Community Wildfire Hazard Risk Assessment Update
Goat Peak Ranch
South Cle Elum, WA

Prepared by
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Kittitas County Conservation District

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Introduction

The Firewise USA® program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following community wildfire hazard risk assessment update is intended as a resource to be used by Goat Peak Ranch residents for creating an updated wildfire protection plan. The plan developed from the information in this assessment should be implemented in a collaborative manner, and updated and modified as needed.

The Goat Peak community is located in a wildfire environment. Wildfires have and will happen, it's just a matter of when and where fire will occur--exclusion is not an option. This assessment addresses the wildfire-related characteristics of this community. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but examines the community as a whole.

Risk Assessment Process

This assessment was prepared by Firewise USA® Regional Coordinator
Wendy Mee, Kittitas County Conservation District (KCCD);
with contribution and consultation from *Phil Hess*, Forester.
Also, in coordination and consultation with:
Scott Chambers and *Jason Emsley*, Washington Department of Natural Resources SE Region Landowner Assistance Foresters;
Chief John Sinclair, Rick West and *Dave Ewing* of Fire District 7;
Darren Higashiyama, Kittitas Co. Sheriff Dept. Emergency Operations Commander;
and community members *Jeff Kluth* and *Ingrid Vimont*.

Definition of the Home Ignition Zone

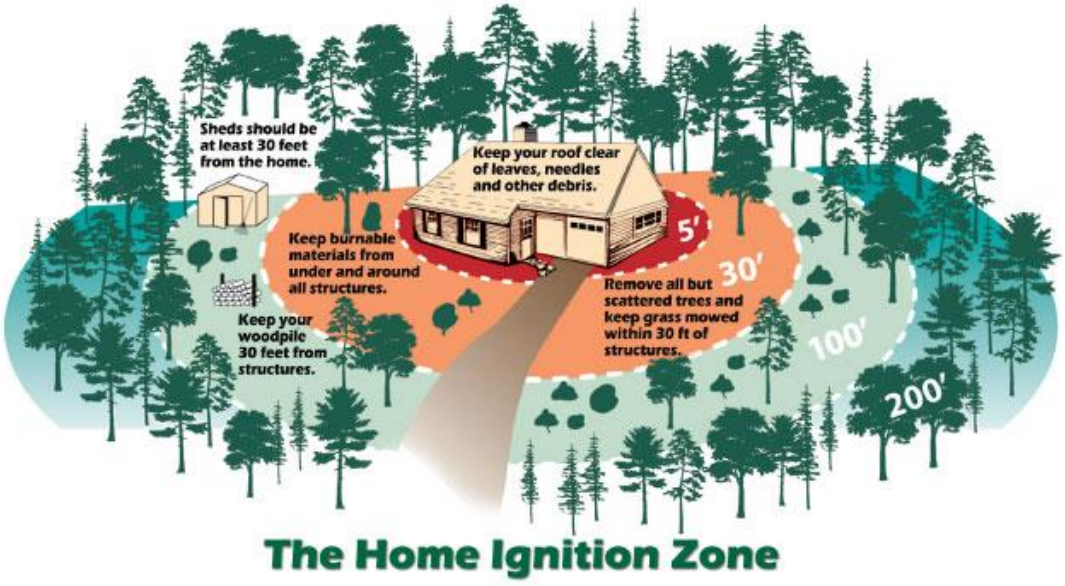

Figure 1: Home Ignition Zone Concept

A house burns because of its interrelationship with everything in its surrounding ignition zone----the house, associated structures and its immediate surroundings (within 100-200ft). To avoid a home/structure ignition, a property owner must minimize the wildfire's potential relationship with his/her house. This can be accomplished by interrupting the natural path a fire takes and limiting available fuel. Changing a fire's path by clearing a home ignition zone is a fairly easy-to-accomplish task that can result in avoiding home loss. To accomplish this, highly combustible materials/vegetation must be removed from the area immediately around structures to prevent ignition and flame contact. In addition, reducing the volume of live vegetation will affect the intensity of a wildfire should it enter the home ignition zone. The characteristics and interrelationships within this zone strongly determine the potential for home ignitions during wildland fire events.

Observations made while visiting Goat Peak, as well as information from the Kittitas County Community Fire Protection Plan (CWPP) are included in this assessment. Wildfire behavior will be strongly influenced by the residential characteristics of this community. By addressing community vulnerabilities, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort will reap great rewards in wildfire safety.

Site description/ Regional context

Goat Peak is located in Kittitas County, situated along the lower, north facing slope off South Cle Elum Ridge, southwest of I-90 exit #78 (figure 2). The general area is a popular recreation destination.

Access to the community is limited to Zrebiec Rd off Westside Road from either Golf Course Rd (exit 78) or Nelson Siding Rd to the north or South Cle Elum to the east. Multiple communities are dependent upon access to and from Westside road. All roads are limited in capacity.

