FIREWISE COMMUNITIES/USA® RECOGNITION PROGRAM

KNEELAND

WILDFIRE RISK ASSESSMENT

INTRODUCTION

The Firewise Communities/USA program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire.

This document and the associated Action Plan were developed during community meetings, through interviews and document review that involved Kneeland community members, current and former fire chiefs, board members of the Kneeland Fire Protection District (KFPD), as well as local, county and state officials. The following community assessment is intended as a resource to be used by Kneeland residents for creating and continually updating a wildfire safety action plan. The plans developed from the information in this assessment should be implemented in a collaborative manner, and updated and modified as needed.

Photo: Fire in Kneeland, Amy Miller, August, 2014.

DEFINITION OF THE HOME IGNITION ZONE

Kneeland is located in a wildfire environment. Wildfires will happen--exclusion is not a choice. The variables in a fire scenario are when the fire will occur, and where. This assessment addresses the wildfire-related characteristics of Kneeland. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but examines the community as a whole.

A house burns because of its interrelationship with everything in its surrounding home ignition zone---- the house and its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the wildfire's potential relationship with his/her house. This can be accomplished by interrupting the natural path a fire takes. Changing a fire's path by clearing a home ignition zone is an easy-to-accomplish task

Mix of Douglas-fir and oak in Kneeland, Eileen Nunez, April, 2015.

that can result in avoiding home loss. To accomplish this, flammable items such as dead vegetation must be removed from the area immediately around the structure to prevent flames from contacting it. Also, reducing the volume of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone.

Included in this assessment are observations made in the Kneeland Fire Protection District. The Assessment addresses the ease with which home ignitions can occur under severe wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents. Kneeland residents can reduce their risk of destruction during a wildfire by taking actions within their home ignition zones. This zone principally determines the potential for home ignitions during a wildland fire; it includes a house and its immediate surroundings within 100 to 150 feet.

The result of the assessment is that wildfire behavior will be dominated by the residential characteristics of this area. The good news is that by addressing community vulnerabilities, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort will reap great rewards in wildfire safety.

DESCRIPTION OF THE SEVERE CASE WILDLAND FIRE CHARACTERISTICS THAT COULD THREATEN THE AREA

Fire intensity and spread rate depend on the fuel type and condition (live/dead), the weather conditions prior and during ignition, and the topography. Generally the following relationships hold between the fire behavior and the fuel, weather and topography.

- Fine fuels ignite more easily and spread faster with higher intensities than coarser fuels. For a given fuel, the more there is and the more continuous it is, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn out than coarser fuels.

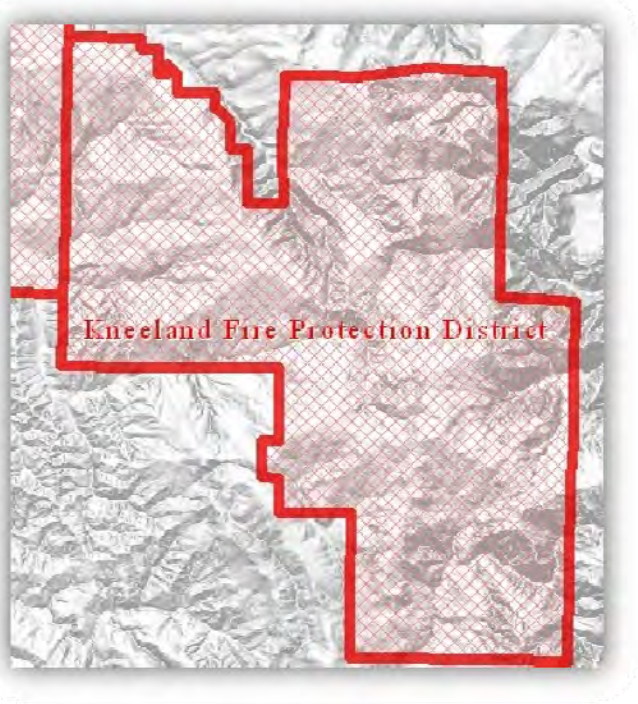
- The weather conditions affect the moisture content of the dead and live vegetative fuels. Dead fine fuel moisture content is highly dependent on the relative humidity and the degree of sun exposure. The lower the relative humidity and the greater the sun exposure, the lower will be the fuel moisture content. Lower fuel moistures produce higher spread rates and fire intensities.

- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity.

- Topography influences fire behavior principally by the steepness of the slope. However, the configuration of the terrain such as narrow draws, saddles and so forth can influence fire spread and intensity. In general, the steeper the slope, the higher the uphill fire spread and intensity.

