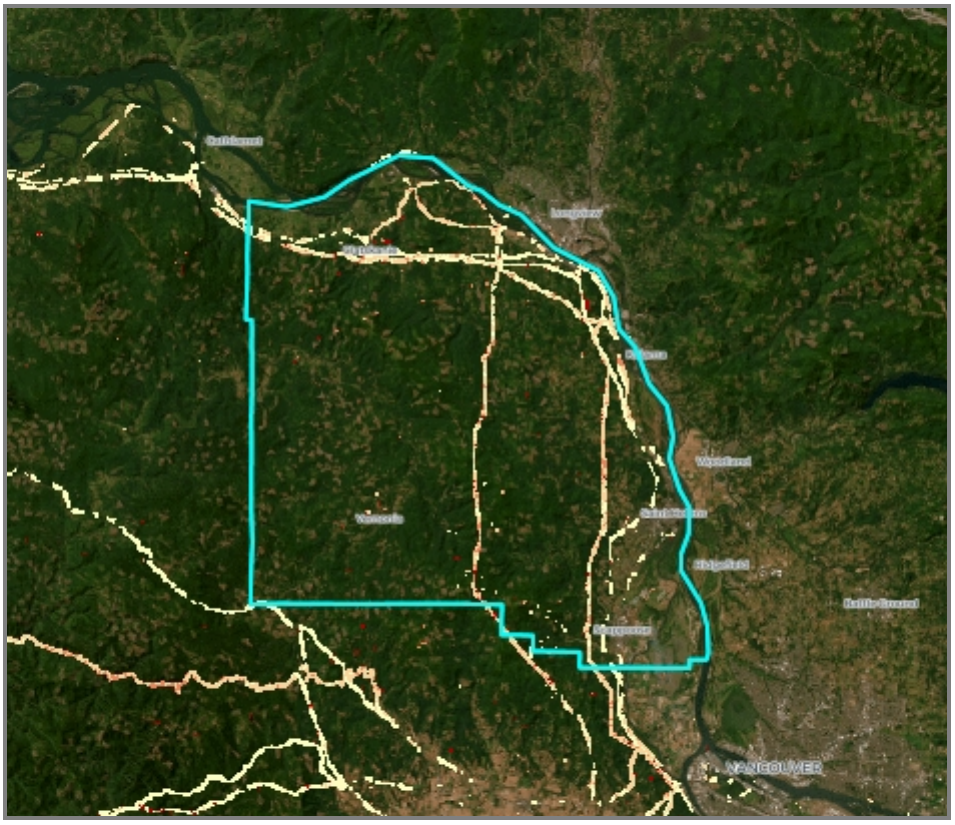
** Values may add up to over 100% due to rounding precision*

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.



Columbia County potential impact to infrastructure, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative (top 5%).	250	< 1
High	Potential impact is highly negative (80-95th percentile).	1,160	< 1
Moderate	Potential impact is moderately negative (50-80th percentile).	5,966	1
Low	Potential impact is slightly negative (0-50th percentile).	6,209	1
No Data	There is no infrastructure mapped in the area or it is considered non-burnable (urban, agriculture, barren,etc).	427,611	97

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

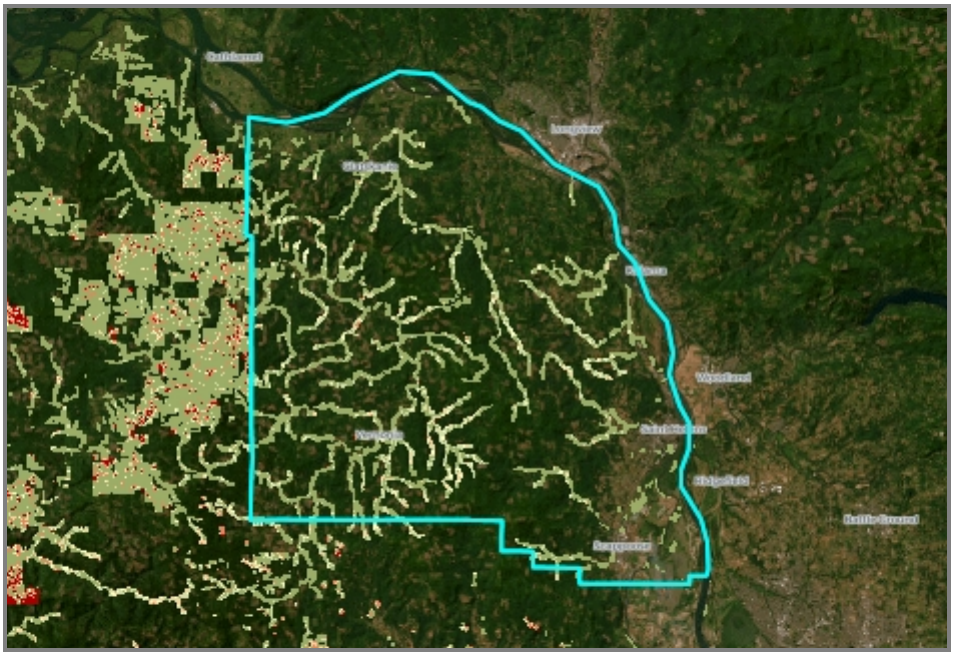
** Values may add up to over 100% due to rounding precision*

POTENTIAL IMPACT TO 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).



Columbia County potential impact to wildlife habitat, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative (top 5%).	11	< 1
High	Potential impact is highly negative (80-95th percentile).	101	< 1
Moderate	Potential impact is moderately negative (50-80th percentile).	1,171	< 1
Low	Potential impact is slightly negative (17-50th percentile).	1,789	< 1
Low Benefit	Potential impact is slightly beneficial to wildlife at low flame lengths (8-17th percentile).	5,658	1
Benefit	Potential impact is beneficial, with a cumulative positive impact on wildlife habitat (0-8th percentile).	28,121	6
No Data	There is no wildlife habitat mapped in the area, or it is considered non-burnable (urban, agriculture, barren,etc).	404,344	92

