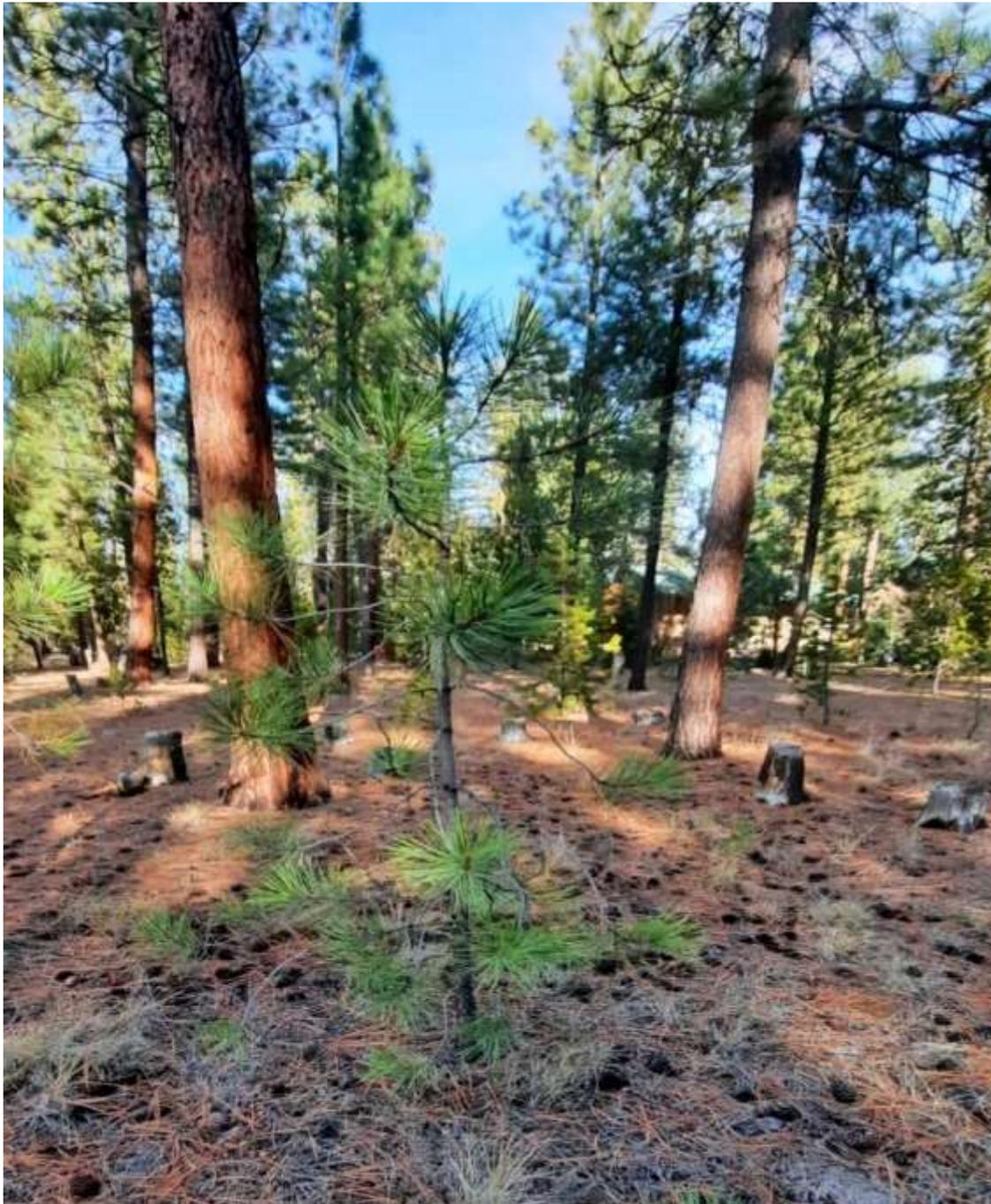


COMMON AREA REVIEW

A Firewise Review of Wild River Homeowner's Association Common Areas



Jim Stone, Retired Silviculturist, February 17, 2022

TABLE OF CONTENTS

PROJECT OVERVIEW 1

INTRODUCTION 1

FORESTS & FIRE..... 2

FOREST VEGETATION, FIRE DYNAMICS, AND HOMES – A PRIMER 2

Forest Vegetation 2

Fire Dynamics 2

Homes 4

OBSERVATIONS & NOTES..... 5

RESULTS OF COMMON AREA RECONNAISSANCE 5

Overview 5

RECON NOTES 8

PHOTOS 15

GLOSSARY OF FORESTRY TERMS..... 18

Definitions of terms used in this document.18

REFERENCES 22

ADDITIONAL RESOURCES 22

PROJECT OVERVIEW

INTRODUCTION

The Wild River Homeowner's Association (WRHA), through Ken Kennedy, Firewise Coordinator, was seeking a review of the subdivision's common areas to determine any needed actions to ensure they meet Firewise recommendations. Identification and marking of any trees to remove was also desired.

Ken reached out to me and asked if I had the skills to address the need and, if so, to submit a proposal. The proposal was submitted on November 14th, 2021 and approval to proceed granted November 22nd.