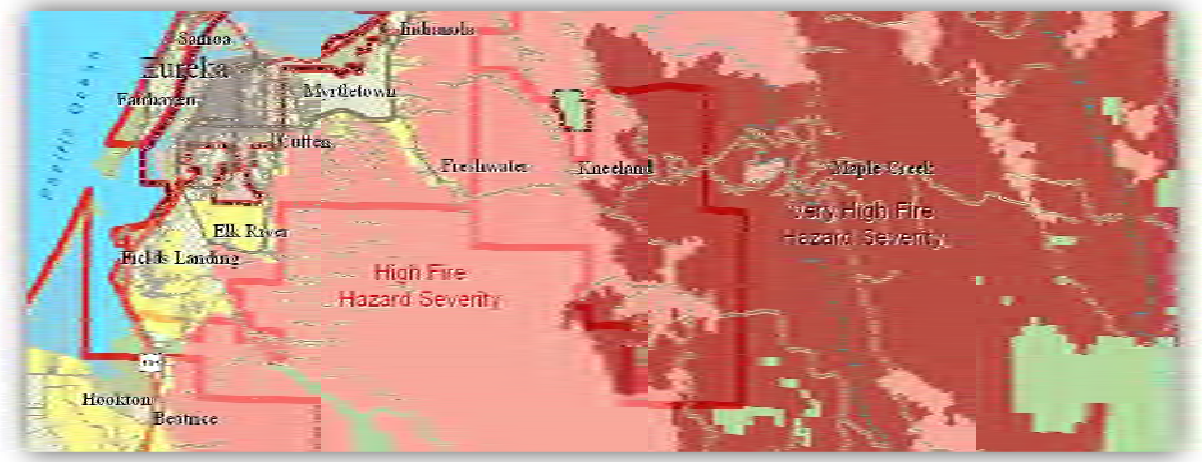
The community of Kneeland is nestled in the mountainous area centered between and just east of Eureka and Arcata. Kneeland is located in the wildland-urban interface (WUI) where there is an increased likelihood of wildland fires of both natural and anthropogenic origin. The terrain is characterized by steep slopes and drainages encompassing portions of the Freshwater and Mad River watersheds and, in the east, dipping into the Van Duzen watershed.

Summers are hotter and drier than communities immediately surrounding Humboldt Bay, especially in the eastern portion of the district. A lit cigarette carelessly thrown from a car window or a late-summer electrical storm could quickly ignite the dry grasses or densely vegetated forests leading to a potentially dangerous fire in minutes.



Humboldt County Web GIS terrain map, accessed 4/20/15.

The mountainous terrain and rural, vegetated landscape are important considerations in evaluating risks from wildland fire. The lower elevation areas are in the "redwood zone" with greater moisture and resistance to wildland fire. The higher elevation areas are characterized by increasingly dry conditions where mixed conifer forest gives way to oak woodlands and rolling grasslands (as you progress further east and south). This change in vegetation marks a distinct boundary between "High Fire Hazard Severity" and "Very High" (see map below). It is worth noting that, while this line has been true historically, increasingly dry and warm weather as predicted in the coming decades may shift the "Very High Fire Hazard Severity" further west. The many ridges that snake through this knot of the coast range are also prone to occasional lightning strikes.

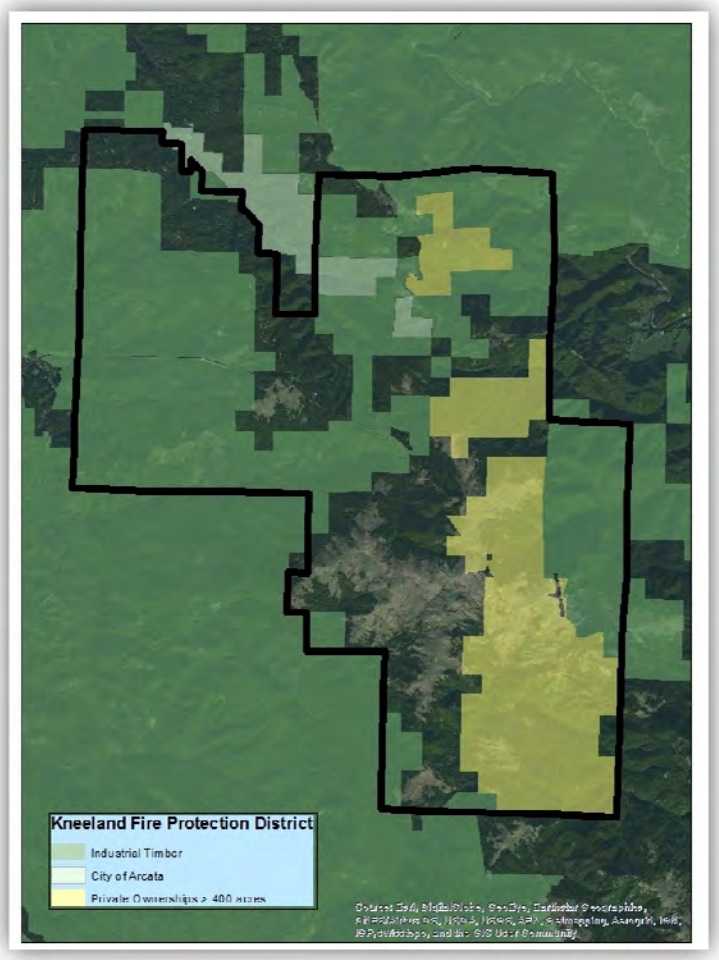


Humboldt County Web GIS fire hazard severity map, accessed 4/20/15.