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

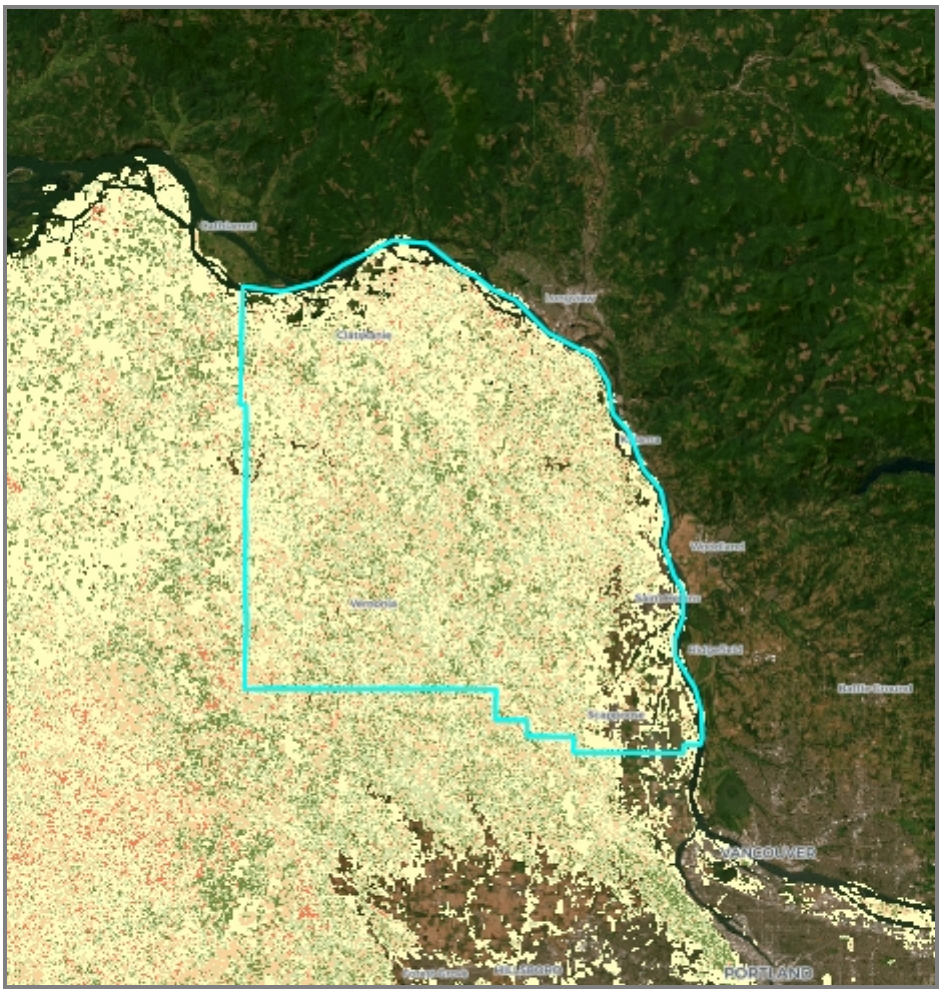
** Values may add up to over 100% due to rounding precision*

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.



Oregon Wildfire Risk Explorer- Advanced Report

Columbia County

441,190 Acres: (689 Sq. Miles)

Generated: September 8, 2023

Columbia County 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.	18,052	4
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.	42,761	10
Moderate	Potential impact is moderately negative (52-87th percentile). Fire will move the landscape further from historical/desired conditions.	73,329	17
Low	Potential impact is slightly negative (19-52th percentile). Fire will move the landscape further from historical/desired conditions.	149,358	34
Low Benefit	Potential impact is slightly beneficial to forest vegetation at low flame lengths, potentially producing a "fuel treatment" effect (0.6-19th percentile).	63,246	14
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	5,563	1
No Data	There is no vegetation mapped in the area, or it is considered non-burnable (urban, agriculture, barren,etc).	88,886	20

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

Oregon Wildfire Risk Explorer- Advanced Report

Columbia County

441,190 Acres: (689 Sq. Miles)

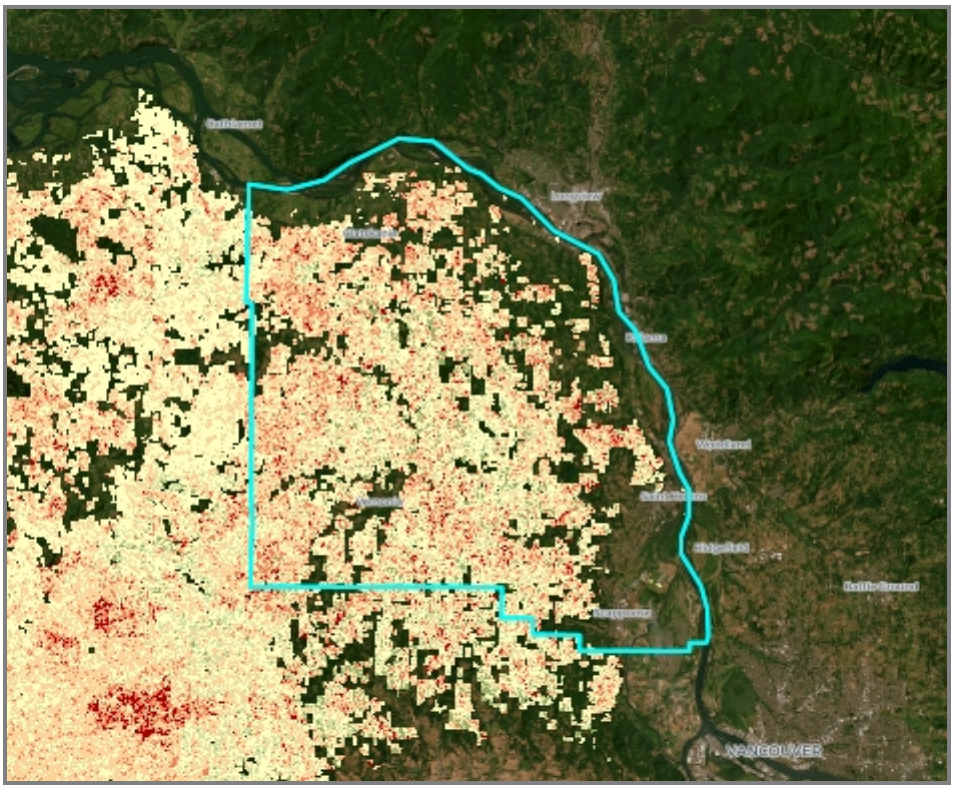
Generated: September 8, 2023

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).



Columbia County potential impact to timber resources, if a wildfire were to occur.