I retired from the US Forest Service in 2007 after a career that spanned 37 years. The last 18 years of my career I served as a certified Silviculturist with most of that time on the Crescent Ranger District of the Deschutes National Forest. My incidental duties, since 1970, have included firefighting responsibilities beginning as a firefighter on the ground, then working my way into my current qualifications as a Planning Section Chief on a Type 2 Incident Management Team, something I have continued to perform even after my retirement. Many of my fire assignments have included wildland fires threatening adjacent homes and subdivisions. This is referred to as wildland-urban interface, or WUI.

For this project, I reviewed the common areas on November 30th and December 2nd in coordination with Vaughn Pieschl who requested I notify him of when I would be there. The weather during my reconnaissance of the area was dry and unseasonably warm with no snow on the ground.

I have cited some resources, but most of this informal document is simply my perspective based on my training and experience. In addition to the Firewise web site, I have listed some references at the end of this document that can provide additional information and perspective on the WUI problems and challenges.

FORESTS & FIRE

FOREST VEGETATION, FIRE DYNAMICS, AND HOMES – A PRIMER

FOREST VEGETATION

Forest vegetation is often pleasing to the eye. It provides food, shelter, and water for man and animals. Many people enjoy living in a forested environment, but it can come with some situations that are quite dangerous and harmful to humans and their homes.

Wild River Subdivision is in a Ponderosa pine and Lodgepole pine ecosystem usually characterized by an overstory of larger, older (200+ years) Ponderosa pine, with younger Ponderosa and Lodgepole pines in the middle and understories. Bitterbrush is common in the area, with greenleaf manzanita found in scattered areas. Idaho fescue, a bunch grass, is also common in some areas. Spotted knapweed, an invasive species, is invading significantly along the river and in some of the disturbed areas as indicated in my notes.

FIRE DYNAMICS

Fires played a role in the forest in this area long before the introduction of European man (Agee 1993). Prior to settlement of the area, fires were frequent, every 5 – 15 years or so, and of low intensity; they rarely killed large portions of the overstory. By preventing and suppressing fires for the last 100 years, man has effectively allowed the development of ladder fuel conditions that easily allow a new fire start to become a stand replacement fire. These problem fires are difficult and expensive to suppress, especially with any significant winds pushing them. Even a casual review of fire events shows that fires in recent years have proven to be more challenging to suppress, especially during our recent droughty period.

The natural fires and the Native American applied fires were done every few years to promote access and the ability to hunt and forage in these forests. Resulting stands



ALL COURTESY OF THE U.S. FOREST SERVICE

This historical photo series shows how an initially open forest (with management activity) dominated by ponderosa pine (*Pinus ponderosa*) has become increasingly vegetated by predominantly Douglas-fir (*Pseudotsuga menziesii*). Historically, such a site had a fire every decade or so that maintained ponderosa pine in an open condition. For more on changes in the ponderosa pine ecosystem, see "Giant Pines and Grassy Glades: The Historic Ponderosa Pine" in *Forest History Today Spring 2008*.

Figure 1

usually consisted of open canopies (where trees are usually spaced apart from one another) with widely scattered middle and understory trees included. Brush was usually scattered if present at all. Ground cover of herbs and grasses might be common if comprised of fire-resilient species. Figure 1 (Cohen 2001) shows this quite well. I have seen similar images from the Brooks-Scanlon stands around Bend, near Lava Butte.

You may notice that the 1989 image in Figure 1 looks familiar. We have many stands like that around Central Oregon. As a silviculturist, I have concerns with stands like that for two basic reasons:

1. *The density of the stand is very conducive to insect and disease infestations.*
2. *Fire effects in stands like these are generally severe, killing most or all trees in the stand because of the ladder fuel effects. A wind driven fire in stands like that can easily cause severe damage to developed areas like subdivisions because of the intensity of the fire and the difficulty to suppress the fire.*

I mention these things because one of the most important parts of keeping Wild River protected from fire is the context in which the subdivision lies. It is surrounded mostly by National Forest lands. The impacts of a wildfire on the subdivision depends a lot on the surrounding forests, on the weather conditions at the time of a wildfire, and on the firefighting resources available at the time of the fire.

In my opinion, in addition to meeting the Firewise recommendations, one of the best things you can do as a community is to do all you can to work with the Deschutes National Forest to keep conditions in the National Forest lands optimal for minimizing impacts to your community. My reconnaissance notes have some specific comments in this regard.

HOMES

One of the keys to keeping your house safe in the event of a wildfire is to follow the Firewise recommendations on what is next to your house, building materials, and what is near your house. One of our fire crews probably saved a house in Utah by simply removing the firewood that was stacked under the porch and restacking it a few yards away from the house. Combustible material right against your house is an opportunity for an ember or a fire whirl to ignite that material which could then ignite your house.

What your house is made of is also a key factor. Wooden shingles are usually prime for embers to start a roof on fire. Untreated wooden decks can also be a receptive medium for fires. A doghouse, boat, playhouse, wooden fence, or other fire receptive items should be kept a safe distance from the house as well.

