MIRRORMONT

COMMUNITY WILDFIRE PROTECTION PLAN

November 2015

Prepared by King County Department of Natural Resources and Parks
with assistance from Washington State Department of Natural Resources
and Eastside Fire and Rescue and Rescue

Acknowledgements and Approvals

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About The Plan

What This Plan Includes

The Mirrormont Wildfire Protection Plan is designed to educate community members about the risks of wildland fire in the Mirrormont community located in King County, Washington, near the city of Issaquah. The plan includes general information about wildfire, specific wildland fire threats in Mirrormont, how these threats can be mitigated, and how the community can participate in the voluntary Firewise program (including getting recognition as a National Firewise Community). This plan was sponsored by King County's Forestry Program in the Department of Natural Resources and Parks using federal funds allocated under the Secure Rural Schools and Community Self-Determination Act, Title III.

Who This Plan Is For

The plan was developed primarily for Mirrormont residents. Elected officials and agency representatives may also find the content useful.

How To Use This Plan

You don't need to read this document from cover-to-cover to get the most out of it. The following roadmap should help you effectively navigate through the plan.

- To learn about the **Firewise** program, read **Chapter 1**.
- To understand **how wildland fire behaves**, and **what you can do to reduce your risks** read **Chapters 2** and **3**.
- To get a **profile of Mirrormont** (including fire-related environmental characteristics), read **Chapter 4**.
- To find out about potential **wildland fire threats in Mirrormont**, read **Chapter 5**.
- To read about ways to **mitigate wildland fire threats in Mirrormont**, refer to **Chapter 6**.
- To learn how **Mirrormont** can gain **Firewise Communities USA recognition**, read **Chapter 7**.

A companion resource kit is also included with this plan. The CD-ROM resource kit contains a number of references, information sources and forms. To learn more about the kit, and what comes with it, refer to the README file on the CD-ROM.

The recommendations made in this plan are based on fire probabilities for the conditions observed at the time of the assessment in 2015. This plan is intended as a guide for reducing the risk of damage to property and infrastructure in the Mirrormont community should a wildfire occur. Wildfire behavior can be unpredictable and no plan can address all potential fire scenarios. The Mirrormont community should continue to work with King County Fire District 10/Eastside Fire and Rescue to adapt this plan to changing conditions and community needs.

Chapter 1
Firewise, Dollar-smart

About Firewise

During the past hundred years, America's population has nearly tripled. Much of this growth has occurred in traditionally natural areas such as forests and grasslands. These areas are all subject to the natural process of wildfire. Wildland fires can be difficult to control. As a result, in places where development has encroached into natural areas (dubbed the *wildland/urban interface or WUI*) property, lives and natural resources are all at risk from wildfire.

Following the catastrophic fire season of 1985, government representatives met to discuss the increasing trend of wind-driven fires in populated areas. They formed the National Wildland/Urban Interface Fire Program. In 1992, the program's advisory group began to use the term *Firewise* to describe being knowledgeable and prepared for wildfire in residential or urban settings.

In 1996 a Firewise Web site (www.firewise.org) was launched. It was followed by national and regional workshops, public education efforts, and a community recognition project. Today the Firewise program is viewed as a successful example of partnering among communities, homeowners, private industry, tribes, and public agencies and officials to develop and implement local solutions for wildfire preparedness – before a fire starts.

Firewise Fundamentals

Wildland fires are a natural part of the environment. Despite the best efforts of government agencies, they will occur. The Firewise vision is that with adequate planning and cooperation among varying interests, wildfires can occur without disastrous loss of life, property, and resources.

The best approach to wildfire preparedness involves utilizing the wide range of Firewise practices. The Firewise program offers a series of practical steps (such as landscaping, home construction and design, and community planning) that individuals and communities can take to reduce their vulnerability to wildfire.

Firewise doesn't mean cutting down all of the surrounding trees and creating a sterile environment to prevent a wildfire from spreading. People want to live close to nature for a reason, and aesthetics is a cornerstone of the Firewise program.

Examples of Firewise techniques for property owners include creating a defensible space around residential structures by thinning trees and brush, choosing fire-resistant plants, selecting ignition-resistant building materials, positioning structures away from slopes, and working with firefighters to develop emergency plans.

It's important to understand that Firewise is a voluntary program. Firewise offers proven, common-sense ways of reducing the risks of wildfire. It is ultimately up to community members whether they want to put these practices in place. It is also important to recognize that all of the Firewise practices don't necessarily need to be implemented at once. A single practice reduces fire risk, and other practices can be added over time if desired. Relatively small investments of time and effort can produce great rewards when it comes to wildfire safety.

Community members have the option of participating in Firewise Communities/USA. This program recognizes communities for working together to protect residents and property from fire

in the wildland/urban interface. To receive Firewise Communities/USA recognition, communities must create and implement a local plan with cooperative assistance from state forestry agencies and local fire staff. In addition, communities are required to continue regular maintenance and education to retain recognition status. (The steps for gaining recognition are laid out in this plan.)

Benefits

Applying Firewise practices have a number of benefits, including:

- Saving homeowner lives during a wildfire
- Increasing firefighter safety by reducing risks
- Saving homes and possessions from damage or destruction
- Preserving community aesthetics (both before and after a fire)

To Learn More

The Firewise Web site (www.firewise.org) provides homeowners and agency staff with educational information about wildland/urban interface fires. The interactive site details how to mitigate wildfire risks at the homeowner and community levels. You can view streaming videos, download documents, browse an extensive list of helpful links, and access a searchable library of national, state, and local documents on a wide range of wildfire safety issues.

Chapter 2
Wildland Fire Behavior Basics

As a homeowner, if you want to reduce the risks of wildfire, you need to know a little about how fire behaves. This chapter presents the basics and tells you what you need to know about wildland fire behavior.

Understanding the Fire Triangle

To begin with, three components are required for a fire to start and keep burning.

- Heat
- Fuel
- Oxygen

These components form what is called the fire triangle (as shown in Figure 2-1).

***Figure 2-1**: The fire triangle consists of heat, fuel and oxygen.*

When there's not enough heat generated, when the fuel is exhausted, removed, or isolated, or when the oxygen supply is limited, then a side of the triangle is broken and the fire goes out. Firefighters try to manage one or more of these three elements to control a fire.

Zeroing In On Heat

The heat part of the fire triangle is critical. Some type of a heat source is required to ignite a fire (lightning, matches, cigarette butt, fireworks, etc.) and heat is needed to maintain the fire and cause it to spread.

Fire is constantly producing heat and the transfer of heat to the surrounding environment is what makes a fire spread. Heat removes the moisture from surrounding combustible materials (grasses, trees, wood, paper, etc.) making it more prone to burn - the dryer the fuel, the more combustible. (Fuels are discussed in the next section.)

When it comes to fire, heat can be transferred three ways:

- **Convection** is heat transfer through the air, such as when hot air rises through a chimney. Convection air currents can preheat leaves and branches carrying a ground fire upwards into a tree or shrub.

- **Radiation** transmits heat by the proximity to flame. Radiation accounts for most of the preheating of fuels surrounding a fire. The temperature of these fuels can sometimes grow so high that the fuels ignite before they even come in contact with the flames, spreading the fire.

- **Conduction** is direct transfer of heat from one fuel source to the next, such as when a stove burner heats a pan and its contents. Conduction allows the heat to be transferred inside and throughout the fuel, rather than only heating the surface. Conduction is usually not the primary mechanism of heat transfer in a wildfire since wood is a poor heat conductor.

How and how fast heat is transferred plays a large role in wildland fire behavior. Each of the three heat transfer methods can cause a fire to behave differently, depending on the fuel, wind speed, and slope of the terrain.

Focusing On Fuel

The fuel side of the fire triangle refers anything that can burn. Fuel types include:

- Living vegetation

- Dead vegetation (duff, twigs, needles, standing dead snags, leaves, and moss)

- Organic subsurface material (peat and coal)

- Combustible human-made materials and structures

Fine fuels (grasses, leaves, pine needles) ignite more easily and spread faster with higher intensities than coarser fuels (tree trunks, branches, logs). Generally, the more fuel there is and the more continuous it is, the faster the fire spreads and the higher the intensities.

Several other factors determine how a fuel will burn, including:

- **Moisture content** determines how easily a fuel will burn. For example, live trees usually contain a great deal of moisture and are more difficult to combust while dead logs burn easier because they contain very little moisture. Before a wet fuel can burn, the moisture must be converted into vapor through the heating process. The greater the moisture content, the higher the heat temperatures required to dry the fuel. The presence of moist fuel can affect the rate and direction in which a wildland fire spreads. High moisture content slows the burning process since heat from the fire must first expel moisture.

- **Size and shape** in part determine a fuel's moisture content. Lighter fuels (often called *fine fuels*) such as grasses, leaves, and needles quickly expel moisture, and burn rapidly. Heavier fuels, such as tree branches, logs, and trunks, take longer to heat up and ignite. In areas of light fuel, the temperature required for ignition is lower than in areas of heavier fuel. The oxygen surrounds lighter fuels and allows the fuel to burn with greater intensity, quickly exhausting the fuel supply.

- **Quantity**, or how much combustible fuel there is in a given area, is known as known as *fuel loading*. Fuels may be arranged in a uniform pattern and distributed continuously across the ground, allowing a wildland fire to travel uninterrupted. Or, the fuel may be distributed unevenly in a patchy network, forcing the fire to find ways around rocks and other barriers.

- **Vertical arrangement**, whether fuels are positioned high or low, is another important factor in wildfires. For example intense fires known as *crown fires* occur when fire spreads from the ground into the tops of trees - these fires burn independently of surface fires, with flames moving through the treetops. This type of fire is not very common in western Washington. *Ground fuels* are all of the combustible materials found below the ground surface, and include tree roots, duff, and organic material. *Surface fuels* are found at the ground level, including twigs, grass, needles, wood, and other vegetation. *Aerial fuels* are standing vegetation including tree crowns, branches, leaves, snags, and hanging moss.

Taking in Oxygen

The third component of the fire triangle is oxygen. Oxygen is required for combustion, or fire, to occur. Oxygen is in the air you breathe. Anywhere air can reach, oxygen can reach. Firefighters use dirt and other methods to smother burning fuels. The dirt replaces the air so no oxygen is available for the fire.

Densely packed fuels have less air available than loosely packed fuels. Less air means less oxygen and that makes it more difficult for the fire to spread. Loosely packed fuels have more air space, and thus more oxygen, which makes it easier for the fire to spread.

Watching Out For Weather and Terrain

In addition to the components of the fire triangle, how intense a fire burns and how fast it spreads depends on weather and terrain. Here are some general rules of thumb:

- The combination of current or forecasted high temperatures, low humidity and strong winds can produce potentially dangerous fire conditions.

- Weather affects the moisture content of dead and live vegetation. Moisture content in dead fine fuel is highly dependent on the relative humidity and the amount of sun exposure. The lower the relative humidity and the greater the sun exposure, the drier the fuel. Relative humidity tends to increase at night. Lower fuel moistures produce faster spread rates and higher fire intensities. This is why wildfires are prevalent in the summer months when rainfall is light and relative humidity is low.