Category	Description	Acres	%*
Very High	Potential impact is very highly negative (top 5%).	5,132	1
High	Potential impact is highly negative (80-95th percentile).	33,232	8
Moderate	Potential impact is moderately negative (50-80th percentile).	88,884	20
Low	Potential impact is slightly negative (19-50th percentile).	71,925	16
Low Benefit	Potential impact is slightly beneficial to timber resources at low flame lengths (9-19th percentile).	14,182	3
Benefit	Potential impact is beneficial, with a cumulative positive impact on timber resources (0-9th percentile).	10,946	2
No Data	There are no timber resources mapped in the area, or it is considered non-burnable (urban, agriculture, barren,etc).	216,895	49

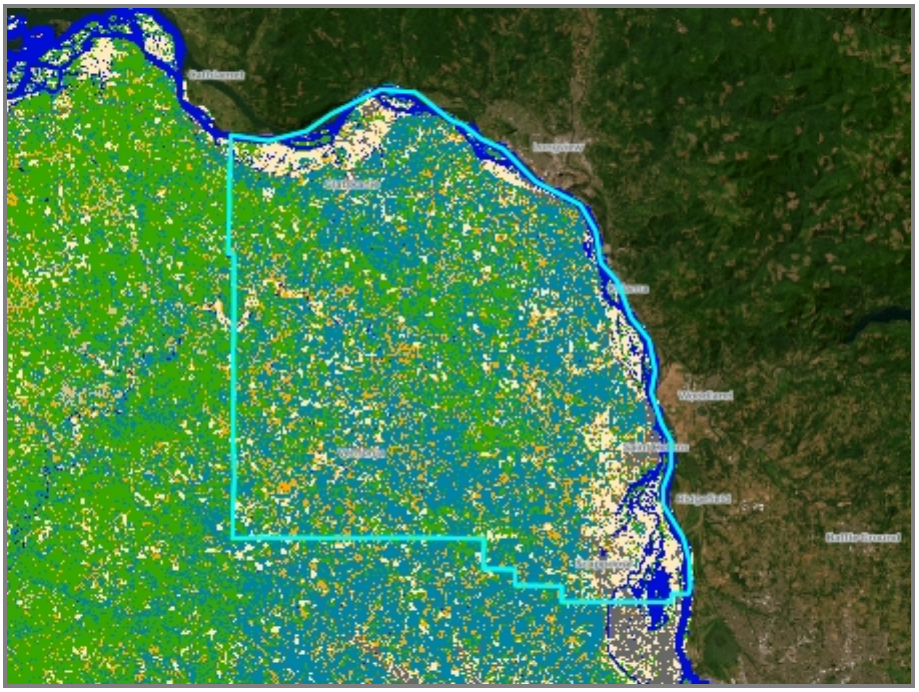
Source: 2018 Pacific Northwest Quantitative Wildfire Risk Assessment, US Forest Service

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

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.



Columbia County fuel model groups (see next page for descriptions of codes)

Category	Description	Acres	%*
Grass	Fuel models 101-104, (GR1; GR2; GR3; GR4)	48,677	11
Grass/Shrub	Fuel models 121-123, (GS1; GS2; GS3)	51,970	12
Non-burnable-other	Fuel Models 91-93,99, (NB1; NB2; NB3; NB9)	17,891	4
Non-burnable-water	Fuel Models 98, (NB8)	21,772	5
Slash-blowdown	Fuel Models 202, (SB2)	0	0
Shrub	Fuel Models 141-147, (SH1; SH2; SH3; SH4; SH5; SH6; SH7)	9,373	2
Timber Litter	Fuel Models 181-189, (TL1; TL2; TL3; TL4; TL5; TL6; TL7; TL8; TL9)	189,139	43
Timber-Understory	Fuel Models 161-163, 165, (TU1; TU2; TU3; TU5)	101,189	23

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.

How to Cite:

Accessed from the Oregon Wildfire Risk Explorer on September 08, 2023
URL:https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfireplanning
Primary data Source: USDA Forest Service Pacific Northwest Quantitative Wildfire Risk Assessment (2018)

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

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.

Attachment V-3. Wildfire Mitigation Plan

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Wildfire Mitigation Plan

Mist Resiliency Project
February 2024

Prepared for

NW Natural

Northwest Natural Gas

Prepared by

TETRA TECH

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Table of Contents

List of Tables

List of Attachments

Acronyms and Abbreviations

CFR	Code of Federal Regulations
CWPP	Community Wildfire Protection Plan
ERRP	Emergency Response and Recovery Plan
Facility	Mist Underground Natural Gas Storage Facility
NERC	North American Electric Reliability Corporation
NWN	Northwest Natural Gas
OAR	Oregon Administrative Rule
Plan	Wildfire Mitigation Plan
Project	Mist Resiliency Project

1.0 Introduction

This Wildfire Mitigation Plan (Plan) is provided to satisfy the approval standards for Northwest Natural (NWN) in its Amendment 13 to Mist Underground Natural Gas Storage Facility (Facility) Site Certificate under Oregon Administrative Rules (OAR) 345-022-0115(1)(b), which requires the Plan to:

> *(A) Identify areas within the site boundary that are subject to a heightened risk of wildfire, using current data from reputable sources, and discuss data and methods used in the analysis (see Section 2.0);*
>
> *(B) Describe the procedures, standards, and time frames that the applicant will use to inspect facility components and manage vegetation in the areas identified under subsection (a) of this section (see Section 3.0);*
>
> *(C) Identify preventative actions and programs that the applicant will carry out to minimize the risk of facility components causing wildfire, including procedures that will be used to adjust operations during periods of heightened wildfire risk (see Section 4.0);*
>
> *(D) Identify procedures to minimize risks to public health and safety, the health and safety of responders, and damages to resources protected by Council standards in the event that a wildfire occurs at the facility site, regardless of ignition source (see Section 5.0); and*
>
> *(E) Describe methods the applicant will use to ensure that updates of the plan incorporate best practices and emerging technologies to minimize and mitigate wildfire risk (see Section 6.0).*

The following Plan addresses these requirements for the Mist Resiliency Project (Project) as part of the Facility's Request for Amendment 13.

