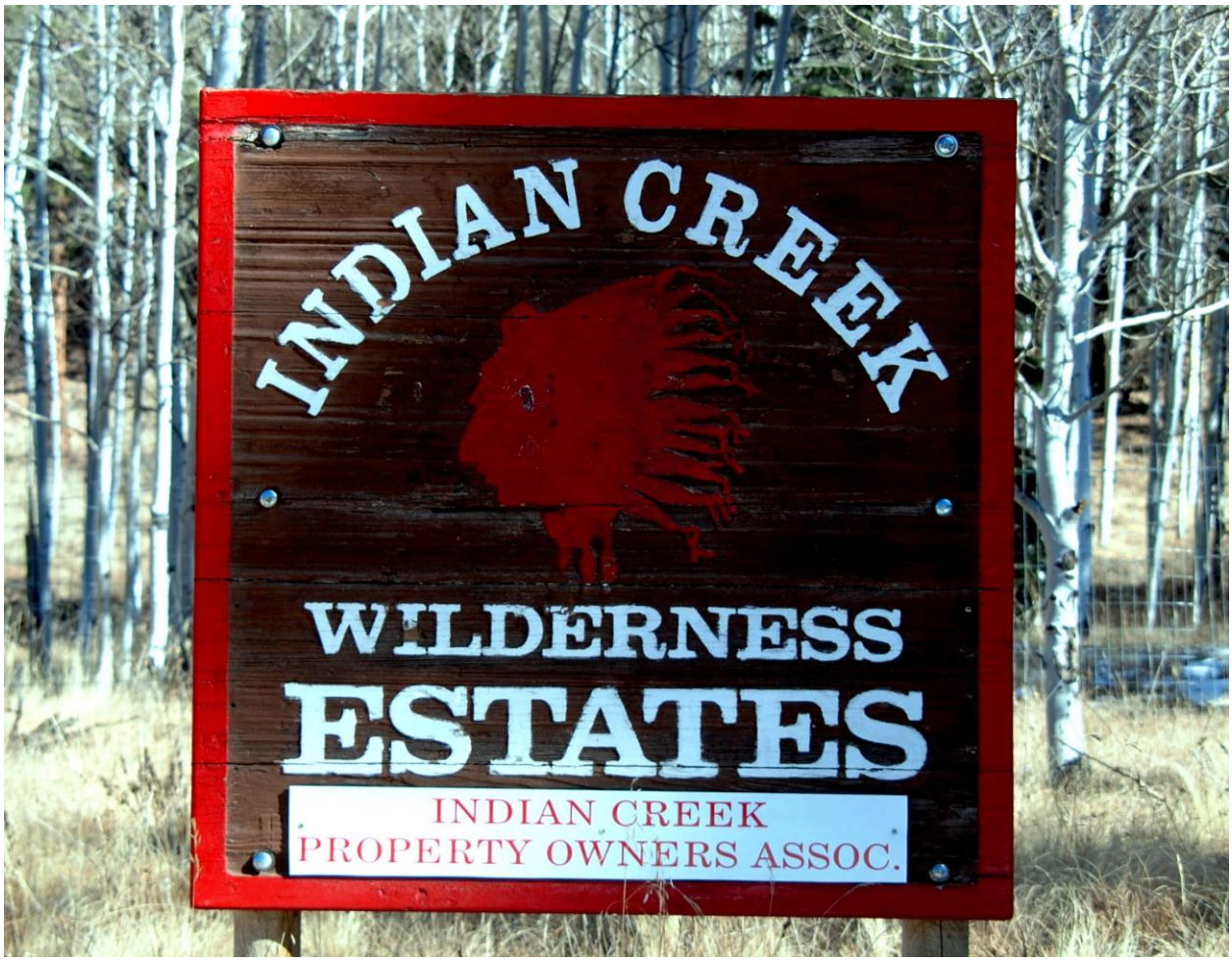

Indian Creek Community Wildfire Protection Plan January 27, 2011

COMMUNITY WILDFIRE PROTECTION PLAN
INDIAN CREEK
TELLER COUNTY COLORADO
January 2011
Submitted by

CWPP Team Date 12/17/2010

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Colorado State Forest Service, Woodland Park District

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Note: This document was prepared in good faith by the Indian Creek CWPP committee for the benefit of the Indian Creek Subdivision and the committee assumes no liability in the preparation of this document. This document is intended only as a guide for the Indian Creek POA to reduce fire risk and improve forest conditions for the next five years. The information provided has been obtained from local forest professionals, homeowners participating in this project and from past knowledge and history of projects in the community.

INDIAN CREEK COMMUNITY WILDFIRE PROTECTION PLAN January 2011

Introduction

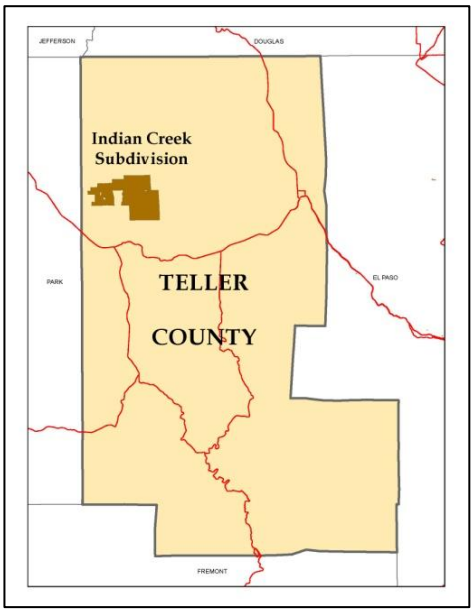
After the devastating wildfire season of 2002, Congress passed the Healthy Forest Restoration Act of 2003 that, among other provisions, allowed communities to develop plans to reduce their risk from wildfire. Community Wildfire Protection Plans provide a framework for a community to assess its wildfire risk, and develop specific projects to reduce that risk. Additional legislation passed by the Colorado General assembly in 2009 requires that plans list and prioritize the community's mitigation projects. Once a plan is completed, the community may apply for cost sharing to implement the projects within the plan. Indian Creek began developing this plan in May, 2010. A core group was established consisting of representatives from the Indian Creek Property Owners Association, the Colorado State Forest Service, and the Florissant Fire Protection District. Representatives from the core team individuals were: Carolynne Forster, Craig Knowles, Joe Kraudelt, Robert Villani, and Sue Zaba, and Robert Bertram, Chief, Florissant FPD; Dave Root, Assistant District Forester Colorado State Forest Service; Marti Campbell, CWPP Facilitator, Coalition for the Upper South Platte. Development of the plan has proceeded through the summer of 2010 with ten meetings, three fire mitigation presentations to homeowners, and a mail-in survey which went to every property owner in Indian Creek.

Plan Objectives

The purpose of this plan is to guide Indian Creek for a period of ten years toward the objective of reducing the wildfire hazard within the subdivision. This plan will be a living document, and will be revised and updated as conditions require. Specific objectives of the plan are:

1. Assess the wildfire hazard within and adjacent to the Indian Creek community.
2. Make recommendations to reduce the ignitability of homes and other structures within the community.
3. Develop a prioritized plan to reduce the wildfire hazard within the community while improving the health of the forest.

Map 1



Indian Creek Location

Indian Creek is located on the western border of Teller County just north of Highway 24. There are approximately 450 homes within the 5,500 acre subdivision. Average lot size is 5 acres. There is no common space in Indian Creek.

The Indian Creek community is situated on the Upper South Platte watershed and a catastrophic wildland fire in this location could degrade the water quality in streams with severe consequences to people and communities far from Indian Creek. Much of the land surrounding the subdivisions is US Forest Service land.

Historical Fire Conditions

Before settlement, ponderosa pine forests typically burned every twenty to thirty years. Lightning was a frequent cause, but some fires were started by native populations to clear underbrush and maintain wildlife habitat. Low intensity fires were the primary factor that shaped the forest, and the pre-settlement forest was an open pine savannah with approximately 40 large trees per acre. Such large trees with thick bark were rarely harmed by the fires that passed under them. Mature trees were often 400 years old, and the openings between trees had several age classes of younger trees, again thinned by frequent fires. The frequent low intensity fire regime had a cleansing effect on the forest and fuel build up between fires was minimal. Such fires rarely reached the upper canopy of the forest and recovery from the fire was quick.