Even with all else done to recommendations, a fire in very extreme burning conditions pushed by extreme winds might still impact at least some houses in a situation like yours. I noticed this in the Detroit area on Highway 22 in 2020. The extreme winds seemed to randomly cause houses all by themselves and surrounded by green lawns to burn to the ground, while others were still standing even with trees and vegetation right next to the house. An additional fact to consider is when burning conditions are extreme and many fires are going in the nation, there may be minimal or no firefighting resources available or delayed in arriving. I encourage you to do what you can to provide the best chance of your house remaining intact in the event of a wildfire.

OBSERVATIONS & NOTES

RESULTS OF COMMON AREA RECONNAISSANCE

OVERVIEW

I received a map of the common areas from Ken Kennedy. The resolution of the map was quite small, and I wasn't sure what the designation was for each of the common areas. Figure 2 shows the designations I used to label each of the common areas and my notes are tied to those designations.

My recon efforts were quite quick, so I had little interaction with residents, but some did ask what I was doing and provided comments about my tasks. They are summarized in three points:

- 1. Don't remove any trees on the edge of the bank (to the river) as that might cause the bank to be unstable.*
- 2. It would be nice for the common areas to provide a visual screening effect from adjacent homes like they used to. (I might add that in most situations, effective screening would not meet Firewise guidance except maybe for trees 8' to 15' tall.)*
- 3. Do what's necessary to keep hazardous trees from hitting my home.*

Some items in common in all areas include:

- Review them every 5-10 years (more often if needed) to identify hazardous trees which could damage homes and other structures.*
- Monitor every 1-3 years for insect and/or disease infestations.*
- The National Forest lands north of Wild River is PP overstory with LP and PP understory. There is heavy lichen in the denser understory trees which make for prime ladder fuels. There is also a lot of needle cast in the areas of heavy bitterbrush; highly volatile fuel condition.*

- *The National Forest lands west of Wild River are open stands, but the regen and bitterbrush is coming in strong. It would be good if it could be pre-commercially thinned and reduce the brush in 10-15 years.*
- *The National Forest lands east of Wild River are fairly open and the only real concern is the amount of bitterbrush near the subdivision.*
- *Blue flagged trees should be removed with the next cycle of treatment in the area.*
- *Red flagged trees should be removed as soon as practical. Reasons are noted with the notes specific to each common area with red flagged trees.*
- *Raking or removing of needles and cones should be done with every entry, or three years, where they tend to build up, especially within 100' of structures.*
- *The overstory density is a bit high in some areas. The concern is this makes the trees more susceptible to insect and disease infestations, especially if the drought continues. Further measurements would need to be done to effectively determine where this would be effective.*

Outside of common areas, several trees should be considered for removal on the lots. These trees have the potential to cause some serious damage or harm individuals in some of the homes. I have observed that almost any tree can come down with the right wind situation, so I would encourage diligence in watching for hazardous trees among the houses.

- Areas to be maintained yearly - June & July
- Areas to be maintained tri annually - 2019/2022/2025 - Common Lot G - BID
- Areas to be maintained tri annually - 2018/2021/2024
- Areas to be maintained tri annually – 2017/2020/2023 - Common Lot N - BID
- Areas to be maintained tri annually – Common Lot O & E South - BID
- Area to be bided - Common Lot E North

