

# Perry Park Metropolitan District Community Wildfire Protection Plan

March 7, 2023

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In Cooperation With:  
Colorado State Forest Service

**Warning and Disclaimer:** The degree of protection from wildfire hazards intended to be provided by this plan is considered reasonable for planning purposes and based on accepted forestry and fire science methodology. This plan is intended to aid the community in minimizing the dangers, costs and impacts from wildfire hazards. Fire is a natural force and historical part of the ecosystem. Therefore, unforeseen or unknown wildfire conditions or natural or man-made changes in conditions such as climate, vegetation, fire breaks, fuel materials, fire suppression or protection devices, and ignition sources may contribute to future damages to structures and land uses even though properly permitted within designated wildfire hazard areas.

## ACCEPTANCE

The Perry Park Metro District (PPMD) Community Wildfire Protection Plan (CWPP) was developed in accordance with the guidelines set forth by the Healthy Forests Restoration Act of 2003 and the Colorado State Forest Services' Minimum Standards for CWPP's.

This CWPP is a collaborative effort to guide the Larkspur Fire Protection District (District) and PPMD stewardship management activities, including wildfire protection. The activities recommended in this plan are appropriate to meet PPMD and District objectives and will benefit the natural resources and reduce the risk from wildland fire. This plan is voluntary, and where possible, PPMD and the District intend to apply the recommended practices, thus improving community preparedness, and increasing public safety.

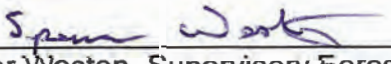
The CWPP has been reviewed and approved by the PPMD CWPP Core Team and Firewise Committee.

  
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President  
Perry Park Metro District

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Fire Chief  
Larkspur Fire Protection District

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Spencer Weston, Supervisory Forester  
Colorado State Forest Service

  
\_\_\_\_\_  
Date

<b>PPMD CWPP Updates/Amendments</b>		
<b>Change</b>	<b>Date</b>	<b>Comments</b>
Original Plan	2005	Approved by PPMD Board
Plan Amendment	2007	Approved by PPMD Board

**NOTE: Amendments to this plan must be approved by Colorado State Forest Service and Larkspur Fire Protection District.**

## Forward

The experience of the last several fire seasons, sustained drought conditions, disease and the ever-increasing number of homes constructed in the Wildland-Urban Interface (WUI) make future wildfires in the Larkspur Fire Protection District (District) and Perry Park Metro District (PPMD) a near certainty. All residents and property owners in PPMD have a personal responsibility to understand the linkage between forest stewardship, their personal safety, that of their neighbors and our firefighters.

With future fires a certainty, it is vitally important that each individual home and property owner understand and apply principles and guidelines in the Colorado State Forest Service Publication, (Updated 2021): *The Home Ignition Zone: A Guide to Preparing Your Home for Wildfire and Creating Defensible-Space*, and other Firewise recommendations found at [www.firewise.org](http://www.firewise.org). However, principles, standards and techniques in various wildfire publications are useless without a key factor: The human will to make a change in the WUI environment.

To make this change, three key principles can be examined: Community, Consensus, and Collaboration, or, the three C's.

### Community:

- Responsibility- individual and collective.
- Entire areas mitigated and forests restored to healthy conditions.
- Overall reduction in fuel volumes.
- Risk management as opposed to an unrealistic expectation of risk elimination.

### Consensus:

- Standards for fuel reduction intended to protect life, property and natural resources.
- Adoption of an overall Plan (CWPP) to address/manage wildfire risks.
- Breaking through deeply held cultural values and beliefs that prevent residents from becoming more adapted to fire as a natural part of the ecosystem.
- Definition of a healthy forest, using the best science available, and development of an acceptable “aesthetic” based on this science.
- Wildfires will happen. It is not a matter of “if”, but “when”.
- There are no guarantees with wildfire due to many variables; both human and natural.

### Collaboration:

- Partnering with organizations that can have an impact on the life, property and natural resources of the County.
- Working together to take advantage of any outside financial assistance or programs to meet stated fuels modification.
- Empathy with different standards.
- Getting past “no” and/or willful ignorance.

The Three C's are vital to building common interest, understanding and action; and necessary to protect the values that make the study area unique.

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## Introduction

The CWPP study area is based on “Landscape Neighborhoods” identified as Compartments 1 to 6. These areas have the potential to be impacted by wildfires. Three major wildfires have occurred within 30 miles of the Community. These were the Hayman Fire (2002), Waldo Canyon Fire (2012) and Black Forest Fire (2013). The fires burned with high intensity as crown fires and resulted in four deaths and significant property losses. These fires burned for extended periods of time and fire spread direction changed multiple times. The study area’s residents must continue to reduce their ladder fuels and increase tree crown separation to survive a high intensity wildfire that can come from any direction. Structures must be hardened to resist both embers and flames. Property owners should take advantage of any slash disposal programs.

The study area, to be proactive, has begun to implement fuel treatments in the surrounding area (Greater Larkspur project-which includes Perry Park Metro District, Haystack Ranch and Sandstone Open Space) under supervision of CSFS. The fire district has begun a free voluntary homeowner evaluation program within high-risk neighborhoods.

Objectives of the plan are:

- To protect life, property, and natural resources of the CWPP study area.
- To protect lifestyle and shared community values.
- Continue to identify values that need to be protected within the study area.
- To restore and protect the forests of the study area.
- To protect homeowner access to affordable insurance.
- To reduce wildfire risks in the community.
- To develop partnerships (i.e., newly forming Douglas County Wildfire Partnership) for shared stewardship efforts, leveraging resources with those that can have an influence on the wildfire risk. To provide for the safety of firefighters and allow them to be more effective in protecting us.
- To collaborate with adjoining fire departments, Colorado State Forest Service, Douglas County Sheriff’s Office, Douglas County and USDA Forest Service to mitigate wildfire hazards on a landscape level.