Of this rugged landscape, many of the timbered valleys are owned by industrial timber companies while clusters of residential development are situated along ridge tops. Historically, the vast majority of fire events have been related to accidental ignitions (more on this below), primarily from small landowners in

the area. Risk of wildland fire on industrial timberlands arises from the dense accumulations of fuel-wood (from decades of fire suppression) and the slash piles that remain after logging events. In addition, these areas are frequented by transients and suffer from illegal dumping of household waste, appliances, etc.; both of which are considerations as potential ignition sources. Areas of increased wildfire risk to structures include the residential centers along and nearby Tim Mullen, Barry and Mountain View roads. These roads are located in the most fire-prone area of the district and include many residences that line the top of ridges.

The sprawling nature of the community, surrounded by industrial timberlands, characterized by steep and rugged terrain, all contribute to a landscape that is both flammable and topographically inclined to create high intensity wildfires that can spread quickly and burn very hot.



Map created using Humboldt County parcel data from August, 2014.

SITE DESCRIPTION

Kneeland was historically a tight-knit agricultural community and is a place rich with local history. Located 30 minutes from Eureka and Arcata, Kneeland is well known for its redwood and Douglas-fir forests, rolling hills, spectacular open pastoral views, and fertile farm land. It experiences a warm Mediterranean climate with elevation ranging from 200 to 2,600 feet.

Demographics

The Kneeland Fire Protection District is composed of approximately 27,000 acres of land, with approximately 600 people living in roughly 230 residences. Within this population the majority of the residents are of an older age, (1/3 of the population is over the age of 55). The 2010 census found a median age of 47, up significantly from the 2000 census and much higher than the state and national averages. An aging population is noteworthy as some residents may be less able to manage vegetation on their properties. Much of the population can be found in dense clusters along the main roads such as Greenwood Heights, Kneeland, Barry and Tim Mullen roads with pockets of residents widely spread throughout the area. And while the area was historically populated with agricultural and timber landowners (some of whom are still actively harvesting and ranching), now many of the residents are small landholders seeking rural solitude while either retired or working elsewhere in the county.

Typical, "Redwood Zone" vegetation, Google Images, 2014.

Ownership Patterns

The District is comprised primarily of ownerships larger than 400 acres. Industrial Timber companies own nearly half of the acreage in the District. Humboldt Redwood Company comprises approximately 33% of the District (mostly in the southwest) while Green Diamond Resource Company comprising an additional 12% (mostly in the northeast). Private landowners with ownerships larger than 400 acres encompass approximately 26% of the district. Thus, twelve landowners account for almost ¾ of the acreage within the district. While the remaining 300 landowners own far less of the rural land, they have historically been the primary source of ignition for wildland fire. Therefore, a core strategy for preventing wildland fire in the KFPD and associated response area is to, first and foremost, implement an outreach campaign to prevent ignitions from the entire community while conducting fuel reduction projects as time and funding allow.

Vegetation Characteristics

The vegetation varies from low to high elevation. Lower elevations are characterized by moist redwood forests stretching upwards to Douglas – fir forests and eventually to more open, dry woodlands with annual and perennial grasses, and a mix of hardwoods such as oaks, California laurel and shrubs.

The majority of the KFPD is designated as having a "Very High Fire Hazard Severity". This is due, in part, to the change in the natural fire regime caused by fire suppression. By continually suppressing fire, the fuel load has built up in the understory of the forest and the oaks and grassland areas have more fuels on the ground that are easily ignited when fire enters the system. Young Douglas-firs have begun to exponentially encroach on oak woodlands and grasslands which poses an increased danger for wildland fire.

Firs encroaching on native oak woodland, Lindsay Green, October, 2013.

Fires are now more likely to be catastrophic in nature as they will burn at a higher intensity potentially causing severe damage and an even greater mortality rate of large trees. Intense fires also burn the soil thereby reducing nutrients and the potential to support future growth of vegetation. High intensity fires may also move rapidly across that landscape increasing the chances of threatening structures. Historically, ignition sources within the area have been almost entirely human-related.