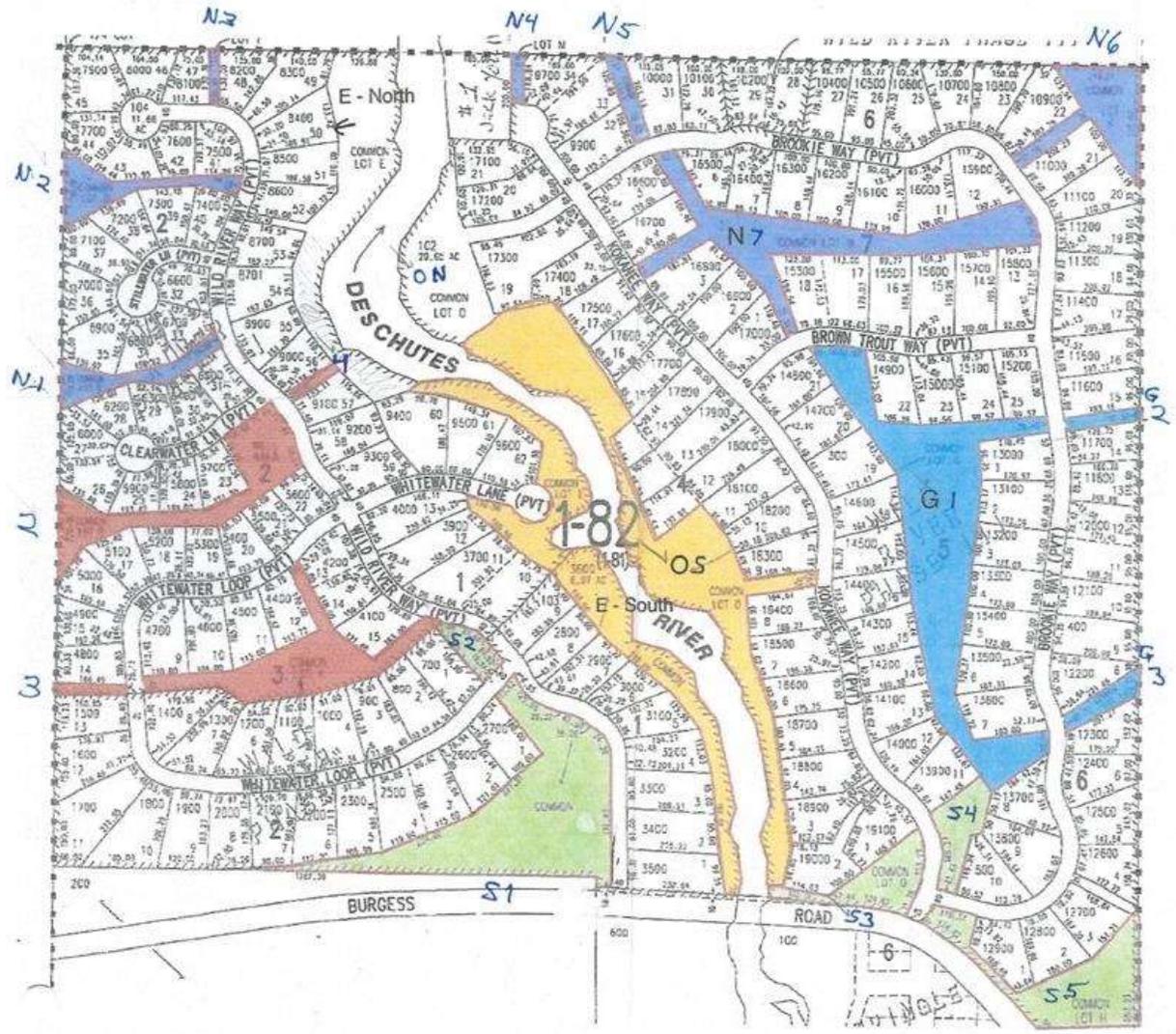


Figure 2 – Map used to identify Common Areas

RECON NOTES

<p>COMMON AREA</p>	<p>RECON NOTES</p>
<p>E – North</p>	<ul style="list-style-type: none"> • <i>Generally, a healthy stand of mostly ponderosa pine (PP).</i> • <i>Estimated that stocking level is high – could use some thinning, but access to the area is very limited.</i> • <i>Contains isolated forked and damaged trees and some trees that lean significantly (leaners).</i> • <i>Lodgepole pine (LP) more common by the river.</i> • <i>One western white pine seedling (WP) noted on very northwest end.</i> • <i>Averages about a 45% slope.</i> • <i>The occasional old and a few new logs on the site are good for the soil. Getting many more would not be worth the fire suppression risk.</i> • <i>The south end has some knapweed, especially below lots 53 and 54. It's also scattered near several houses.</i> • <i>In the future (10-20 years or so) the area below lots 49-52 could be thinned to prevent bark beetle infestations, especially western pine beetle. I would remove 1/3 to 1/2 of the trees and leave all trees within 50' of the river to retain soil stability of the riverbank.</i> • <i>Two trees should be removed with the next activity in the area.</i> <ul style="list-style-type: none"> ○ <i>Tree numbered EN 1, PP, blue flagging, 12" dbh, the crook in the tree is a weak spot and it could hit the nearby house/deck.</i> ○ <i>Tree numbered EN 2, LP, blue flagging, 10" dbh, near lot 55 – it has a large gall at the base that is a weak spot and the tree could hit the house. Before falling this tree, remove the woodpecker silhouette. NOTE: This may be on lot 55 and not in the common area.</i>
<p>N3</p>	<ul style="list-style-type: none"> • <i>No concerns observed at this time.</i> • <i>Removal of LP to favor nearby smaller PP could be considered, but not needed right away. I would suggest in 10-15 years.</i>

COMMON AREA	RECON NOTES
N2	<ul style="list-style-type: none"> • <i>There is quite a bit of regen several years old that is not growing well. There is enough overstory in this area to restrict growth of PP regen, but LP regen will probably do fine.</i> • <i>Moderately dense overstory.</i> • <i>The portion next to lots 39-42 has a dense enough overstory that regen won't grow well, will have sparse foliage, and won't be useful to provide visual screening between lots.</i> • <i>If it is desirable to thin the overstory a bit, the first entry would be to remove all but 2 or 3 LP overstory trees plus the LP regen and saplings.</i> • <i>Very light presence of bitterbrush in this area. Not a Firewise problem.</i>
N1	<ul style="list-style-type: none"> • <i>Thick regen in many portions, especially the west end.</i> • <i>Recommend pre-commercial thinning in 10 – 15 years favoring the retention of PP and the larger healthy trees. Remove all western gall rust infected trees of LP or PP.</i> • <i>Decide on the importance of visual screening.</i> • <i>This area is not very Firewise in its present condition, mostly due to the density of the smaller trees.</i>
4	<ul style="list-style-type: none"> • <i>There are a couple of small LP to remove right at the street end of the common area:</i> <ul style="list-style-type: none"> ○ <i>Tree # 4-1, LP, 6" dbh, the tree is unhealthy and shading out the ornamental bush planted there.</i> ○ <i>Tree # 4-2, LP, 4" dbh, tree is dying.</i> • <i>This area has mixed sizes of PP and LP.</i> • <i>Some aspens in the understory on the northeast end.</i> • <i>A very healthy PP about 30' from the road is forked and could split or break with a heavy snow load and could damage adjacent vehicles or structures.</i>