# The CWPP Process

The minimum requirements for a CWPP as described in the Healthy Forest Restoration Act of 2003 are:

1. **Collaboration:** A CWPP must be collaboratively developed by local and state government representatives, in consultation with federal agencies and other interested parties.
2. **Prioritized Fuel Reduction:** A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.
3. **Treatment of Structural Ignitability:** A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.<sup>1</sup>

The CWPP process will cover:

- **Assessment:**
  - Carry out a general community assessment and an analysis of community fire mitigation capacity.
- **Education and Preparedness:**
  - Develop community education and preparedness initiatives about wildfire behavior and mitigation.
- **Mitigation planning**
  - Engage in community wildfire mitigation planning.
- **Implementation**
  - Implement risk reduction and community protection activities.
- **Monitoring and Sustainability**
  - Commit to project implementation monitoring and building sustainable community capacity.

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<sup>1</sup> Preparing a Community Wildfire Protection Plan, National Association of State Foresters, et al, March 2004.

# COMMUNITY IDENTIFICATION AND DESCRIPTION

## Location and General Description

Perry Park is an unincorporated community in central Colorado within southern Douglas County. It is generally located 18 miles northwest of the Town of Monument and 15 miles southwest of the Town of Castle Rock. Perry Park connects to Perry Park Road (DC-105) with alternate routes to Interstate 25, which provides access to Colorado Springs and Denver.

Perry Park was subdivided in 1968-1972 by Colorado Western Development with most lots averaging one acre. When the development failed in 1976, residents and lot owners were left with incomplete infrastructure to all lots. Perry Park Metropolitan District (PPMD), a quasi-governmental taxing authority, was formed in 1977 to assume responsibility for unpaved roads and all parks and open spaces. By 2001, PPMD, in cooperation with Douglas County, was able to complete paving of all occupied streets. With the rising awareness of wildfire risks, PPMD modified its Service Plan in 2004 to include wildfire mitigation services and traffic safety issues.

Residents enjoy the availability of potable water through the Perry Park Water and Sanitation District (PPWSD) central water distribution system. Electric service is provided by Core Rural Electric Association (CREA). Natural gas service is provided by Black Hills Energy. Telephone service is provided by Century Link Communications. Internet services are offered through wired or satellite dish service providers. Cellular cell phone service is not consistent throughout the community. Central sanitary sewage collection and treatment is provided to most properties by PPWSD. Street maintenance services are provided by Douglas County. Law enforcement is covered by the Douglas County Sheriff's Office (DCSO). Fire protection services are made available through the Larkspur Fire Protection District (LFPD). Parks and open space within the community are managed by PPMD.

There are approximately 800 residences and 650 vacant lots with an estimated population of 1,800 residents. These numbers will change over the next 10 years

The community is located within Sections 15, 16, 21, 22, 23, 25, 26, 27 and 28, Township 9 South, Range 68 West of the 6<sup>th</sup> Principal Meridian.



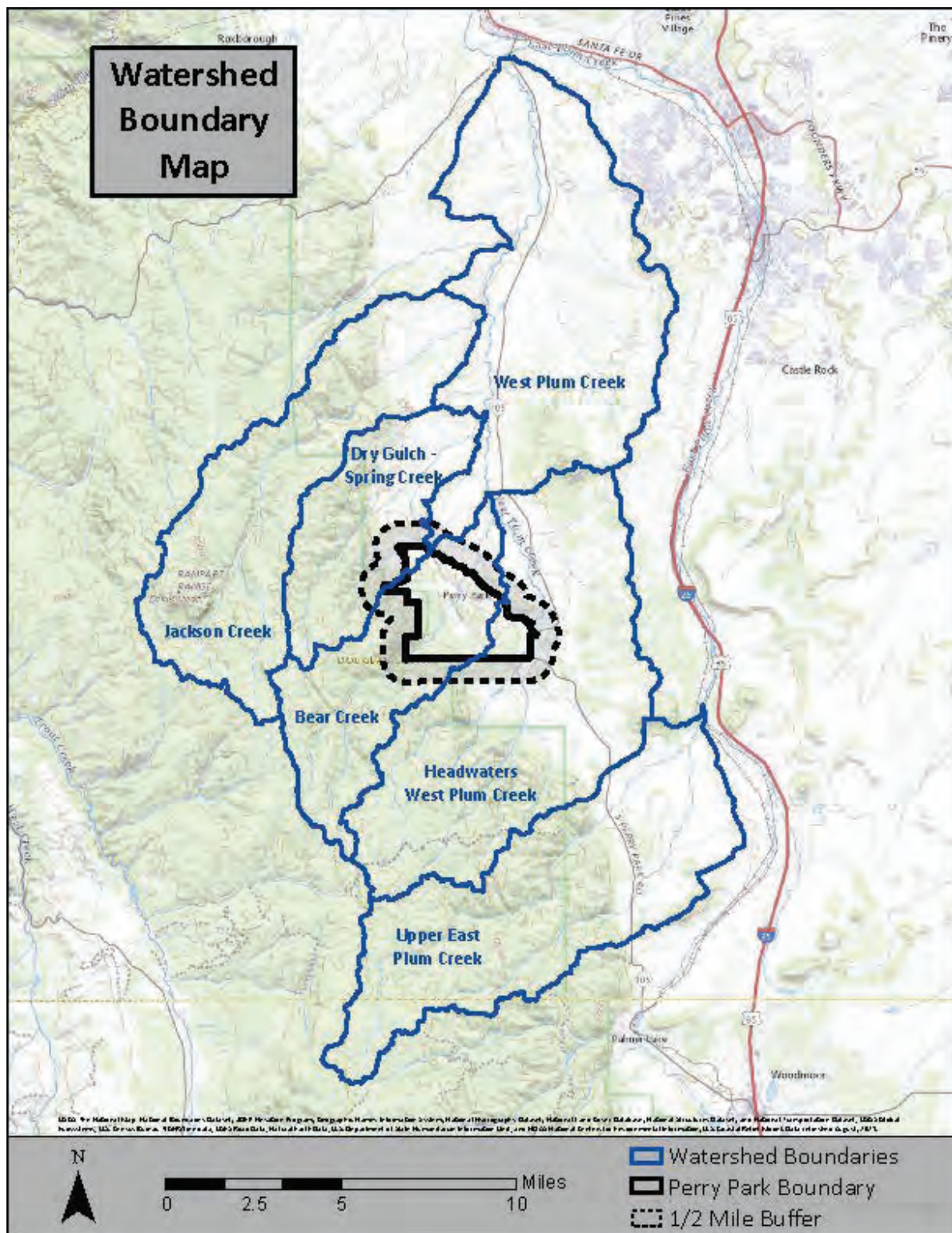


Figure 1. Vicinity Map



The CWPP study area includes the community as Zone 1, a one-half mile wide buffer around the community as Zone 2 (Figure 2) and Pike National Forest west of Perry Park and surrounding watersheds as Zone 3 (Figure 1).