However, in the early 1850's a rare large fire called the "big burn" started on the flank of Cheyenne Mountain near the present day Cheyenne Mountain State Park. Winds carried the fire north through Ute Pass and, in some accounts, as far as what is now Breckinridge and the western boundary of South Park. It is likely that the area that includes Indian Creek was burned during this period. Old photographs from the 1880s show bare hillsides without trees in areas that are now densely forested.

Less than a decade after the big burn gold was discovered in the South Park area and the era of settlement began. Remaining forests were extensively logged during the late nineteenth and early twentieth century to provide ties for the Midland Railroad and timbers for mining in the Cripple Creek area. After the Pikes Peak gold rush, farms and ranches were established, and were later replaced by subdivisions. By necessity, fires were suppressed as quickly as possible, and the present forest grew back without maintenance by man or fire.

Current Forest Conditions

The forest in the Indian Creek area is mixed conifer, consisting of ponderosa pine, Douglas-fir, Colorado Blue Spruce, some lodgepole pine and aspen. The current forest consists of trees that grew back after the logging era, and most trees are 120 to 140 years old. The present fire hazard in Indian Creek is the direct result of the past fire, logging and regrowth. As a result, the forest is denser than the pre-settlement forest — often containing several thousand trees per acre.

Photo 1: Current photo of typical forest condition in Indian Creek; courtesy of J. Kraudelt

Competition for sunlight and nutrients is severe. In the dense canopy, the hazard of severe wildfires increases. Furthermore, trees stressed by severe competition and drought are more susceptible to attack from insects and disease.

Ponderosa is most common on the west and south facing slopes, which is typical for this type of tree. Sun-loving trees like ponderosa rarely sprout in shaded areas or beneath larger trees. Often an dense understory of shade tolerant Douglas-fir develops in these stands as the ponderosa shade the forest floor.

On north and east facing slopes where the environment is cooler and moister, Douglas-fir is the dominant conifer. Patches of spruce, ponderosa pine and lodgepole pine can be intermixed with the Douglas-fir. Aspen can be mixed with the conifers in these areas as well.

The aspen range from a few trees to stands of several acres which are interspersed with the conifers. Aspen, like ponderosa, require direct sunlight for establishment and do not thrive in shade. Although aspen produce large quantities of seed, seeds require moist conditions to germinate and become established. In dry climates like the Southern Rocky Mountains, seeds rarely germinate, and aspen rely on suckers produced by the roots to establish new trees. When a fire or other disturbance kills the existing trees the aspen roots sprout vigorously (often within days), establishing a new stand of aspen. As the aspen mature and shade the site, shade tolerant conifers sprout and eventually overtop and shade out the aspen, and the cycle continues. This process is apparent in Indian Creek. Notice how many aspen stands have small Douglas-fir and spruce trees in the understory. With the continued absence of fire, aspen stands will give way to shade tolerant conifers.

Factors Affecting Fire Behavior

In order to understand the wildfire hazard in Indian Creek, it is necessary to understand some of the influences on how fires burn. "Fire behavior" is the term used to describe the intensity with which a fire may burn on any given day. There are three factors responsible for determining fire behavior: fuel, topography, and weather.

Fuels: The amount of fuel available to a fire influences how much heat is produced. Anyone who has ever been near a campfire knows that more wood on the fire produces more heat. More fuel available to a wildfire produces more severe fire behavior. The diameter of fuel also affects fire behavior. Small diameter fuels such as dry grass or small branches ignite more easily than large diameter fuels such as large logs. Again consider the example of a campfire. Fires are started with small kindling before larger sizes of wood are added. In a wildfire the smaller diameter fuels act as kindling, spreading the fire to the larger fuels. It is more difficult to control a fire burning in larger diameter fuels. Fires burning in duff and litter underneath trees usually do not move rapidly. The surrounding trees tend to slow the wind and thus reduce the rate of fire spread. This is, of course, dependent on the wind speed, and fires will move faster on very windy days. This situation can change markedly if the ground fire reaches

a closed forest canopy. In strong winds, crown fires are wind driven and can move rapidly through the forest.

Some areas within the subdivision and some of the WUI area are grasslands. Typically, grass fires ignite more easily and move faster. The flame front moves quickly, and the fire intensity decreases shortly after the flame front has passed. Grass fires can be extremely hazardous to life and property. In 2007, a grass fire moved through the town of Ordway, in southeastern Colorado, severely damaging the town.

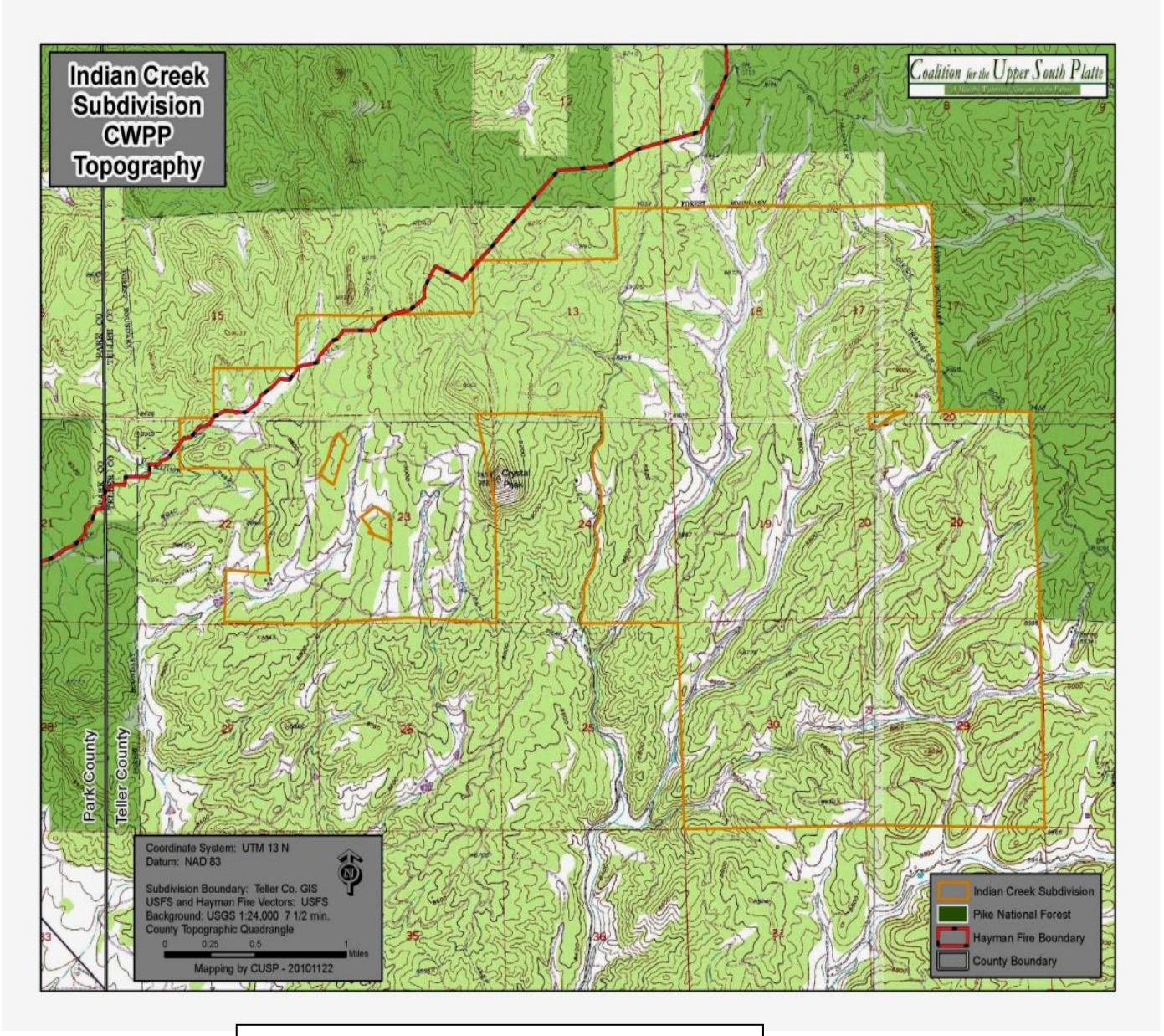
The two types of fuel in a Wildland Urban Interface (WUI) are vegetative and structural. Vegetative fuels consist of living and dead trees, bushes, and grasses. Non-vegetative fuels include houses, ancillary buildings, fences, and firewood piles.