COMMON AREA	RECON NOTES
E South	<ul style="list-style-type: none"> • <i>There is a 20" dbh PP with 3 tops that is a potential hazard for the house on lot 62. Not flagged at this time.</i> • <i>Brush, trees, and the rock riverbed all contribute to a stable riverbank currently.</i> • <i>Very light regeneration in the area – mostly LP.</i> • <i>The northwest end has a bit more regen.</i> • <i>Occasional dead LP that are less than 8" dbh.</i> • <i>Pockets of bitterbrush of no concern.</i> • <i>PP and LP where there is overstory.</i> • <i>Fairly open area with bunchgrass, regen patches, and scattered brush species.</i> • <i>A couple of golden chinquapin bushes noted.</i> • <i>Evidence of beaver activity on brush near lot 3 and south to the highway.</i> • <i>No treatment recommendations currently.</i>
S1	<ul style="list-style-type: none"> • <i>Open stand of PP overstory.</i> • <i>ATV trail roughly parallels Burgess Road.</i> • <i>Very little regen.</i> • <i>Remove dead LP on north end near the street junction: <ul style="list-style-type: none"> ○ <i>Tree # S1 – 1, red flagging, LP, 18" dbh, remove because it is dead and close to the house on Lot #1. There is a nail in a scar. Not sure of cause of death.</i> </i>
S2	<ul style="list-style-type: none"> • <i>Open overstory of PP and LP.</i> • <i>Midstory of PP and LP is moderately dense.</i> • <i>PP and LP regen is common.</i> • <i>Should plan to remove undesirable trees, mostly LP, sometime in the next 10 years.</i> • <i>No real concerns currently.</i>
3	<ul style="list-style-type: none"> • <i>Somewhat open stand of PP overstory and mid story.</i> • <i>A few PP and LP saplings and poles (trees 3"-6" dbh).</i>

COMMON AREA	RECON NOTES
	<ul style="list-style-type: none"> • <i>There is a large PP (24" dbh or larger) with strong sweep out away from structures. It could fall with the right winds or heavy snow load.</i> • <i>Scattered logs in common areas are good for the soil.</i> • <i>The west end of this area is fairly dense.</i> • <i>Two trees were marked to remove with blue flagging: <ul style="list-style-type: none"> ○ <i>Tree # 3-1, LP, 6" dbh, it is dead and can damage fence on Lot #8.</i> ○ <i>Tree # 3-2, PP, 22" dbh, it is weak at the fork and considered a hazard to Lot #8.</i> </i>
2	<ul style="list-style-type: none"> • <i>Scattered PP overstory.</i> • <i>Western gall rust is common in sapling PP, especially on the west end.</i> • <i>Scattered Greenleaf manzanita, especially by the water tank. It is not a fire issue.</i> • <i>No real concerns in this area currently.</i>
N5	<ul style="list-style-type: none"> • <i>Scattered PP overstory with LP intermediates and saplings.</i> • <i>There are 3-5 undesirable LP that could be removed with next entry.</i> • <i>This area is ready for some ground cleanup of needles and cones.</i> • <i>Some squirrel or porcupine damage to the stems of some of the LP. Would expect the portions of those crowns above the damage to die within a few years.</i>
N4	<ul style="list-style-type: none"> • <i>Greenleaf manzanita in open PP overstory.</i> • <i>No issues at this time.</i>
ON	<ul style="list-style-type: none"> • <i>Open area along river with widely scattered trees.</i> • <i>Greenleaf manzanita and lots of spotted knapweed.</i> • <i>Scattered LP and PP regen.</i> • <i>No issues other than eliminating the spotted knapweed.</i>

COMMON AREA	RECON NOTES
OS	<ul style="list-style-type: none"> • <i>I reconned this from the north end; notes change accordingly.</i> • <i>Snowbrush ceanothus noted with Greenleaf manzanita and snowberry.</i> • <i>Scattered small PP overstory with isolated large PP.</i> • <i>Occasional PP saplings.</i> • <i>Spotted knapweed is common in the open areas.</i> • <i>One LP of about 10" dbh was knocked down, but still growing as the top was turning upward. It could be on Lot #12.</i> • <i>I noted some trees that may need removal, but they could be on Lot #8 about 10' off of the turn around.</i> • <i>Next to Lot #7 is a 10" dbh LP that is leaning heavily. If it is removed, leave the stump for riverbank stabilization purposes.</i> • <i>The split tree photo is near Lot #4, or perhaps #3. It is an example of how forked trees can be a hazard in this area.</i> • <i>There is some scattered bitterbrush in this area.</i> • <i>No serious or urgent issues currently.</i>
S3	<ul style="list-style-type: none"> • <i>Scattered PP and LP overstory.</i> • <i>Greenleaf manzanita, bunchgrass, scattered bitterbrush and snowbrush ceanothus on this area.</i> • <i>Some planted ornamentals.</i> • <i>No issues noted.</i>
S4	<ul style="list-style-type: none"> • <i>Scattered PP overstory that gets more dense towards the southern end.</i> • <i>Bitterbrush is increasing.</i> • <i>Greenleaf and scattered PP regen, some of which has potential to grow.</i> • <i>Pinedrops were observed – evidence of good soil microbes.</i> • <i>No issues noted.</i>
S5	<ul style="list-style-type: none"> • <i>Ornamentals planted near the entry to the subdivision.</i> • <i>PP overstory is more dense than most areas.</i> • <i>Greenleaf manzanita, snowbrush ceanothus and bunch grasses as ground cover.</i>