Assets at Risk

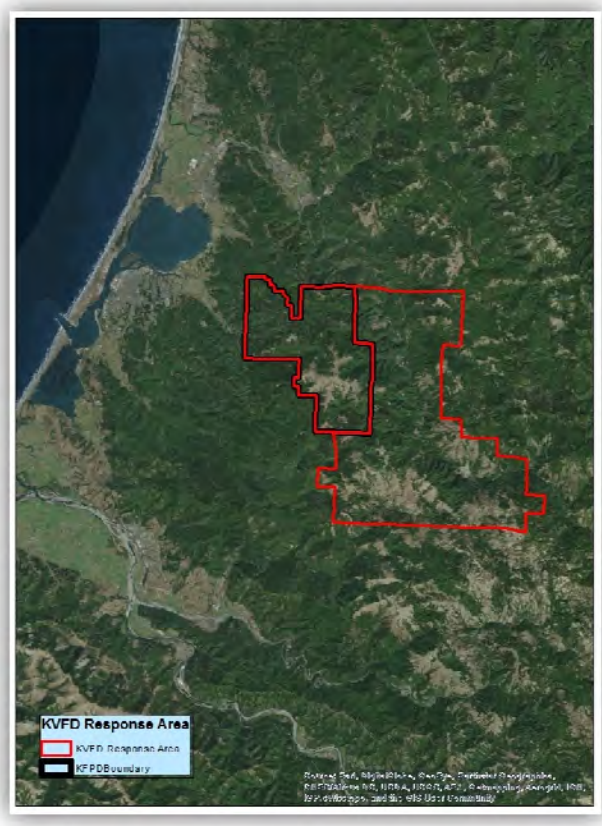
Kneeland has productive soils with a climate more similar to inland communities than those found on the coast. This has attracted a mixed community consisting of agricultural and timber producers as well as those who enjoy the "four season" mountain weather, with a relatively short commute to jobs in town.

Timber stands and ranch grasslands benefit from regular marine influence but are located just far enough inland to enjoy warmer temperatures (though not as drying as those further to the east). Thus Kneeland boasts, large tracts of well-stocked redwood and Douglas-fir ground that are located relatively close to local mills (enhancing their economic viability as resource lands). In addition, multi-generational ranches that house agricultural infrastructure (barns, corrals, etc.) are located in the midst of productive but seasonally dry grasslands. In the event of wildland fire, productive timber lands, livestock and agricultural infrastructure would be at risk; all of which are important contributors to the local economy.

The beautiful vistas of Kneeland coupled with its unique weather and proximity to the town centers of Eureka and Arcata has led to significant residential development, especially on the ridges lining this mountainous community. In addition, the "Small Necessary Rural School" of Kneeland Elementary – which functions as an important community hub – is located near the top of Kneeland Summit. In the event of wildland fire, personal homes and outbuildings would be at risk, as would the local elementary school which is of great importance to the community.

Firefighting Ability

With the high fire risk designation, the Kneeland Fire Protection District was formed on August 11, 1990 which encompasses approximately forty-two square miles. The district is adjacent to a designated response area that nearly triples the area for which the Kneeland Volunteer Fire Department (KVFD) often acts as first responder (see map on following page). While Kneeland is within the California SRA (State Responsibility Area) and CALFIRE has legal responsibility for wildland fire suppression of vegetation and timber lands, they have no responding ground response fire engines in the Kneeland area. For Kneeland, CALFIRE is based in Trinidad and Fortuna, with a 45-minute to one-hour driving time to the District. Especially in the summer fire season, CALFIRE may not be available to respond depending on other commitments. Additionally, from November to the following May, CALFIRE has limited firefighter staffing so response times may be even longer.



KVFD Response Area, Humboldt County GIS, 2015.

The KFPD and response area are served by a volunteer force of about 10 firefighters including a long-serving chief who acts entirely as a volunteer. The Kneeland Volunteer Fire Department has worked very hard in recent years to recruit new firefighters, ensure broad, standardized training for every department volunteer, helped to pass a local ballot measure for a supplemental property tax that will make it possible for continued upgrades and training and has

helped to develop a capital campaign to build a permanent firehouse. Their equipment is located on Greenwood Heights making travel time to a fire on the upper (more fire-prone) portion of the hill time consuming. The department currently operates with no firehouse and aging equipment; both of which are significant concerns for fire safety in Kneeland.

Maps displaying additional information related to the Kneeland Firewise Community can be found in Exhibits A and B.

ASSESSMENT PROCESS

During the Data Collecting Process key individuals within the community were convened to evaluate the concerns and needs that should be addressed within the Kneeland Wildfire Risk Assessment and specifically to identify areas that are at risk of wildfire. The first meeting took place on March 11th at the Kneeland Elementary School and was attended by board president Mike Davis, Firewise Committee Members Amy Miller and Betsy Watson (also a board member), Lindsay Green, project lead (and board member), Fire Chiefs Jim Anderson, Greg Fitch, Jerry West, and Rick Hardin (current fire chief), and Eileen Nunez, Intern For the Firewise project. During this meeting a series of questions were asked to flesh out the key considerations related to wildland fire in Kneeland. Immediately following the meeting Lindsay Green and Eileen Nunez visited several locations, as recommended by participants in the first meeting, to document both positive Firewise modifications as well as evidence of those areas that pose a risk for fire safety in our community.

The second meeting took place on April 26th at the home of a Firewise Committee member. Those in attendance included Firewise committee members Betsy Watson, Irene Van Natter and Amy Miller, as well as fire chief Rick Hardin, project lead Lindsay Green and Eileen Nunez, Intern For the Firewise project. During this meeting the group reviewed the draft Wildfire Risk Assessment and Action Plan (as drafted by Lindsay and Eileen) and provided recommendations for revisions. The second half of the meeting was focused on planning for the first annual Kneeland Firewise Day including logistics, outreach and plans for involving as much of the community as possible.