- Fire typically follows wind direction. It's possible for the wind to carry embers (*firebrands*) ahead of the main fire and start new fires (known as *spot fires*).

- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity. This is due, in part, to the increased amount of oxygen (more air) and the wind driving heat into adjacent fuels. Strong dry winds originating from the east side of the state carry an even greater threat.

- Thunderstorms produce lighting, which is a source of ignition, and strong and often erratic winds.

- Large fires may generate enough heat to create their own weather. Called *plume dominated fires*, from the giant smoke plume that rises thousands of feet into the air, these fires are dangerous because of their erratic behavior.

- Terrain influences fire behavior by the steepness of the slope. Fires tend to burn uphill. In general, the steeper the slope, the faster a fire will spread and the more intense it will burn. This is an important issue to consider in the Mirrormont community.

- The direction a slope faces (*aspect*) contributes to how a fire burns. Fuels on a south facing slope tend to be drier and will burn faster and more intensely than fuels on a shaded north slope.

- Narrow and box canyons can produce a chimney effect that creates strong upslope winds which can rapidly spread a fire.

Chapter 3
Getting In The Zone

Two factors generally determine the survivability of a house during a wildfire. The first is the house itself. Depending on the construction, one house may be more likely to survive a wildland fire than another. For example because there is no source of exterior combustible fuel, a concrete structure with a metal roof will fare better than a house with a shake roof and wooden siding.

From a construction standpoint, you can make a house more fire survivable by using:

- Class A, B or C rated, fire-resistant roofing material
- Fire-resistant building materials on exterior walls, overhangs and attachments
- Double-paned or tempered glass in windows, skylights and doors
- Enclosed eaves, fasciae, soffits and vents

See *www.firewise.org* for more tips on making your home safer.

Due to the cost and effort, it might not be practical to make structural modifications to your home. However you can still greatly reduce the risks of wildfire by focusing on the second factor that determines house fire survivability - the area surrounding the home.

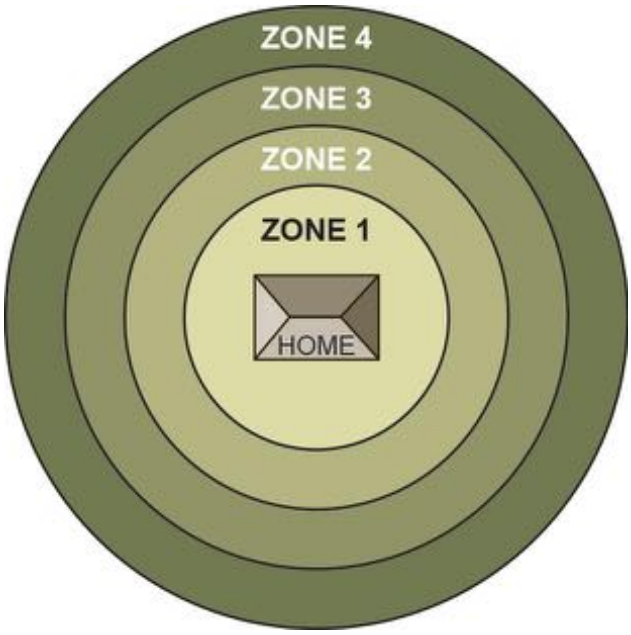
It's important to understand that wildland fires aren't like avalanches or tsunamis. They don't spread by flowing over the landscape, engulfing whatever is in their path. Fires need fuel, heat and oxygen to burn and spread (see Chapter 2 for more details). If you can limit heat and fuel sources, you reduce the potential for the fire to grow. One way to do this is by knowing about the *home ignition zone*.

A *home ignition zone* includes the house and everything within 100 to 200 feet of the structure. The extent of the zone depends on topography and vegetation. While the wooden frame construction of a house is combustible, it takes a significant amount of heat to ignite. A mere 30 feet of distance from a crown fire is all that's required to reduce the radiated heat to low enough levels that the house will not catch on fire. This critical 30-foot zone is often referred to as *defensible space* or *survivable* space. See Figure 3-1 to get a better idea of Firewise zones.

Figure 3-1: *Example Firewise Zones in Mirrormont. Neighboring properties can have interconnected zones.*

The foundation to 30 feet and 30 to 100 feet areas (based on 2009 King County GIS data) are overlaid on an aerial photo of Mirrormont. As you can see, the close proximity of residences makes neighborhood cooperation extremely important in reducing fire risk.

To understand zones, first visualize your property as a target with your home as the bull's eye (Figure 3-2), the yard as the first ring (Zone 1), and additional zones with varying levels of fuel management as you move further from the structure.



Zone 1 = 0 to 30 feet away from the home

Goal: Create "survivable space" by reducing fuels and allowing space for firefighting equipment.

Zone 2 = 30 to 50 feet away

Goal: Reduce fire intensity and keep fire from reaching the tree canopy.

Zone 3 = 50 to 100 feet away

Goal: A healthy, diverse, appropriately stocked forest with reduced potential for intense fire.

Zone 4 = 100 feet away on level ground up to 200 feet away on a steep slope.

Goal: This zone is furthest from structures. In forested areas thin selectively to maintain healthy tree growth.

Figure 3-2: *Firewise Zones Chart*

Figure 3-3*: Zone 1 landscaping; simple steps for turning a house into a Firewise home.*

If you reduce amount and type of fuels around a house, you decrease the amount of heat that is generated adjacent to the structure during a wildfire. This increases the home's survivability.

- Plant fire-resistant vegetation (see the list in the Resource Kit) and keep plants, grass and trees regularly watered and healthy; especially during fire season.
- Prune back shrubs and tree branches – the lowest branches should be at least 6-10 feet from the ground and shouldn't overhang any part of the house.
- Take out *ladder fuels* (material on or near the ground that will carry fire into a tree) and provide fuel breaks (such as gravel walkways) to prevent fire from traveling along the ground to the house.
- Remove dead vegetation (leaves and pine needles) from gutters, under decks, and within 10 feet of the house. Mow the lawn regularly.
- Think lean, clean and green: Use a 3 to 5-foot swathe of gravel, crushed rock, or other non-combustible materials around structures.

For more information on the home ignition zone and things you can do to your home and your property, visit these Web sites:
www.firewise.org **and** *www.kingcounty.gov/environment/waterandland/forestry/forestfire.aspx*.

Chapter 4
Mirrormont Profile

This chapter presents a brief profile of the Mirrormont community (see Figure 4-1). General demographic, economic, public safety and environmental features are discussed.
(Note: Chapter 5 talks about specific wildland fire threats and vulnerabilities.)

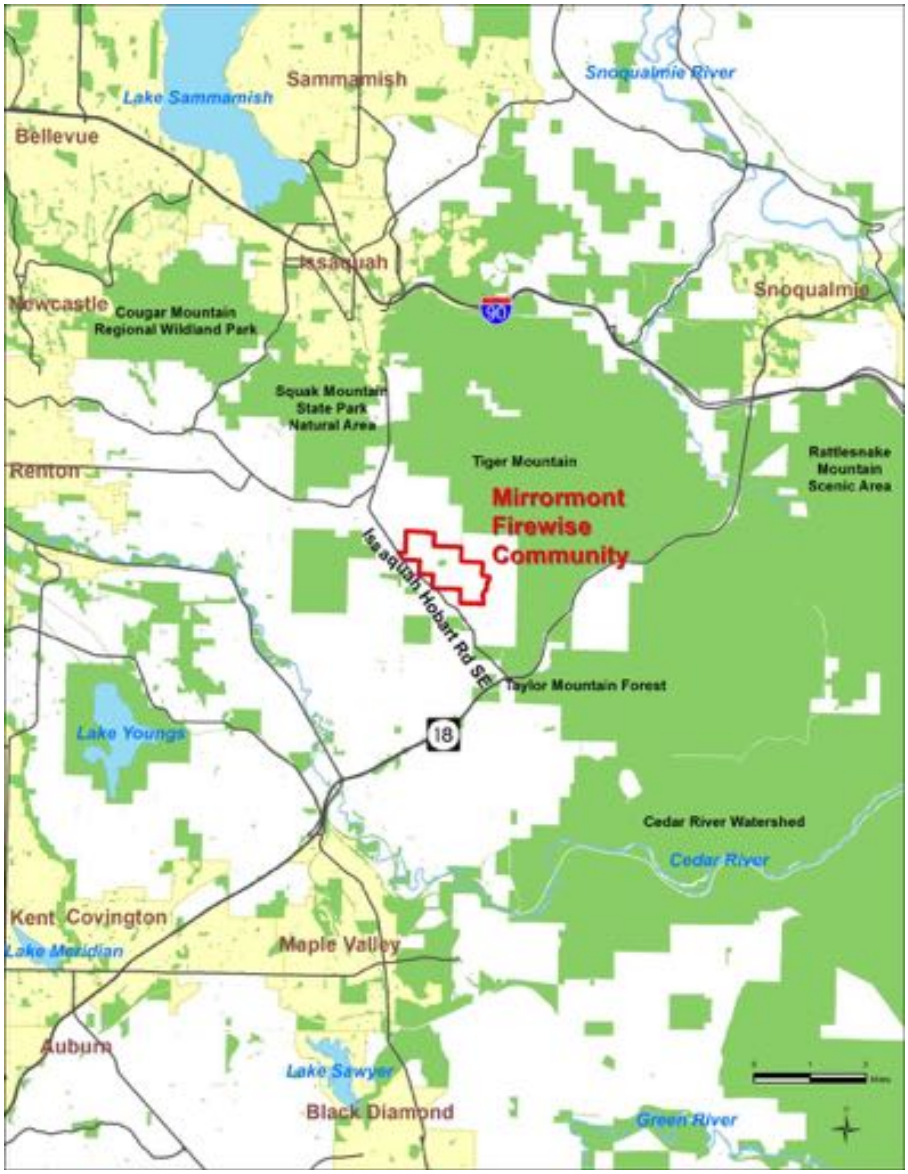


Figure 4-1: *Mirrormont community (outlined in red) is south of Issaquah and just west of Tiger Mountain State Forest. (King County GIS)*

Community

Mirrormont is located in the southwest foothills of Tiger Mountain. It was established in 1962 and originally covered approximately 1,939 acres. The lots averaged about .75 of an acre. Since then additional homes have been built outside the original borders but these are still accessed from the main roads inside Mirrormont (Figure 4-2). Today, there are 597 residences in the general Mirrormont community. There are 1,584 residents living in Mirrormont. In the midst of the community is King County's Mirrormont Park. The Mirrormont Community Association (MCA) takes great pride in maintaining this 11-acre park in cooperation with King County Parks. Adjacent to the park is the Mirrormont Country Club, a private organization (separate from the MCA) that includes an outdoor swimming pool, tennis courts and clubhouse.

As of 2010, the 597 residences have a total land and improvement value in excess of $250,000,000.

For more history of the Mirrormont community, check out the community's web page, *Mirrormont.org* and their Facebook page (https://www.facebook.com/Mirrormont/).