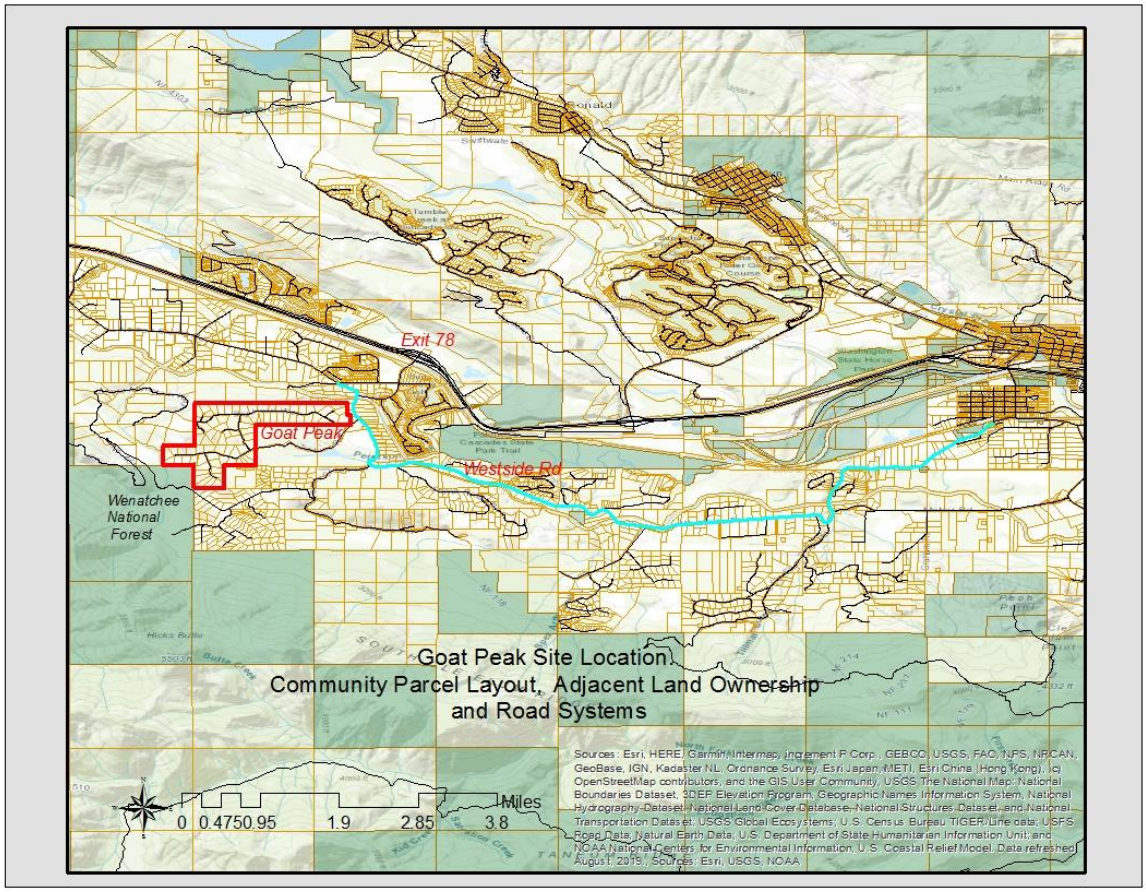

Figure 2: Landscape Character and Site Location, Community Layout, Adjacent Land Ownership patterns and Road Systems

This 87 parcel community currently has approximately 50 dwellings with half being year-round residents. Typical lot size is around 5 acres. All parcels within this community fall under the county's Wildland Urban Interface (WUI) Class 1 Ignition Resistant code 504.1 for new construction.

Much of the land to the west of the community is part of the Wenatchee National Forest and falls under US Forest Service management. Adjacent forested land parcels south of the community off of Zrebiec Rd are owned by the Manke Timber Co Inc. Forested parcels to the north are part of Camp Kionoia, owned and operated by Church of the Brethren. Other adjacent forested land parcels are privately owned by a variety of individuals and different companies. A power line right of way runs along the southwest community boundary (figure 3). Forest composition, conifer density, quantity and distribution of ladder and ground fuels have and will continue to strongly influence the risk of catastrophic canopy fires within the area.

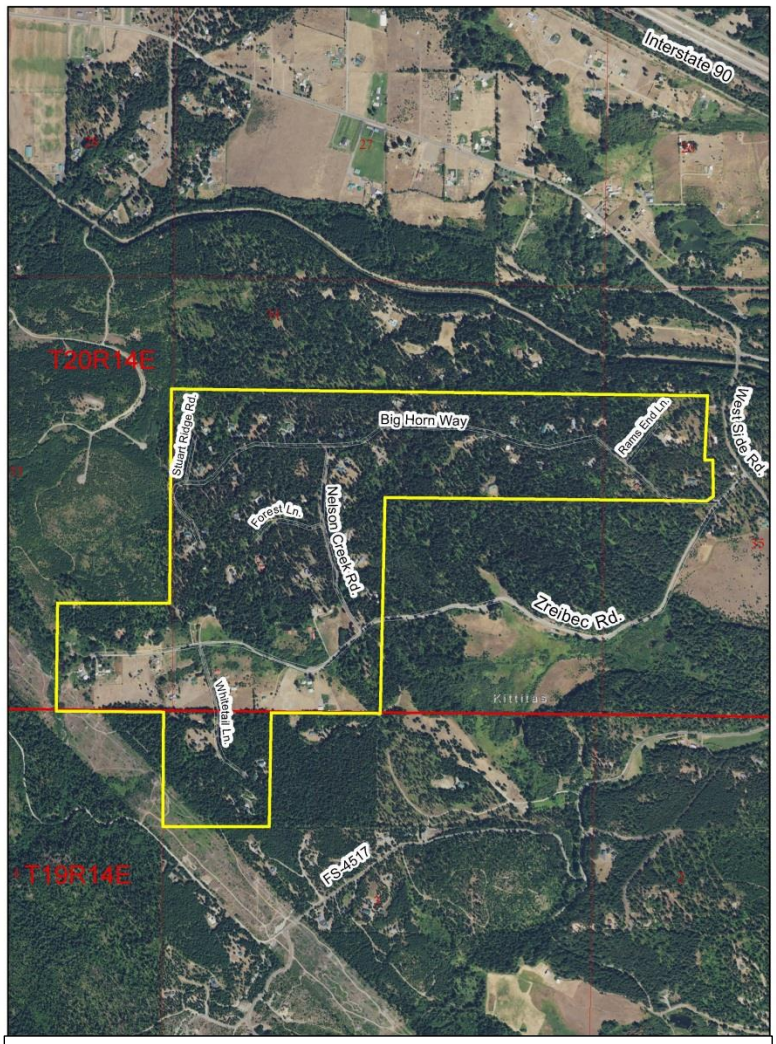

Figure 3: Community roads and Vegetation patterns

The community is situated on relatively low gradient slope, with those lots at the westerly end with the steepest gradients (figure 4). The Nelson Creek Drainage runs through the middle of the community which adds a riparian forest community component.