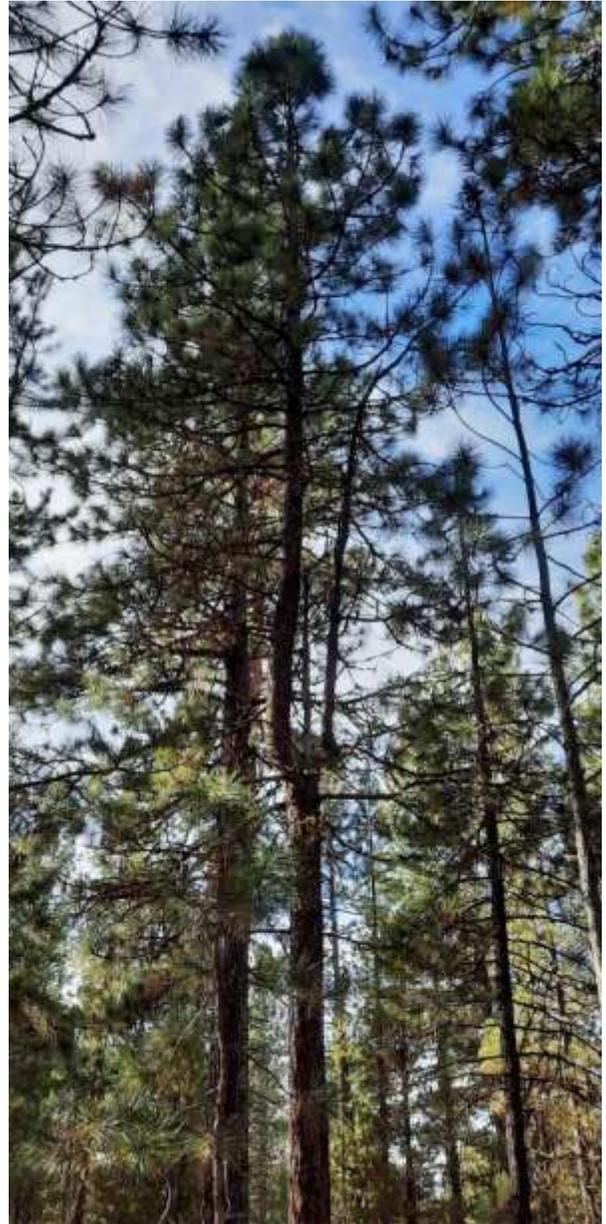
COMMON AREA	RECON NOTES
	<ul style="list-style-type: none"> • Scattered intermediate LP are dying. • Squirrel or porcupine activity in LP. • Very light LP dwarf-mistletoe. • Large PP with two large brooms down low. Dwarf-mistletoe not evident or active. • No issues currently noted. • One tree to remove flagged with blue flagging: <ul style="list-style-type: none"> ○ Tree #S5-1, 13" dbh, LP, dying from western gall rust along the highway.
G3	<ul style="list-style-type: none"> • Along the powerline right-of-way. • PP with some LP in the overstory. • Bitterbrush coming back in. Greenleaf manzanita also present. • One large PP with crook in the stem is healthy looking, but the crook may be a weak spot susceptible to damage from strong winds. • No issues currently noted.
G1	<ul style="list-style-type: none"> • PP overstory with scattered LP regen. • Greenleaf manzanita with scattered bitterbrush. • Ready for needle and cone removal. • LP with sapsucker activity. Possible insect problem. Should be watched. • Lots of forks, crooks, and broken tops in this stand. • The northwest arm has much more dense stand than the rest of the area. • Two removal trees were flagged blue: <ul style="list-style-type: none"> ○ Tree #G1-1, 20" dbh, PP, western gall rust scar at about 5' up is a weak spot in the tree. It could hit a deck to the west on Lot #19. ○ Tree #G1-2, 20" dbh, LP, split base with rot and leaning over the driveway of Lot #22.