The primary access roads to the community are Issaquah-Hobart Rd NE and Tiger Mountain Rd. Issaquah-Hobart Road is a main north/south artery for the entire region. Tiger Mountain Rd loops around the north and east sides of the development from Issaquah-Hobart Rd. There are two roads exiting Mirrormont, one onto Issaquah-Hobart Rd and one onto Tiger Mountain Rd.

Issaquah-Hobart Rd NE connects to Highway 18 south of Mirrormont and leads north into the city of Issaquah and interstate I-90.

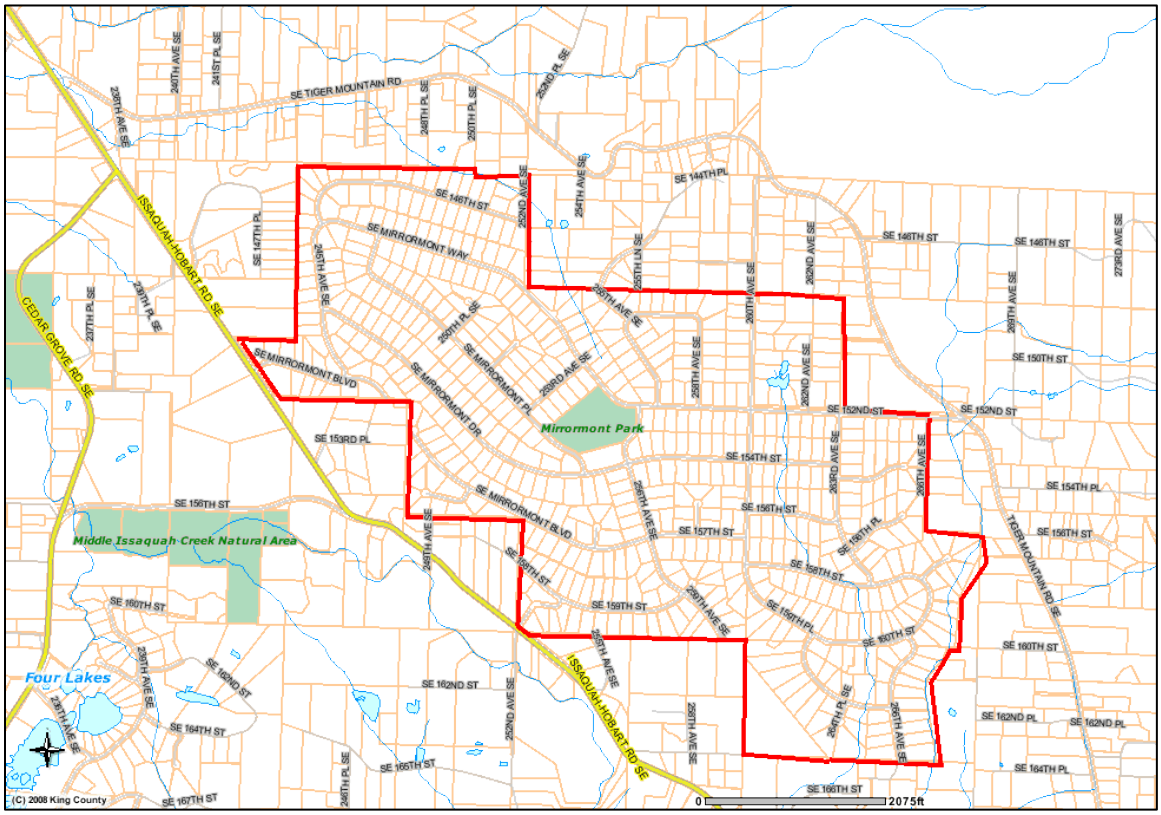


Figure 4-2: *Mirrormont community parcel map. (King County GIS)*

The homes of Mirrormont are usually set back from the road. Many homes are located on steep slopes that require steep drives to access the house.

There are many wide, paved roads in the area. There are a few cul-de-sacs and a number of dead-end and discontinuous roads such as 266th Avenue SE and SE 158TH Street that can make it difficult to navigate through the community. The streets and cul-de-sacs are wide enough to provide adequate access for emergency vehicles. There is minimal evidence of on-street parking; most homes have plenty of parking for personal vehicles.

Mirrormont Park

Mirrormont Park is owned and maintained by King County Department of Natural Resources and Parks. The County enforces the rules of the park, mows the grass, clears the trails, cleans up storm damage, and collects garbage.

The Mirrormont Park Committee and Mirrormont Community Association (MCA) have an agreement to develop and maintain the park. The MCA Park Committee members are stewards of the park who strive to mediate the needs of the community with King County, and make improvements such as installing benches and tables. Mirrormont volunteers maintain doggie poop bags, spread chips on trails, trim overgrowth from paths, remove invasive weeds and replace them with native plants. For more information see www.mirrormont.org/community/park or contact park@mirrormont.org

Water System

Mirrormont is served by a private water system owned by the Washington Water Service Company. While adequate to serve the existing homes, the overall pressure and volume is considered to be a bit low.

There are fire hydrants throughout Mirrormont, all providing a flow capable of fighting fires.

Fire Protection

Mirrormont is part of Eastside Fire and Rescue, King County Fire District 10. The nearest station is Station 76, located adjacent to the community on 15132 Tiger Mountain Rd SE. Volunteers currently staff this station.

Station 78 is staffed with career professionals and volunteers and it is located 4 miles away at 20720 SE May Valley Rd.

Fuels

One of the primary attractions of the Mirrormont community is its natural setting. Mature coniferous trees and native vegetation are apparent throughout the community (Figure 4-3)) and large tracts of forested land are adjacent.

Figure 4-3: *2012 aerial photo showing vegetation in Mirrormont and immediately surrounding land. (King County GIS)*

Most of the land immediately abutting Mirrormont to is privately owned. The exception to this is the King County Mirrormont Park located in the middle of the community. However, a short distance to the east is Tiger Mountain State Forest. This is a highly used recreational and active working forest. Timber and biomass production, communication tower leases and other commercial activities occur in this portion of the forest. Some of these activities can increase the risk of wildfires.

Topography

The topography of Mirrormont is generally steep hills. Mirrormont is located in the foothills of Tiger Mountain. Most of the lots are on steep slopes (Figure 4-4).

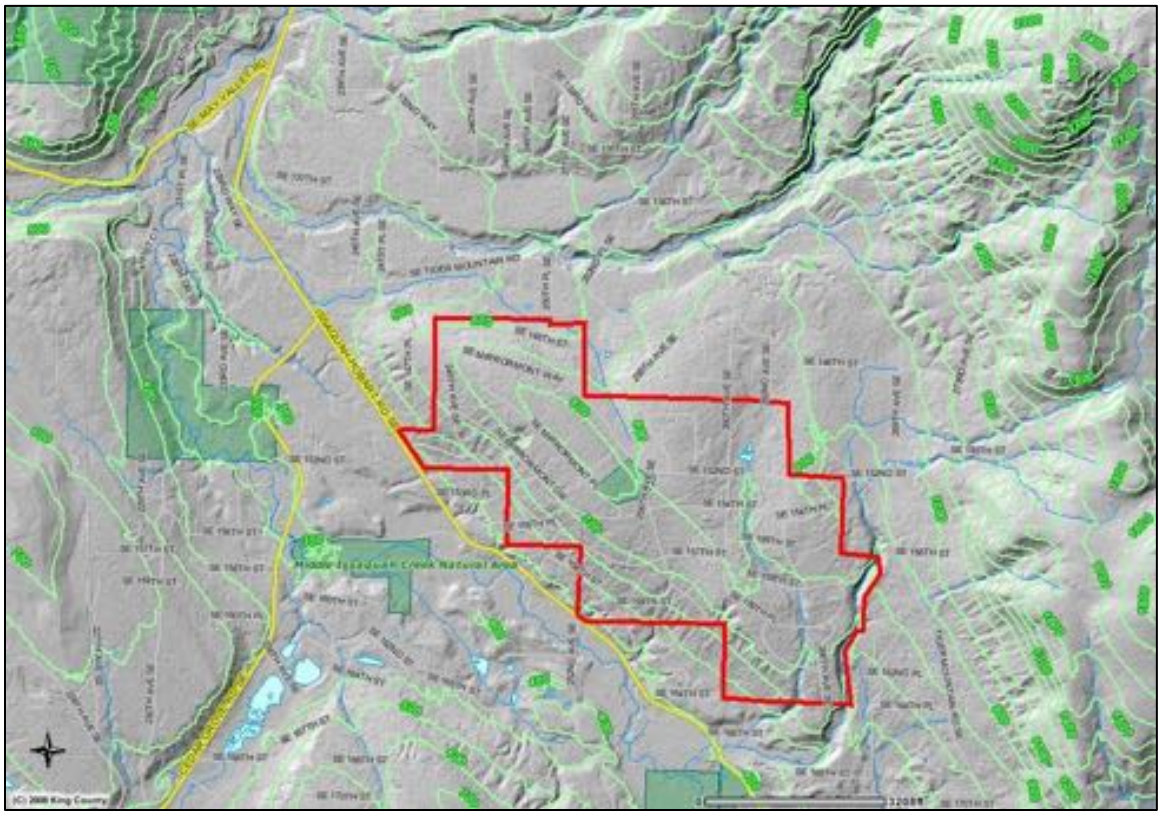


Figure 4-4: *Mirrormont area topography.*

The eastern third of the community is a bit flatter. The slope runs to the southwest.

Weather

Located between Puget Sound and the west Cascades, the Mirrormont area typically has slightly higher total rainfall and snow amounts than other parts of the Puget Sound Basin. This additional precipitation tends to delay the start of fire season, with the driest times of the year occurring in July and August. (See Figures 4-5 and 4-6.)

