

Hills Above Possum Kingdom Lake Firewise USA Risk Assessment

2018



Introduction

The Hills Above Possum Kingdom Lake (HAPKL) community in Graford, Texas boasts rolling hills, huge live oaks, dramatic elevation changes, rock formations, and views that stretch for miles. Overlooking Possum Kingdom Lake, these 1 to 5 acres parcels are situated among scenic common areas, a lakefront park, a private boat launch and fishing park located about 30 minutes west of Mineral Wells and 1 ½ hours from Fort Worth. Since 2009, Palo Pinto County has experienced some of the worst wildfires in the state, including wildfires at Possum Kingdom Lake in 2011 and 2012 where more than 160 homes were destroyed and 117,000 acres burned. As a result of these fires, HAPKL has adopted Firewise principles into their covenants and conditions, and have burn policies in place to reduce wildfire risk for outdoor activities.



Hills Above Possum Kingdom Gate

Palo Pinto County Community Wildfire Protection Plan and Firewise USA Recognition Program

Palo Pinto County is an area prone to wildfire with a history of intense, large fires. In 2015, Palo Pinto County began work towards completing a Community Wildfire Protection Plan (CWPP). This CWPP is a collaborative effort between Palo Pinto county fire departments, Office of Emergency Management, and the Texas A&M Forest Service, as well as other interested parties to identify and reduce wildfire risk to

the county. The Texas A&M Forest Service has identified Hills Above Possum Kingdom Lake as an at-risk community based on a number of factors such as surrounding environment and structure ignitability. This area has a high to extreme risk of wildfire and, thus, identified as an area to implement fuels reduction projects as well as mitigation and prevention efforts such as becoming a recognized Firewise USA site.

The Firewise USA recognition program encourages communities to develop an action plan that guides community risk reduction activities, while engaging and encouraging community members to become more active participants in building a safer place. The ultimate goal of creating a Firewise site is to promote community-wide participation in the use of technology, policy, and practices that minimize loss of life and property to wildfire, independent of firefighting efforts. With little or no preparation before a wildfire event, communities lose much. However, with an action plan and regular attention to community wildfire mitigation, wildfire can occur with little or no lasting effect on the community.

The HAPKL risk assessment was completed on February 26, 2018 after site visits and meetings with both HAPKL Property Owners Association board members and Texas A&M Forest Service staff. The risk assessment is an integral part of the process to becoming a nationally recognized Firewise USA site.

Road Access

HAPKL is situated on the north side of Possum Kingdom Lake. All the roads throughout HAPKL are paved and well-maintained. Power line utilities are primarily located underground but there are some that run parallel as well as perpendicular to a few roads throughout the community. These utilities and their surrounding areas are well-maintained. However, a wildfire burning near the road could cause power lines to fall onto the road, cutting off emergency ingress and egress.

The following mitigation practices are suggested:

- Maintain or reduce the density of fuels along the road to widen access
- Create a plan to shelter in place if road access is cut-off during a wildfire; create an evacuation plan

The road system throughout HAPKL is composed of paved surfaces connecting homes and conservation areas as well as other infrastructure. The roads are at an appropriate width for emergency vehicles with adequate space to turn around. Further, the fuels along the road are well-maintained and mowed on a regular basis to allow for usage and to facilitate evacuations, if necessary. However, in the event of a wildfire, residents unfamiliar with the area may be lost or confused and their exit obscured by smoke.

The following mitigation practices are suggested:

- Install exit or 'no outlet' signs to provide guidance in an emergency event
- Reduce or maintain the density of fuels along roads and hiking/horse trails for safe ingress and egress



Roads throughout HAPKL are paved and of an appropriate width for emergency vehicles. Powerlines running parallel or perpendicular (as pictured) to roadways can be hazardous if downed during a wildfire incident.

Structures and Structural Ignitability

The structures at HAPKL are predominantly houses situated among rolling hills. The majority of these structures have well-maintained landscapes as a result of adopting Firewise principles years prior. However, the backsides of some structures, due to their locations on hilltops, are adjacent to dense cedar and juniper trees with understories that are heavily vegetated with shrubs.

A structure burns because of its interrelationship with everything in its surrounding “home/structure ignition zone”—the house or structures immediate surroundings. To avoid structure ignition, a wildfire’s potential to expose that structure to intense radiant heat and direct flame contact must be eliminated. This can be accomplished by interrupting the natural path a fire takes by reducing vegetation density and continuity of fuels leading to the structure.

Significant breaks in fuel continuity, or patchiness, leading to structures results in the slowing or stopping of the fire as well as decreased fire intensity resulting in less heat emitted from the fire and reduced probability of structural ignition. These non-fuel or patchy areas include bare ground, rock outcroppings, gravel, etc.

If fuels are continuous and connected as they reach a structure, there is significant increase in radiant heat exposure and direct flame impingement. The continuity of fuels is evaluated in both horizontal and vertical directions. If there are no significant gaps in the distribution of fuels, fire can travel in both directions.

Horizontal fuels are any combustible material or vegetation that carries a fire horizontally across a landscape. Grass or low growing shrubs and forbs that grow closely together and cover areas between the fire and the structure with no breaks or patches of non-combustible material are examples of horizontal fuels.