2.0 Wildfire Risk Assessment - OAR 345-022-0115(1)(b)(A)

This Plan has been prepared to meet the approval standard under OAR 345-022-0115(1)(b):

> *OAR 345-022-0115(1) To issue a site certificate, the Council must find that:*
>
> *(b) That the proposed facility will be designed, constructed, and operated in compliance with a Wildfire Mitigation Plan approved by the Council. The Wildfire Mitigation Plan must, at a minimum:*
>
> *(A) Identify areas within the site boundary that are subject to a heightened risk of wildfire, using current data from reputable sources, and discuss data and methods used in the analysis;*

Areas within the Amended Site Boundary that are subject to heightened risk of wildfire were identified and described in detail in Exhibit V (Sections 3.3.3, 3.5, 3.6). Reputable data from the Oregon Community Wildfire Protection Plan (CWPP) planning tool were used for the analyses completed in Exhibit V and referenced in this Plan (CWPP 2018). The CWPP provides a range of fire

behavior and fire effects data to aid decisionmakers in charge of reducing wildfire risk in their communities. The Oregon Explorer's CWPP data presented are from the 2018 Pacific Northwest Quantitative Wildfire Risk Assessment (Gilbertson-Day et al. 2018). This tool does not include the Statewide Wildfire Risk Map required by 2021 Senate Bill 762 and does not contain property-level wildfire risk determinations.

Based on the data provided in Exhibit V, the Amended Site Boundary poses a moderate to high fire risk as the burn probability onsite is low, but the event of a fire could have a high impact to structures and the surrounding community. Most land within the Amended Site Boundary has an overall fire risk rating of high (56 percent) to moderate (16 percent; Gilbertson-Day et al. 2018, CWPP 2018)(see also Exhibit V). There are few regions, making up 1 percent of the Amended Site Boundary, that are listed with a very high overall fire risk rating. The largest very high risk rating region in the Wildfire Analysis Area falls in the town of Mist, Oregon, which lies to the southeast of the Bark and Haul laydown yard. Additionally, a transmission line corridor falls south of the northernmost laydown yards in the Wildfire Analysis Area and has a very high wildfire risk rating (Figure V-6).

Areas of heightened risk are described using the CWPP Hazard to Potential Structures data (see Exhibit V). The hazard to potential structures layer shows impact levels to potential structures within 150 meters of burnable vegetation in the event of a wildfire (Gilbertson-Day et al. 2018). The hazard to potential structures within the Amended Site Boundary is predominately low (77 percent) and moderate (15 percent) (see Exhibit V). The land within the Amended Site Boundary with a high potential for damaging existing structures falls in the North Mist Compressor Station Expansion Area. Currently, North Mist Compressor Station Expansion Area already contains several structures, which are therefore at high risk of damage in the event of a wildfire. There is also high potential for impact to structures due to wildfire where Miller Station is located within the Wildfire Analysis Area. NWN will use this information when planning Project's building locations and when identifying building materials.

3.0 Inspection and Management – OAR 345-022-0115(1)(b)(B)

> *OAR 345-022-0115(1)(b)(B) Describe the procedures, standards, and time frames that the Certificate Holder will use to inspect facility components and manage vegetation in the areas identified under subsection (a) of this section;*

3.1 Facility Inspections

Inspections for fire safety at a natural gas facility are a regular and required element of operation. Fire safety inspections at a natural gas facility involve a systematic assessment of various components to identify potential fire hazards and ensure the safety of personnel, equipment, and the surrounding environment. These inspections are conducted regularly to prevent and mitigate fire risks.

Operation of the Facility is monitored and remotely controlled by trained operators at Miller Station, which is staffed 24 hours per day. The new operations building at NMCS will also be staffed 24 hours per day. In addition to the monitoring at Miller Station and the future NMCS, staff at NWN Gas Control, located in Portland, Oregon, will continue to provide additional monitoring of the newly integrated facilities on a 24-hour basis. Fire detection and extinguishers are located at designated points throughout the compressor station as needed. Monthly extinguisher evaluations will occur, along with annual inspections by Birkenfeld fire station.

In addition to ongoing monitoring, the Facility will be monitored at different frequencies to assess for potential hazards. Electrical systems inspections will be conducted in accordance with National Fire Protection Association 70e safety requirements to identify potential issues including frayed wiring, overheating, or electrical malfunctions. Checks of control panels, switches, and wiring connections are crucial to prevent electrical-related fires. Inspections of the fuel supply systems will occur regularly to detect and address gas leaks, damaged pipelines, or other issues that could lead to combustible gas escaping. Compressor equipment inspections will be performed semiannually to ensure proper functioning and check for signs of wear, overheating, or lubrication system disintegration. For storage tanks, inspections will be performed semiannually to check for leaks, corrosion, or other vulnerabilities that could lead to fuel spillage and potential fires. Regular inspections of piping and valves will be completed to detect leaks, damage, or malfunction. These inspections should be conducted quarterly to semi-annually. In-plant pipe conducted through leak checks, annually.

Underground pipelines will be inspected on a seven-year assessment schedule to address any leaks or damage. (in accordance with our pipeline integrity program)

In addition to component inspections over time, the Facility will manage fire risk by utilizing any code-required fire suppression systems and ensuring staff are well-trained to manage fire risk. Emergency shutdown systems will be in place, and inspected annually to ensure they are operational and capable of responding quickly to fire or safety incidents. Fire suppression system inspections, including fire extinguishers and fire sprinklers, will occur annually or as recommended by the system manufacturer to verify functionality. Inspections of emergency response equipment, such as personal protective gear, first-aid kits, and communication devices, will be carried out annually to ensure they are in working order. Routine Project grounds inspections will occur weekly to maintain cleanliness, remove combustible debris, and minimize fire hazards. Fire safety training and emergency response drills will be conducted annually to ensure that personnel are well-prepared to handle fire incidents effectively. Finally, maintenance and inspection records will be updated and maintained in compliance with industry regulations. Operations staff will regularly review and update safety protocols based on the findings of these inspections.

3.2 Vegetation Management

Well pads and compressor stations will be fenced and will include gravel or concrete foundations to keep out vegetation. Encroaching vegetation near aboveground structures within Miller Station and NMCS, along with the newly built well pads, may be mowed, or treated with herbicides periodically.

A physical vegetation survey assessment of the fenced area will be completed at least twice a year to monitor for vegetation growth. One of the vegetation survey assessments will occur in May or June, prior to the start of the dry season, a time when wildfire risk is heightened. The survey will be conducted by operations staff and will be used to assess the frequency of upcoming vegetation maintenance and identify areas that may need additional attention. Any herbicides used for vegetation management will be selected and used in a manner that fully complies with all applicable laws and regulations.