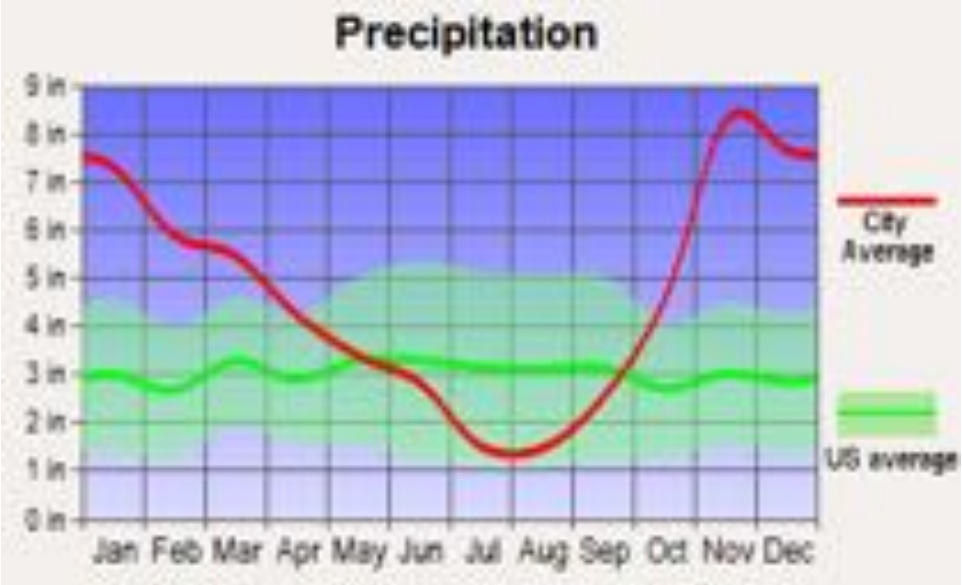


Figure 4-5: *Mirrormont average precipitation.*

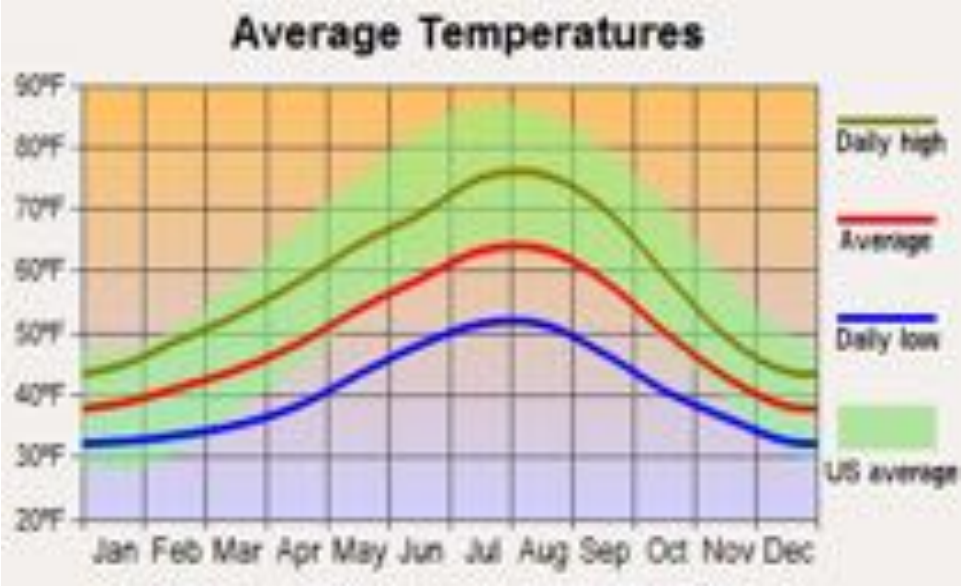


Figure 4-6: *Mirrormont average temperatures.*

During the summer months temperatures may exceed 80 degrees for several days in a row, accelerating fuel drying.

Local wind conditions can have a significant impact on fire behavior. Tiger Mountain does provide some protection from the summer easterly winds that come through the Snoqualmie Pass.

Chapter 5
Mirrormont Issues & Threats

To assess fire threats and vulnerabilities, the Mirrormont development was surveyed in August 2015. The report authors drove through Mirrormont and the surrounding area noting potential threats using a wildfire danger evaluation form currently in use with the Washington State Department of Natural Resources (WA-DNR); the form is based on 2006 International Wildland-Urban Interface Code Appendix C and 2002 NFPA 1144 Annex A. A copy of the completed form is included at the end of this chapter.

The area scored a 78, which is in the moderate risk Hazard rating. However, there are specific hazards (wooded slopes on the east side, forested ravines/greenbelts interspersed throughout the development) that can cause fire to travel from the slopes into the community. Steep slopes and heavy vegetation should be considered when determining the defensible space around a home. As noted in Chapter 2, fire tends to travel rapidly up slopes, so the size of defensible space around a home should be considered when steep slopes are present.

Significant factors that contributed to the score such as vegetation, surrounding forestlands, and topography are discussed in this chapter.

Fire History

In evaluating wildland fire threats, it's useful to first start with the fire history of an area. Figure 5-1 shows non-structure fires reported near Mirrormont from 1970 to 2013.

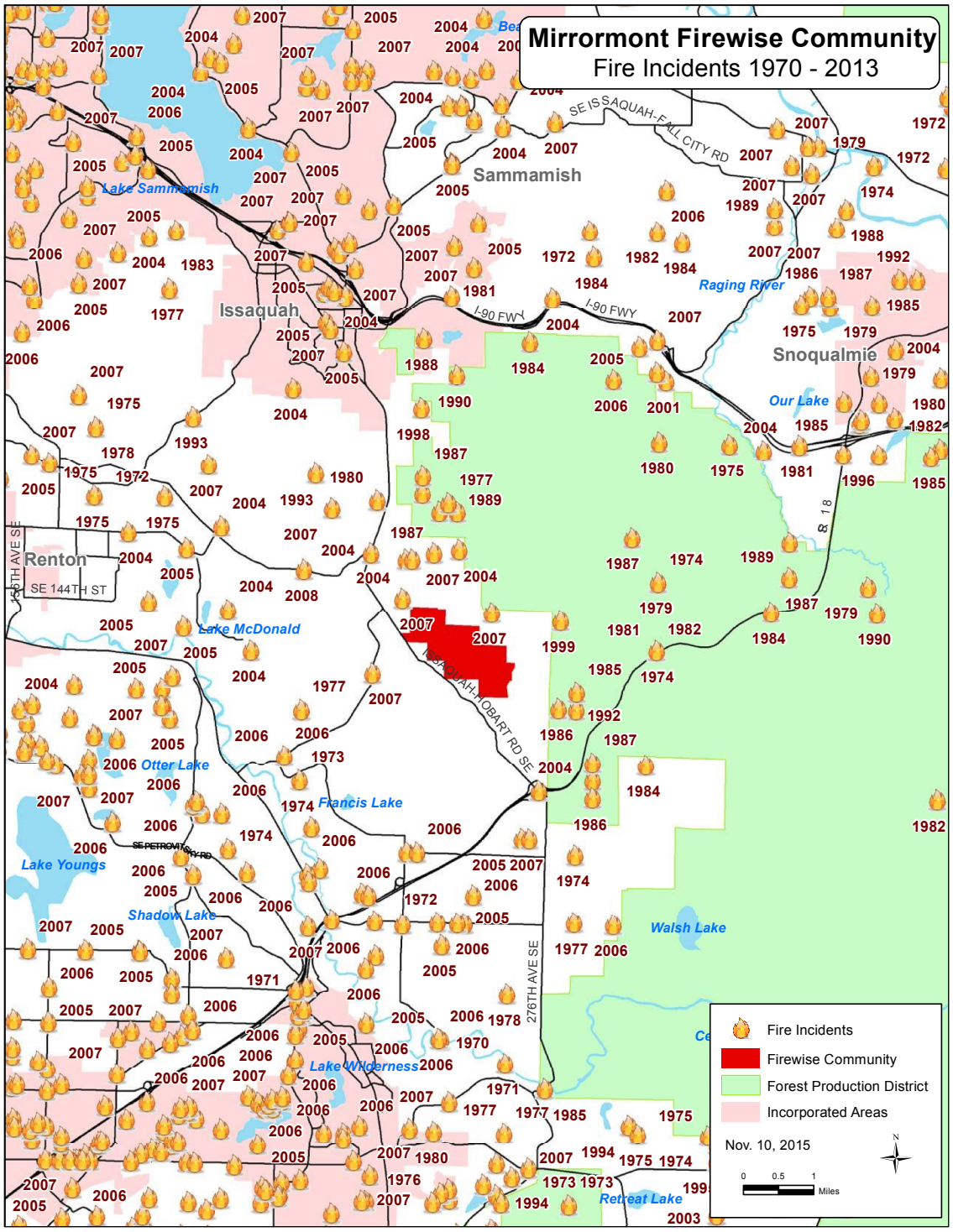


Figure 5-1: *Non-structure fires near Mirrormont (King County GIS)*

With the right conditions, any of these fires could produce embers and spread into Mirrormont.

Wind Driven Embers

One of the biggest threats Mirrormont faces is a wildland fire on the east slopes of Tiger Mountain accompanied by winds. These steeps slopes can carry fire and embers into the community.

Figure 5-2: *Ember Storm*

Wind-blown, burning embers (also called firebrands) such as those shown in Figure 5-2, can spread a fire far in advance of the main flame front. Embers can easily travel up to 1.5 miles or more, depending on wind. In fact, during the Carlton Complex wildfire in 2014, a news crew recorded a firebrand landing over 7 miles from the nearest fire.

Figure 5-3: *Wind driven burning embers (firebrands) can quickly spread a fire.*

During strong winds it's also possible for firebrands and embers from a structure fire to spread flames to other structures or nearby vegetation.

Drought Conditions

In recent years, the Mirrormont area has experienced limited fire activity. This is mostly due to reduced logging, changes in how logging slash is handled, effective fire suppression efforts, and in most years, the high amounts of rainfall and humidity the Cascades foothills experience. Rain and moist air keeps vegetation green and fuel moisture levels elevated, reducing the chances of ignition and rapid spread of fire.

Seasonally, August and September tend to be the driest months in the Puget Sound region, with little to no rainfall. If the Mirrormont area experiences prolonged dry conditions, such as the one in 2015, the risk of fire increases; as the duration of the drought increases, so does the risk. Extreme fire seasons in the United States, such as the one in 1910, are almost always associated with prolonged drought conditions.

During the 2015 wildfire season, unexpected and fast moving fires in Cle Elum, Wenatchee, and elsewhere in the state threatened or destroyed homes and property. Red flag warnings (high fire danger alerts), previously rare events in the Puget Sound Region, are becoming more and more common especially July through September.

There were also a record number of days without precipitation at SeaTac Airport. During such conditions, an unpredictable and dangerous fire can start from a carelessly discarded cigarette butt or an improperly extinguished campfire —even in areas with a low incidence of wildfires.

Adjacent Forest Lands

Embers can easily travel up to 1.5 miles even in mild winds and more in strong winds. This means that a community must look beyond its' borders to determine potential wildfire danger areas. In addition to all the mature trees throughout Mirrormont, there are heavily forested lands abutting the development on the north and east sides. The east side of Mirrormont abuts Tiger Mountain State Forest. This forest has both recreational and commercial forest users. Just southeast of Mirrormont, across Hwy 18, is King County's Taylor Mountain Forest, another nearby working forest with high recreational use. Statistically, most wildfires are due to human mistakes (lightning is the second most common cause). An unattended or improper campfire can easily spread into surrounding forestland and start spreading towards Mirrormont.

Terrain

A large portion of Mirrormont is located on steep, southwestern facing slopes. Slopes with this aspect tend to get a lot of sun in the summer, drying out faster than northern or eastern facing slopes.

Fire also tends to travel rapidly uphill. Along the bottom of this slope (Issaquah-Hobart Road) is a heavily traveled traffic corridor. Sparks from malfunctioning vehicles/equipment or a carelessly discarded cigarette butt could start a fire that would rapidly spread uphill and immediately endanger the entire community.

Natural Fuels

Wildfire fuels are simply anything that may burn. All trees, brush, homes, structures, and other flammable items are considered fuel. However, some types of vegetation and structures are more flammable than others.