Ladder fuels, or vertical fuels, are combustible material or vegetation that carries fire upward; material on or near the ground that will spread fire to the crown of the tree, e.g. flammable shrubs, large amounts of dead surface wood, branches, and dead foliage, conifer limbs touching or close to the ground, and dead lower branches with foliage attached. Once a fire becomes a crown fire, it can spread rapidly and become more intense producing tall flames and, potentially, spot fires.



This area is dense and could be a fire hazard to the home directly above this plot of land. While the home is fire resistant, this area should be cleared of all ladder fuels and well-maintained to reduce dead and dense vegetation building in the understory and becoming a fire hazard.

The tree cover of the site consists primarily of a mix of Post Oak, Blackjack Oak, Cedar Elm, Live Oak, Mesquite and Cedar. Native range plants include Switchgrass, Indian Grass, Little Bluestem, Sideoats Grama, and King Ranch Bluestem.

HAPKL is active in landscaping around residences and buildings; most buildings have a well-maintained defensible space. However, the backsides of many buildings with steep topography do not have a maintained defensible space. This is largely due to poorly maintained empty lots or developers lots. Creating defensible space is essential to improving a building's chance of surviving a wildfire. It is the buffer created between a building and the grass, trees, shrubs, or any wildland area that surround it. This space will slow or stop the spread of wildfire and protect the structure from catching fire either by direct flame impingement or radiant heat. Reducing vegetation and fuels at a minimum of 30 feet is suggested.

Fire travels up steep slopes more than 5 times faster than downhill. Thus, for people living on a slope or on the clifftops, particular consideration should be given to "fuel sources" that lie downhill. While many

residents can't create defensible space in these areas for safety reasons, they can implement considerations and suggested mitigation practices on the small area behind their home.

The following mitigation practices are suggested:

- Create a “fire-free” area within 5 feet of the structure, using non-flammable landscaping materials and/or high-moisture-content annuals and perennials
- Prune low-hanging branches 6-10 feet from the ground
- Remove branches that hang over roofs
- Remove ladder fuels and reduce the density of the understory
- Keep grasses short and irrigated, if possible
- Remove all dead plants, grasses, and weeds
- Remove any vegetation and items that could catch fire from around and under decks
- Remove firewood stacks and propane tanks from within 30 feet of a structure. If a propane tank is within 30 feet of a structure, treat the tank as a structure itself and create defensible space around it

Building construction of homes and other infrastructure is modern and tends to be Firewise. Most buildings have exterior siding composed of non-flammable materials such as brick or stucco, rated roofs, and any openings such as vents, eaves, or soffits are covered with mesh screening or closed.

The roof is the most vulnerable part of any structure. Buildings with wood and shingle roofs are at a high risk of being destroyed during a wildfire as they are more receptive to embers landing. Keep roofs clean of any organic materials that might accumulate to prevent embers from catching. Block any spaces between roof decking and covering to prevent embers from catching. Build a roof or re-roof with non-flammable materials such as composition shingles, metal, or tile.

Wooden attachments such as decks and fences increase the chances of ignition to a structure either by direct flame impingement, radiant heat, or embers. Clearing debris from these wooden attachments can reduce the risk of ignition.

This building is constructed with fire-resistant materials; brick siding and flame-resistant roofing. The property has defensible space and is generally a good example of a Firewise home.





This building is constructed with flammable materials and has wooden attachments surrounded by dense vegetation. While the building may be more flammable, the property around this structure is well-maintained with an adequate defensible space.

Fire Breaks or Shaded Fuel Breaks

HAPKL board members expressed concern over wildfires from neighboring properties. By strategically placing fire breaks or shaded fuel breaks, a fire's progress will be slowed or impeded allowing residents to escape at some other egress on the property. These fuel breaks will also provide another defense for all infrastructures along with defensible space.

An evacuation plan should be written and implemented (if it hasn't already). This plan should be public knowledge to residents to help facilitate a timely and orderly evacuation in the event that it is needed.

Next Steps

After reviewing the contents of this assessment and its recommendations, HAPKL will determine whether to seek Firewise USA recognition. If the site assessment and recommendations are accepted and recognition is sought, HAPKL will create an area-specific solution to the Firewise recommendations and create an action plan in cooperation with Texas A&M Forest Service.

Assuming HAPKL seeks to achieve national Firewise USA recognition status, it will integrate the following standards in its plan of action:

- Form a Firewise board or committee that will maintain the Firewise program and status. This board or committee will also create an action plan based on this risk assessment (to be updated every 3 years).
- Conduct a minimum of one wildfire risk reduction educational outreach event, or related activity annually.

- The site must invest a minimum of \$24.14 per dwelling unit, in wildfire risk reduction actions annually (based on the 2017 annual National Hourly Volunteer Rate). The rate will be updated in April of every year when the new hourly volunteer rate is published. Work done by volunteers or local and state employees using private or government owned equipment can be included, as can state and federal grants dedicated to that purpose.
- Submit an application or annual renewal report/application through the Firewise USA portal. State liaisons will approve applications, with processing finalized by the National Fire Protection Association. This report and renewal application documents continuing participation in the program.

Erin O'Connor
Wildland Urban Interface Specialist II
Texas A&M Forest Service
Decatur, TX
936.241.2572
eoconnor@tfs.tamu.edu