Topography: Topography is the lay of the land. The influence of topography is simply that heat rises. On a slope heat rises above a fire, pre-heating and drying the fuel above. The drier upslope fuels ignite easier and burn more quickly than downslope fuels. The steeper the slope, the more pronounced is this effect. During the day, warming air rises and pushes wildfires up slope. Fires may move four times faster up slopes than on flat ground. (See Map 2, page 5)

Indian Creek has numerous hilly areas with structures. Drainages act as natural chimneys that funnel heat and wind up the drainage. Homes in drainages or at the tops of drainages are particularly vulnerable to wildfires. The chimney effect is more pronounced in steeper and narrower drainages.

Weather: High temperatures, low humidity, and strong winds increase the intensity of wildfires. It is easier to start a campfire on a warm, dry day than a cold, damp day. Short-term and long-term droughts intensify the problem. Weather is the "wild card" of fire behavior. Topography is constant over time, and the amount of fuel can be measured far in advance of a fire. Weather conditions on the day a wildfire starts cannot be predicted.

Of the three factors that determine fire behavior, only fuels can be altered to reduce the spread and intensity of a wild fire.



Map 2: Topography of Indian Creek Area – with subdivision boundary

Fire Risk to the Forest

As demonstrated in the Teller County CWPP, 2005, the current forest condition in Indian Creek is a closed canopy conducive to an intense crown fire such as occurred in the nearby Hayman Fire of 2002. The branches of the largest trees, called dominants by foresters, are often very close to one another. The dominant trees are characterized by large diameter trunks and their crowns are in full sunlight. Unless diseased or infested with insects, the dominants are the most vigorous trees in the forest.

The spaces between the dominant trees are occupied by shorter trees—called co-dominants and intermediates—nearly as tall as the dominant trees. It is a common misconception in even aged stands such as the ponderosa in Indian Creek, that tree diameter is an indicator of age. Trees of smaller diameter are frequently older than the larger diameter tree next to them. These intermediates are suppressed by the larger trees around them, and do not receive full sunlight. Their limited supply of energy is used in an attempt to reach the light, and the trunks are smaller in diameter than the dominant trees. Suppressed trees usually have one sided crowns and flattened tops as a result of crowding by adjacent trees.

In the lowest level of the forest canopy are even smaller trees that are completely overtopped. These are the least vigorous trees in the forest. The overtopped trees represent a significant fire hazard as so called “ladder fuels”. Ladder fuels are those fuels near the ground that provide a pathway for ground fires to reach the upper forest canopy. Lower branches of dominant trees, dead branches, and shrubs can also be ladder fuels. Once in the canopy, a fire becomes wind driven, produces intense heat, and cannot be controlled by firefighters with hand tools. Lack of forest management, recent droughts and unnaturally dense forests conspire to create a serious wildfire threat to the community.

The structure of the forest directly affects wildfire risk. Wildfires can be broadly categorized into two types based on the intensity of the fire and the damage caused to the environment. The most severe type is a crown fire such as the Hayman Fire of 2002. Crown fires burn in the canopy of the forest, jumping from tree top to tree top killing most, if not all of the trees in their path. Extreme heat is produced. Not only are the trees killed, but the heat damages the soil making the upper layer water resistant. Long after a crown fire is extinguished, precipitation runs off this hardened soil causing flash flooding and environmental degradation far from the burn area. Vegetation re-growth is severely delayed.

Data from the USDA Natural Resources Conservation Service indicates that 48.8% of the soils in the area have a high potential for damage, and the remaining 55.7% have a moderate potential for damage. (See Appendix A)

Erosion following the major Colorado wildfires of the last decade has been severe. Complete soils data and maps are in Appendix A.

Photo 2: Erosion following Hayman fire in unburned area. USFS photo

The less severe type of fire is the so called surface fire. This type of fire that is characteristic of open ponderosa pine forests, and typically burns the surface fuels such as grasses and litter. The heat does not damage the soil and rarely penetrates the thick bark of the ponderosa to kill that species. New herbaceous plants re-sprout quickly after the fire cools. Most prescribed fires mimic this type of fire.

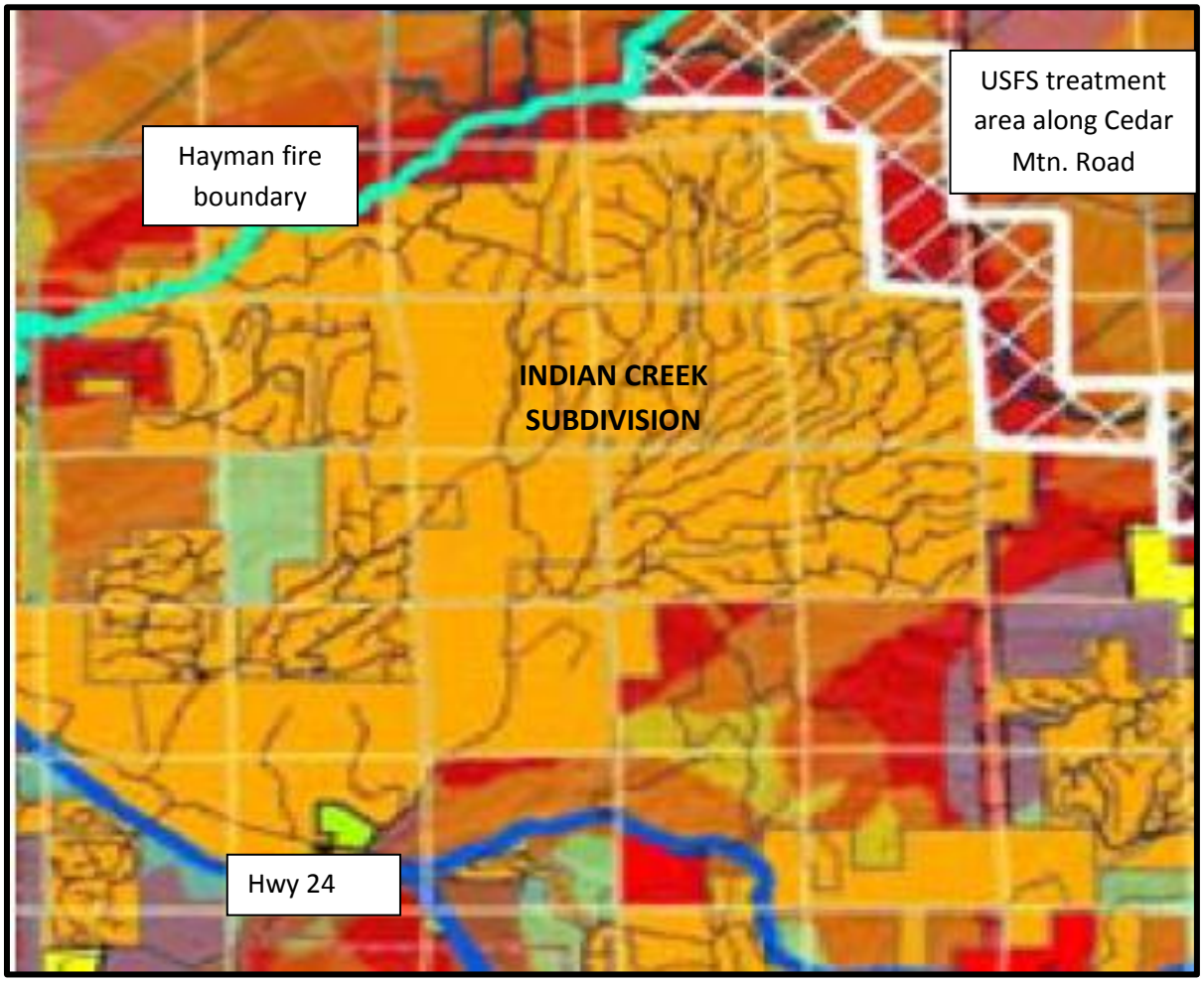
Hazard descriptions are as follows:

Low Hazard: Low hazard areas are those that are primarily open grasslands and open areas with widely scattered trees. It should not be inferred that low hazard is no hazard. Fires can burn in grass as well as timber. Grass fires move quickly as they are driven by the wind. The flame front from a fire burning in tall grass can easily cause injury or destroy property.

Moderate Hazard: The areas identified as moderate hazard are typified by a closed canopy absent of ladder fuels and typically have flat slopes. Fire may reach the crowns of the trees, but would not be intensified by steep topography.