Natural fuel in the Mirrormont area consists of grasses, understory, and a forest dominated by evergreen trees (Figure 5-4).

Figure 5-4: *Typical Mirrormont fuels. The fuel loads of wooded areas increase the risks of fire spreading through the community.*

The average annual rainfall of 35 inches is only slightly below the average for the country (37.5 inches). However, annual prolonged summer drought conditions can dry out fine fuels, increasing wildfire risk, especially when there are concentrations of downed trees and limbs from storm events.

Forest Health

Most of the mature trees throughout Mirrormont appear to be in good health.

Figure 5-5: *Typical stand of large conifers in Mirrormont*

The majority of trees in Mirrormont are large, older conifers. Proper maintenance and care can reduce the risk of wildfire spreading through these trees.

Figure 5-6: *Ladder Fuels - yellowing needles and numerous dead branches are indications that trees are not healthy.*

One potential issue is when branches reach down to the ground or intermingle with ground-based plants and shrubs. When dry these needles and branches can allow a ground fire to quickly move from the ground into the tree canopy. When these dead materials fall to the ground, they are fuels that can quickly spread fire to adjacent properties.

Another issue is when limbs and treetops are lost during seasonal storms. This debris can build up and become a potential fire source.

Flammable Landscaping

While the landscaping in the community tends to be well maintained, there are certain landscaping practices that can increase fire risk, regardless of condition. Some residences in the community have vegetation growing in close proximity to structures (Figure 5-7).

Figure 5-7*: Foundation plantings - shrubs touching the house (photo King County Assessor)*

Shrubs and trees should not touch structures. Vegetation growing near structures should be at least 2 to 3 feet away.

Figure 5-8: *Mulch used too deep (8") and touching wood siding*

Ideally a 3 to 5 foot swath of rock or gravel should be used around structures. Flying embers can ignite bark or woodchip mulches, which may not flame but will smolder igniting flammable siding or plants. Figure 5-8 shows a layer of mulch that is too deep (over 2 inches) and too close to (and at intervals touching) flammable siding. When bark or wood chip mulches are used, a single layer is recommended. A single layer may smolder but is unlikely to get hot enough to ignite the house.

Highly flammable plants, such as decorative arborvitaes and yews (Figure 5-9), should not be used within 30' of a residence. Even away from homes, resinous plants can increase fire risk since flames can quickly spread from plant to plant. (Wildland firefighters sometime refer to ornamental junipers as *little green gas cans*.) When it comes to landscaping, there are a variety of fire resistant plantings that are safer, yet are still aesthetically pleasing and can provide privacy.

Flammable Privacy Plantings

While not common, there are homes that use flammable species as a privacy hedge. These commonly consist of a row of arborvitae, cedar, cypress, juniper or other varieties that are not fire resistant. These resinous species tend hold onto old, dead needles and tend to be quite flammable. When placed in a row (often used to provide privacy) a fire will simply follow each

plant acting like a fuse until the entire row of plants is on fire. If the plants are near a home, this can lead the fire to the house and start the structure on fire.

Figure 5-9: *Flammable privacy planting.*

If the row of plants does not connect with the house (or is outside a 30' defensible space zone) this may not be a threat; although burning plants may still produce embers, which can spread a fire. When hedges of resinous plants reach into the trees, they can serve as ladder fuels and spread fire into the tree canopy (see Figure 5-9).

Roofs

Structures with cedar shake roofs (see Figure 5-10) are at greater risk of being destroyed or damaged by a wildfire. In various studies, buildings with Class A fire resistant material roof such as asphalt or metal are 95% more likely to survive a wildfire compared to structures with wooden roofs.

Wind-blown embers can catch and collect on roofs. Because of the flammability of cedar roofs (especially older roofs that were not chemically pressure treated) a home can quickly burn to the ground. If a number of homes are threatened by a wildfire, firefighters with limited resources may elect to protect homes with composite roofs versus those with cedar roofs because of a greater likelihood of saving them. Embers are produced as a cedar roof burns and may spread a fire to other homes.

Figure 5-10: *Cedar shake roof*

While the majority of residences in the Mirrormont area have composite roofs, a few were noted with cedar shakes.

Figure 5-11: *Accumulated needles on roof valley*

Another roof-related threat to residences is the accumulation of branches, twigs, and other vegetation (see Figure 5-11). This dried material can easily ignite, posing a threat to homes with older, worn composite roofs that do not offer the fire resistance of newer roofing material.

Overhanging Branches

Branches that hang over a roof of a structure can cause problems (see Figure 5-12). If the tree should catch on fire, these branches can provide a path for the fire to reach the roof and other portions of a house or other structure.

Figure 5-12: *Branches overhanging structure*

Fences and Decks

Anything connected to a house that can burn can be a hazard, especially if there are flammable plants nearby. Embers landing on or against wooden decks and fences can start those structures on fire. The fire can then spread to a house or other buildings.

Wind-blown dead vegetation such as leaves, pine needles and small branches can easily gather under raised wooden decks and porches that do not have screening or lattice. Embers can ignite these accumulations. Once the detritus starts burning, it can potentially set the deck or porch on fire. And the fire can travel to the house itself.

Another way fire can spread to a house is when a firebrand or embers collect against a wooden fence and starts the fence on fire. If the fence is directly connected to the house, fire can spread from the fence to the structure.

Screened Chimneys

Chimneys, especially for wood burning fireplaces and stoves, should be screened at the top to prevent embers from escaping the flue.

Figure 5-13: *Unscreened chimney*

Even indoor fires can spread embers. Chimneys should be properly screened.

Outbuildings

There were only a few outbuildings (Figure 5-14) observed in the Mirrormont area.

Figure 5-14: *Outbuildings are often overlooked when mitigating wildfire risk.*While most emphasis is placed on protecting residences from wildfire, outbuildings such as detached garages, shops,

storage sheds, and barns can be equally if not more vulnerable to fire. (See Figure 5-14) In addition to losing a structure, possessions, and possibly livestock, outbuildings can also be a source of embers, further spreading a fire. Unenclosed exterior rafters, stored flammable liquids and other combustible materials, and unsafe electrical wiring increase the chances of an outbuilding and its contents being lost to a fire.

Difficult to See Street Address Numbers

Easily seen house address numbers on the street can be important for emergency personnel responding to emergencies, especially during darkness or limited visibility conditions. Many properties had difficult to read address signs at the street. A number of residences only had address numbers on mailboxes (Figure 5-15). Some properties appeared not to have address numbers.

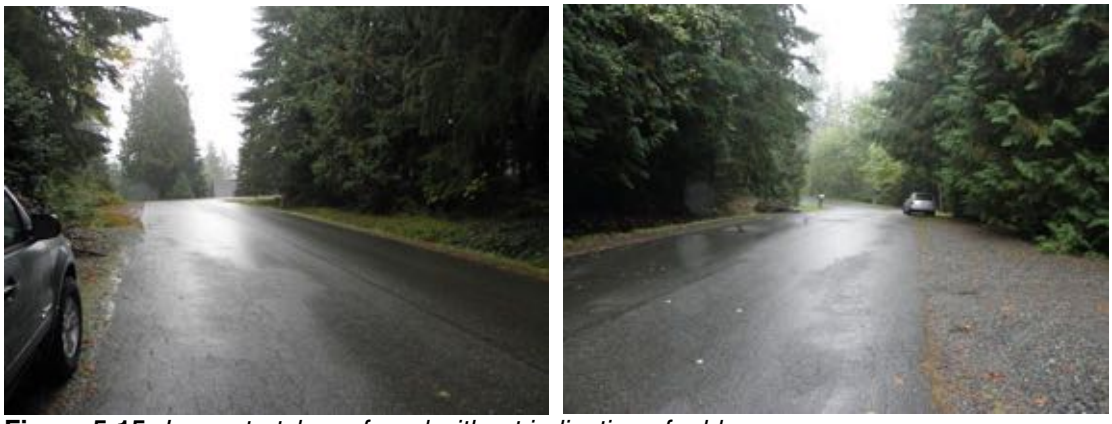


Figure 5-15: *Long stretches of road without indication of address*

Figure 5-16: *Vegetation obscuring address sign*

Even when an address sign is present, they need to be easily visible from the street. Vegetation can obscure the address sign making them difficult to see. Even when numbers are nice and large, there should be a large contrast between the number, the background and surrounding vegetation to make it easier to see.

Mirrormont Park Condition

The 11-acre, King County Mirrormont Park is centrally located in the community (see Figure 5-17). In general the park is in pretty good condition, but there are specific issues that could be addressed.

Figure 5-17: *King County Mirrormont Park.*

Figure 5-18: *Examples of ladder fuels in the park.*

There are some locations where the brush and low hanging branches create a ladder fuel condition.

Figure 5-19: *Fuel concentrations in park*

While brush piles such as those shown in Figure 5-19 are not common at the time of this writing, however fuel buildup from dropped needles and limbs is an annual occurrence.

Firewise Practices

Conditions were noted at several residences that increase the chance of property loss or damage from a wildland fire. These include low hanging limbs that could as a ladder to bring a fire up into the trees and flammable species located near the home.

Knowledge of basic Firewise practices can help homeowners identify these threats.

Access and Evacuation Routes

Issaquah Hobart Road and Tiger Mountain Road are the main access roads for the community.

The population of Mirrormont and the surrounding area may make a rapid evacuation difficult, but not impossible. Cars parked along the roadside could create choke points.

Some cul-de-sacs and dead-end roads offer limited turnaround opportunities for fire equipment.

Fireworks

In 2009, fireworks and explosives started 790 fires and caused over $5.4 million in loss statewide. 85% of all wildfires are caused by man-made activities. The use of fireworks is a major contributor of fire starts. The use of fireworks is illegal in Mirrormont Park without the permission of King County Parks and Recreation. Educating residents and others about the dangers of using fireworks in heavily forested areas and the surrounding lands should be an ongoing effort.

Neighborhood Wildfire Hazard Evaluation Form

This form is based on 2006 International Wildland-Urban Interface Code Appendix C and 2002 NFPA 1144 Annex A

Community Name - Mirrormont

Location - King County, Washington

Primary Access Road Name – Issaquah-Hobart Road

Evaluation Date – August 2015

Evaluator -Linda Vane, King County Department of Natural Resources & Parks, and Jeff Madden

A: Neighborhood Design	**Score**	**Rating**
Access		
Two or more primary roads	0	0
One road through	3	
One road in and out (entrance & exit are the same)	5	
Gate		
Not gated	0	0
Locked gate	5	
Bridges		
No bridges or bridges with no weight and width restrictions	0	0
Low weight or narrow bridge restricting emergency vehicle access	5	
Road Width		
20' or more	1	
Less than 20'	3	2
Road Grade		
5% or less	1	
Greater than 5%	3	2
Road Type		
All weather, paved	0	0
All weather, gravel	3	
Limited access or unmaintained	5	
Secondary Road Terminus		
Loop roads or cul-de-sacs, outside turning radius of 45' or more	1	1
Cul-de-sac, outside turning radius of less than 45'	2	
Dead-end road, less than 200' long	3	
Dead-end road, more than 200' long	5	
Street Signs		
Present, with ≥4" reflective letters	1	2
Missing, or present with <4" letters or non-reflective letters	3	
	Sum:	**7**

Notes:

Most are through streets, only a couple cul-de-sacs.