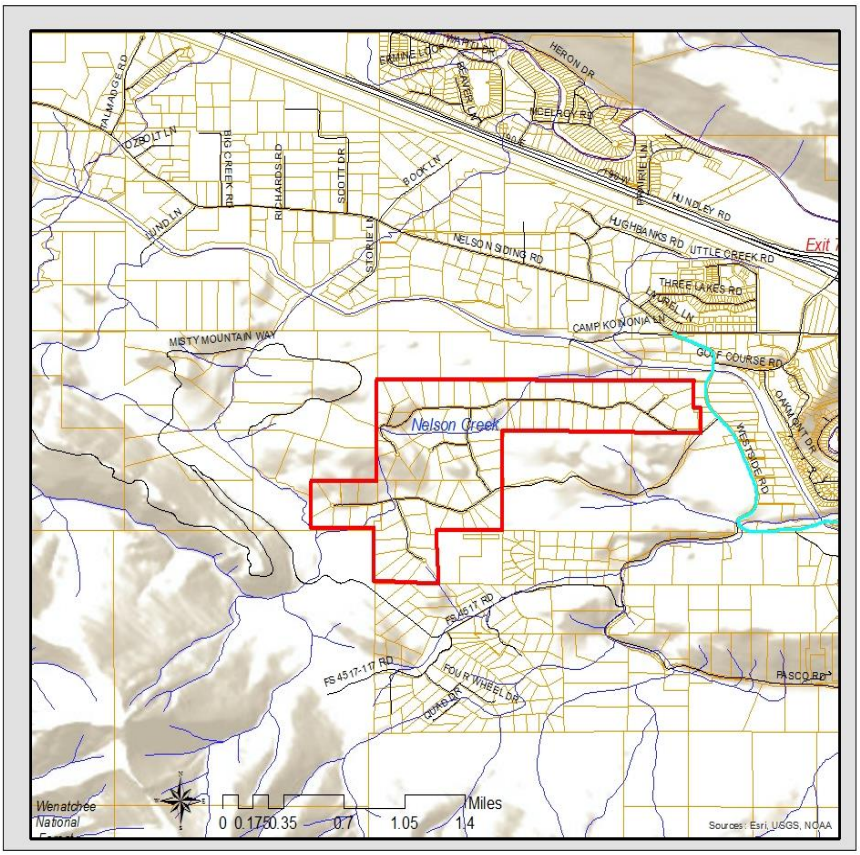

Figure 4: Community Topographic setting

This community is currently identified as a High Fire Hazard area for wildfire due to forest health/insects and disease, fuel loading, and the proximity to wildlands.

Fire History

Historically, fire played an important role shaping the composition and distribution of the drier eastern Cascade forest communities, with a fire interval of every 5-25years. These fires were typically lightening induced low intensity fires which thinned out young saplings and underbrush. This patchy fire pattern created a complex mosaic across the broader landscape, the community was resilient and diverse.

Land use and fire suppression in more current timeframes has also influenced the composition and distribution of the forest communities, with increased tree density, increased fuel loading, changes in tree composition towards less fire and drought

tolerant species and a much higher risk of large scale, high intensity fire scenarios. The forest has become stressed due to high density and limited resources; stressed forests become diseased forests as insect outbreaks increase, further increasing the amount of highly flammable material within the forest.

The role climate plays influencing both forest susceptibility to fire and fire behavior cannot be ignored. High temperatures coupled with low humidity during wildfire season dry fuel sources and allow fuels to ignite and burn faster. Drought cycles and conditions as experienced this past year must also be taken into consideration. Drought can further stress forest health resulting in drier vegetation which can ignite and burn more readily. The dry, windy weather of Kittitas County can cause wildfires to grow quickly and also carry firebrands as far as a mile or more. Winds can have the biggest influence on wildfire behavior.

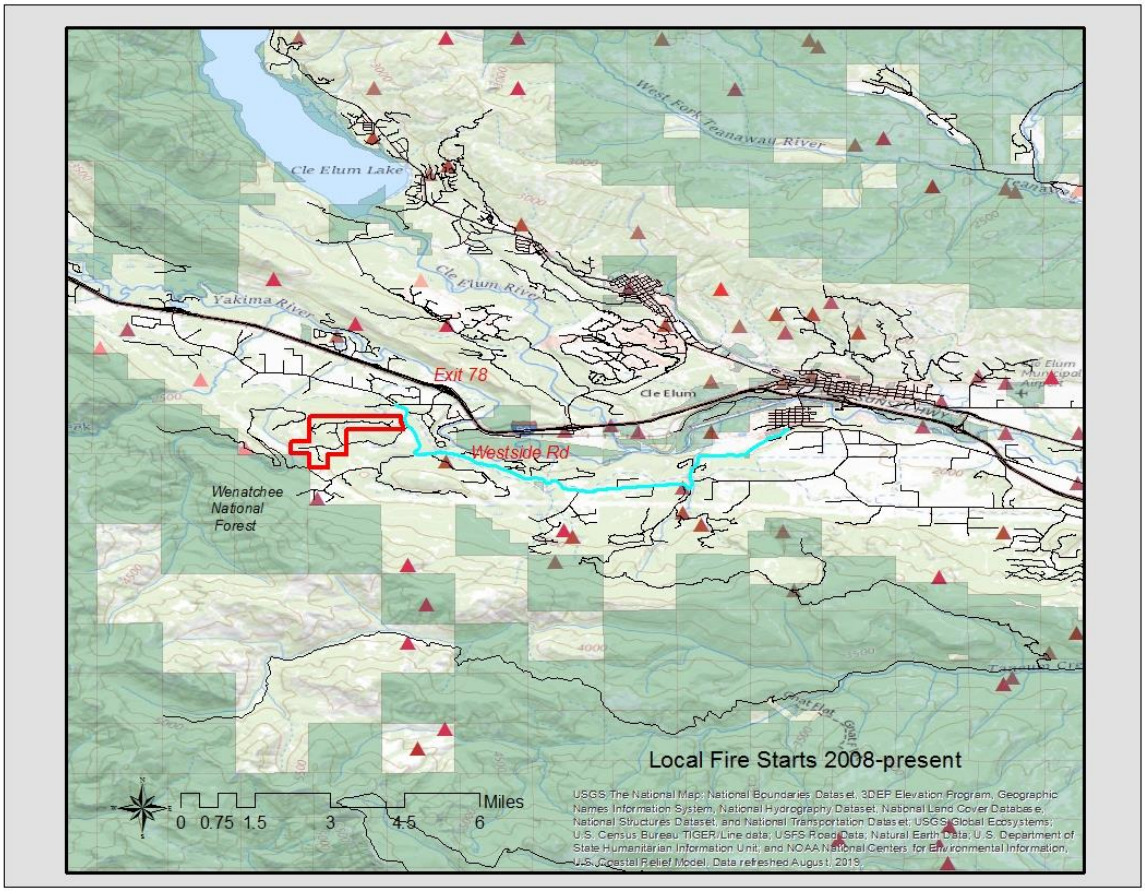

Figure 5: Fire Statistics in the surrounding area to date Based on data collected by the WA DNR