High Hazard: There are abundant ladder fuels, the topography is steeper, and hazard was rated as high. The slightly steeper topography increases the risk that fuels ahead of the fire will be preheated from any flames on the slope below. Soils are often damaged during severe wildfire events. Frequently soils repel water after a severe wildfire, and the inability of water to penetrate the soil causes increased runoff after rains. Increased runoff can cause flash flooding, severe soil erosion and loss of life long after the fires is controlled.

Extreme Hazard: Extreme hazard areas have a tight-closed canopy, steep terrain, and abundant ladder fuels which increase the chance for high fire intensity, as well as extension into the crowns. Structures rated “extreme” have poor access for firefighters and direct suppression efforts may be considered too dangerous to risk firefighter safety.



. *Map 3: Data obtained from Teller County CWPP, 2005.*

Fire Risk to Structures

The introduction of structures in the flammable forest creates a different dilemma. The term Wildland Urban Interface (WUI) refers to those areas where high density developments are located in areas of wildland fire fuels. *(See Map 4, pg 15)* Indian Creek has approximately 1,000 treed parcels, and homes on these lots have various risks of being destroyed by a wildfire. In the past little information was available to homeowners and contractors regarding the wildfire threat to the structure itself. (*See Appendix B for more information.)*

Structures burn when the heat from a wildfire is transferred to the structure. There are three ways that heat can be transferred. They are through radiation, convection, and firebrands. Heat transfer can be from surrounding burning vegetation to structures or from burning structures to the surrounding vegetation. The three methods of heat transfer are:

Radiation: Wildfires can spread to a home by radiated heat in the same way a radiator heats rooms in the wintertime. Radiated heat is capable of igniting combustible materials from a distance of 100 feet.

Convection: Direct contact with flames, or the wildfire's convective heat column, may also ignite a home. This is most likely to occur when trees or brush near a structure ignite and the flames touch a flammable part of the structure.

Firebrands: Firebrands are embers that are blown ahead of a fire on strong updrafts created by the fire. Firebrands can be carried long distances – more than a mile – by the winds associated with a wildfire. Roofs and decks are the most vulnerable parts of a structure to fire brands.

The 2002 Hayman Fire was Colorado's most devastating forest fire until the Four Mile Fire in Boulder County, 2010. The Hayman fire burned 138,000 acres and 132 homes in 20 days. Surprisingly, 662 homes within the perimeter of the fire were not destroyed.

USDA Forest Service scientists Jack Cohen and Rick Stratton reported on the causes of home destruction in the "Hayman Fire Case Study".[1] Many of the homes that survived did so without intervention by firefighters. The study objective was to determine if there were common factors among these surviving homes that might be helpful in preventing loss of homes in future wildfires. They found that "torching" or intense crown fires within 30 feet of a structure destroyed 70 homes. If a house was destroyed but the surrounding trees did not burn, they assumed that embers or firebrands ignited it. Based on this logic, they concluded that 62 of the 132 homes (47%) destroyed in the Hayman Fire were ignited by surface fires or firebrands.

Cohen and Stratton found that home destruction was related more to a house and its site-specific surroundings than to the context of the larger Hayman Fire. If the vegetation around a house allowed high intensity fires to burn near them, they did not survive. If the vegetation permitted only low intensity fires, the structures had a good probability of surviving. Flammability of roofs, decks, siding materials, and other house construction features raised or lowered the risk of flames igniting homes.

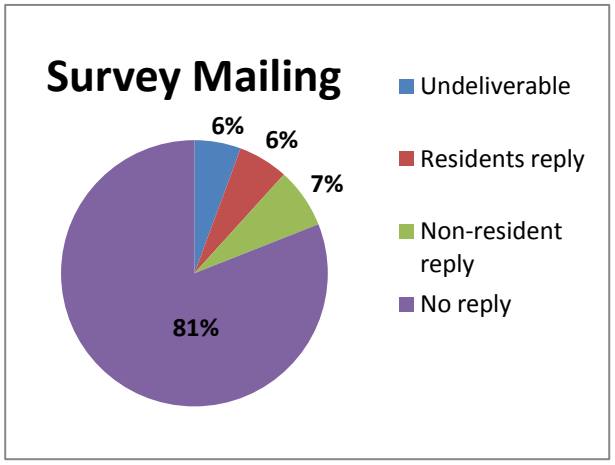
Currently, Red Zone Assessment Software© is being used by Florissant Fire staff to assess individual home sites for vulnerability to wildfire. Some homes are used only seasonally and many lots are vacant. Out-of-area owners account for 55% of the properties. On visual inspection, most home structures in Indian Creek are wood framed with asphalt shingle roofs. Most houses have wooden decks and some have some ornamental landscaping near structures. A few property owners have done at least some thinning in Zone 1, the 30' buffer area closest to their homes, but many homes have not taken this first step. The amount of risk depends on the vegetative fuels, materials used in construction, placement of the structure in regards to topography, and current weather events.

During the Hayman Fire, all of the Indian Creek Subdivision was evacuated and residents were displaced two weeks or more. While the fire burned in a limited area of Indian Creek, the emotional impact was felt throughout the subdivision. There are no covenants that require fire prevention or risk reduction by residents. There are "firewise" construction and landscaping techniques and building materials that can be used to reduce the risk of home loss in the event of a wildfire. The reduction of risk to structures and vegetation on private property is solely the homeowner's responsibility.

[1] "Hayman Fire Case Study" compiled by Russell T. Graham, Sept. 2003, USDA Rocky Mountain Research Station, Report RMRS-CTR-114, 396 pages.

SURVEY FOR PUBLIC IMPUT

In July, 2010 The Indian Creek Property Owners Association mailed a survey to every property owner of record (909) listed by the Teller County Assessor. All properties were included, vacant or improved. Data was captured from 110 surveys that were completed and returned. No statistical calculations were attempted. Results are computed using raw data and the results of returns are illustrated below.

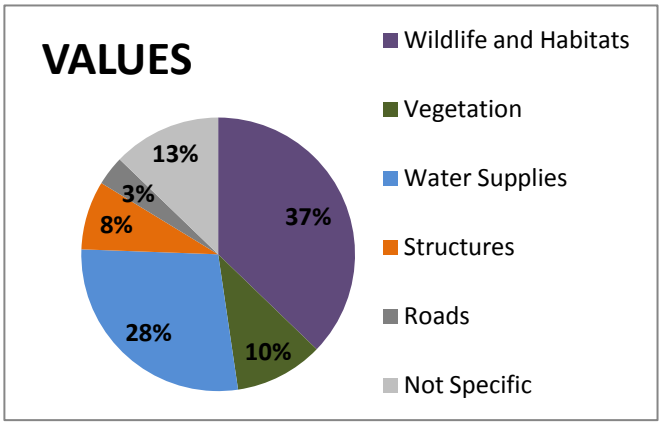


Are you a full time resident of Indian Creek?

There are 405 local addresses (Lake George, Florissant or Divide) and 504 "other" addresses according to the address list. While it appears that more non-residents replied to the survey, the percentage (13%) in each owner category was essentially the same.

Over 50 surveys were returned as undeliverable or unable to forward. These individuals are unable to receive any mailed communication regarding important issues that impact the subdivision. If you are a property owner in Indian Creek Subdivision and did NOT receive a survey, please email: Admin@florissantfire.com.

What do you consider the most important areas in your neighborhood (other than homes) to protect in the case of wildfire?



The largest responses to this question sited wildlife and water supplies as values to be protected. The majority of properties rely on wells as the primary water source. While water quantity cannot be changed, water quality is essential to all. Managing vegetation to reduce or prevent erosion near surface water sources is everyone's responsibility.