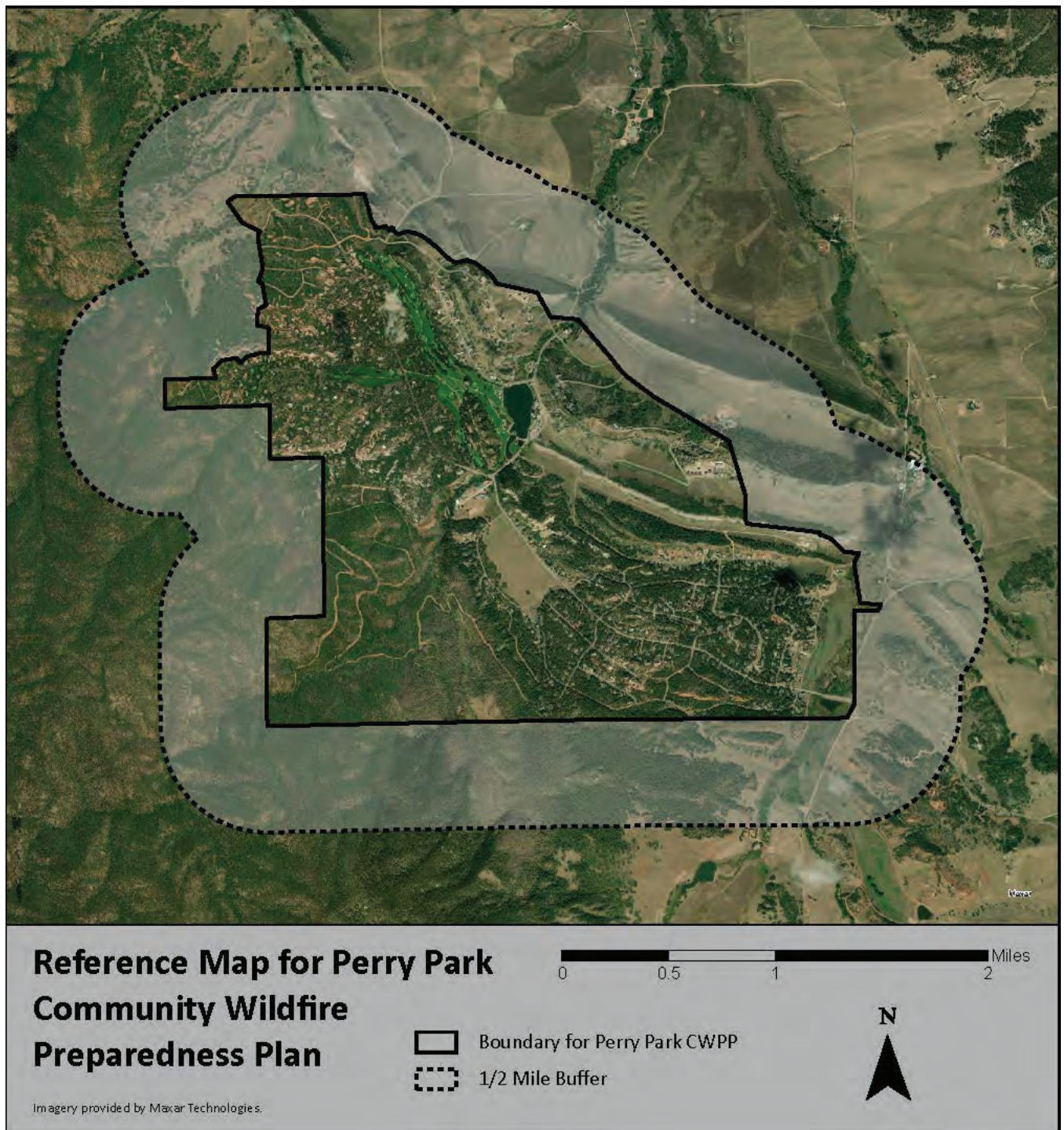


Figure 2. Map Perry Park and ½ mile wide Zone 2



# COMMUNITY ASSESSMENT

## Community Values at Risk

The number one asset in the study area is the residential and commercial resource.<sup>2</sup> Valuation of properties in Perry Park is currently more than **\$535,939,286**.<sup>3</sup> The surrounding forest is also of high value. This asset provides three main values. The first is the aesthetic value, which supports tourism in the area. The second value, property value, is directly related to lot costs and home resale values for forested properties. The third value is renewable water. Water, for domestic uses, is the most valuable resource from the watersheds south and west of the CWPP area (Figure 4). Other less tangible values include wildlife habitat, view corridors, and privacy. Perry Park Wildland Urban Interface (WUI) is shown in Figure 3.