Forest Health

A number of insect pests and diseases have caused damage to the forested land in the upper county (figure 6). Populations of such insects as the spruce budworm, western pine beetle and mountain pine beetle tend to expand within stressed forest systems. The dead and dying trees caused either by these pests, or by other diseases, are of concern because of the added fuels they provide in the area. Insect surveys conducted by the WA DNR show the extent of various insect and other disease presences across the eastern Cascades. Attacks by these insects can leave large patches of dead trees that dry out and will more easily ignite. (See Appendix B)

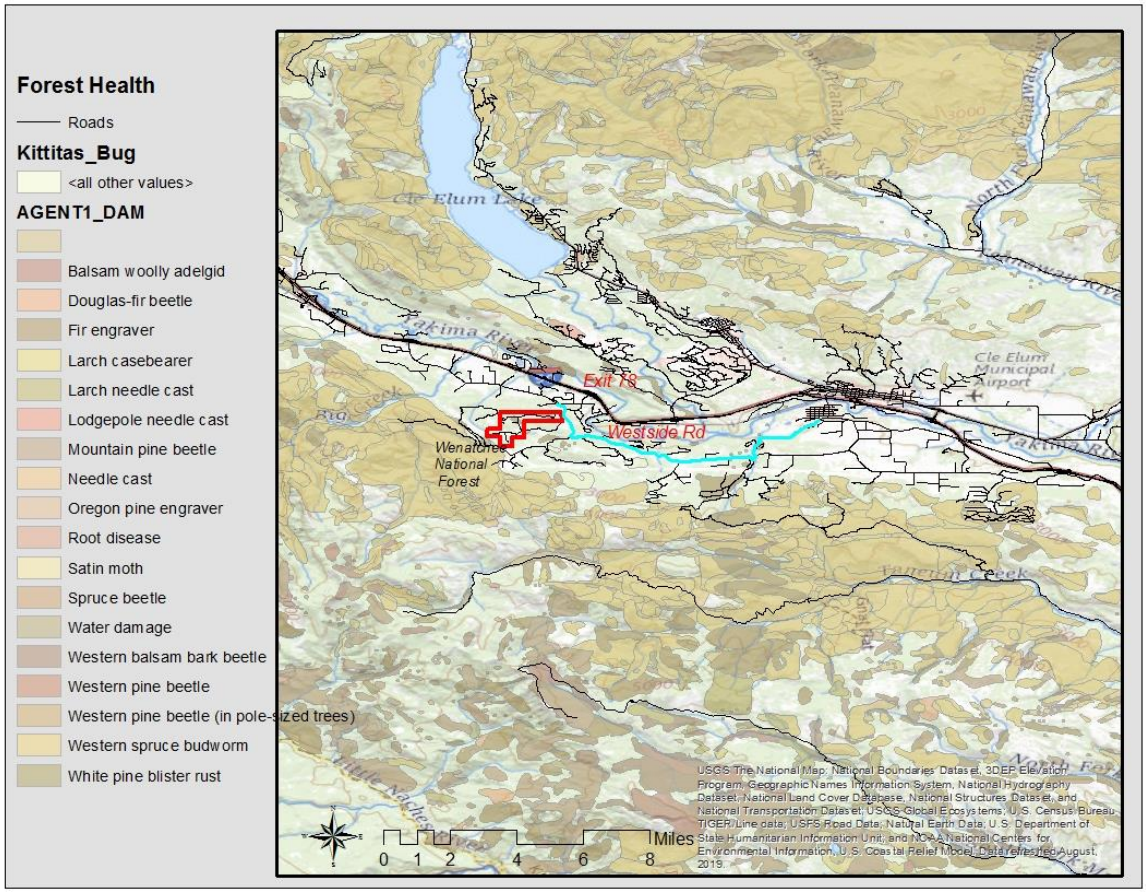

Figure 6: Forest Health Aerial Survey 1980-2017.

Fuel and Fire

Fire intensity and the rate a fire spreads depend on the type of fuel and the amount ready to burn at any given time of the year. Different fuel types burn at different rates; living fuels such as trees, brush and grasses burn slower than dead fuels. Weather conditions affect the moisture content of live and dead vegetation. Low relative humidity and higher temperatures will reduce the fuel moisture content, and produce higher fire spread rates and intensities. Wind speed significantly increases the rate of fire spread and fire intensity. The higher the wind speed the greater fire will spread.

Fine fuels such as grasses ignite more easily and spread faster than other types of fuels. They also burn out faster. There are no high intensity ember showers associated with grass fires. Shrubs and brush also burn fast, and depending on the amount of dead fuel present, and can create embers and result in spotting into the community.

When large trees, especially conifers, are present with grass and shrubs, there is a possibility for fire to travel from the fuels on the ground up into the treetops, especially on steep slopes with high wind speeds. Crown fires are of major concern since this type of fire produces vast quantities of fire embers. During a large fire, embers trapped on the roof and under the deck are a major cause of home loss.

Community Observations and Recommendations

The National Fire Protection Association (NFPA) Residential Wildfire Hazard Assessment Form (Appendix A) has been utilized as a template for this assessment. Hazard Ratings however have not been applied.

A. Means of Access

1. Ingress and Egress

Observations:

Access into the Goat Peak Ranch Community and ultimately exiting the community is confined solely to Zreibec Road which feeds south off of Westside Rd (figures 2 & 3). Both of these are county maintained roads. The road system established within the community provides access to the northern parcels via Big Horn Way off of Zreibec Rd. With the exception of Nelson Creek Road which connects Big Horn Way back onto Zreibec about a mile west of the initial junction, all roads end in a cul- de-sac.

Potential evacuation/emergency response activities could become bottlenecked at road junctions and cul- de- sacs unless well-orchestrated. Depending upon the urgency and onset of potential evacuation needs within the general area (figure 2), access onto and along Westside road could become problematic.

Recommendations:

Consider communicating with adjacent landowners and communities to explore the potential for developing alternative emergency ingress/egress connectivity (such as a connection to/from Fowler Creek).

Consider developing a communication network to help inform landowners of evacuation protocol as directed by the Kittitas County Sheriff Department.

Consider continuing to develop a community evacuation plan.

Consider developing an alternative "shelter in place" plan should exiting the area not be possible by vehicles (such as a wildfire coming from the east, southeast with strong winds making Westside road unavailable).

1. Road Widths

Observations:

Zreibec Road, a county maintained road, has an average width of 30' with turnouts and little vegetation encroachment. Width of the private roads within the community varies from 16-18'. It appears that some work has been done, especially along Big Horn Way to at least limit the vegetation encroachment.