IMPORTANT CONSIDERATIONS

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

In the Kneeland community there are three primary issues that contribute to a potentially dangerous fire situation: 1) an historic lack of community participation and awareness related to fire safety and the prevention of fire ignitions; 2) a lack of adequate volunteers, water and equipment for firefighting; and 3) a buildup of fuels in our fire prone area. There are many facets to each of these three issues which are discussed in more detail below.

An Historic Lack of Community Participation:

There are several potential reasons for the apparent lack of collective involvement from the greater population. It may be related to the sprawling nature of residences and the lack of a community "hub" – this makes promoting a sense of community difficult. It may be related to the fact that Kneeland has not experienced a significant fire event in recent decades, allowing residents a false sense of security related to fire risk. It may be related to the aging population of the Kneeland community or a host of other potential reasons. Whatever the reason(s), like many volunteer fire departments across the nation, the KVFD has struggled to maintain an adequate force of volunteer firefighters (to be discussed in greater detail in the following section) and events and fundraisers aimed at increasing community involvement and awareness around fire safety have historically been poorly attended.

The historic lack of community participation is significant considering that fires in the Kneeland Community are started almost entirely by people. According to the current fire chief, ignitions are most likely to occur from the following situations:

1. ***Home owner burn piles that get out of control***. Landowner does not provide sufficient water supply or the ability to apply it. Burn piles are abandoned or left unattended resulting in accidental ignition of surrounding vegetation or structure.
2. ***Landowners engaging in high-risk activities*** such as mowing in dry grass areas with lawnmowers, emitting sparks.
3. ***A burn pile is ignited too close to exposures*** (e.g. wood fences, garages, sheds, surrounding vegetation or even their house).
4. ***Residential wood cutters leaving hot chain saws or building camp fires in rural dry grass areas***.
5. ***Illegal home owner vegetation burns*** (including burning at the wrong time of year and/or illegal burn size and location).
6. ***Off road vehicle accidents*** (which includes car fires, ATV and motorcycle use).
7. ***Arson.*** Humans purposely starting fires, or travelers discarding cigarettes (etc.) into high risk vegetation.
8. ***Timber Company controlled burns***. In rare cases, slash piles that are left unattended, larger than advisable or are burned in unanticipated poor weather conditions may get out of control. Occasionally fires may occur from non-permitted burns.
9. ***Mother Nature***. Lightning strikes are rare but do occur.

Private landowner burn pile, Lindsay Green, March, 2015.

It appears community involvement may be shifting, however. In 2014, the Kneeland community passed "Measure L" which authorized the KFPD to impose an additional parcel tax of $80 per improved parcel and $60 per unimproved parcel in order to fund fire protection services and equipment. This measure passed by an impressive 82% indicating strong community support for fire protection efforts. Prior to the passage of "Measure L", the volunteer fire department had difficulty securing funding for adequate equipment.

"Measure L" clearly created some momentum and re-invigorated community interest in fire and rescue efforts of the KVFD. It is hoped that this initiative coupled with the emerging Kneeland Firewise program will engender greater community support and involvement in the future. To have a successful Firewise program there needs to be a dialogue with the residents of Kneeland to assess their needs and wants, in order to inform and educate them on the options and actions they can take individually that will help them to live harmoniously within the WUI.

Adequate Volunteers, equipment and water for firefighting:

Kneeland Volunteer Firefighters, 2014.

Volunteer Firefighters

The Kneeland Volunteer Fire Department is chronically understaffed. Currently Kneeland has 10 volunteer firefighters but many of these volunteers travel to work during the day (away from Kneeland) and are unable to respond to calls. The current fire chief has acted on the department for 26 years. In the foreseeable future, the department will need someone else to fulfill the responsibilities of chief. Presently, no other community members with the proper training and experience have emerged to fill this position.

Ideally, the department would have 15 volunteer firefighters in hopes of offering better daytime coverage. Kneeland volunteers trained through rigorous, standardized firefighter training programs will ensure the greatest safety in fire and medical response. Recruitment and retention have historically been very difficult for the department and continue to be of major concern for the community of Kneeland.

Firefighting Equipment

The equipment currently owned by the department is aging and in constant need of repair. New or updated equipment is important for the department to have the best available tools to help fight fires and keep the community safe. The lack of proper equipment poses a potential risk for the firefighters while responding to a fire or medical aid and also may delay response time significantly. Measure "L" funding will help the department slowly replace aging equipment with newer, safer and more effective tools but this will take time.

Chief Hardin with Chief's Response Vehicle.

Currently the department is lacking a firehouse. The department owns the site, has poured the foundation, and has developed engineered drawings for the design of the firehouse site (a temporary metal building exists there now to house equipment). Community donations and fundraising efforts have secured about half of the needed funds for construction. A capital campaign is needed to secure the remaining funds. Building the firehouse is of great community importance to act as a secure storage site for equipment, to be a training facility for volunteers, to act as a community response area following a disaster and also, importantly, to act as a community hub that could be used to promote fire awareness and fire safety in Kneeland.