4.0 Preventative and Minimization Actions for Wildfire Risk - OAR 345-022-0115(1)(b)(C)

> *OAR 345-022-0115(1)(b)(C) Identify preventative actions and programs that the [Certificate Holder] will carry out to minimize the risk of facility components causing wildfire, including procedures that will be used to adjust operations during periods of heightened wildfire risk;*

4.1 Preventative Actions

Fire prevention systems and procedures are also followed at Miller Station and will be followed at the operation station at NMCS. NWN will maintain fire prevention equipment, and emergency shutdown and station venting systems. The buildings will maintain emergency firefighting equipment including shovels, portable water for hand sprayers, fire extinguishers, and other equipment. Installation of fire detection systems (including smoke detectors and fire alarms) will be installed throughout the operations buildings to detect and control fires in their early stages. Onsite employees will also receive training on fire prevention and response and have onsite fire extinguishers to respond to small fires. In the event of a large fire, emergency responders will be dispatched.

Any potentially hazardous substances necessary to support the long-term operation of the Project will either be limited to quantities of less than Oregon State Fire Marshall (OSFM) Reportable Quantities or disclosed annually as part of the Community Right to Know Act managed by the OSFM.

Miller Station implements various preventive measures outlined in their Operations and Maintenance Manual (NWN 2023), including:

- Automatic safety features;
- Facility equipment shutdown triggered by automatic temperature gauges;
- Rigorous operator qualification program addressing abnormal operating conditions, with follow-up for observed abnormalities;
- Continuous reporting on safety-related conditions;
- Specific safety protocols for storing combustible materials at compressor stations;

- Gas detection mechanisms, along with inspection and testing procedures for relief devices at compressor stations;
- Utilization of Corrosion Control Leads to monitor the site for potential fire-inducing damage;
- Thorough and ongoing inspection and testing of transmission lines for gas leakages, including gas detection at compressor stations;
- Inspection and testing methods for pressure limiting and regulating stations;
- Scheduled valve maintenance for transmission lines;
- Comprehensive pressure testing programs for steel pipelines.

Additional preventative actions were developed by Oregon Department of Forestry (ODF) in the form of Industrial Fire Precaution Levels (IFPLs) which are used to guide wildfire prevention actions at the Facility (Attachment A; ODF 2023a). These requirements are specified for industrial facilities within the Oregon Predictive Service Area fire district: PSA NW-03. The listed fire season requirements become effective when fire season is declared in each Oregon Department of Forestry Fire Protection District by an ODF forester.

The Oregon Forest Practices Act (FPA) requires forest landowners and operators to notify the Oregon Department of Forestry (ODF) at least 15 days before they begin forest operations on any non-federal lands in Oregon. NWN provides this notification through the Notification of Operations and Application for Permit (NO/AP) process, conducted through the ODF Private Forests, and Protection from Fire divisions. NWN also applies for a Power-Driven Machinery (PDM) permit as necessary in in accordance with ORS 477.625.

During fire season, NWN will adhere to ODF's Fire Season Requirements (Attachment A, ODF 2023a). ODF will identify the IFPL throughout fire season as follows:

- IFPL I – fire season
- IFPL II – limited shutdown
- IFPL III – restricted shutdown
- IFPL IV – complete shutdown

NWN will follow the restrictions associated with each IFPL and the associated best management practices throughout the season (Attachment B; ODF 2023b, ODF 2023c).

4.2 Other Preventative Programs

NWN will implement the following programs to minimize fire risk during operations of the Project.

4.2.1 OHSA-Compliant Fire Prevention Plan

All workers, contracting employees, and other personnel performing official duties at the Facility will conduct work under a Fire Prevention Plan that meets applicable portions of 29 Code of Federal Regulations (CFR) 1910.39 and Subpart L 29 CFR 1910.155-165.

4.2.1.1 Fire Prevention Plans (29 CFR 1910.39)

A Fire Prevention Plan will be kept in workplace and made available for employees to review (29 CFR 1910.39(a-b)). The fire prevention plan must include:

- 29 CFR 1910.39(c)(1): A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard;
- 29 CFR 1910.39(c)(2): Procedures to control accumulations of flammable and combustible waste materials;
- 29 CFR 1910.39(c)(3): Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials;
- 29 CFR 1910.39(c)(4): The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires; and
- 29 CFR 1910.39(c)(5): The name or job title of employees responsible for the control of fuel source hazards.
- 29 CFR 1910.39(d): Employee information. An employer must inform employees upon initial assignment to a job of the fire hazards to which they are exposed. An employer must also review with each employee those parts of the fire prevention plan necessary for self-protection.

4.2.1.2 Fire Protection (Subpart L 29 CFR 1910.155-165)

This subpart contains requirements for fire brigades, and all portable and fixed fire suppression equipment, fire detection systems, and fire or employee alarm systems installed to meet the fire protection requirements of 29 CFR part 1910. This subpart (L) applies to all employments except for maritime, construction, and agriculture. The Fire Protection subpart requires that:

- Fire brigades (29 CFR 1910.156): A trained fire brigade is established (also required by ODA 2023b, see Firewatch section 4.3.3), their expectations are documented, and they are provided with the required Personal Protective Equipment for their roles.
- Portable fire extinguishers (29 CFR 1910.157): The Facility contains properly maintained portable fire extinguishers, and staff are trained to use them (also required by ODA 2023b, section 4.2).
- Standpipe and hose systems (29 CFR 1910.158): The Facility contains maintained standpipes and hoses (also required by ODA 2023b, section 4.2).

- Automatic sprinkler system (29 CFR 1910.159); The Facility contains a functional sprinkler system capable of running for 30 minutes and draining completely after running.
- Fixed extinguishing systems (29 CFR 1910.160-163): Any general, dry chemical, gaseous agent, or water spray and foam fixed extinguishing systems are maintained and in working order, with a functional drainage system in place.
- Fire detection systems (29 CFR 1910.164): Fire detection systems are in place, functional, and maintained throughout the Facility. Any fire detection systems placed outside must be protected from atmospheric corrosion. The number, spacing and location of fire detectors is based upon design data obtained from field experience, or tests, engineering surveys, the manufacturer's recommendations, or a recognized testing laboratory listing.
- Employee alarm systems (29 CFR 1910.165): An employee alarm system is in place to provide warning for necessary emergency action (as called for in NWN's Emergency Response and Recovery Plan), or for reaction time for safe escape of employees from the workplace or the immediate work area, or both.