Recommendations:

Narrow roads and sharp turns are very difficult for large Emergency/Fire vehicles to maneuver. Dense vegetation along roadways limits both visibility and accessibility. These conditions add to the difficulties of emergency/fire response in the community.

Consider updating existing private roads and driveways to meet county standards with allowances for larger turn radius and or pullouts to accommodate larger emergency/fire vehicles.
https://www.co.kittitas.wa.us/boc/countycode/title12.aspx

Consider a roadway visibility assessment to identify additional and continued vegetation management needs along road margins. It is recommended that brush be removed and trees limbed up to at least 15' for a minimum of 10' from the edge of the road. The installation of reflectors in some areas may also be beneficial during times of poor visibility due to fog, snow, rain or smoke.

2. All-Season Road Condition

Observations:

All roads with the Goat Peak Ranch community are paved. With the exception of a few, short runs, the roads have less than a five percent slope.

Recommendations:

Paved roads with less than 5% slope provide good emergency vehicle accessibility. Road width and turning radius are more of a concern. It is recommended that any future private roads are paved, <5% slope and at least 20' wide (meet county standards).

3. Fire Service Access

Observations:

Fire service accessibility evaluates driveway length, width, slope and turnaround ability. Current Fire Apparatus Access requirements specify a minimum width of 12' for driveways less than 150' and a minimum width of 16' for those longer than 150'. For roadways with a slope >12%, the width requirement increases by 50%. https://www.co.kittitas.wa.us/uploads/bocc/ordinances/2010-005-ordinance.pdf

A number of the homes in the community have short driveways and some turnaround potential for large fire service vehicles. Some properties however have long driveways and very limited turnaround capabilities, thereby limiting access by larger fire service vehicles. A couple of properties have fairly steep and long driveways which also is an impediment to the fire service's ability to defend the home from wildfire (figure 7).

Recommendations:

Long driveway length can be somewhat mitigated with vegetation treatment and development of adequate turnaround areas near the home. Dead-ending cul- de- sac style roads are the primary access concern (figures 2 & 3). Established homes are encouraged to meet current fire apparatus access criteria.

Figure 7: Long, narrow driveway impeding fire service access.

4. Street Signs

Observations:

Signs identifying Goat Peak Ranch are located at the intersection of Zreibec Rd and Big Horn Way, and where the county maintained portion of Zreibec Rd. ends. Street names are clearly signed with reflectorized signs, and most of the homes in the community have 4" reflectorized house numbers easily visible from the road. One home on Rams End Lane had a house number on the gate, but it was not reflectorized. About 7 other homes in the community had no signs for home numbers on the street.

Recommendations:

The community is not difficult to find for emergency vehicles since it is located off of a major county road. Interior road labels will assist emergency response vehicles once they arrive at the community. The number signs do assist in locating individual lots and are very helpful when present. Homes without numbers should install new 4"reflective numbers for better identification; contact Kittitas County Public Works 509-962-7523 if you need a reflective sign. Vegetation maintenance around these numbers should be kept up so that the signs remain visible.

B. Vegetation (Fuel Models)

1. Predominate Vegetation

Observations:

The natural vegetation in and around the community varies from warm mixed conifer stands that are very dense, to open grassy pastures on the south end of the community. A riparian forest composition intermingles with both the open pasturelands and conifer stands across the site.

To the west, previous logging activities has resulted in a reproduction stand of trees that looks to be about 30 years in age. Dwarf Mistletoe is present in some of trees. This increases the torching fire potential in infested trees. Bark beetle activity is present but not epidemic yet.

Crown fire potential is high within community as well as across the adjacent landscape as a result of the overstocked forest. Ladder fuels are significant across the landscape and within the community as well. Heavy brush and regeneration concentrations are the primary ladder fuel component. Crown fires not only greatly increase the heat of a fire, but can produce enormous amounts of firebrands or embers which can be transported long distances, quickly increasing and expanding the rate of wildfire spread.

A few of the properties have had fuels reduction work completed to thin trees, reduce ground fuels and reduce ladder fuels, with some properties have work planned.

See Appendix B: *Forest Health Management, Guidelines for Tree Spacing (beyond Defensible Space Zones)and Common Conifer Pests/Diseases*

Recommendations:

It is recommended that the forest be thinned to open up the forest canopy. This thinning should incorporate the removal of stressed and diseased trees.

Spacing should vary based upon location in relationship to homes or other structures (defensible space) and on the size and age of the trees. Follow County WUI code (section 603.2.2) defensible space tree spacing specifications.

Ladder fuels should also be managed by removing brush and smaller understory trees. Lifting the canopies by pruning lower branches of larger trees to at least 10 feet up the tree bole also helps reduce the potential for crown fire development.

The development of a maintenance program is also encouraged. The management of vegetation in relationship not only to fire potential but also to site accessibility will require continued effort. An annual community wide chipping event is one example of a potential firewise management activity to consider.

These actions will reduce the intensity of wildfires and significantly reduce the risk to the community. Grant assistance may be available and should be pursued. It is recommended that a professional forester assess the forest surrounding the community and write a management plan that identifies long term forest management objectives.

Explore potential working relationship with adjacent landowners/communities in regards to forest health, composition and density.

2. Defensible Space

Observations:

The term defensible space refers to that area between a house and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and allow fire fighters to safely operate. The Kittitas County WUI code requires a defensible space distance of 100' or to Property Line for all new construction. https://www.co.kittitas.wa.us/uploads/cds/fire-marshal/Bulletin-14-01-IR1.pdf

There are a few homes within the community that have already developed some defensible space, and the homes to the south that are not within the forested areas are inherently more defensible.

Defensible space can also be diminished by other fuel sources such a firewood piles, needle accumulations, railroad ties, landscape timbers and beauty bark.

Recommendations:

Increasing defensible space will lead to the most significant reduction in wildfire risk. Homes that increase their defensible space from less than 30 feet to more than 100 feet will reduce their risk greatly. Established homes are strongly encouraged to meet the minimum 100' defensible space distance.

To increase defensible space, residents need to reduce and disconnect the overall amount of fuel around the home including; small trees and brush, overhanging branches, wood piles, slash piles, pine needles piles, non-fire resistant trees, shrubs and landscape materials. Block and rock landscape materials can be highly effective. Residents need to keep remaining vegetation lean, clean and green with regular maintenance and watering in the summer months. Future plant material used in landscaping should be fire resistant. Residents should work together to improve

defensible space, since what is done on one property can affect the neighboring property.