Someday, a "sub-station" further up the hill (perhaps in the area of the airport) would be an important addition to the District firefighting infrastructure. This would allow for equipment storage that is more centrally located in the greater KVFD response area and would reduce response times in the "Very High Fire Hazard Severity" portion of the area.

Current Fire Station, Lindsay Green, May, 2015.

"Blue Dot" Water Tanks Dedicated for Fire Fighting.

Water for Firefighting

Water is perennially a concern in the mountainous, relatively dry terrain of Kneeland. Access to water that is both adequate in quantity and suitable for use in firefighting equipment is a major issue that the District faces. There is a lack of tanks designated specifically for firefighting and a lack of tanks equipped with the proper fittings that would allow firefighters to hook up and use the water. Perhaps the most important challenge facing KVFD: a lack of detailed agreements with landowners about access and allowable timing for water use. Having tanks specifically designated for fire use is greatly preferred over ponds and other "open water" sources because poor water quality can damage pumps or clog tanks, hoses and other equipment which has been very costly to the department in the past.

This situation is improving recently as a landowner in Greenwood Heights has set up an agreement with the KVFD that would allow them access to 55,000 gallons of water storage any time they need throughout the year. This agreement is very useful in that it gives KVFD access to a large volume of water. However, fires further up the hill will take longer to respond to and to refill. Securing agreements for water at locations throughout Kneeland is a very important piece of the fire safety puzzle for the KFPD.

Buildup of fuels:

Although the Kneeland Community has been fortunate not to have experienced many major wildfire events recently, the lack of fire in this region for several decades has led to the accumulation of heavy fuel loads and a general lack of community interest in addressing the risk of wildland fire. Dense fuels arise from an accumulation of downed woody debris, dense stands of young conifers and thick clusters of invasive species such as Scotch Broom (among other factors) – all of which may become ladder fuels in times of wildland fire.

Industrial timber, accounting for nearly half the land in the district frequently conducts logging activities (primarily selective logging with a history of some clear cutting) which result in large piles of slash. In addition, the lack of fire and the lower intensity logging practices of the past 60 years have resulted in very high fuel loads on these lands. In recently logged areas, with a large amount of vegetation on the ground in a relatively open area, ignition is quick and can burn very rapidly at a high intensity. Residential slash piles are also common as landowners manage vegetation on their properties. The periodic burning of slash piles have historically been sources of wildland fire in the Kneeland area.

Scotch Broom, Eileen Nunez, April, 2015.

OBSERVATIONS AND RECOMMENDATIONS

Kneeland residents are reminded to be conscious of keeping high-intensity fire more than 100 feet from their homes. It is important for them to avoid fire contact with their structures. This includes firebrands. The assessment team recommends the establishment of a 'fire free zone', allowing no fire to burn within ten feet of a house by removing fuels located there. It is a bad idea for fire to touch a house during a wildfire. Remember that, while wildfire cannot be eliminated from a property, it can be reduced in intensity.

Homeowners are reminded that street signs, addresses, road widths and fire hydrants do not keep a house from igniting. Proper attention to their home ignition zones does. They should identify and address the things that will ignite their homes.

Weather is, of course, of great concern during wildfire season. When fire weather is severe, homeowners should remember not to leave flammable items outside. This includes rattan doormats, flammable patio furniture, firewood stacked next to the house, or other exposed flammables.

Observations

During development of the Kneeland Wildfire Risk Assessment we observed many areas where Firewise improvements could be made. These observations are catalogued below.

Vegetation Tunnels, E. Nunez & L. Green, 2015.

"Vegetation Tunnels"

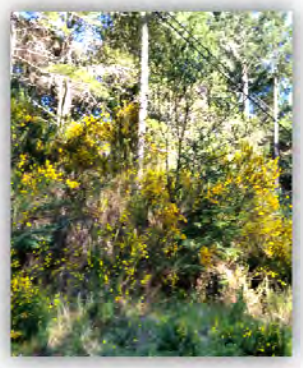
Commonly observed within the District are "vegetation tunnels" that encircle access roads. Dense vegetation crowding the sides, and sometimes arching over roads could potentially limit the ability of firefighting equipment to reach the site of a fire or other emergency. Dense vegetation is also more likely to catch fire and may act as a ladder fuel igniting vegetation higher in the canopy.

Residents should take care to keep their access roads clear of vegetation, ideally 50 feet in either direction from their access road. Access roads should be at least 10 feet wide with at least 15 feet of vertical clearance.

Dense Brush

Kneeland's productive climate means vegetation that grows – quickly! The Firewise Committee noted that many landowners have very dense brush near their homes and outbuildings, not to mention on other areas of their property. This vegetation is dangerous because it is often highly combustible and therefore can burn fast and hot leading to a more catastrophic fire that may spread quickly. Dense fuels that reach towards the canopy may also act as a "ladder" fuels, allowing the fire to spread quickly into the canopy from which it can travel to adjacent vegetation and, sometimes (in the case of embers) much further away.