4.2.2 Electrical Safety Program

All operational workers will be trained in electrical safety and the specific hazards of the greater Project area. This training will address:

- Minimum experience requirements to work on different types of electrical components;
- Electrical equipment testing and troubleshooting;
- Electronic Switching system (e.g.: SCADA system);
- Provisions for entering high voltage areas;
- Minimum approach distances; and
- Required personal protective equipment.

4.2.3 Lock Out/Tag Out Procedure

Lock Out/Tag Out (LOTO) procedure is a systematic method used to ensure that equipment or machinery is properly de-energized and isolated from energy sources before maintenance, repair, or servicing work is performed. The goal is to prevent the inadvertent release of energy (such as electrical, mechanical, hydraulic, or pneumatic energy) that could pose a hazard to workers. During maintenance activities on electrical equipment, the equipment is de-energized and physically locked or tagged in the de-energized positions to inadvertent events that could result in arc flash.

4.2.4 Emergency Response and Recovery Plan

An Emergency Response and Recovery Plan (ERRP) was developed for NWN to provide a framework for the restoration of service to customers after emergency events take place. The ERRP:

- Includes all hazards and emergencies which may impact the Project;
- Provides framework for emergency response and recovery processes; and
- And identifies the roles and responsibilities of each department and individual.

NWN will collaborate with the Emergency Management Steering Committee, along with the appropriate authorities outlined in Exhibits U and V, to review and modify the plan if required, once the final system design is finished but before construction commences. The plan will include response procedures that consider the mild climate of the area and deal with seasonal risks, including the dryness of summer months. Additionally, the plan will outline communication channels that NWN intends to use to connect with local fire protection agencies, such as holding annual meetings to talk about emergency planning and inviting them to observe any emergency drills performed at the Facility.

The ERRP prepared prior to any new construction by NWN and construction contractor will contain policies and procedures for preparing for and responding to a range of potential emergencies, including fires. Implementation of the ERRP will minimize risks to public health and safety, and risks to emergency responders. The ERRP will cover response procedures that consider the climate of the Facility and address regional risks on a seasonal basis. The ERRP will also specify communication channels NWN intends to pursue with local fire protection agency personnel, such as annual meetings to discuss emergency planning and invitations to observe any emergency drills conducted at the Facility. As new Project operations commence, a copy of the site plan will be provided to the local fire district indicating the arrangement of the Project structures and access points.

In addition to the emergency responses to be stipulated in the ERRP, personnel will be trained on the RACE procedure to implement in the event of a fire start:

- Rescue anyone in danger (if safe to do so);
- Alarm – call the control room, who will then determine if 911 should be alerted;
- Contain the fire (if safe to do so); and
- Extinguish the incipient fire stage (if safe to do so).

Personnel on site will carry fire suppression equipment during the fire season in their vehicles. This equipment shall include, at a minimum a shovel, pulaski or axe, and a 5 pound fire extinguisher.

Another potential safety mitigation to have available onsite during construction and operation is a water truck, water buffalo or tank with minimum 500-gallon capacity.

Finally, personnel will receive training on use of suppression equipment. All personnel shall be equipped with communication equipment capable of reaching the control room from all locations within the Amended Site Boundary.

5.0 Wildfire Risk Minimization Procedures - OAR 345-022-0115(1)(b)(D)

OAR 345-022-0115(1)(b)(D) Identify procedures to minimize risks to public health and safety, the health and safety of responders, and damages to resources protected by Council standards in the event that a wildfire occurs at the facility site, regardless of ignition source;

To minimize wildfire impacts, NWN will utilize the expertise of local fire brigades in the event of a fire. NWN has written agreements with the Clatskanie Rural Fire Protection District and the Mist-Birkenfeld Rural Fire Protection District dating back to 2015 (Amendment 11, Attachment U-2). Both groups have willingness and ability to respond as staffing allows to any fire protection issues which may arise during the construction and operation of the Project. NWN shall provide the Mist Birkenfeld Rural Fire Protection District with an annual tour of the Miller Station to familiarize personnel with the facility in case of an emergency.

In addition to the measures described in sections above, the risk of a wildfire affecting public safety, first responders, or Energy Facility Siting Council-protected resources would be minimized by the procedures listed in Table 1.

In the event of a fire, reactionary Emergency Response Procedures are outlined in the NW Natural-Miller Station Operations and Maintenance Manual (2023), for both controllable and uncontrollable incidents. These plans include first response expectations, evacuations plans, and management of fires within or outside of the site boundaries.

Table 1. Procedures to Minimize Wildfire Risk

Topic	Procedures
Public Health and Safety	The public will be excluded from the well pads, Miller Station, and North Mist Compressor Station facilities by fencing.
First Responders	NWN will meet with local first responders annually. Meetings will cover the firefighting responses to electrical and gas leak fires. Response to fires in the Facility will focus on controlling spread to adjacent lands. Operational staff will be trained in the use of fire extinguishers for responding to incipient stage fires on site.
Resource Protection	NWN is responsible for annually obtaining their Notification of Operations and Application for Permit (NO/AP) through ODF, which is a permit required to safely use fire or power-driven machinery in Oregon forestlands. Resources covered by Energy Facility Siting Council standards near the Facility include agricultural land, shrub steppe habitat, and cultural resources. The existing county roads will form a fire break between fields that will discourage the spread of wildfire between fields into wildlife habitat. According to Exhibit S, there are no historic or

Topic	Procedures
	cultural resources identified within the analysis area that are on private lands, on public lands, or listed on the National Register of Historic Places.

6.0 Plan Updates and Modifications - OAR 345-022-0115(1)(b)(E)

OAR 345-022-0115(1)(b)(E) Describe methods the applicant will use to ensure that updates of the plan incorporate best practices and emerging technologies to minimize and mitigate wildfire risk.

NWN will review in accordance with NWN Mist UGS operation and maintenance manuals. Evaluation of wildfire risk will be consistent with the requirements of OAR 345-022-0115(1) using current data from reputable sources. Updates to this Plan will account for changes in local fire protection agency personnel and changes in best practices for minimizing and mitigating fire risk. NWN will consult with Columbia County, the local fire department, and the Columbia County Emergency Manager.

After each review, a copy of the updated Plan will be provided to the Oregon Department of Energy within the annual compliance report required under OAR 345-026-0080(2). In the annual report's monitoring report, a discussion of any significant changes to the wildfire mitigation program, including the reason for any such changes, will be described (OAR 345-026-0080(2)(e)). If after the review of the Plan, a determination is made that no changes are required, an explanation of this determination will be provided. Additionally, the annual report's compliance report will describe the certificate holder's compliance with all site certificate conditions that are applicable during the preceding year (OAR 345-026-0080(2)(f)).