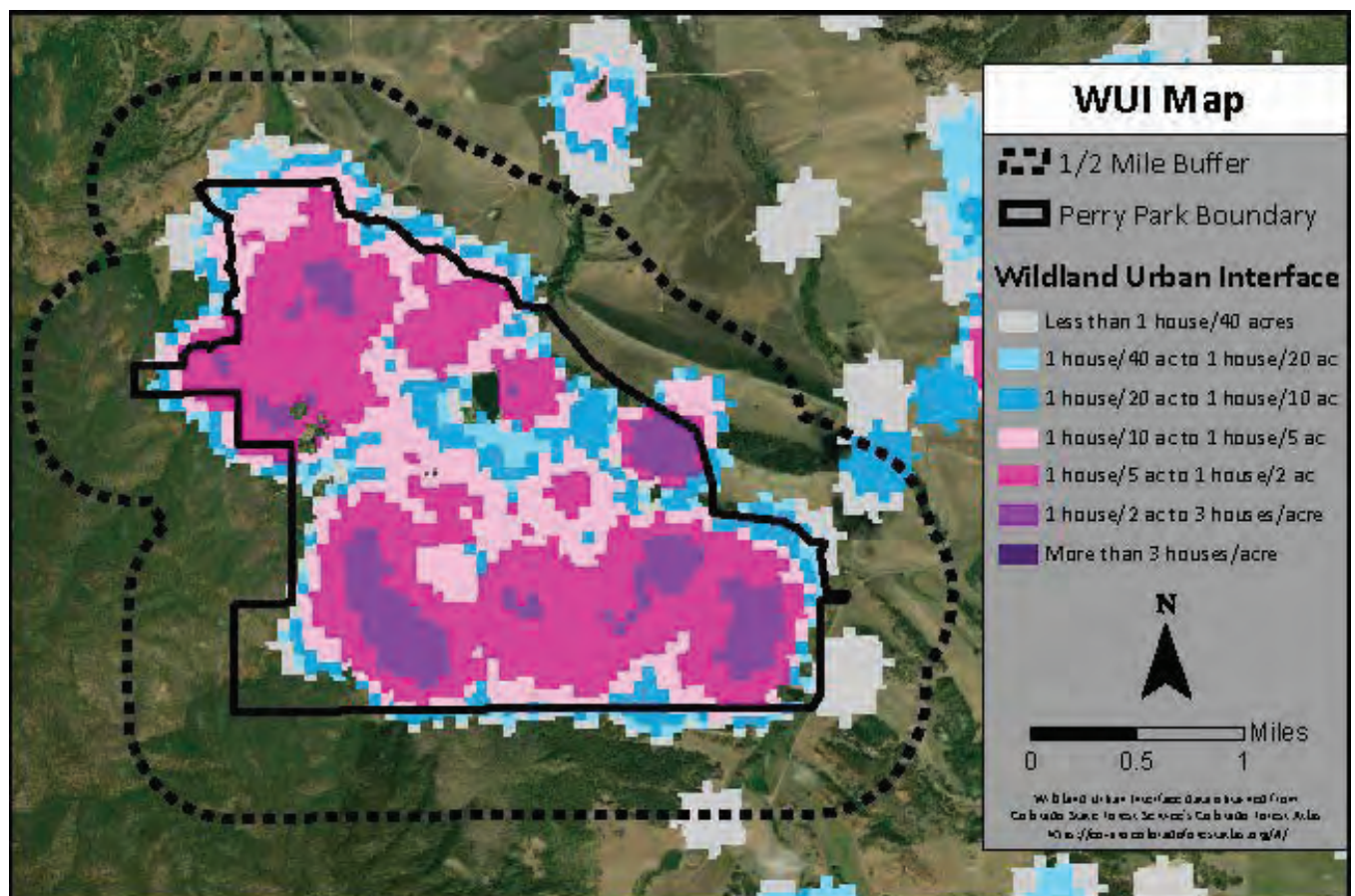


Figure 3. Wildland Urban Interface (“hs/ac” = houses/structures per acres)

<sup>2</sup> CSFS Forest Atlas and CO-WRAP mapping tools used to generate risk maps.

<sup>3</sup> Source: 2022 Certification of Valuation by Douglas County Assessor, PPMD Tax District 4005.