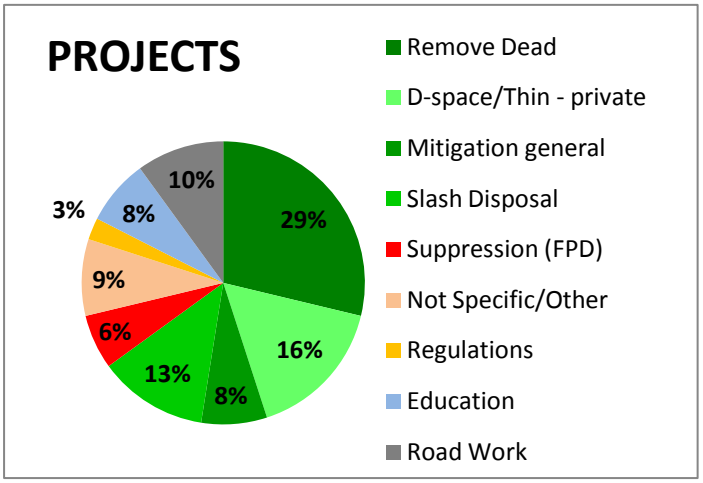
Wildlife habitats are becoming smaller as development expands. Where wildfire once thinned and cleared areas and opened the forests for meadow regeneration, the absence of fire allows meadow areas to become overgrown by trees. Too many trees compete for moisture and nutrients and shade the soil, preventing growth on the forest floor. Food sources for wildlife do not thrive under a dense tree canopy and valued habitats shrink or disappear. Improving the wildlife habitats in Indian Creek will require property owners to work together to thin the forest across the subdivision. Doing so will not only allow grass and shrub growth and wildlife habitat

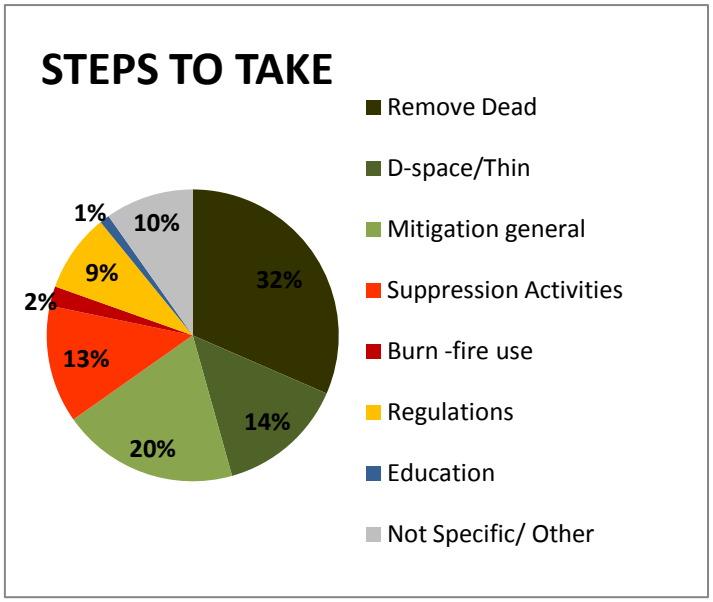
regeneration, it will also improve the health of the remaining trees and reduce the risk of catastrophic wildfire and destruction.

Which places near your property would be most difficult to control if a fire started there?

25% of replies mentioned steep slopes as presenting the greatest hazard with regards to wildfire. Unfortunately, nothing can be done to change the terrain. 31% felt that other land owners – neighbors, BLM and National Forest are responsible for the hazard. Only 11% understood that dense vegetation on or near their property is a hazard.

What would you like to see done in your neighborhood to improve fire safety? Removing dead and down trees was seen as the overwhelming choice to improve fire safety. Overall, 63% said that some sort of fuel management should be done to improve fire safety.





What steps do you think need to be taken to protect you and your neighbors from wildfire?

Again, the majority of the respondents identified some type of fuel mitigation as the most important step to take to reduce the risk of wildfire. Improvement in the capabilities for fire suppression was mentioned in 13% of responses. However, these come into play after the fire has begun and do nothing to minimize the size or intensity of the initial wildfire.

Community Values At Risk

Photo 3: Ute Prayer Tree – courtesy of Pikes Peak Historical Society

The purpose of a CWPP is to reduce the threat of wildfire to the values a community holds dear. The forested, semi-rural setting of the community is highly prized by the residents. Their homes and property often represent their largest investments. Loss of any of these values would devastate the community. Although structures would most likely be replaced by insurance after a wildfire, valued family possessions would be lost forever. After a severe crown fire, the loss in value of the property would create a severe financial loss for most families. Additionally, having been an ancestral home to the Ute Indians for thousands of years, the area is rich in culturally-scarred trees. There are specimens of the four types of trees (medicine, prayer, message and burial) interspersed throughout Indian Creek. These trees live for about 800 years and are absolutely irreplaceable. Ute Leaders and a prominent local historian are working with the US Forest Service to map and preserve these living relics. Doing our part to protect them from wildfire is critical, as there is no insurance policy which could replace these unique ties to our past.

Suppression Capabilities

The Indian Creek community expects prompt initial attack response from Federal, state, and local fire suppression resources in the event of a wildland fire start that threatens the community. When possible, aggressive initial attack, including the use of aircraft, has been shown to be the most cost effective approach for dealing with wildfires. The Indian Creek community does understand that occasionally, due to reasons such as lack of resources, multiple fire starts, extreme burning conditions, or inability to mitigate firefighter safety issues, initial attack will not be successful; however, the community expects that each party with a role in suppression will take aggressive actions to contain, control, and fully extinguish wildfires during the initial attack period and thereafter, and agrees the primary concern is the extinguishing of wildland fires.

Florissant Fire Protection District is composed of 3 paid and 20 volunteer firemen with an average response time of 15 minutes. As a volunteer department, there are significant limits to the manpower, number of responding vehicles, and response time that can be anticipated in a fire emergency. Florissant Fire and Rescue would have the responsibility to be first responder to a fire -wildland or structural -in the Indian Creek vicinity. Two fire substations would also respond. Station 3 is located inside Indian Creek. Additionally, three neighboring fire districts are available to provide Mutual Aid: Lake George Fire to the west, Four-Mile Fire to the south, and Divide Fire to the east. It is of critical importance that Indian Creek residents are aware of these limits and take steps to be personally responsibility for the fire hazards on their private property.

The Ute Pass Regional Ambulance District (UPRAD) EMS unit is located on Hwy 24 south of Indian Creek. In the event of a structure or wildland fire the ambulance crews become members of the engine, truck, or brush truck crews. UPRAD's barn is next door to Florissant Fire Protection District's Station 1. If the severity of the fire warrants, additional personnel and equipment can be requested from other fire departments, including those from state and federal agencies, and a team specifically wildfire-trained for the Coalition of the Upper South Platte (CUSP) will respond.

Florissant Fire and Rescue Resources and Wildfire Strategy

Fire Response -The Teller County Sheriff serves as Fire Incident Commander until other resources are on scene. Other assistance from the OEM (Office of Emergency Management) includes an emergency operations center which can request mutual aid from other fire departments in Teller County and the ability to request assistance from outside the county, if needed. In the event of an evacuation the Sheriff—not the firefighters-- would be in charge of evacuating residents. Information about evacuations is given out through the media and by the GEOCAST call 911). The Teller County Sheriff's Department would be notified soon after the Incident Commander (officer in charge of the fire) evaluates the fire situation. Upon their arrival the sheriff's deputies would receive instructions from the Incident Commander on which roads should be closed and how an evacuation would proceed.

The priorities of the first responding firemen are:
1 – Ensure the safety of the fire fighters and residents in and near the fire.
2 – Evaluate the fire situation, assign firefighters to specific duties to control and suppress the fire, and inform the sheriff and other agencies about the situation.
3 – Restrict the loss of homes and other property.
The most common causes of wildfire ignitions are 1) lightning strikes, 2) human actions such as fireworks, open fires, out-of-control burning, careless smoking, etc., and 3) a structure fire which ignites adjacent vegetation and spreads to other homes.

Fire Hazard Assessment

In 2005 Teller County prepared a county wide Wildfire Protection Plan that included assessment of each subdivision as a whole. According to that document assessment, Indian Creek was at high risk to crown fires and severe risk for property damage. The fire hazard within Indian Creek was judged to be moderate or high in most areas.