Paved roads, no shoulders

Address signs are spotty

B: Vegetation / Fuels	Score	Rating
Fuel Type		
Light (e.g., grasses <6", deciduous leaf litter)	1	
Medium (e.g., grasses >6", conifer litter, light brush, small trees)	5	
Heavy (e.g., dense brush, timber)	10	
Very heavy (e.g., logging slash, high volume of dead and down)	15	12
Ladder Fuels		
Most tree branches pruned up >6' above ground or understory fuels	0	
Most tree branches close to ground or understory fuels	5	3
Defensible Space		
70% or more of neighborhood	1	
30 - 70% of neighborhood	10	
Less than 30% of neighborhood	20	15
	Sum:	**30**
Notes:		
Large lots surrounded by mature trees.		
Trees immediately adjacent to homes.		
Some homes had branches overhanging the roof		
Adjacent forestlands		

C: Topography and Weather	Score	Rating
Weather		
History of high fire occurrence	0 - 5	0
Exposed to unusually severe fire weather and strong, dry winds	0 - 5	2
Local weather conditions and prevailing winds	0 - 5	2
Slope		
8% or less	1	
8 - 19%	4	4
20 - 29%	7	
More than 30%	10	
Topographic features*		
Topography that adversely affects fire behavior	0 - 5	4
** Consider attributes like ridges, saddles, steep slopes, steep narrow draws, small canyons, etc.*	**Sum:**	**12**
Notes:		
Steep slopes dominate the terrain		

D: Building and Property Construction	Score	Rating
Roofing		
More than 75% of homes have metal, tile, class A asphalt or fiberglass shingles	0	5
50 - 70% of homes have metal, tile, class A asphalt or fiberglass shingles	10	
Less than 50% of homes have metal, tile, class A asphalt or fiberglass shingles	15	
More than 50% of homes have wood roofs	20	

Siding and Decks		
More than 75% of homes have noncombustible siding/deck	0	
50 - 70% of homes have noncombustible siding/deck	5	5
50 - 70% of homes have noncombustible siding and combustible deck	10	
Less than 50% of homes have noncombustible siding and combustible deck	15	
More than 50% of homes have combustible siding/deck	20	
Foundations / Crawlspace		
More than 75% of homes have enclosed foundations with vents covered by ≤1/4" metal mesh	0	0
50 - 70% of homes have enclosed foundations with vents covered by ≤1/4" metal mesh	5	
Less than 50% of homes have enclosed foundations with vents covered by ≤1/4" metal mesh	15	
More than 50% of homes have open foundations	20	
	Sum:	**10**
Notes:		
Some homes have cedar shake roofs		

E: Fire Protection - Water Source	**Score**	**Rating**
500 GPM hydrants spaced within 1,000'	0	
Hydrants spaced >1,000' apart or < 500 GPM hydrants	2	2
Other water source available within community (tanks, pools, lakes, etc.)	5	
Water source located within 20 minute or less round trip	7	
Water source located farther than 20 minute but less than 45 minute round trip	10	
Water source farther than 45 minute round trip	15	
	Sum:	**2**
Notes:		
Hydrants present, may be subject to low flow, volume		

F: Utilities	**Score**	**Rating**
Electric		
Underground, clearly marked	0	
Underground, not clearly marked	1	1
Overhead, with adequate right of way (>20')	2	
Overhead, with right of way not maintained	5	
Gas		
Underground, clearly marked	0	
Underground, not clearly marked	1	1
Aboveground, with 15' of brush clearance and >30' from structures	2	
Aboveground, with no brush clearance or <30' from structures	5	
	Sum:	**2**
Notes:		
Some electric utilities are above ground, the majority are underground.		

G: Surrounding Landscape	**Score**	**Rating**
Neighborhood is predominately within low fire hazard mapping area	0	
Neighborhood is predominately within moderate fire hazard mapping area	10	
Neighborhood is predominately within high fire hazard mapping area	15	15
Neighborhood is predominately within extreme fire hazard mapping area	20	
	Sum:	**15**
Notes:		
Tiger Mountain Forest is to the north and east. High recreation and working forest lands.		
Neighborhood Hazard Ratings	**Sum**	
A: Neighborhood Design	7	
B: Vegetation / Fuels	30	
C: Topography and Weather	12	
D: Building and Property Construction	10	
E: Fire Protection - Water Source	2	
F: Utilities	2	
G: Surrounding Landscape	15	
Total:	**78**	
Neighborhood Hazard from Wildfire Rating Scale		
Low	**< 70**	
Moderate	**71-110**	
High	**111-135**	
Extreme	**> 135**	

Chapter 6
Recommendations

Chapter 5 lists some of the wildfire vulnerabilities and threats present in Mirrormont. This chapter provides recommendations for addressing vulnerabilities and decreasing the risk of loss of life and/or property during a wildfire incident.

The recommendations include:

- Educate property owners about Firewise principles and practices
- Reduce fuel sources
- Evaluate roofing and other home construction for Firewise recommendations
- Ensure Firewise practices are applied to homes, Mirrormont Park and community-owned common spaces
- Explore the use of emergency communication systems
- Establish a formal community evacuation plan
- Consider forming a Community Emergency Response Team (CERT) which could include a Firewise Community Committee that would focus on wildfire prevention and Firewise principles and practices

It's important to note that these recommendations can be phased in over time (a suggested plan is included at the end of this chapter). For example, some communities focus on community education and small cleanup projects the first year and then move on to more ambitious projects the second year. Much depends on the community and level of involvement. The key is to make forward progress on reducing fire risk, no matter how gradual that progress is.

Firewise Public Education and Application

Education is one of the strongest tools for reducing the risk of harm or loss from wildfire. The Firewise program is primarily educational and seeks to create a sustainable balance that allows communities to live safely in natural settings.

Simple awareness of basic Firewise principles and practices can do much to mitigate wildland fire risk. Educating community members about 30' defensible space zones and 100’ home ignition zones should be a priority. Once educated, residents can then begin to deal with some of the vulnerabilities identified in Chapter 5 by applying Firewise practices such as:

- Pruning tree and shrub limbs to eliminate ladder fuels, both near homes and in the park within 100 feet of structures, in order to prevent a ground fire from moving up into the trees
- Raking under raised decks and stairs to prevent flammable debris from accumulating
- Swapping flammable plants with less flammable ones in their landscaping
- Creating gaps between clumps of trees and shrubs to interrupt any continuous lines of fuel to structures

To inform the greatest possible number of people about Firewise, a variety of methods should be used. These could include presentations by recognized authorities, written material targeted to property owners, and distributing readily available Firewise educational material.

Other public outreach ideas to consider are:

Walk-arounds – An effective way to demonstrate Firewise landscaping and defensible space principles is to take a walk around the neighborhood, pointing out good and not so good examples of Firewise practices. An alternative workshop could begin with a short slide presentation on Firewise principles, followed by questions from the attendees about landscaping and construction features.
Create demonstration landscape/Firewise homes – Identify homes with good examples of Firewise landscaping (using yard signs or maps). Include examples of privacy hedges that do not use resinous plants. Showcase Firewise alternatives to common issues.
Firewise Literature – King County and Washington State DNR (WA-DNR) both have Firewise brochures and educational materials. Additional materials may be ordered from the *www.firewise.org* web site. The Mirrormont Community Club could keep brochures on hand. For new residents that move into the community, a "Welcome Bag" of informational materials could be sent to new residents.
Spreading the Word – While Firewise practices in Mirrormont will help reduce wildfire risk inside the neighborhood, the entire area is at risk due to the large amount of wildland urban interface land. The more property owners that employ Firewise practices the better. Getting the word out by simple word of mouth or suggesting additional Firewise presentations at the community club or other forums can help. Beyond that, Firewise communities have used a number of different techniques to inform others about the program, including:

- Articles on homeowners association and community club web sites
- Articles in local newspapers
- "Give-away" items with tips, hints, and other Firewise-related information. Free Firewise literature and promotional items can be ordered from the non-profit National Fire Protection Association at *www.nfpa.org/catalog/;* select the "Wildfire Safety" category.
- Social networks such as Nextdoor Mirrormont, Facebook, Twitter and other media are great ways to both get information out to neighbors (refer to the Resource Kit for more information). Mirrormont already has a Nextdoor Mirrormont and a community website that have been used to announce Firewise-related community activities.

Fire History

Just because residents have not experienced a large wildland fire in their lifetimes, does not mean wildfire is not a threat. Being aware of fire risks during abnormally dry periods is essential. As George Santayana said, "Those who cannot remember the past are condemned to repeat it."

Wind Driven Embers

Wind-driven embers can start fires up over a mile away from the main fire. The embers are small and the wind can drive the embers through spaces as small as 1/4 of an inch. If embers land in an appropriate fuel, they can start a fire in a matter of seconds.

Figure 6-1: *1/8" wire mesh behind decorative lattice prevents embers from settling under a deck.*

Figure 6-2: *Attic vents with 1/8" wire mesh*

The best protection from wind borne embers and firebrands is to make sure there is no fuel to catch fire. This can mean:

- Cleaning out gutters
- Using gravel, compost and other non-flammable materials for mulch in planting beds (and avoiding the use of decorative bark). A 2" layer is usually sufficient. Any mulch used should be at least 2 inches below the siding and in no case come into contact with the siding.
- Enclosing the bottoms of decks and porches with 1/8 inch metal screening
- Making sure attic and crawlspace vents are covered with 1/8 inch metal screening

Fuels

The forested land that surrounds Mirrormont coupled with the area's topography, the high volumes of traffic, and easterly winds increase the risk of a wildfire.

Managing vegetation and fuels that increase fire danger can help to mitigate this risk. Once hazardous fuel sources are identified, the community can work with the landowners to reduce fuel loads, ensure vegetation on road right of ways is managed, and keep the trails and common

areas free of dead and dry vegetation. Community projects, such as reducing fuels from the development's common areas, could also be scheduled.

Chipper Day – One proven Firewise activity is for the neighborhood to continue to have wood chipper days. Participating residents simply drag unwanted brush from their properties to the roadside where a volunteer or professional crew chips and disposes of the brush. The community typically shares the costs of a renting an appropriate sized chipper. The chips may be used on site on trails, as mulch or hauled off to an appropriate location

.

Figure 6-3: *Mirrormont Chipper Week*

Mirrormont has already had one very successful chipping operation (see Figure 6-3). The community should review their progress and determine how frequent the fuel reduction/chipping program should be offered.

The existing forest stands are being managed to improve overall forest health. This will also reduce the risk of wildfires spreading through the forest (remember: a healthy forest is a safe forest).