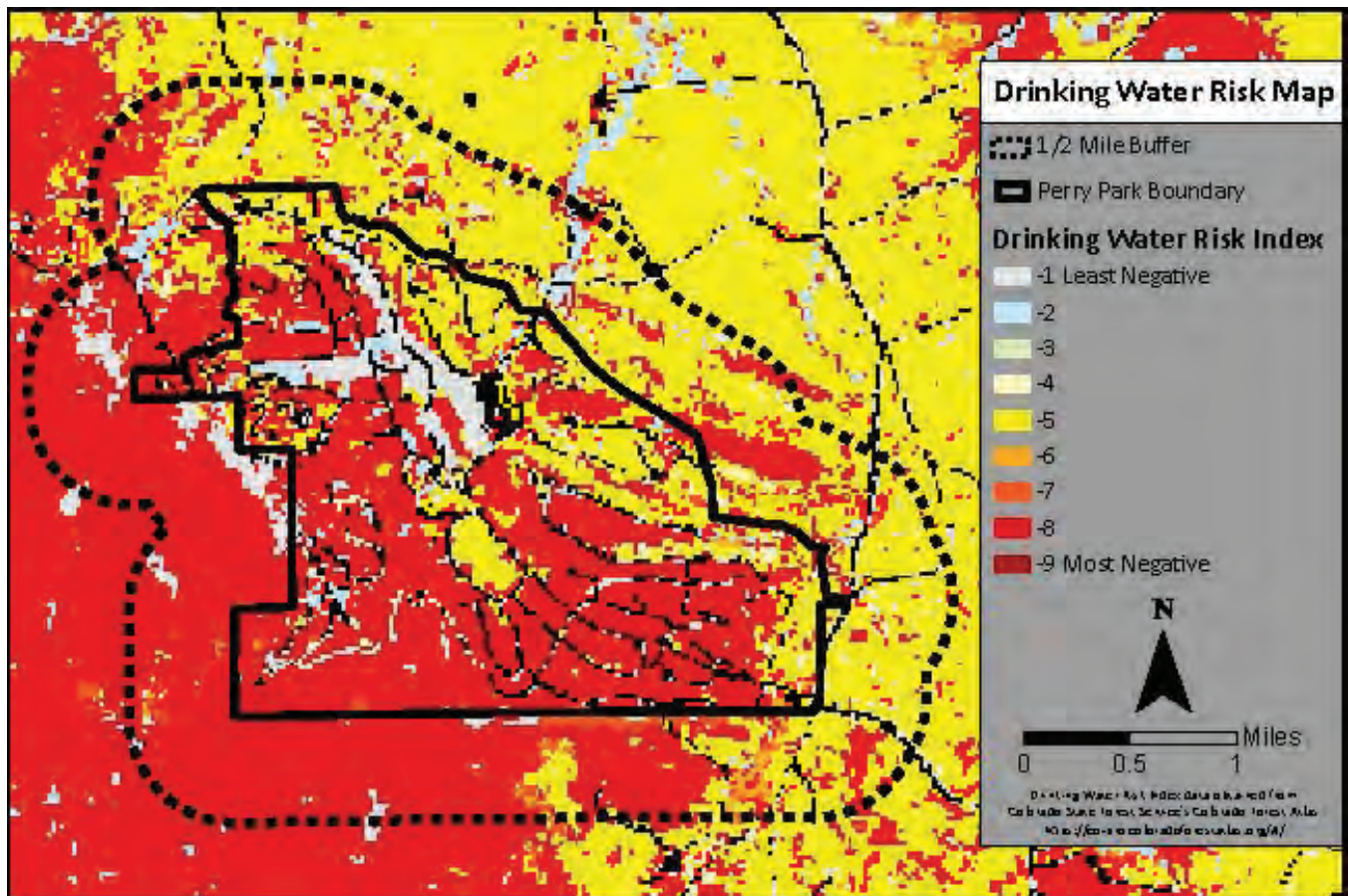


Figure 4. Drinking Water Risk Index

### **Wildland Urban Interface Boundary**

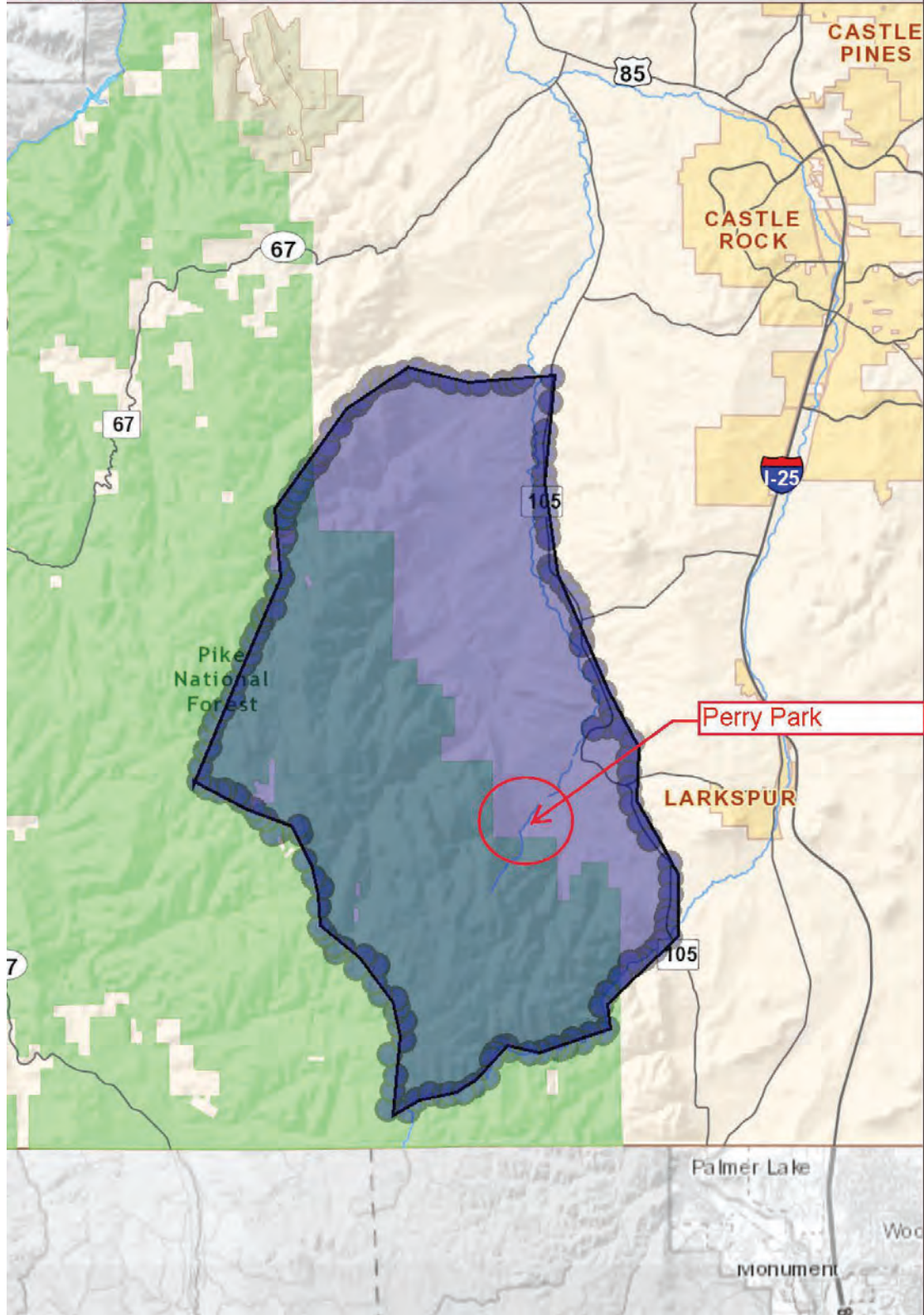
The wildland urban interface (WUI) boundary is defined as the area where a wildfire would be a threat to the community. The boundary, shown as a purple area on the map on the following page (Figure 5), was set at the CWPP boundaries. Three zones have been identified. These are:

- Zone 1- Community boundary and neighborhoods within the study area.
- Zone 2- Wildfire impact areas abutting the community, primarily lands where wildfire occurrence may have an immediate impact on Perry Park. A minimum 1/2 mile wide area will be a high priority for treatments due to potential crown fire spread and ember outwash from this zone into the community. It should be noted that embers generated outside of the community can also impact residents.<sup>4</sup>
- Zone 3- Wildfire influence zone beyond 1/2 mile from Perry Park. Wildfires from this zone can exhibit extreme fire behavior that continues into zones 1 and 2, with little or no potential for containment or control.

<sup>4</sup> Framework for Addressing the National Wildland Urban Interface Fire Problem – Determining Fire and Ember Exposure Zones using a WUI Hazard Scale, NIST Technical Note 1748, January 2013, A. Maranghides, W. Mell <http://dx.doi.org/10.6028/NIST.TN.1748>



## Perry Park CWPP Watersheds



**Figure 5. Risk and WUI Boundary (purple)**

In past, fire seasons, normally ninety-eight percent of wildfires were typically contained or controlled within the first or second burning period.<sup>5</sup> The Hayman, Waldo Canyon and Black Forest Fires fit into the remaining two percent of fires that exceeded the suppression capacity of fire service control due to extreme weather and fuel conditions. Most of the homes and structures are lost during this “convergence of conditions” of fuel, weather, and topography within the first 24 hours of the fire.