NWN may consider revisions to this Plan at its sole discretion to incorporate future best practices or emerging technology, depending on whether the new technology is cost effective and suitable for the site conditions. NWN will track the industry groups and applicable design standards outlined in Table 2 to identify future technologies or best practices that could be implemented at the Facility.

Table 2. Resources for Future Best Practices

Reference	Description	Method
ODA's Fire Season Requirements (Attachment A; ODF 2023a)	Fire season requirements which come into effect by PSA, according to ODF foresters.	Project personnel will keep up-to-date with changes to ODF's Fire Season Requirements document for PSA NW03.
Industrial Fire Precaution Levels (IFPLs) for Oregon Department of Forestry Protection west of the Cascades (Attachment B; ODF 2023b, ODF 2023c)	Additional fire season requirements and Best Management Practices, which change according to the local severity of fire risk.	Project personnel will keep up-to-date with changes to ODF's IFPL requirements for PSA NW03.
North American Electric Reliability Corporation (NERC; NERC 2023)	NERC develops electrical standards for large energy facilities.	NWN will follow the NERC reliability guidelines for natural gas, as outlined in their March, 2023 report.
Pipeline and Hazardous Materials Safety Administration (PHMSA 2021)	PHMSA exists through the US Department of Transportation and is responsible for developing and enforcing regulations for the safe, reliable, and environmentally sound transportation of energy and other hazardous materials.	Remain up to date with new bulletins shared through PHMSA regarding changes to regulations or recommended safety procedures.
Oregon Structural Specialty Code (OSSC 2022)	Building codes applicable to inhabitable spaces, including the Operations and Maintenance building, and written according to the 2021 International Fire Code.	Remodeling to the Operations and Maintenance building that requires permits will follow any updates to the Oregon Structural Specialty Code at that time.

7.0 References

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ODF (Oregon Department of Forestry). 2023a. Fire Season Requirements. https://www.oregon.gov/odf/fire/documents/fire-season-requirements-for-industrial-operations.pdf. Accessed October 2023.

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OSSC (Oregon Structural Specialty Code). 2022. Commercial Structures Code Program. https://www.oregon.gov/bcd/codes-stand/pages/commercial-structures.aspx. Accessed November 14, 2023.

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Attachment A. ODF's Fire Season Requirements

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FIRE SEASON REQUIREMENTS

The following fire season requirements become effective when fire season is declared in each Oregon Department of Forestry Fire Protection District, including those protected by associations (DFPA, CFPA, WRPA).

NO SMOKING **(477.510)**

No smoking while working or traveling in an operation area.

HAND TOOLS **(ORS 477.655, OAR 629-43-0025)**

Supply hand tools for each operation site - 1 tool per person with a mix of pulaskis, axes, shovels, hazel hoes.
Store all hand tools for fire in a sturdy box clearly identified as containing firefighting tools. Supply at least one box for each operation area. Crews of 4 or less are not required to have a fire tools box as long as each person has a shovel, suitable for fire-fighting and available for immediate use while working on the operation.

FIRE EXTINGUISHERS **(ORS 477.655, OAR 629-43-0025)**

Each internal combustion engine used in an operation, except power saws, shall be equipped with a chemical fire extinguisher rated as not less than 2A:10BC (5 pound).

POWER SAWS **(ORS 477.640, OAR 629-043-0036)**

Power saws must meet Spark Arrester Guide specifications - a stock exhaust system and screen with ≤ .023 inch holes.

The following shall be immediately available for prevention and suppression of fire:

- One gallon of water or pressurized container of fire suppressant of at least eight ounce capacity
- 1 round pointed shovel at least 8 inches wide with a handle at least 26 inches long
- The power saw must be moved at least 20' from the place of fueling before it is started.

FIRE TOOLS, EXTINGUISHERS FOR TRUCKS **(ORS 477.655, OAR 629-043-0025)**

Equip each truck driven in forest areas for industrial purposes with:

- 1 round pointed shovel at least 8 inches wide, with a handle at least 26 inches long
- 1 axe or Pulaski with 26 inch handle or longer
- 1 fire extinguisher rated not less than 2A:10BC (5 pound).

SPARK ARRESTERS AND MUFFLERS **(ORS 477.645, OAR 629-043-0015)**

All non-turbo charged engines must meet Spark Arrester Guide specifications except:

- Fully turbo charged engines.
- Engines in motor vehicles operating on improved roads equipped with an adequate muffler and exhaust system.
- Engines in light trucks (26,000 GVW or less) that are equipped with an adequate muffler and an exhaust system.
- Engines in heavy trucks (greater than 26,000 GVW) that are equipped with an adequate muffler and exhaust system.
- If a truck engine is not fully turbo-charged, then the exhaust must extend above the cab and discharge upward or to the rear, or to the end of the truck frame.
- Water pumping equipment used exclusively for fighting fire.
- Engines of 50 cubic inch displacement or less, except ATV's and motorcycles, shall be equipped with an adequate muffler and an exhaust system.
- Engines in ATV's and motorcycles must be equipped with an adequate muffler and exhaust system or an approved screen, which completely encloses exhaust system.
- Power saws. (See power saw requirements)

PUMP, HOSE, AND WATER SUPPLY **(ORS 477.650, 477.625, OAR 629-043-0026, 629-43-0020)**

Supply a pump, hose and water supply for equipment used on an operation.

- Pump must be maintained ready to operate and capable to provide a discharge of not less than 20 gallons per minute at 115 psi at pump level. **Note: Volume pumps will not produce the necessary pressure to effectively attack a fire start. Pressure pumps are recommended.**
- Water supply shall be a minimum of 300 gallons if a self-propelled engine.
  Water supply shall be a minimum of 500 gallons if not self-propelled (pond, stream, tank, sump, trailer, etc.)
- One water supply is adequate as long as the operator can deliver water to the fire within 10 minutes
- Provide enough hose (500 feet minimum) not less than 3/4" inside diameter to reach areas where power driven machinery has worked.

Note: Should a fire occur, the operator must be able to position the water supply in a location where enough hose is available to reach the area worked by power driven machinery. This includes mobile equipment as well as motorized carriages and their moving lines. Moving lines are defined as main lines and haul back lines. This can be achieved in many ways, including the practice of having a water tank and hose attached to a piece of equipment, like a skidgen or skidder, that can get the water to the fire.