Dense brush should be cleared completely from within 100 feet of any home or structure. Trees should be at least 15 feet apart in this zone and shrubs should be at least 10 feet apart. Any branches should be removed up to 8 feet in height. All dead grass, and debris should be mowed or removed within 100 feet of structure.



Scotch Broom, Eileen Nunez, April, 2015

Dense mixed Conifer, Lindsay Green, May, 2015

Dense Understory, L. Green, May, 2015

In addition to dense brush on their properties, many residents abut neighbors or vast forest tracts packed with dense vegetation they cannot control. While it is important that landowners do all that they can to create defensible space within 100 feet of their home and other structures, in cases where site control (and/or neighborly collaboration on vegetation) is not possible, the important thing to remember is that breaking up the continuity and density of vegetation nearest your home is the most important thing you can do to prevent home damage or loss. That said, increased collaboration between neighbors is strongly encouraged to help reduce dense fuels near all structures to prevent home and property loss in the event of wildland fire.

Dense Fuels on Property Line, Irene Van Natter, 2015

Combustible Home Materials

In the Kneeland area, many homes are constructed of combustible materials including wood siding and roofs (as compared to non-wood shingles, ceramic tile, metal, etc. or non wood/plastic sidings). Combustible materials combined with dense vegetation create a serious fire hazard for the home and for structure on neighboring properties. This fire risk is compounded when structures are left vacant or are not regularly maintained.

Home with combustible materials and adjacent vegetation, E. Nunez, 2015.

Firehouse Foundation Construction.

Lack of Fire House / Community Hub

The Kneeland community is lacking both a permanent fire station to house equipment as well as a well-designed location for community events (though the school has served this purpose well over the years). Though the land is (almost) secured, and the foundation has been poured, an extensive capital campaign is needed to build the fire house.

Firewise Recommendations: What Homeowners Can Do

Create a 100' fire safe clearance around your home. Defensible space is a buffer zone, a minimum 100 foot fire resistant area around your house (200 feet or more if you live on a hill or in an area surrounded by tall grasses) that reduces the risk of a wildland fire starting from, or spreading to, your home.

1. Rake and remove pine needles and dry leaves within a minimum of 5 feet of a home's foundation. As time permits – continue up to a 30 foot distance around the home. Dispose of collected debris in appropriate trash receptacles.
2. Get out your measuring tape and see how close wood piles are located to the home. If closer than 30 feet, they need to be relocated and moved at least 30' away from structures.
3. Sweep porches and decks clearing them of leaves and pine needles. Rake under decks, porches, sheds and play structures and dispose of debris.
4. Mow grasses to a height of four inches or less.

Defensible Space Zones, www readyforwildfire.org.

5. On mature trees, use hand pruners and loppers to remove low-hanging tree branches up to a height of 6 feet from the ground. Also, remove low hanging branches/vegetation from around your house or out buildings. Establish the 100' clearance.
6. Collect downed tree limbs and broken branches and take them to a disposal site, chip or develop a legal authorized slash burn.
7. Remove items stored under decks and porches and relocate it to a proper storage shed, garage, or basement.
8. Arrange for a chipper service to remove slash.
9. Keep your gutters and roofs clean of any debris and/or vegetation.

Additionally, in case of an emergency, make sure that your home's address number is clearly visible from the street, make sure roads that access your home and structures meet CALFIRE guidelines for emergency response vehicles. Regularly trim overgrown vegetation covering or blocking the numbers. It is extremely important to have an address sign on the primary roads leading to your house, not only in case of fire but emergency medical responses as well. Finally, as a family, locate two alternate routes out of your neighborhood (besides the one normally used); and plan and practice an evacuation drill using those secondary routes.

SUCCESSFUL FIREWISE MODIFICATIONS

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

A homeowner/community must focus attention on the home ignition zone and eliminate the fire's potential relationship with the house. This can be accomplished by disconnecting the house from high and/or low-intensity fire that could occur around it. The following photographs were taken in Kneeland and are examples of good Firewise practices.

Incentive programs such as FLASH (Fire-adapted Landscapes and Safe Homes), may be available to Kneeland landowners and offer financial assistance, for completing fuels reduction projects around their residences and access roads. Below are several examples of good Firewise practices in Kneeland:

Sweeping decks of debris.

Keeping grasses short during fire season.

Dense stand "before" fuels treatment .

Dense stand "after" fuels treatment.

First annual Kneeland Firewise Day.

First annual Bucket Brigade Challenge.

NEXT STEPS

After reviewing the contents of this assessment and its recommendations, the Kneeland Firewise Board in cooperation with the Kneeland Volunteer Fire Department will determine whether or not it wishes to continue seeking Firewise Communities/USA recognition. The Firewise Communities/USA representative will contact the Firewise Board representative by [date] to receive its decision.