Subdivision Wildfire Hazard Ratings Teller County Community Wildfire Protection Plan

March 1, 2005

Subdivision	FPD	Ingress Egress	Road Width	Accessibility	Road Terminus	Lot Size	Street Signs	Fuel Density	Defensible Space	Slope	Response Time	Hydrants	Draft Sources	Materials	Utilities	Crown Fire Hazard	Category	Property Loss Hazard	Category	# of lots
INDIAN CREEK	Florissant	0	1	3	2	2	0	7	5	4	1	3	2	5	1	13	III	25	III	1063

Rating Key:

Crown Fire Hazard

	Category 1 3 to 8
	Category II 9 to 11
	Category III 12 to 14
	Category IV 15 to 20

Property Loss Risk

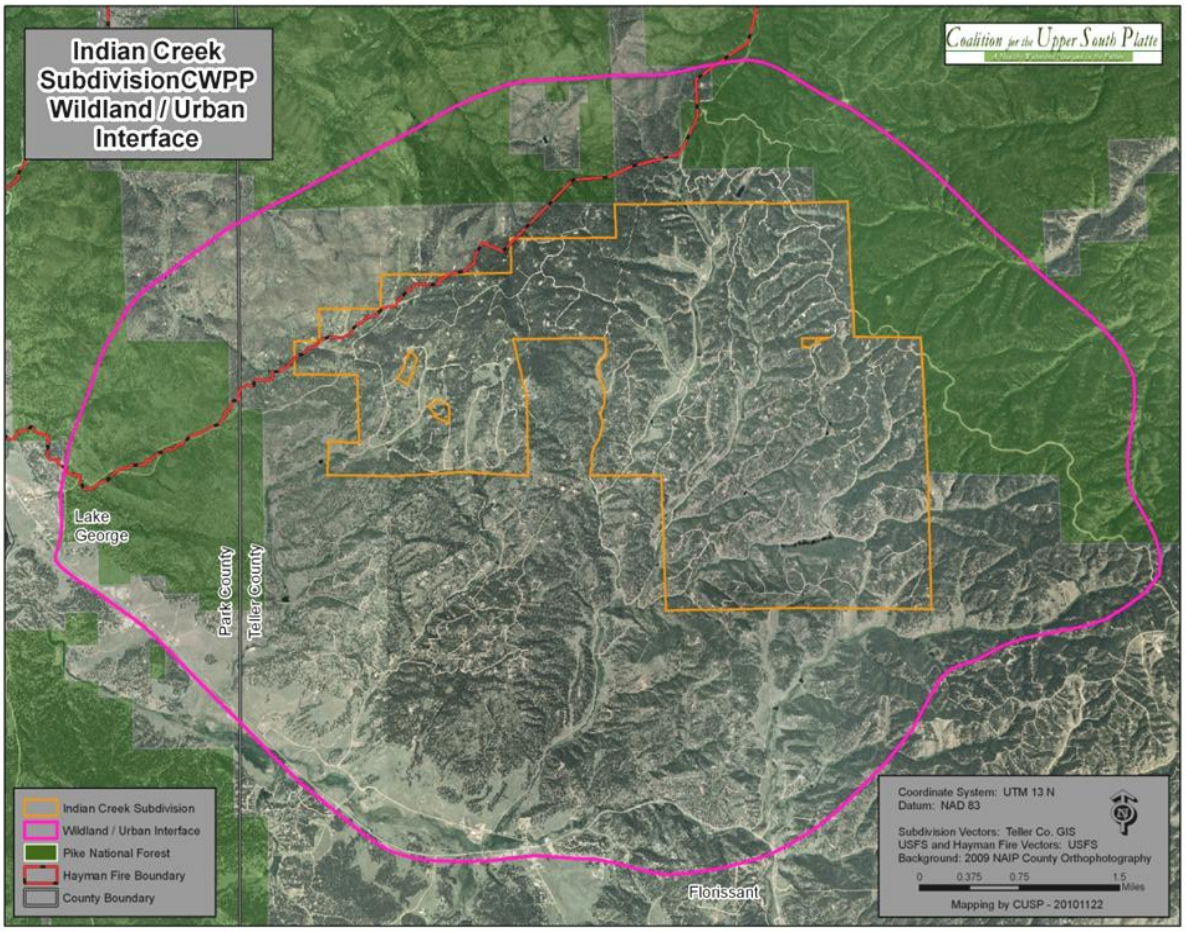
	Category 1 6 to 17
	Category II 18 to 24
	Category III 25+

Currently, application of Red Zone Assessment Software© is being used in the Indian Creek subdivision by the Florissant Fire Protection District Fire Mitigation Technician. Most homes in the subdivision are constructed of wood, and some have cedar shake roofs. Many of the homes have gables which may tend to catch debris in the roof corners and most have wooden decks. Electric lines are above ground and most homes have propane tanks. Water service is provided by wells, and there are no fire hydrants in Indian Creek. There are some open ponds and several creeks which could provide additional water.

The length of driveways is diverse and most homes are not marked with the address at the end of the driveway and so are not identifiable day or night. Driveways are often crowded by trees and need additional clearance for fire vehicles to access them safely. Turn-around areas at the end of many driveways is inadequate for a large structural fire engine.

Indian Creek Wildland Urban Interface Boundary

As used in Community Wildfire Protection Plans, the term “WUI boundary” refers to the area within and adjacent to the community where a wildfire would directly impact the community. The WUI boundary is often used in communities adjacent to Federal lands, such as national forests, to indicate to federal land managers those areas where fire mitigation should receive a high priority. Considerable work has already been accomplished by the US Forest Service along Indian Creek boundaries.



Map 4: Indian Creek wildland urban interface (WUI) boundary

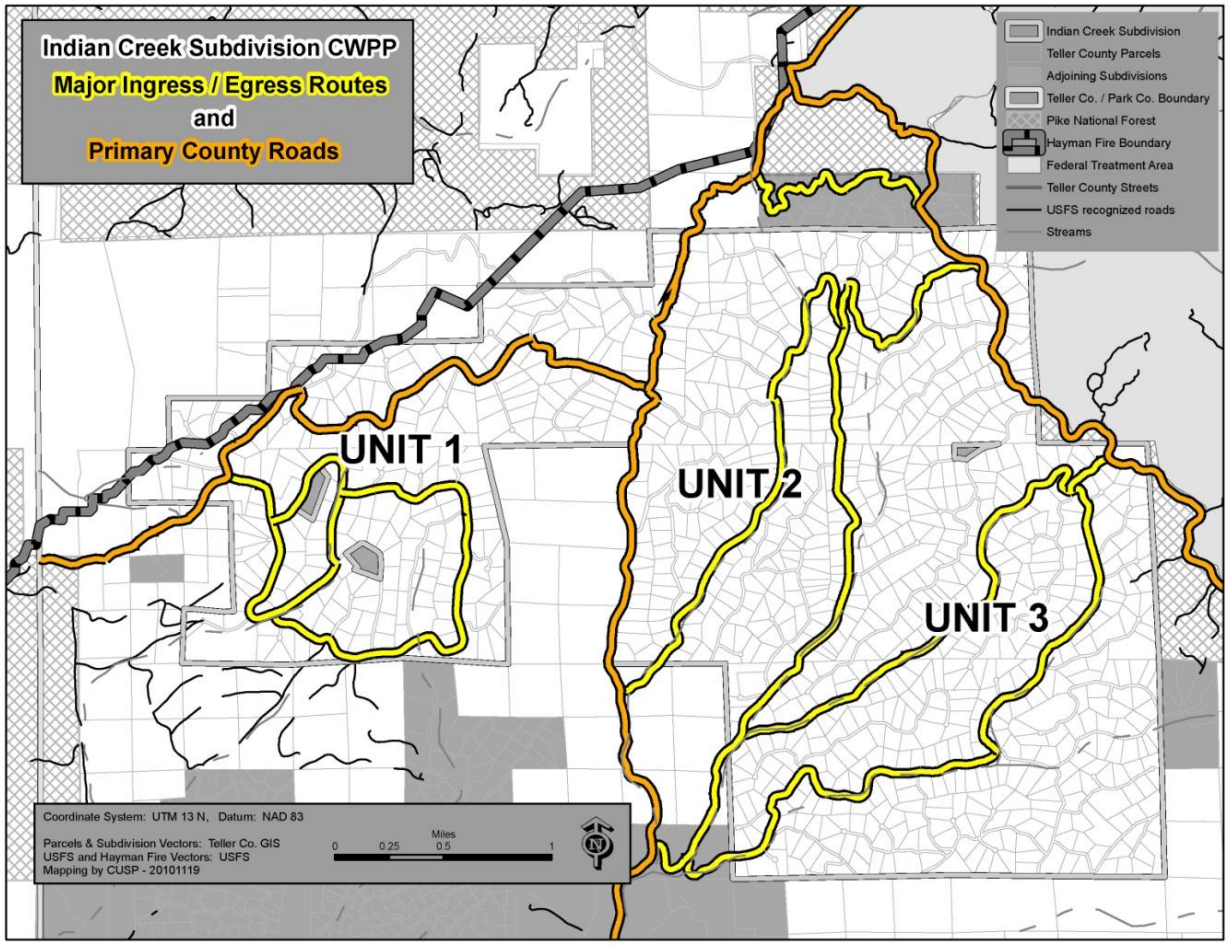
The WUI boundary for Indian Creek was developed to include the entire forested area of which the subdivision is a part. The boundary is extended to the west to Trail Creek Road which would be the primary evacuation route for Unit 1 in the event of a fire. The boundary extends north and west to Cedar Mountain road which is also a primary evacuation route for at least one-half of the community.