- One of the best ways to minimize damage to homes is to reduce the fuel around the house to create defensible space within 30' of structures, and reduce fuels appropriately in the 100' to 200' home ignition zone. (The extent of the ignition zone depends upon the slope.) Refer to the King County Wildfire Safety Best Management Practices or visit *www.kingcounty.gov/forestry* and select *'Firewise community wildfire safety planning'.*
- Mirrormont has worked with King County to maintain the health of Mirrormont Park. This partnership should continue in the future.

Flammable Landscaping

With the majority of landscaping being managed by homeowners, the Firewise committee should work with the association to identify more appropriate species that could be recommended for use throughout the community's landscape. More flammable species (those that are very resinous or collect a lot of dead needles and vegetation) should be replaced (when appropriate) with less flammable species. When more flammable species are used, the dead needles and vegetation should be removed on a regular basis. Many needles may be removed by a simple shaking of the plant followed by a good raking.

The community should consider the placement of plantings in relationship to eaves of structures. Plants should be placed out from under the eaves (when fully grown, the leaves should still be about 2 feet or further from the siding). Moving the plants out away from the structure not only reduces the risk of spreading fire, but it allows better access to the structure for maintenance (window cleaning, painting, etc.) and removes possible pathways for insects.

Flammable Privacy Plantings

When appropriate, replace the more flammable species with a shrub of less flammability (see the Firewise plant list for suggestions). For example, using plant species other than arborvitae or various decorative cedars and yews as a privacy hedge can maintain privacy. Laurel, viburnum, rhododendron, azalea, hydrangea and other less flammable species can be used to produce a thick, efficient privacy hedge. Many of these species produce colorful flowers as well.

If flammable plantings remain, once or twice a year shake the dead needles and litter out of the shrub, rake it up and remove the dead vegetation from the area.

For a list of appropriate Firewise plants, refer to *www.your.kingcounty.gov/dnrp/library/water-and-land/forestry/forestfire/FirewisePlantsPugetSoundBasin-2011.pdf* or use the King County Native Plant Guide *www.green2.kingcounty.gov/gonative/Plant.aspx?Act=search* and search for fire resistant plants.

Roofing and Other Home Construction

Cedar shake roofs increase the risk of fire damage or loss to a house and surrounding residences. Residents should be educated about the threat and encouraged to replace roofing with Class A fire resistant material when they have an opportunity.

As an interim measure to replacing a roof, home owners should know about other structural improvements that are less costly yet can still reduce fire risk. Simple measures such as enclosing the bottom of wooden decks with screens as mentioned below can make a difference in protecting a home.

Where branches are hanging over a structure, they should be pruned back. Not only does this reduce the risk of fire traveling from a tree, it also removes a pathway for various animals and insects.

Chimneys
Chimneys, especially for wood burning fireplaces and stoves, should be screened at the top to prevent embers from escaping the flue. Even indoor fires can spread embers. Chimneys should be properly screened.

Figure 6-4: *Screened Chimney*

Fires have started in the winter, especially during cold, but dry, spells. The top layer of brush can dry out quite rapidly in low humidity, extreme cold weather. In January 1995, over 300 acres in Cumberland, Washington burned as the result of a winter wildfire.

Detached garages, shops, storage sheds, barns, and other outbuildings should be assessed for fire vulnerabilities. Most Firewise practices that apply to residences can also be used with outbuildings. In addition, any flammable and combustible liquids and materials should be stored so they are not readily exposed to embers or flames.

The national Firewise Communities/USA program has many additional suggestions for home construction on their website:
www.firewise.org/wildfire-preparedness/be-firewise/home-and-landscape.aspx.

Fences and Decks

Wooden fences and decks should not be connected directly to a residence. If an ember should land against a fence and start it on fire, the fire can easily spread to the house. There are a couple of easy fixes for this situation. To prevent a fence from acting like a fuse, use metal flashing (or other non-flammable material) to connect the fence to the house. Another solution is to have a gate next to the house that can be opened (breaking the "fuse") in case of fire. A metal gate would not even have to be opened. The fence could be terminated with a stone or metal post next to the house. If the fence must be connected to the house, use metal connectors and avoid direct wood-to-wood contact.

Ideally, decks should be made of inflammable materials, such as Trex or other materials. These manmade materials are more difficult to ignite. To reduce the risk of a deck catching fire, keep it clean of debris, both on top and especially underneath. The area beneath a deck can be screened with 1/8" wire mesh to prevent embers from collecting under the deck. The wire mesh also prevents leaves and litter from building up as well as keeps out unwanted pests. The mesh may be covered with a trellis or other decorative covering. If it is not practical to screen the deck (due to height above the ground), be sure to keep the area well raked and do not store flammable items under the deck.

Difficult to See Street Address Numbers

If there is an urgent situation, fire and emergency personnel need to be able to easily find individual homes in the community. While address numbers may be present on homes or mailboxes, emergency personnel must slow down and examine each home for to determine the address. Address numbers should be posted at the entrance to the drive and be clear and easily read at a distance, in both directions, in the darkness or under low visibility conditions. A good address sign will have numbers that contrast sharply from the background of the sign.

Fireworks

In 2009, fireworks and explosives started 790 fires and caused over $5.4 million in loss statewide. 85% of all wildfires are caused by human activities. The use of fireworks is a major contributor of fire starts. Educating residents and others about the dangers of using fireworks in heavily forested areas and the surrounding lands should be an ongoing effort.

Evacuation Plan

Fire can be an unpredictable and powerful force. Despite the best efforts of federal, state, and local fire agencies, a fire may burn out of control and threaten residents and homes in an area. Residents should educate themselves on how to prepare for an evacuation, when to evacuate,

how to leave their homes in a fast and efficient way, and when they can return once the area is safe.

One possible project would be to work with KCFD 10 to conduct a wildfire drill in Mirrormont. This could be a simple tabletop exercise where the community tests its communications and evacuation procedures. Such an exercise should also consider what to do if Tiger Mountain Road or Issaquah Hobart Road was cut off in one direction due to a fire/smoke across the road or a vehicle accident.

Emergency Communications

In the event that landline or cell phone service is available during an emergency, consider establishing a phone tree system for contacting residents. This is a fast and efficient way of providing the latest information about a wildfire or other emergency. A phone tree could be easily expanded outside of the area by adding contacts for other neighborhoods. In addition to a phone tree, email addresses should be exchanged as part of an emergency communication plan.

Regional Public Information and Notification (RPIN) - RPIN is a voluntary system that helps inform you about potential hazards and threats that impact your area. The features include voice messages to landlines, added geographical filters for areas of King County, and targeted types of alerts (e.g., safety information and/or emergency notifications). To learn more visit *http://www.kingcounty.gov/safety/prepare/RPIN.aspx.* To sign up, visit *http://rpin.alertsen.se/SignUp/?.*

Smart 911 – This supplemental service allows you to create a safety profile that emergency responders can see when you call 9-1-1. When you register with Smart911, you create a Safety Profile that includes any information about your household that you want 9-1-1 to have in the event of an emergency. Information may include address, medical, and security information. Then, when someone dials 9-1-1 from a phone associated with the household Safety Profile, the profile is immediately displayed to the 9-1-1 dispatcher. This additional information helps the dispatcher facilitate the proper response to the proper location. To learn more visit *www.kingcounty.gov/safety/E911/Smart911.aspx*. To signup, visit *www.smart911.com*.

Wireless Messaging – You can send a text message from your computer to cell phones if you have the service carrier ID and the cell phone number of the person you want to contact.

Before sending a text message, you will need to know the recipient's wireless service provider and the provider's ID. A partial list is provided below (Figure 6.2).

To send a message, on the email address line enter the service provider ID code followed by the recipient's area code + cell # with no dashes or spaces. areacode+cell#@txt.att.net

For example the AT&T cell phone number (206) 123-4567, would be entered as: 2061234567@txt.att.net.

Service Provider	How to address the message:
AT&T	areacode+cell#@txt.att.net
Cingular	areacode+cell#@cingularme.com
Cricket	areacode+cell#@sms.mycricket.com
MetroPCS	areacode+cell#@mymetropcs.com
Nextel	areacode+cell#@messaging.nextel.com
Sprint	areacode+cell#@messaging.sprintpcs.com

T-Mobile	areacode+cell#@tmomail.net
Tracfone	areacode+cell#@mmst5@tracfone.com
US Cellular	areacode+cell#@email.uscc.net or phonenumber@mms.uscc.net for picture messages
Verizon	areacode+cell#@vtext.com or phonenumber@vzwpix.com for multi-media messages
Virgin Mobile	areacode+cell#@vmobl.com

Figure 6-5: *Common carriers and their ID*

This means of contacting neighbors has been used by Firewise communities in eastern Washington. The limitation of this method is that not everyone will have text capability, a cell, or phone capability if the power goes out.

Amateur Radio – While some of the utilities in Mirrormont are below ground, above ground utilities that connect to Mirrormont can be disrupted during a wildland fire, causing disruptions in service. Cell phone service can also be interrupted during an emergency when circuits are overloaded or transmission facilities are damaged. Because of this, the community should examine alternative emergency communication methods in case phone service is not available. This could consist of handheld FRS (Family Radio Service) radios; which are relatively inexpensive, don't require a license and work over distances of around a mile (depending on terrain and vegetation). Amateur (HAM) radio is another option, although radios are more expensive and require training and a license to operate.

Contact the Issaquah Amateur Radio Club (*www.w7bi.com*) or other local ARRL (American Radio Relay League - *www.arrl.org*) for more information about amateur radios.

CERT

Another all-hazards way to reduce risk from fires and natural and human-caused disasters is to consider starting or joining an existing Community Emergency Response Team (CERT). CERT is a U.S. government sponsored program that educates people about disaster preparedness for hazards that may affect their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Using the training learned in the classroom and during exercises, CERT members can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members also support emergency response agencies by taking a more active role in emergency preparedness projects in their community.

CERT training is usually coordinated by the local fire department. Mirrormont residents interested in CERT training should contact Eastside Fire and Rescue for details on a CERT class nearby. More information about CERT can be found at *www.eastsidefire-rescue.org/theme_02_design_Opportunities.html* or *www.citizencorps.gov/cert/*

Mirrormont Specific

Many of the preceding recommendations apply to the Mirrormont area as a whole. There are a few suggestions that Mirrormont residents should specifically take note of:

- As fire travels faster uphill, residents in Mirrormont should be aware that they may require larger areas of defensible space. Also, a fast moving fire may leave little time for evacuation preparations.

- Where possible, owners of larger lots should make sure they are taking care of the entire forested land on their properties, not just the 30-foot “defensible space” immediately surrounding structures. Property owners should monitor forest health and take measures to ensure the forest stays healthy. A healthy forest is a safer forest.