The 2020 fire season called into question the 2% to 98% ratio due to decades-long drought. The Cameron Peak Fire, Troublesome Fire, Pine Gulch Fire, Calwood Fire and Grizzly Creek Fire were even more unprecedented in their behavior.

Other observations of the fuels in the CWPP are:

- Large, un-thinned, decadent forests will exacerbate fire behavior.
- Limited fuel treatments implemented by homeowners can be easily overwhelmed due to untreated fuels on surrounding properties.
- Aerial resources may be unavailable, or of limited value for reducing rate of fire spread due to extreme fire behavior and high winds.
- Density of the tree canopy provides challenges for the effective placement of retardant by some of the delivery systems in use.
- Risks to critical infrastructure are high.
- Post-fire impacts will also affect critical infrastructure.

Greatest risks are to water supply and overhead powerlines (Figure 6) and sewer facilities (Figures 7). A wildfire risk analysis of PPWSD facilities is attached as Appendix C.

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<sup>5</sup> *Assessing Wildfire Hazards in the Home Ignition Zone*, NFPA, 2010, Publication FWC93710PKD

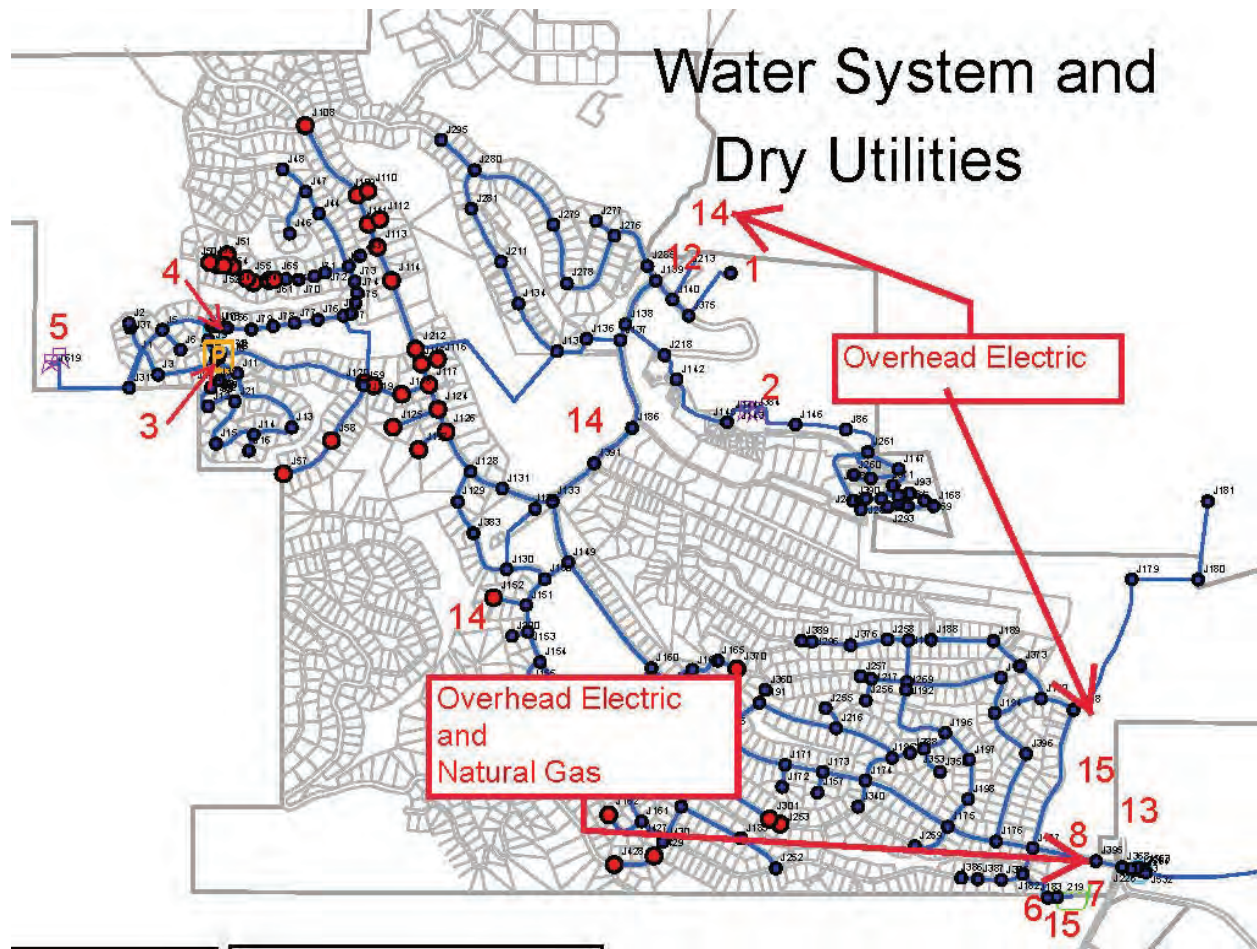


Figure 6. Water system (Mains- blue lines) and Overhead Power Supply



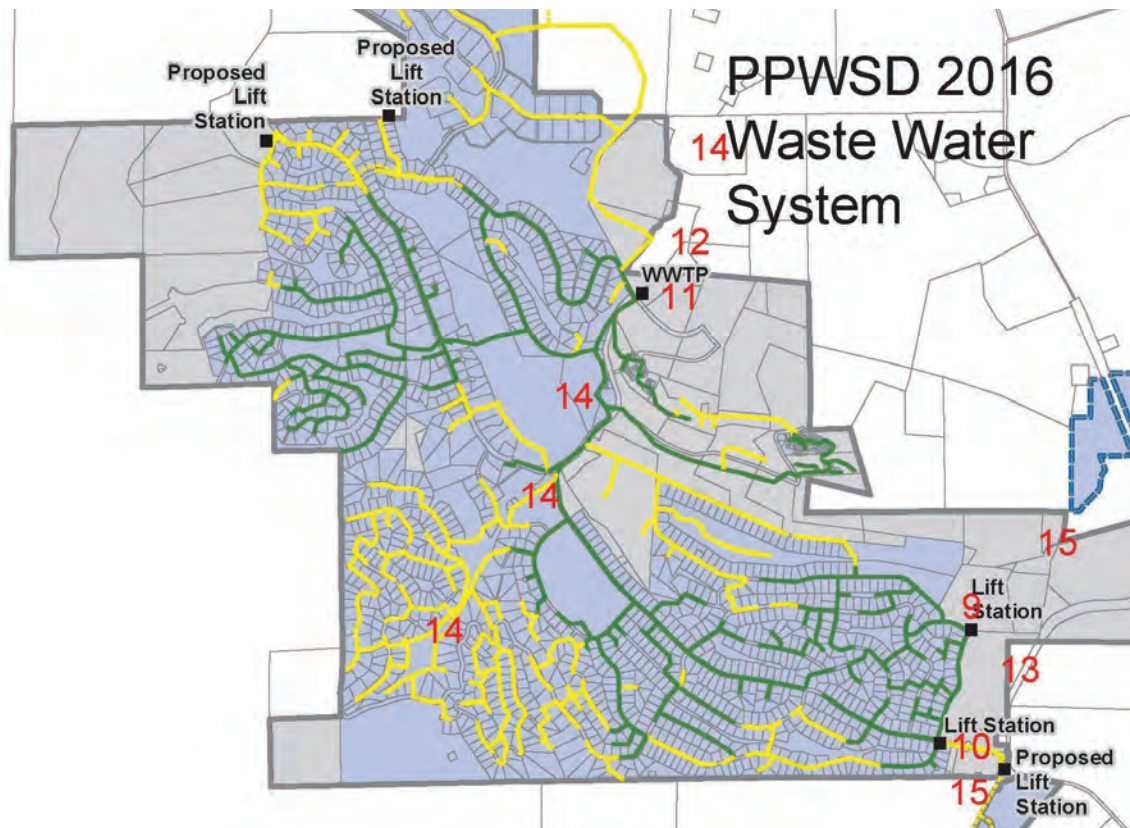


Figure 7. Sanitary Sewer System