COMMON AREA	RECON NOTES
G2	<ul style="list-style-type: none"> • <i>All sizes of PP with some scattered LP.</i> • <i>A trace of bitterbrush.</i> • <i>No issues other than one forked PP in the overstory.</i>
N6	<ul style="list-style-type: none"> • <i>Overstory is PP, intermediate LP and PP are common.</i> • <i>Considerable PP and LP regen.</i> • <i>Not much bitterbrush, but adjacent National Forest land has considerable regen with heavy bitterbrush.</i> • <i>There is dwarf-mistletoe in the LP on the west-southwest finger of the area.</i> • <i>No other issues observed.</i>
N7	<ul style="list-style-type: none"> • <i>PP and LP overstory.</i> • <i>LP with dwarf-mistletoe is easy to find.</i> • <i>Forked tops and squirrel or porcupine damage evident.</i> • <i>A few LP flagged with orange flagging in the middle of the east arm and should be removed.</i> • <i>Some quite deformed, multiple-topped trees in this area with potential to be problems.</i> • <i>One removal tree marked with red flagging:</i> <ul style="list-style-type: none"> ○ <i>Tree #N7-1, PP, 24" dbh, cause not determined, but lower 2/3 of the crown is dead, possibly due to the drought. This tree can hit the house on Lot #6 or the shed and play area on Lot #5. The tree was already flagged with orange, but I believe it should be removed soon as it is big enough to do some damage.</i>

PHOTOS



An example of PP with western gall rust causing a weak spot in the stem.



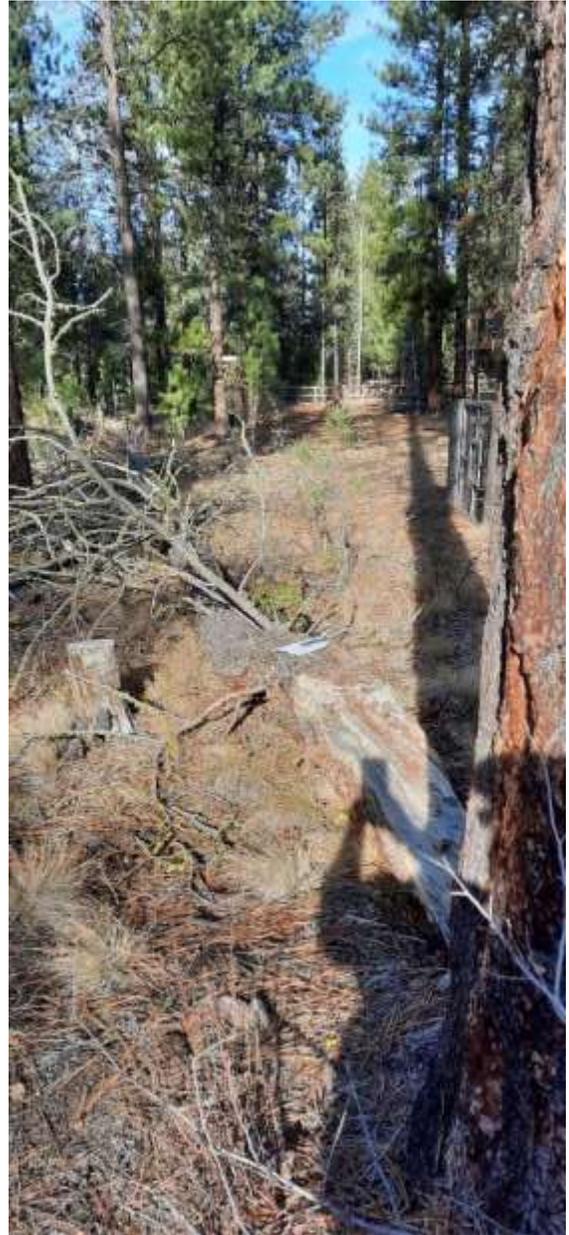
Trees with forks and/or multiple tops.



Beaver activity on the LP in Common Area OS.



The residual scar from the forked top breaking away leaves opportunity for rot to enter the already weakened area of stem.



An example of PP forked top that broke away from the main stem. The notebook and pencil are for scale.

GLOSSARY OF FORESTRY TERMS

DEFINITIONS OF TERMS THAT MAY BE USED IN THIS DOCUMENT.

TERM	DEFINITION
Advanced Regeneration	Small trees, usually less than 1" dbh, which are growing under mature trees prior to planned harvest activities.
Canopy	The uppermost spreading branchy layer of a forest.
Capable	The potential of a particular site or area to be able to develop a vegetative structural condition that can meet management objectives for that area.
Diameter (dbh)	Diameter in forestry usually refers to the diameter of the stem of a tree at 4.5 feet off of the ground on the uphill side of the tree. This is referred to as diameter at breast height (dbh).
Cycle	As applied to WROA common areas, it is the time interval between treatment entries. It should be noted that treatment entries in common areas are to leave residual conditions which should not need treatment for at least one cycle length.
Desirable Species	Any species of plant or animal which is considered to be compatible with meeting management objectives.
Endemic	Native insects or diseases that are at levels considered to not be a problem for meeting future management objectives.
Epidemic	Native insects or diseases that are at levels considered to be posing the threat of large-scale losses of trees needed to meet management objectives.