A Suggested Plan

First six months

- Form a local Firewise Community Board (*completed*)
- Conduct a Firewise neighborhood workshop (*completed*)
- Implement simple Firewise risk reduction measures (clearing or mowing vegetation within 3 feet of building foundations, trimming shrubs, removing tree limbs that touch the house, etc.) on individual properties (*completed – chipper weeks in Oct-Nov*)
- Apply for a Community Service Area (CSA) grant to fund reflective 2-sided street address signs (*completed*)
- Sponsor a presentation from a CERT volunteer on emergency preparedness and CERT classes in Issaquah (*in progress*)
- Distribute Firewise literature to neighborhood residents
- Create emergency contact phone tree
- Apply for Firewise Community status with Firewise Communities/USA (*in progress*)

Year one

- Work with community association to add a Firewise pruning section to Forest Practices section of the community web site and guidelines
- Continue to work with King County Parks in supporting a healthy forest in Mirrormont Park
- Work with Eastside Fire and Rescue, KCFD 10 to develop a fire evacuation plan and have individual emergency plans in place
- Install reflective 2-sided street address signs in cooperation with Eastside Fire and Rescue and KCFD 10 if CSA grant is awarded (pursue other options for signs if grant is not awarded).
- Develop an alternative communications (FRS or Amateur Radios) plan
- Conduct an annual Firewise audit to measure fire risk reduction and identify areas of improvement
- Renew Firewise Community status

Year two

- Continue to educate residents about Firewise risk reduction measures
- Consider identifying good examples of Firewise landscaping in the community. Point out examples with yard signs or in the community newsletter. Make this an annual event (May is National Wildfire Awareness Month).
- Encourage residents to participate in CERT training and consider forming a Mirrormont CERT
- Conduct the annual Firewise audit and community cleanup, and renew Firewise Community Status

Year three

- Implement more costly Firewise risk reduction measures if identified
- Continue with education process, make Firewise awareness an annual tradition
- Conduct the annual Firewise audit and community cleanup, and renew Firewise Community Status

Chapter 7
Getting Firewise Communities/USA Recognition

While any homeowner can implement Firewise practices it's important to note that fire doesn't recognize property boundaries. By working together, a community can increase the safety of all the homes in the area. This is especially important when the homes are as close together in a forested environment as they are in Mirrormont. The Firewise Communities/USA program grants special recognition to communities that come together to create a more fire-safe place to live.

Getting Firewise Communities/USA recognition is an optional but achievable goal that demonstrates a community's commitment to reducing the risks of wildfire. This chapter outlines the requirements and what Mirrormont needs to do to be awarded this distinction.

Why Become Recognized?

Why should a community apply for national Firewise recognition? Here are some good reasons:

- Helps create a sense of community, of belonging. People who work together for a common goal tend to build stronger neighborhoods. The program opens up communications between neighbors.
- Engages more neighbors in preparing for wildfire safety. The more Firewise homes, the less chance that a home may catch fire and spread to other homes in the neighborhood.
- Encourages attractive and welcoming landscapes. Firewise landscaping is aesthetically pleasing.
- Increases possible grant sources for common projects.
- Provides access to national Firewise organizations resources including:
  - Quarterly publications
  - Online Learning Center
  - National biannual Convention
- Establishes relationships with local fire agencies.
- Can help when applying for grants and other programs.

What's Involved?

Mirrormont as a whole may apply for Firewise Communities/USA status or subsections of the development, such as individual blocks, can apply. It's possible to have multiple Firewise Communities within a big development if there's a lack of interest at the larger scale.

Here are the steps involved in getting Firewise Communities/USA recognition:

1. Establish a Mirrormont Firewise Board. The board consists of community members who are interested in helping Mirrormont become more fire-safe. The Mirrormont Community Club officers could serve as the Board.
2. Complete a community assessment and create a plan that identifies agreed-upon achievable solutions to be implemented by the community. State, county and local agency representatives must approve the assessment and plan. (The plan and assessment in this document fulfill both of these requirements.)

3. Observe a Firewise Communities/USA Day each year that is dedicated to a local Firewise project. Projects can include yard debris cleanup days, educational events/presentations, or any community project designed to reduce the risks of wildfire.
4. Invest a minimum of $2 per capita annually in local Firewise projects. Most communities meet this requirement through volunteer time. See the "How Much Does It Cost?" section below for details.

It's up to the Firewise Board, in cooperation with KCFD 10, to decide whether to pursue Firewise Communities/USA status. The majority of the community or subsection should support the effort.

If the board decides to move forward, a Firewise Communities/USA application is submitted to the county's Firewise representative.

When approved, Mirrormont (or a subsection) achieves recognition and is included among a select group of neighborhoods in the United States; at present only eight communities in King County have received this distinction. (See: http://submissions.nfpa.org/firewise/fw_communities_list.php for a nationwide list of communities.)

Each year the Firewise Board may submit an application and documentation to renew Firewise Communities/USA recognition. The annual requirements include holding a Firewise day event and investing a minimum of $2 or the equivalent per community member in Firewise activities.

How Much Does It Cost?

It doesn't cost anything to apply for Firewise Communities/USA status (or renew annually, once your community is recognized).

The program does stipulate that the community must invest a minimum of $2.00 per capita annually in local Firewise projects if they want to maintain their recognition status. However, this does not mean that a cash outlay is required. The value of volunteer time and donated labor and supplies count toward the $2 minimum as well as money spent by individuals maintaining their property for wildfire safety.

For example, in 2010 Mirrormont had 1584 residents. So the Mirrormont community as a whole would need to invest at least $3,168 in various Firewise projects to meet this requirement. Again, that doesn't mean the community needs to raise that much money or spend out-of-pocket dollars each year. First, volunteer time counts. The current rate for volunteer compensation is a bit over $27 an hour ($27.54 as of 2014, see *www.independentsector.org/volunteer_time* for more information on how this is determined). So if a single person volunteers an hour of time on a Firewise project, he or she has met the annual $2.00 per capita requirement for 13 people.

With a total of 597 housing units, that’s only about $5.31 per house. Or a little over 11 minutes per house per year. Obviously not everyone will participate, but it does not take a lot of people to easily exceed the annual investment. It doesn't matter how many people are logging the hours (although the more the better), just that they are recorded. (Volunteer forms are included in the Resource Kit included with this report.)

Second, individual efforts count toward the community. Let's say you landscaped your yard and used fire tolerant plantings. The total cost of your landscaping could be applied to the community's annual Firewise investment. Even annual maintenance items like cleaning gutters (or paying someone to clean your gutters) can be used to meet the investment requirements. As you can see, it's easy to meet this requirement.

Examples of Firewise projects include:

- Educating the community (presentations, workshops, or information booths on Firewise concepts)
- Cleaning dead needles and twigs from your roof and gutters
- Creating defensible space around your house and along common areas
- Attending Firewise meetings (local board meetings or national conferences)
- Participating in community projects (such as cleaning up greenbelts and common areas, removing dangerous plants and fuels)

Note: The time and fees involved in preparing this report can be applied to the $2 per capita annual investment for the first year.

How Long Does The Process Take?

On a national level, most communities take 12 to 24 months to complete all of the Firewise Communities/USA requirements. However, in the case of Mirrormont the process has been accelerated since the assessment and plan have been completed, a highly successful fuels reduction Chipper Week has been accomplished, and the cost of creating this report can be applied to the annual $2 per capita investment. The primary requirements are holding a Firewise Day event and submitting an application. Once these tasks are completed, the approval process should take 6 to 8 weeks.

Is There Grant Money Available for Projects?

The Mirrormont Firewise Board may identify large-scale projects such as fuels reduction or road improvements that could significantly reduce wildfire risk. These projects may be too costly for the community to undertake. However it is possible there may be funding available for certain projects through federal, state and county grants. The Resource Kit contains information on potential funding sources.

For More Information

Check out the official Firewise Communities/USA Web site at:

www.firewise.org

You'll find stories and photos from a number of communities that have received the distinction.

Appendix A
Firewise Contacts

King County Department of Natural Resources and Parks
Linda Vane, Firewise Program Manager
201 South Jackson Street, Suite 600
Seattle WA 98104-3855
linda.vane@kingcounty.gov
206-477-4842

King County Fire District 10, Eastside Fire and Rescue
Chief Greg Tyron
175 Newport Way NW, Issaquah, WA 98027
425-313-3203

Washington State Department of Natural Resources
Art Tasker, Region Manager
South Puget Sound District
950 Farman Ave. N.
Enumclaw WA 98022
art.tasker@dnr.wa.gov
360-802-7038
www.dnr.wa.gov

Sarah Foster, Washington State Firewise Coordinator
Olympia, WA
sarah.foster@dnr.wa.gov

National Firewise Communities
www.Firewise.org

Information for 98027 zip code - *(Issaquah and unincorporated King County)*
9-1-1 is for emergencies only: Call 9-1-1 only if you need an immediate response from police, fire or medics.

For non-emergencies, here are some contact information that may be useful:

Utility Companies
Puget Sound Energy (24 hr):
1-888-225-5773
www.pse.com
Seattle City Light:
206-684-7400 (24 hr Outage Hotline) or 206-684-3000
www.seattle.gov/light/talk

Police
King County (24 hr):
206-296-3311
www.kingcounty.gov/safety/sheriff.aspx
Online Reporting
www.kingcounty.gov/safety/sheriff/ReportToSheriff.aspx
Issaquah
425-837-3200425-556-2500
www.ci.issaquah.wa.us/index.aspx?NID=306

Fire and EMS
Eastside Fire and Rescue
425-313-3200
www.eastsidefire-rescue.org

Roads, Transportation and Traffic
Travel Information:
511
www.wsdot.wa.gov/traffic/511
Issaquah Public Works Operations:
425-837-3470
http://www.ci.issaquah.wa.us/index.aspx?nid=308
King County Roads (unincorporated areas):
1-800-527-6237
www.kingcounty.gov/transportation/kcdot/Roads/RoadsMaintenance.aspx
Washington State Patrol:
425-401-7788
www.wsp.wa.gov
Vehicle Collision Report: www.wsp.wa.gov/publications/collision.htm

Health and Human Services

Public Health:
1-800-325-6165
www.kingcounty.gov/healthservices/health.aspx

Washington Poison Center (24 hr):
1-800-222-1222
www.wapc.org

Crisis Clinic:
1-866-427-4747
www.crisisclinic.org/main.html

Washington Information Network:
211
www.crisisclinic.org/main.html

Other Services

King County Flood Warning Information Line (recorded flood phase information):
1-800-945-9263
www.kingcounty.gov/environment/waterandland/flooding/warning-system/phones.aspx

King County Flood Warning Center (staffed only during a flood event):
1-800-768-7932
www.kingcounty.gov/environment/waterandland/flooding/warning-system.aspx

American Red Cross serving King County:
206-323-2345 or 360-377-3761
www.seattleredcross.org/show.aspx?mi=4030

Regional Animal Services:
206-296-7387
www.seattleredcross.org/show.aspx?mi=4030

Illegal Dumping:
1-866-431-7483
www.kingcounty.gov/environment/dnrp.aspx
www.your.kingcounty.gov/solidwaste/cleanup/report-dumping.asp

Online Reporting King County Abandoned Vehicle Hotline (vehicle on the side of the road):
206-205-0969
www.kingcounty.gov/transportation/kcdot/Roads/RoadsMaintenance/AbandonedVehicles.aspx