## **Wildfire Risk**

Vegetation in the study area is dominated by a second-growth ponderosa pine, mixed-conifer forests with a high percentage of closed crowns, and dense pine, Douglas-fir or Gambel oak understory (Figure 8). Fuel models for this timber type are:

- FBO Fuel Models **1** and **9**<sup>6</sup>
- NFDRS Models **U** and **L**<sup>7</sup>

The eastern portion of the area is covered by prairie fuels intermixed with low shrub species. Fuel models for these areas are:

- FBO Fuel Models **1** and **2**
- NFDRS Models **A**, **C**, **L** and **T**

<sup>6</sup> *Aids to Determining Fuel Models For Estimating Fire Behavior*, Hal E. Anderson, USDA Forest Service General Technical Report INT-122, April 1982.

<sup>7</sup> *Gaining an Understanding of the National Fire Danger Rating System (NFDRS)*, PMS 932/NFES 2665, National Wildfire Coordinating Group (NWCG), 2002.



Dense, continuous stands of Gambel oak are intermixed throughout the community. Fire intensity and fast-spreading fires involve the foliage and live and dead fine woody material in the crowns of a nearly continuous secondary overstory. Stands of mature shrubs, 6 or more feet tall, are typical candidates. Besides flammable foliage, dead woody material in the stands significantly contributes to the fire intensity.

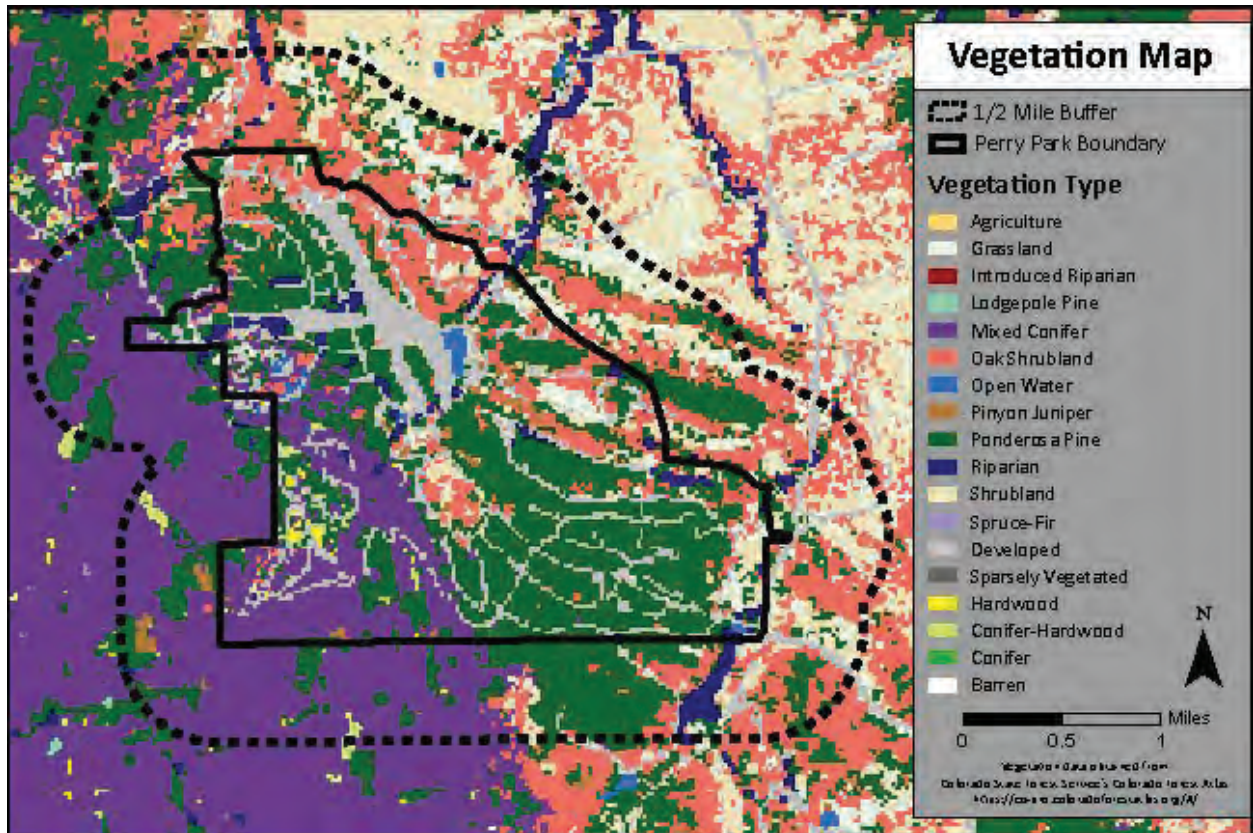
- FBO Fuel Models **4** and **7**
- NFDRS Models **B, O, D** or **Q**