The Firewise USA® program seeks to create a sustainable balance that will allow communities to live safely while maintaining environmental harmony in a wildland/urban interface setting. Homeowners already balance their decisions about fire protection measures against their desire for certain aesthetics associated with highly flammable components on their properties. It is important for them to understand the implications of the choices they are making. These choices directly relate to the fire resistance of their home ignition zones during a wildfire.

C. Topography

1. Slope

Observations:

The slope around Goat Peak Ranch varies from 0 to about 30 percent (figure 4). Given that fires can rapidly move upslope, homes which are located mid slope or near the hilltop are of highest concern. Homes at the base of slopes or on flat ground are less at risk.

Recommendations:

Slope is difficult to change. Homes that are currently in a poor location relative to slope should mitigate the wildfire risk by increasing defensible space distance downslope from the home. Future development should consider slope location prior to home placement. Avoid placing homes mid-slope or near hilltops.

D. Additional Factors

1. Topography That Adversely Affects Wildland Fire Behavior

Observations:

Overall, the development is located on a relatively flat aspect at the base of South Cle Elum Ridge, which has a north aspect. Northern aspects are typically cooler and wetter. However, wildfires burning on this ridge, with prevailing northwest winds, have the potential to send hot fire brands into the community igniting fires within Goat Peak Ranch. Homes on hill slopes and in draws are at more risk, as fire activity increases in these areas.

Recommendations:

Topography is difficult to change. Homes that are currently in a poor topographic location should mitigate the wildfire risk by increasing defensible space distance. Future expansion should consider topographic features.

2. Area With History of High Fire Occurrence

Observations:

According to DNR statistics there have been at least 10 fire starts in the area since 2008 (figure 5). Several fires have threatened the community in the past, including the South Cle Elum Ridge fire in 2014. Lightning, debris burning, and other human caused starts are the majority.

Recommendations:

Residents within Goat Peak Ranch can help prevent fire starts by being extra careful during fire season. Information on wildfire prevention can be passed along to community members at board meetings and through mailings from the homeowners association. Community members should follow forest protections rules and regulations.

Consider a community red flag warning system (such as having a flag) to signal times of severe fire danger.

3. Area of Unusually Severe Fire Weather and Wind

Observations:

Lightning storms are common in the area and have started fires in the past. The Kittitas valley is well known for strong winds that usually come from the west/northwest, and can drive fire behaviour. Cold fronts that bring strong and erratic winds are common in Eastern Washington.

Recommendation:

The weather cannot be controlled. Unfortunately, major catastrophic fires quickly overwhelm local fire resources. By increasing home survivability, property owners within the community won't have to depend upon these resources.

4. Separation of Adjacent Structures

Observations:

Lots in Goat Peak Ranch are typically around 5 acres which allows for separation from adjacent homes in most cases. There are numerous outbuildings, barns and other structures that, with a lack of defensible space, could ignite and threaten the home.

Recommendation:

Separation of structures is not a major concern due to the large lot size. Outbuildings that are close together require defensible space as well, to reduce the chances of igniting and threatening homes and fire service safety.

E. Building Construction

1. Roofing Assembly

Observations:

Roofing materials are mostly metal with a few composition shingles within this community. Concentrations of dead needles and leaves were noticed on some homes.

Recommendations:

Continue to use non-combustible roofing material. Residents should clean off the roof and gutters in the spring, and they should be maintained throughout the summer to reduce the chance of ignition from fire brands. Removing some of the overstocked trees can reduce the amount of needles and leaves that are cast onto homes and into yards.

2. Existing Building Construction

Materials
Observations:

Homes and outbuildings within Goat Peak Ranch have mostly wood siding materials. Decking materials identified within the community are wood and/or metal. Skirting of decks and screening of open vents and soffits was not noticed

during assessment, as some of the homes were not clearly visible from the assessor's vantage point.

Recommendations:

The building materials utilized within the community are generally fire resistant. Continued use of fire resistant materials is recommended. Avoid use of cedar siding materials. Enclosing openings under homes and decks will reduce the potential for firebrand ignitions. Screening off vents and other openings will prevent firebrands from entering the home. See current codes to consider adaptive measures for existing structures.

Individual home assessments are recommended to identify areas of concern and mitigation.

3. Setbacks from Slopes

Observations:

The homes that are located on slopes generally have less than thirty foot setbacks. Homes that are not adequately set back from slopes are subject to greater radiant, conductive and convective heating.

Recommendations:

The homes on the edge of the slopes have greater risk. Setbacks of 30 foot or greater are recommended for future home locations. If possible, increase setbacks for existing homes by re-contouring property in front of homes. An increase in defensible space distance down slope from the home will help mitigate the lack of set back and should be considered.

G. Available Fire Protection

1. Water Source Availability (On Site)

Observations:

No pressurized hydrants were identified during initial assessment. There are some irrigation hydrants on the individual properties, but availability for fire protection and gallons per minute is unknown.
At least one landowner has a pond that may be used for drafting and/or dipping site, but they are small and fed from a creek that has less flow during the summer months.

There is also an irrigation canal that can be used for a firefighting water source within about 0.5 miles from the community.

Recommendation:

Irrigation hydrants should be kept clear and visible and marked with water availability information if possible. Contact local fire district and have them assess pond for water source use and possibly construct a sign letting firefighting resources know that it can be used. Remember, a good water source doesn't guarantee homes will be safe from wildfire. Homes need to be fire resistant because fire protection resources may not be available.

2. Organized Response Resources

Observations:

Goat Peak Ranch is located within the protection boundary of Kittitas County Fire Protection District Seven. Fire District Seven, Station 73, is 3 miles from the farthest point in Goat Peak Ranch. The station does support a small permanent staff; however, the district is highly dependent upon volunteer firefighters. Although the station is closer than 5 miles to the community, the additional response times of volunteer firefighters reduces its effectiveness some.
Recommendation:

To improve fire district protection, it is recommended that the Goat Peak Ranch residents support future fire district actions that increase staffing ability.

It may not be possible for the county Sheriff Department to knock on every door in the event of an evacuation. An internal community notification system is worth consideration. During extreme fire hazard conditions, landowners should keep informed via the Sheriff and Fire Districts Facebook pages and or the radio.