- Water supply, pump, and at least 250' of hose with nozzle must be maintained as a connected, operating unit ready for immediate use.

CABLE LOGGING OPERATIONS **(ORS 477.625, 477.655, OAR 629-043-0026, 629-043-0025)**

Clear the ground of flammable debris within a 10-foot radius around any block. This cleared area shall be kept free of flammable debris while the block is in use.

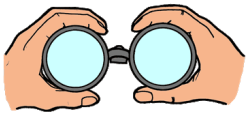
Provide at each block:

- 5 gallon pump can filled with water
- 1 round pointed shovel at least 8 inches wide with a handle at least 26 inches long.

FIRE WATCH SERVICE **(477.665, 629-043-0030)**

Each operation area is to have a Firewatch.

Fire watch shall be on duty during any breaks (up to 3 hours) and for three hours after all power driven machinery used by the operator has been shut down for the day. ***Note: Some ODF districts waive this requirement based on the IFPL in place. Check with the district in which you are working.***



Fire watch shall:

- Be physically capable and experienced to operate firefighting equipment.
- Have facilities for transportation and communications to summon assistance.
- Observe all portions of the operation on which activity occurred during the day.

Upon discovery of a fire, Firewatch personnel must: First report the fire, summon any necessary firefighting assistance, describe intended fire suppression activities and agree on a checking system; then, after determining a safety zone and an escape route that will not be cut off if the fire increases or changes direction, immediately proceed to control and extinguish the fire, consistent with firefighting training and safety.

OPERATION AREA FIRE PREVENTION **(477.625, 629-043-0026)**

- Keep all power driven machinery free on excess flammable material which may create a risk of fire.
- Avoid line-rub on rock or woody material, which may result in sparks or sufficient heat to cause ignition of a fire.
- Disconnect main batteries from powered components (other than what may be necessary to retain computer memory) through a shut-off switch or other means or, leave equipment on ground cleared of flammable material.

NOTICE**:**

THESE ARE MINIMUM STANDARDS BY LAW. MANY LANDOWNERS REQUIRE ADDITIONAL REQUIREMENTS.

Attachment B. ODF Industrial Fire Precaution Levels (IFPLs) for West of the Cascades

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Industrial Fire Precaution Levels (IFPLs) for Oregon Department of Forestry Protection west of the Cascades

IFPL I. Fire Season
Fire season requirements are in effect. In addition to other fire prevention measures, a Firewatch is required at this and all higher levels unless otherwise waived.

IFPL II. Limited Shutdown
The following may operate only between the hours of 8 P.M. and 1 P.M.:

- Power saws except at loading sites;
- Feller-bunchers with rotary head saws;
- Cable yarding;
- Blasting;
- Welding, cutting, or grinding of metal.

IFPL III. Restricted Shutdown
The following is prohibited except as indicated:

- Cable yarding - except that gravity operated logging systems employing non-motorized carriages or approved motorized carriages (defined below), may operate between 8 P.M. and 1 P.M. when all blocks and moving lines are suspended 10 feet above the ground except the line between the carriage and the chokers and during rigging.

The following are permitted to operate between the hours of 8 P.M. and 1 P.M. where mechanized equipment capable of constructing fire line is immediately available to quickly reach and effectively attack a fire start:

- Ground-based operations (defined below);
- Power saws on ground-based operations;
- Rotary head saw feller-bunchers with a continuous Firewatch;
- Non-rotary head saw feller-bunchers;
- Tethered logging systems (defined below).

The following are permitted to operate between the hours of 8 P.M. and 1 P.M.:

- Power saws at loading sites;
- Loading or hauling of any product or material;
- Blasting;
- Welding, cutting, or grinding of metal;
- Any other spark emitting operation not specifically mentioned.

IFPL IV. Complete Shutdown
All operations are prohibited.

NOTE: Where hauling involves transit through more than one shutdown/regulated use area, the precaution level at the woods loading site shall govern the level of haul restriction, unless otherwise prohibited by other than the IFPL system. Under IFPL III, all trucks must be loaded and leaving the loading site no later than 1 P.M.

IFPL Definitions

Approved motorized carriage: a cable yarding system employing a motorized carriage with two fire extinguishers, each with at least a 2A:10BC rating, mounted securely on opposite sides of the carriage, an emergency motor cutoff, and an approved exhaust system.
Cable yarding system: a yarding system employing cables, and winches in a fixed position.
Fire Season: that season of the year when a fire hazard exists as declared by the responsible agency official.
Ground-based operations: mobile and stationary equipment operations other than cable yarding systems, including but not limited to tractor/skidder, feller-buncher, forwarder, processor, and shovel operations.
Loading sites: a place where any product or material (including, but not limited to logs, firewood, slash, soil, rock, poles, etc.) is placed in or upon a truck or other vehicle. loading site shall govern the level of haul restriction, unless otherwise prohibited by other than the industrial precaution level system.
Tethered logging system: winch-assisted, cable-assisted, traction-assisted, etc., which enable ground-based timber harvesting machines to operate on steep slopes.

Waivers
Waivers, written in advance, may be used for any and all activities. Activities for which waivers may be issued include, but are not limited to:

- mechanized loading and hauling.
- road maintenance such as sprinkling, graveling, grading and paving.
- cable yarding using gravity systems or suspended lines and blocks, or other yarding systems where extra prevention measures will significantly reduce the risk of fire.
- power saws at loading sites or in felling and bucking where extra prevention measures will significantly reduce the risk of fire.
- maintenance of equipment (other than metal cutting and welding) or improvements such as structures, fences and powerlines.

Best Management Practices for Forest Operations Checklist

- Assure good communications are established with protection district.
- Keep all equipment clean of flammable material and debris.
- Utilize and keep in good working condition manufacturer recommended non-sparking clamping jaws on braking systems on carriages.
- Clean out spark arrester ports.
- Hydraulic and fuel lines are in good condition.
- Battery hold-downs are in good repair and positive terminal is insulated;
- Electrical wiring and circuit breakers are in good working order according to manufacturer specifications;
- Pumps and fire trucks are in good working condition;
- Line rub is eliminated;
- Where possible, and when not in use, park equipment overnight in location clear of flammable material.
- Monitor relative humidity hourly and consider shut down when relative humidity drops below 30 percent.

NOTE: The IFPL system does not apply on lands protected by ODF east of the summit of the Cascades.