TERM	DEFINITION
Excess trees	Trees which are present but are not needed in the stand in order to meet management objectives.
Fire regime	A function of the historic frequency of fire and the degree of severity of those fires.
Fire suppression	The strategic and tactical tools available to fire managers for confining and extinguishing a fire or protecting values at risk.
Fuels	<p>Vegetative matter, dead or alive, that burns in a fire. It is broadly characterized by the following categories:</p> <ul style="list-style-type: none"> • Surface or ground fuels are within a foot or so of the ground surface. • Ladder fuels exist when you have a continuous vertical arrangement of fuel that allows fire to easily go from ground level into the tree canopy. • Crown fuels are the tree limbs and leaves that can burn with enough heat and/or wind. • Live fuels are the green (live) herbs and shrubs.
Manageable trees	Trees which are considered suitable to meet long term management objectives for the common areas. These may also be referred to as healthy trees. This may include both the physical make-up of the tree as well as the species.
Noxious weeds (invasive species)	Non-native plants listed by the State that generally have either economic or ecosystem impacts, or are poisonous to wildlife and/or livestock. They aggressively invade disturbed areas such as fires, road sides, and construction areas.
Overstory	The biggest, tallest, and often the oldest trees in a stand.
Prescribed fire	Fire which is planned and used as a tool to meet specific management objectives.

TERM	DEFINITION
Problem fire	Any that escapes initial attack efforts and becomes a fire needing extended attack resources. These are type 3, 2 and 1 fires, usually requiring incident management teams from a few days to several months. These are fires normally under extreme conditions that result in uncharacteristically severe fire effects on the vegetation and/or ecosystem as a whole, usually evidenced by the degree of stand replacement effects.
Project Area	An area, regardless of size, which is being considered for one or more management activities through some analysis process. In this case, the project area is the common areas of Wild River.
Regeneration	Also referred to as regen, this is the trees of any species that have seeded in naturally. They can be anywhere from 6" to 8' tall in the context of my notes. Saplings are regen from 8'-15'.
Silviculture	The theory and practice of directing forest establishment, composition, and growth to produce forest resources to meet specific management objectives. The word is derived from the Latin word <i>sylva</i> , which means "forest" and from "cultura", which means "to develop and care for." So, it is the development and caring for the forest.
Silviculturist	One who plans, assists in and supervises the implementation of silviculture projects. The silviculturist determines (prescribes) the vegetative treatments necessary to meet the objectives for vegetation on a given site.
Site	A specific location where management activity is considered, planned, or operating.
Stand	A group of trees of similar canopy structure, species composition, and/or size growing on a continuous area. A stand is distinct from neighboring stands in either structure, growing conditions, or management objectives.

TERM	DEFINITION
Stand dynamics	The changes in forest stand structure with time, including stand behavior during and after disturbances.
Stand structure	The physical and temporal distribution of trees and other plants in a stand.
Sustainable	Vegetative conditions that are expected to persist with key components remaining intact through time. These are usually conditions that are quite resilient after normal disturbance events such as fire.
Thinning	<p>Any cutting or removal of vegetation (trees, brush, etc.) resulting in a reduction of competition for water, light, and/or nutrients between individual plants. Thinning is commonly referred to as commercial thinning and small tree thinning.</p> <ul style="list-style-type: none"> • <i>Commercial thinning refers to removing material that has an established dollar value on the open market and can be sold with at least a minimal net value sufficient to pay for the thinning activity.</i> • <i>Small tree thinning may or may not have a dollar value and usually includes the need to pay someone to accomplish the work. This is sometimes called pre-commercial thinning because the trees are smaller than the sizes that have a commercial value.</i>
Treatment	A term used to broadly refer to the vegetative changes completed to meet management objectives. It may include thinning, undesirable tree cutting, prescribed fire, salvage, or any manipulation of the vegetative conditions and/or fuels.
Underburn	Using prescribed fire under the canopy of an existing stand of trees. These are usually done to reduce the amount of surface fuels to provide better tactical opportunities for suppressing unplanned ignitions (wildfires). They can also be helpful in reducing ladder fuels.

TERM	DEFINITION
Understory	The smaller, shorter trees in a stand, usually younger.
Undesirable tree	Any tree which is NOT considered to be compatible with, or capable of, meeting management objectives.
Woody debris	Dead pieces of woody vegetation such as stems or limbs which are on a site.

REFERENCES

- "Fire Ecology of Pacific Northwest Forests", by James K. Agee, Island Press, 1993.
- "The Wildland-Urban Interface Fire Problem", by Jack Cohen, Forest History Today, Fall 2008: 20-26. (Available as PDF: <https://foresthistor.org/wp-content/uploads/2017/01/Cohen.pdf>)

ADDITIONAL RESOURCES

- **Firewise Oregon:** <https://www.oregon.gov/osp/Docs/Firewise-the%20program.pdf>
- **Firewise USA:** <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA>
- **National Fire Protection Association Glossary of Terms:**
 - <https://www.nfpa.org/Codes-and-Standards/Resources/Glossary-of-Terms>
- "Giant Pines and Grassy Glades", the Historic Ponderosa Ecosystem, Disappearing Icon of the American West, S. F. Arno, Fiedler, and M. K. Arno:
 - https://foresthistor.org/wp-content/uploads/2016/12/2008-Spring_giant-pines.pdf