3. Fixed Fire Protection

Observations:

Fixed fire protection that meets NFPA 13, 13R and 13D refers to exterior fire sprinklers systems for structural protection from wildfire. No homes within Goat Peak Ranch were identified as having an exterior sprinkler system for structural protection.

Recommendation:

Exterior sprinkler systems for structures may reduce the risk to homes that are composed of combustible roofing, combustible siding materials or have combustible debris on the roofs. The system must operate correctly to be effective. For example, the system must turn on automatically when a fire is approaching. This type of system is not necessary when homes are composed of fire resistant exterior building materials. Many of the homes within the community have fire resistant roofs and siding. This is the preferred option because sprinklers and hoses may reduce the capacity of the water system to provide water to firefighting resources.

G. Utilities (Gas and Electric)

Observations:

Electrical and communication lines within Goat Peak Ranch are underground. Liquid Propane Gas tanks are located adjacent to multiple structures in the community. In some instances there is no break between the forest fuels and the tank.

Recommendations:

Underground electrical lines reduce wildfire ignition potential immediately within the community. Electrical lines should be located underground with future development. LPG tanks should be located at least 30 feet from structures and have fuel breaks around the tanks to prevent direct flame contact during a wildfire.

Successful Firewise Modifications

When adequately prepared, a house can likely withstand a wildfire without the intervention of the fire service. Further, a house and its surrounding community can be both fire resistant and compatible with the area's ecosystem. The Firewise USA® program is designed to enable communities to achieve a high level of protection against wildland/urban interface fire loss even as a sustainable ecosystem balance is maintained.

Residents are reminded to be conscious of keeping high-intensity fire more than 100 feet from their homes. It is important for them to avoid fire contact with their structures. This includes firebrands. The assessment team recommends the establishment of Defensible Space zones across the properties: a 'fire free zone' not allowing any combustible materials within five feet of a house/structure; a firebreak zone (5-30') of limited, disconnected fuel and a reduced fuel zone (30-100+'). Homes situated on steep slopes should increase the width of these zones.

Remember that, while wildfire cannot be eliminated from a property, it can be reduced in intensity.

Weather is, of course, of great concern during wildfire season. At such time as fire weather is severe, homeowners should remember not to leave flammable items outside. This includes rattan doormats, cushioned patio furniture, firewood stacked next to the house, or other readily combustible materials.

Homeowners are reminded that street signs, addresses, road widths and fire hydrants do not keep a house from igniting. Proper attention to their home ignition zones does.

All homeowners are encouraged to seek individual assessments offered through the KCCD and DNR.

All homeowners are encouraged to sign up for the Kittitas County Emergency Alerts System (Everbridge.) https://member.everbridge.net/index/337829242601599 #KittitasCountyAlerts

All homeowners are encouraged to stay informed and follow directives as given by the Kittitas County Emergency Command found either on Kittitas County Sheriff Department website https://www.co.kittitas.wa.us/sheriff/, facebook page or on the radio.

All homeowners are encouraged to prepare an evacuation plan and be ready to go at any time.

Next steps

After reviewing the contents of this assessment and its recommendations, the Goat Peak Ranch Firewise Board in cooperation with the KCCD and Kittitas County Fire District 7 will determine whether or not it wishes to continue Firewise USA® recognition.

If the site assessment and recommendations are accepted and continued recognition will be sought, the Goat Peak Ranch Firewise Board will create agreed-upon, area-specific solutions to the recommendations and create an action plan in cooperation with the Kittitas County Fire District 7.

Assuming the assessment area seeks to continue National Firewise USA® recognition status, it will integrate the following standards into its plan of action:

- Sponsor a local board, task force, committee, commission or department that maintains the Firewise USA® program and status.

- Enlist a wildland/urban interface specialist to complete required risk assessments every 5 years.

- Using the risk assessment as a tool to determine risk reduction priorities within the defined site boundary, the board/committee must develop a multi-year action plan based on the risk assessment. Action plans are a prioritized list of risk reduction projects/investments, suggested homeowner actions, and education activities that participants strive to complete annually, or over multiple years.

- The Action Plans must be updated at a minimum of every three years.

- Invest a minimum of $25.43 per dwelling unit annually in wildfire risk reduction actions (based on the 2019 annual National Hourly Rate, updated annually in April of each year). Work done by municipal employees or volunteers, using municipal or other equipment, can be included, as can state/federal grants dedicated to that purpose.

- Hold a minimum of one wildfire risk reduction educational outreach event, or related activity annually.

- Submit an annual report to Firewise USA®. This report documents continuing participation in the program.

Appendix A

Wildland Fire Risk Assessment Form

(Circle the most appropriate element in each category and total the points)

Homeowner:_____ County:_____

Address:_____ City:_____ Zip:_____

Element	Assessed Points
A. Means of Access (County Rd/ Main Rd access)	
1. Ingress and egress	
a. Two or more roads in/out	0
b. One road in/out	7
2. Road width	
a. ≥ 24 ft.	0
b. 20 to 24 ft.	2
c. < 20 ft.	4
3. All-season road condition	
a. Surfaced road, grade < 5%	0
b. Surfaced road, grade > 5%	2
c. Non-surfaced road, grade < 5%	2
d. Non-surfaced road, grade > 5%	5
e. Other than all-season	7
4. Fire Service Access (Driveway)	
a. ≤ 300 ft. with turnaround	0
b. > 300 ft. with turnaround	2
c. < 300 ft. with no turnaround	4
d. ≥ 300 ft. with no turnaround	5
5. Street signs and home address numbers	
a. Present: 4 in. in size and reflectorized	0
b. Not present	5
B. Vegetation	
1. Characteristics of predominate vegetation within 300 ft.	
a. Light (grasses, forbs, sawgrasses and tundra)	5
b. Medium (light brush and small trees)	10
c. Heavy (dense brush, timber and hardwoods)	20
d. Slash (timber harvesting residue)	25
2. Defensible space	
a. More than 100 ft. of vegetation treatment from the structure(s)	0
b. 71 – 100 ft. of vegetation treatment from the structure(s)	3
c. 30 – 70 ft. of vegetation treatment from the structure(s)	10
d. <30 ft. of vegetation treatment from the structure(s)	25
C. Topography within 300 ft. of structure(s)	
1. Slope < 9%	1
2. Slope 10% to 20%	4
3. Slope 21% to 30%	7
4. Slope 31% to 40%	8
5. Slope > 41%	10