Essentially, due to the relatively small size of individual lots in this subdivision (5-10 acres) and the neighboring subdivisions, the entire area can be considered wildland urban interface. Roads provide the only fuel breaks for an extensive area of closed canopy forest. The Hayman burn and the USFS forest treatments along Cedar Mountain Road may decrease the risk of fire encroachment from the northwest and north east. Due to the westerly and south westerly prevailing winds the community would be at the greatest risk from a fire to the west or south west. Should a fire occur within this WUI area, the potential for loss of structures, destruction of property, and hazards to human life would be high.

Ingress and Egress

Roads within the subdivision are gravel and wide enough for two-way traffic (see Map 5). Like many forested subdivisions, there are few points of ingress or egress. This would be of primary importance in the event of a wildfire since traffic may evacuate on one route while emergency equipment may access the community from another. There are several routes in and out of the community.

There are many dead end cul-de-sacs within the community, and some are excessively lengthy but most have sufficient area for engines to turn around at the ends. The most likely evacuation routes during a fire would be Trail Creek Road (west), Wildhorn Road (central) and Cedar Mountain Road (east). These roads could become hazardous as evacuees are attempting to leave the community while emergency equipment is attempting to access the fire. Dense fuels along both sides of the road could also present a safety issue if the fire were burning in this area.



Map 5: Indian Creek ingress and egress routes. Units indicate primary evacuation access groups within the subdivision.

PRIORITY PROJECTS AND PRESCRIPTIONS

The principle objective of this plan is to protect Indian Creek from catastrophic wildfires, and this section will prioritize projects to achieve that end. Wildfire is as much a part of the forest ecosystem as the trees themselves, and it is not reasonable to believe that any sort of mitigation will eliminate all fires. The purpose is to delineate a means to return the forest to a condition resembling the natural pre settlement conditions so that fires can be more easily controlled. The priority of projects is determined based on the existing hazards, safety of the community and fire fighters, and community values. The priorities are:

Indian Creek POA CWPP Priorities			**2011**	**2012**	**2013**	**2014**	**2015**
Fuel Reduction	Complete one or more fuel mitigation and forest health demonstration sites.	Inspect previously treated areas biennially and schedule maintenance as needed.		**X**		**X**	
		Prioritize new projects annually at winter committee meeting.	**Annually**				
	Encourage owners to create and improve the survivable (defensible) space around their structures.	Sponsor monthly slash disposal day for residents May - Oct..	**Annually**				
		Create volunteer crews to assist in mitigation where necessary.	**X**	**As needed**			
	Assist homeowners in pursuing grants for private mitigation projects.		**Ongoing**				
Education	Undertake educational efforts to make residents aware of the wildfire threat and mitigation strategies.	Provide reference and contact information in newsletter and emails.	**Annually**				
		Distribute handouts at annual meeting.	**Annually**				
		Host tours of completed projects – show and tell.		**X**		**X**	
		Host community activity day annually focused on mitigation and education.	**X**		**X**		**X**
	Invite relevant speakers to community meetings.		**Annually**				
	Invite interested residents to participate on committees.		**X**	**As needed**			
Maintenance	Establish a "FireWise" committee with the POA to oversee and implement the CWPP.		**X**	**Ongoing**			
	Establish Indian Creek as a recognized Fire Wise Community by the National Fire Protection Association. Renew annually.		**X**	**X**	**X**	**X**	**X**
	Continue to pursue funding opportunities for education, fuel reduction, forest health and maintenance projects.		**Ongoing**				

Generalized Fuel Reduction Recommendations

The fire hazard in Indian Creek can be attributed to two principal factors. First, is a dense understory of trees that will act as ladder fuels, and, second, closed upper forest canopy. Prescriptions for fuel mitigation should consider both of these factors. Every prescription for fuel mitigation must also achieve the larger purpose of enhancing forest health. Thus, the generalized prescriptions here should be altered to reflect the specific conditions in the forest stand. Most commonly, prescriptions are altered to deal with the presence of dwarf mistletoe or bark beetles.

Actual forest conditions can vary widely over each acre on the ground, and proper design of any forest management project must begin with the conditions that exist within the forest stand. Landowner objectives, species composition, access, insect and disease and other variables all change over the landscape. Thus, it is necessary to design any project based on the existing conditions. Landowners and foresters will need to work closely to achieve the multiple objectives of any forest management project.

General fuel break guidelines are published by the CSFS in a booklet entitled *Fuel Break Standards for Forested Subdivisions & Communities* available from the Colorado State Forest Service, and available on the CSFS website at http://www.csfs.colostate.edu. *(See Appendix B)* Fuel break thinning is most often accomplished by a process called thinning from below, and this method is best suited to the conditions existing in Indian Creek. Trees are usually removed or remain based on their height in the canopy. For simplicity, trees can be divided in three levels in the forest canopy. The largest trees at the highest level of the canopy are called dominants. These are usually the most vigorous since they have the largest root systems, most leaf area and receive the most sunlight. Next are the co-dominant or intermediate trees. These trees are nearly as tall as the dominants, but tend to be crowded and of smaller diameter because they use most of their available energy in an attempt to reach the sunlight. They are less vigorous with smaller root systems as the result of crowding by the dominant trees.

At the lowest level of the forest canopy are the overtopped (often called suppressed) trees. These are completely shaded by the dominant and co-dominant trees. As noted earlier, it is a common misconception in ponderosa pine stands that the diameter of a tree is an indicator of its age. Often the co-dominant and overtopped trees are as old as or older than the dominant trees. In a pure ponderosa pine forest young trees are usually found in openings in the canopy and can be recognized by having a diameter proportionate to the tree height and a conical shape.

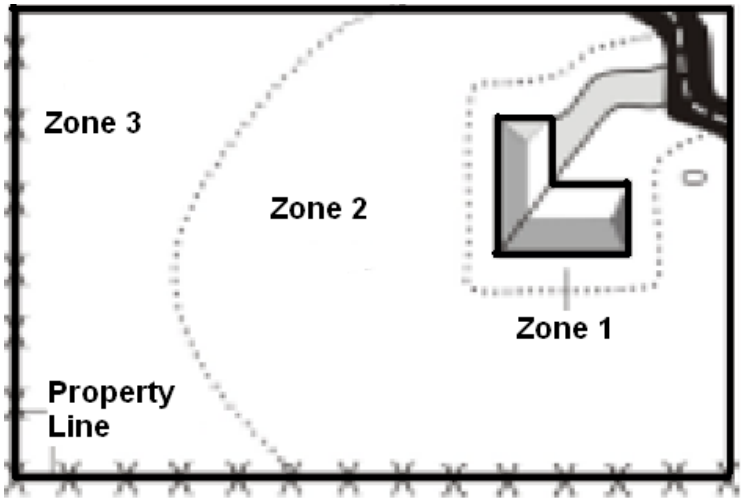
Thinning from below removes all of the overtopped and most of the co-dominant trees. It is essential when thinning for fuel breaks to remove ladder fuels and create enough openings in the forest canopy to prevent crown fires. Thinning from below is desirable in fuel reduction projects because it: 1) leaves the most vigorous trees on the site, 2) creates openings in the forest canopy by removing the less vigorous co-dominants, and 3) eliminates ladder fuels by removing and pruning the lower limbs of remaining trees.

Photo 6: Indian Creek Forest Thinning Project – courtesy of J. Kraudelt

Currently there are some insect and disease problems in Indian Creek. Pockets of dwarf mistletoe may exist that can be treated as part of mitigation projects. Mountain pine beetle is at endemic levels within the community. Trees should be checked for beetles in late October of each year, and any infested trees should be treated soon after.

Protecting Homes with Survivable Space

Thinning around homes is not the same as thinning for fuel breaks. Thinning for survivable space (often called defensible space) is designed to protect structures from the heat of wildfires. As noted earlier, thinning near a structure is the primary factor that determines its fate during a fire. Indian Creek will promote the application of survivable space thinning to reduce the risks of home ignitions. Survivable space is defined as an area around a structure that is either natural or man-made where existing vegetation is modified to slow the rate and intensity of an advancing wildfire. This includes selective removal of trees around structures in two or three concentric management zones. Fuels are reduced according to prescriptions for each zone.



Forested property showing the three fire-defebsible zones around a house or other structure.