If the site assessment and recommendations are accepted and recognition will be sought, the Kneeland Firewise Board will create agreed-upon, area-specific solutions to the Firewise recommendations and create an action plan in cooperation with the Kneeland Volunteer Fire Department.

Assuming the assessment area seeks to achieve national Firewise Communities/USA recognition status, it will integrate the following standards into its plan of action:

- Sponsor a local Firewise board, task force, committee, commission or department that maintains the Firewise Community program and status.
- Enlist a WUI specialist to complete an assessment and create a plan from which it identifies agreed-upon, achievable local solutions.
- Invest a minimum of $2.00 annually per capita in its Firewise Communities/USA program. (Work done by municipal employees or volunteers, using municipal or other equipment, can be included, as can state/federal grants dedicated to that purpose.)
- Observe a Firewise Communities/USA Day each spring that is dedicated to a local Firewise project.
- Submit an annual report to Firewise Communities/USA. This report documents continuing participation in the program.

Exhibit A: Kneeland Firewise Community Map.

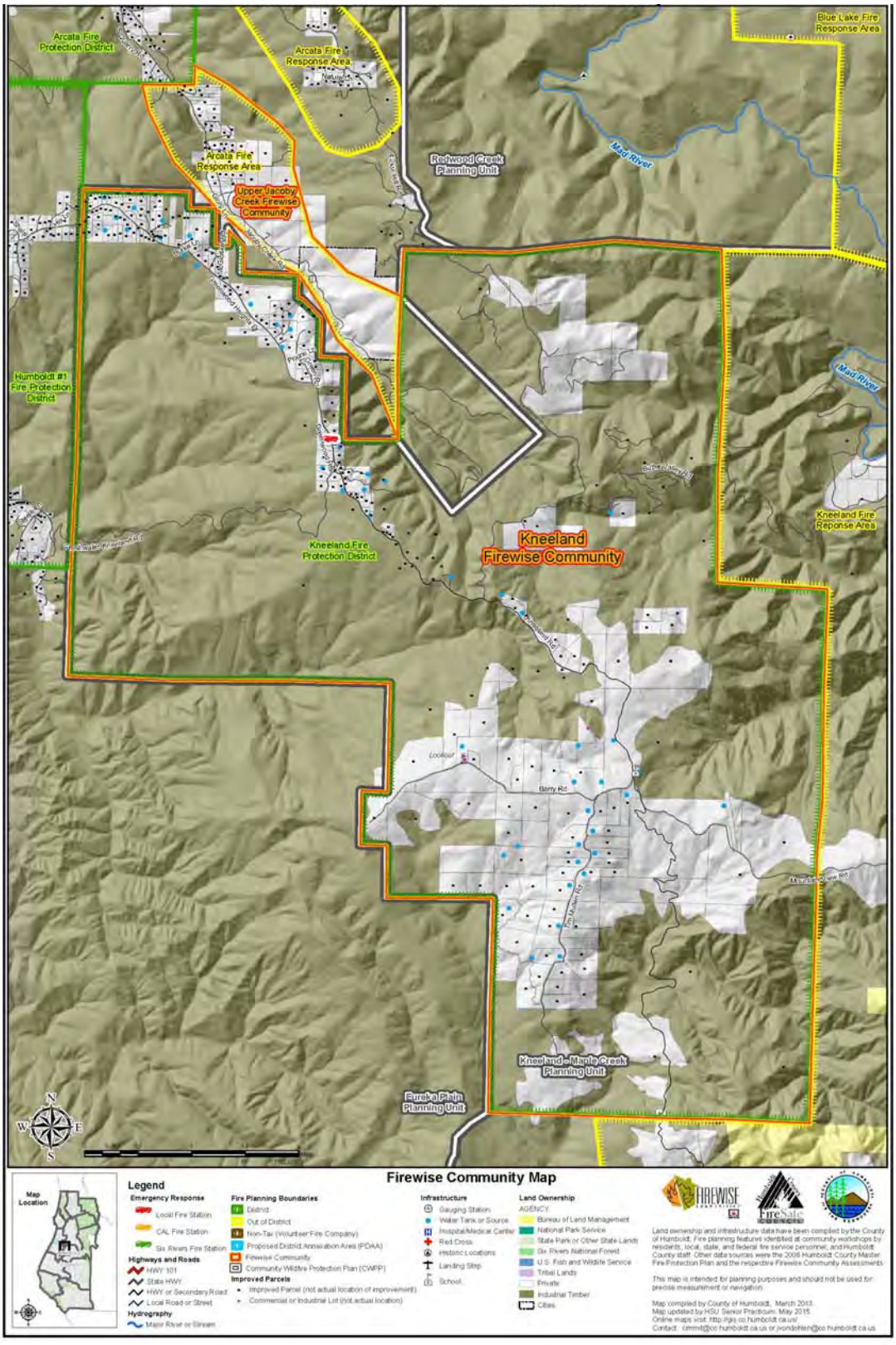


Exhibit B: Kneeland Firewise Community and KVFD Response Area Map.