Hazard Rating	Total Points
1. Low hazard	< 40
2. Moderate hazard	40 - 69
3. High hazard	70 - 112
4. Extreme hazard	> 112

Source: NFPA 1144 Standard for the Protection of Life and Property from Wildfire, 2002 edition, NFPA, Quincy, MA

Element	Assessed Points
D. Additional Rating Factors (rate all that apply)	
1. Topographical features that adversely affect wildland fire behavior	0 1 2 3 4 5
2. Areas with a history of higher fire occurrence than surrounding areas due to special situations (e.g. Heavy lightning, railroads, escaped debris burning, malicious burning)	0 1 2 3 4 5
3. Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0 1 2 3 4 5
4. Separation of adjacent structures that may contribute to fire spread	0 1 2 3 4 5
E. Roofing Assembly	
1. Class A roof (rated in good condition)	0
2. Class B roof (rated in fair condition)	3
3. Class C roof (rated in poor condition)	15
4. Nonrated (wood shake shingles)	25
F. Building Construction	
1. Materials (predominate)	
a. Noncombustible/fire-resistive siding, eaves and decks	0
b. Noncombustible/fire-resistive siding, combustible deck	5
c. Combustible siding and deck	10
2. Building setback relative to slopes > 30%	
a. ≥ 30 ft. to slope	0
b. < 30 ft. to slope	5
G. Available Fire Protection	
1. Water source availability	
a. Pressurized water source availability	
(1) 500 gpm hydrants ≤ 1000 ft. apart	0
(2) 250 gpm hydrants ≤ 1000 ft. apart	1
b. Non-pressurized water source availability (off site)	
(1) ≥ 250 gpm continuous for 2 hours	3
(2) < 250 gpm continuous for 2 hours	5
c. Water unavailable	10
2. Organized response resources	
a. Station ≤ 5 mi. from structure	0
b. Station > 5 Mi. from structure	3
3. Fixed fire protection	
a. NFPA 13, 13R, 13D sprinkler system	0
b. None	5
H. Placement of Gas and Electric Utilities	
1. Both utilities underground	0
2. One underground and one aboveground	3
3. Both aboveground	5

Totals for Home or Subdivision
(Total of circled points) _____

Hazard Rating:_____

Raters:_____

Fire Department:_____

Date:_____

Appendix B

Forest Health Management

Management goals for the many forest land communities in upper Kittitas County revolve around both ecological function and aesthetic attributes:

- Creating and maintaining stands of **healthy trees**
- Creating and maintaining wildlife habitat features and value
- Creating and maintaining visual screening/ privacy ambience

Healthy forests are resilient to insects & disease and to disturbances such as wildfire. Healthy forests require **Active Management**, especially human-populated forests.

Increased tree density causes increased competition for limited resources (water, nutrients and even sunlight), which in turn stresses the system, resulting in less vigorous trees. Reduced vigor increases a forests susceptibility to disease and insect attack. Ultimately, mortality rates increase, fuel accumulation increases and the stage is set for highly destructive wildfire scenarios.

While Natures' primary management tool is fire, the intensity and proximity of wildland fire in relationship to community structures and other assets can be strongly influenced by on-going active management of the forest.

Visual Indicators of early signs of stress: Poorly formed, transparent crowns

Full crowns/ healthy

Weak crowns/unhealthy

Corrective measures to promote high vigor within the forest are ideally undertaken 20 years ahead of when trees begin to lose vigor. Assessing tree vigor is accomplished by observing annual growth rings per inch (RPI). Trees with an RPI over 10 indicate stress and the potential for lost vigor within 20 years.

Adjust Tree Density and Species Composition

With a management plan,
thinning can be accomplished on a lot by lot basis while at the same time maintaining visual screening (between lots and roads) and wildlife habitat features.

Goat Peak Ranch Guidelines for Tree Spacing (outside of the ≥100' Defensible Space Zone as directed by county code)

- In general, tree stocking on GPR should be in the range of 50 to 100 TPA (trees per acre). This translates to 20' to 30' between trees depending on the size of the trees. Larger trees require more space between trees.

- However, leaving clumps of 2-4-6 trees then an opening is preferred over a mechanical spacing.

- There is no "cook book" or "one-size-fits-all" prescription – because much depends on species mix, root disease, and human caused root disturbance in the tree protection zone.

- "Leave" tree selection is based on the most vigorous looking trees (look at crowns) and those species most resilient to pest complexes and fire.

- Think: Pines, Western larch, Douglas fir, Cedar, Grand fir, Spruce and Hemlock in that order. (preferred species is relation to fire resistance and drought tolerance; however, watch for symptoms of disease/pests in all species)

Operational Notes:

- If you own 3 acres or more a Forest Practices Application (FPA) may be required. https://www.dnr.wa.gov/programs-and-services/forest-practices/review-applications-fpars/forest-practices-forms-and
- Select an experienced contractor – check references.
- Dispose of non-marketable cut material by chipping or mastication.
- Grant Cost-Share funding may be available for fuels reduction, contact Landowner Assistance Foresters, Department of Natural Resources, Southeast Region.

Common Conifer Pests/Diseases

Dwarf Mistletoe

Dwarf mistletoe is a species specific parasitic plant genus which attacks a number of conifer species; Douglas fir, Ponderosa pine, lodgepole pine, western larch and western hemlock. The parasitic infection retards tree growth and directly or indirectly increases mortality rate. The "witches'" brooms are highly flammable and can easily transport fire up into the crowns. Removal of infested branches or trees is recommended to limit spread.

Western and Mountain Pine Beetle

Western Pine beetle infests the boles (trunks) of (>6'dbh) mature and second growth Ponderosa. Mountain pine beetle will also infest other pines. Fading foliage is symptomatic of a beetle attack. Management involves reducing forest density and removal of infected trees, with care to manage slash in relation to beetle emergence.


Western Spruce Budworm

The Western spruce budworm larvae feed on buds and current years' foliage of Douglas fir, true firs and spruce. The feeding causes defoliation, moving from the top of the tree down. Ongoing management of species composition and density is recommended to limit infestations.



Root Diseases

The fungal pathogens *Armillaria species* and *Phytopthora species* cause root rot on different conifer species: mainly Douglas fir, true firs(Grand fir), pines and hemlock species. Symptoms can include thin, yellowish foliage, abundant resin flow and basal leakage. Many infected trees die standing. Forest management efforts to reduce stress, thinning to limit root to root contact and favor more resistant species are some recommendations to curb infestations.