Zone 1: is the closest zone to a structure and extends 30 feet from the outer most edge of a structure including any decks. The management goal is to reduce or eliminate most large trees or shrubs within this zone so that they cannot produce intense flames and heat capable of igniting the structure. A few tall trees may be left in zone one if the lowest branches are pruned so that they are well above a fire resistant roof.

Zone 2: is 30 – 100 feet from the structure**.** The main fuels reduction guideline for Zone 2 is to thin the trees to an average spacing of 10-feet crown separation. All ladder fuels under trees should be removed. The branches of dominant trees should be pruned to a height of 8 feet above ground and small trees should have at least two-thirds of the green needles remaining.

Zone 3: 100 feet and further from the structure. The guideline for Zone 3 is to thin the forest primarily to improve forest health. Spacing is less critical in this area but some spaces should be made in the canopy. The primary concern is to remove the co-dominant and overtopped trees and retain the most vigorous trees. The main goal is to remove all ladder fuels because once fire gets into canopies it could move to Zone 2, then Zone 1, and threaten the structure. The primary objective is always to leave the healthiest trees. It should not be to achieve a predetermined spacing.

Driveways in Indian Creek are often narrow. It is important to allow safe access and egress for emergency vehicles. Adequate clearance should be maintained to allow access to large structural fire trucks. Twelve feet of horizontal clearance and 13 feet of vertical clearance should be maintained. At the end of driveways, adequate room for a large fire engine to turn around is desirable. Firefighters must be able to escape quickly if conditions suddenly deteriorate.

Maintenance

Survivable space, or any type of forest management, does not end when the initial project is finished. Continual maintenance is an essential part of any forest management. Even in well managed forests trees will die, storms and wind will damage trees, and new trees will germinate.

- Trees should be inspected every spring for any sign of damage from winter or spring snows or wind.

- Prune any broken branches if they are not too high in the tree. Any trees bent by heavy winter snows should be removed, and check for any signs of insect activity or disease.
- Late October is the best time to inspect trees for attack by mountain pine beetles. Any dead trees in Zones 1 or 2, or trees in Zone 3 that may pose a hazard when they fall, and should be cut. In Zone 3 it may be desirable to leave one or two large (greater than 10 inches in diameter) widely spaced dead trees per acre, as wildlife habitat trees.
- At five years check the canopy closure, especially in Zones 1 and 2. Remove any trees necessary to maintain openings in the canopy. Do any additional pruning or removal of trees and shrubs to eliminate ladder fuels.
- After ten years dense thickets of young trees (regeneration) may have become established, and these will need to be thinned. Not all regeneration should be cut since trees of various ages are important for forest diversity.
- Trees in openings with adequate room to grow should remain, and a useful rule of thumb for spacing is that the trees should receive sunlight from all sides. Regeneration that is likely to become ladder fuel or crowded by other trees should be cut. Depending on their objectives, landowners may want to consider removing some of the larger trees to make room for the younger ones.

Implementation

The Indian Creek CWPP Team will identify main access routes which are overgrown and recommend property owners thin treed-in areas to increase road safety and visibility. We will partner with the Pikes Peak Historical Society and the United States Forest Service to locate culturally-scarred trees and mitigate around them. By mapping the Prayer, Medicine, Message and Burial trees we'll work at preserving these living relics of the past.

The CWPP cannot compel any homeowner to take action. The key to success or failure in reducing fuels hazards and increasing community safety is in the hands of the homeowners. They are the ones that will benefit most from survivable space thinning and fuels reduction projects. Owners need to see the importance of fuels reduction and thinning as this is the key to the health of their forest. This plan will be published on the CSFS website so that it will be available to all residents. The plan is intended to guide Indian Creek's mitigation efforts for a period of ten years, but it will not be a static document.

A Fire Wise committee will be established by the POA to meet twice throughout the year in order to implement the plan and in the winter the committee will establish a work plan for the coming year. As part of the work planning process the goals and objectives will be evaluated and amended as necessary.

Appendicies

Indian Creek

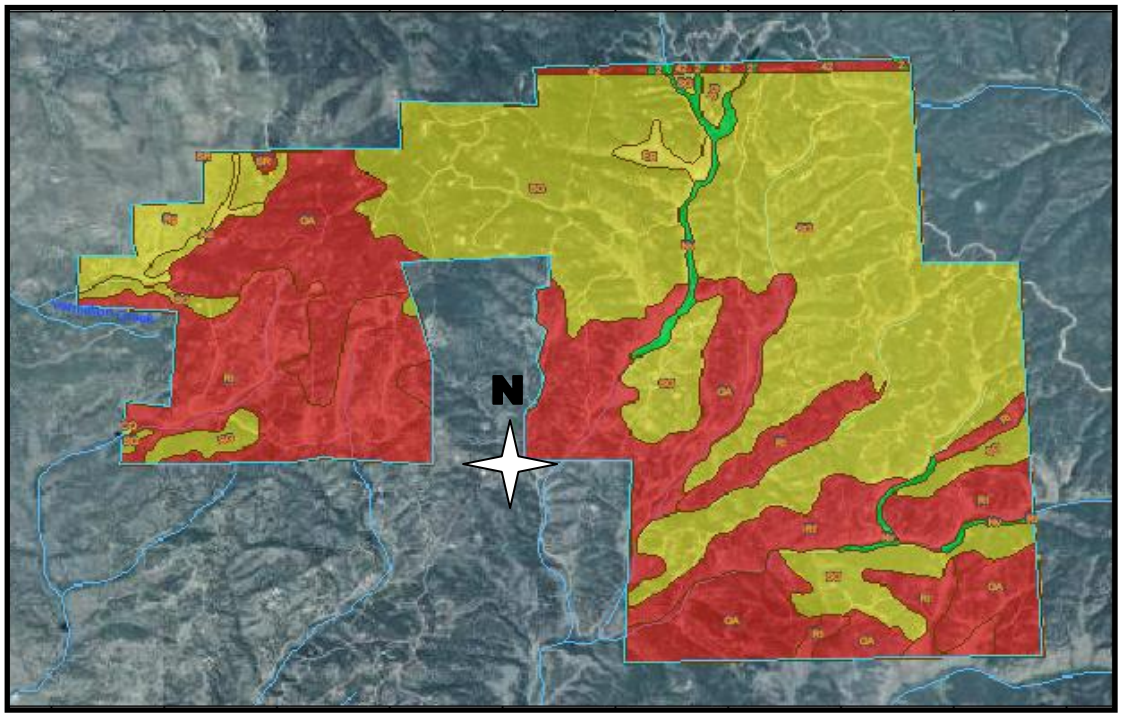
Subdivision

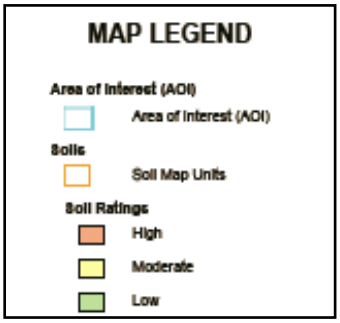
CWPP

January, 2011

Appendix A:

Indian Creek Potential Soil Damage by Fire





USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Indian Creek Subdivision: Potential Damage by Fire—Summary Rating Value		
Rating	**Acres of Potential Damage**	**Percent of Area**
High	2,661.3	43.8 %
Moderate	3,265.6	55.7 %
Low	89.8	1.5 %
TOTALS	**5,971.7**	**100.0 %**

Appendix B:

Contacts For More information

Colorado State Forest Service, Woodland Park Office
113 South Boundary St., PO Box 9024
Woodland Park, CO 80866
phone: 719-687-2921

Florissant Fire and Rescue
2606 W. Highway 24, PO Box 502
Florissant, CO 80816
phone: 719-748-3909

US Forest Service, Pike District
601 S. Weber Ave.
Colorado Springs, CO 80903
phone: 719-636-1602

Websites For More Information

Creating Wildfire Defensible Zones: www.csfs.colostate.edu/pdfs/6302.pdf

Firewise Construction : www.csfs.colostate.edu/pdfs/construction_booklet.pdf

Forest Home Fire Safety: www.csfs.colostate.edu/pdfs/6304.pdf

Firewise Plant Materials: www.csfs.colostate.edu/pdfs/6305.pdf

Other Information: www.csfs.colostate.edu (*use search box at upper right)*

Ute Cultural Trees: www.pikespeakhsmuseum.org/Museum/Main/Headings/Ute