Riparian zones along waterways and seasonal storm channels are made up of shrub species such as willows and cottonwoods, intermixed with grass fuels. These areas are of concern where they abut high density subdivisions, especially under drought conditions. Fuel models for these areas are:

- FBO Model **5**
- NFDRS Models **F** and **T**

Douglas-fir Tussock Moth built to damaging epidemic levels in 2014-2015 resulting in a high percentage of tree mortality along the southwest and west borders of Perry Park. CSFS estimated 8,000 acres of mortality occurred on private lands and Pike National Forest within this area. Mortality also occurred within Perry Park in the area described as "Upper Cheyenne". Untreated area fuel models for these areas are:

- FBO Models **11,12** or **13**
- NFDRS Models **I, J** or **K**

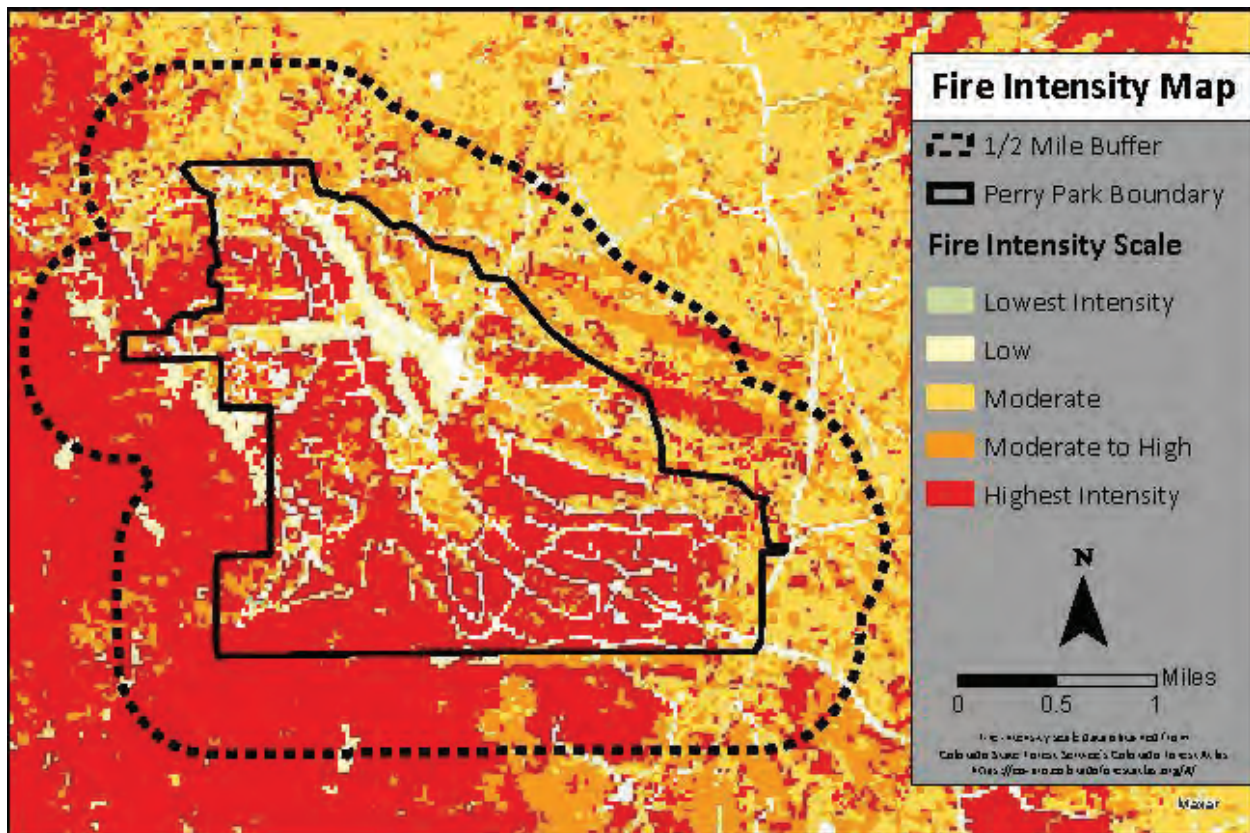


**Figure 8. Wildland Urban Interface Fuel Types (CO-WRAP)**

The wildfire intensity map represents the Colorado Wildfire Risk Assessment Portal (CO-WRAP) analysis of the potential wildfire intensity in and around the study area. Wildfire risk is the chance that a fire might start or spread into the area. Most of the community is at a “Moderate” to “High” risk for wildfire occurrence and intensity (Figure 9).

When interpreting CO-WRAP or Forest Atlas data, it should be noted that predictions are based on the average of historical weather over time. Thus, risk mapping does not predict fire behavior on any given day, and weather conditions at the time of a fire greatly influence actual fire behavior and spread. For example, both the Waldo Canyon and Black Forest Fires burned during the most severe fire weather and not on average days. The effect of weather conditions on fire behavior is further explained in the section on fire behavior.

The existing fuels will have high rates of spread under relatively mild weather conditions.



**Figure 9. Wildfire Intensity (1 Chain = 66 feet)**

Local topography further aggravates fire behavior and control. Prevailing west winds are funneled through the communities involved, with eddy effects on the leeward side of the high ridges. The area is also prone to winds from the east and southeast during upslope weather patterns. Slopes range from five (5) to one hundred (100) percent with most forested hillsides ranging from ten (10) to fifty (50) percent.

**Note:** Wildfire intensity shown on these maps is under normal burning conditions. During the Black Forest Fire, burning conditions were considered extreme, with spread rates over 100 chains per hour or 1.25 miles per hour.

## Risk of Ignition and Wildfire Occurrence

### Causes of Wildfire Ignitions

Reconstruction of fire history and forest dynamics in the area, reveals:

1. An average fire interval of about fifty years during the period 1300-1880, but no major fires between 1880 and 2000.
2. The 2002 Hayman Fire consumed 138,000 acres. Since then, numerous larger and more destructive wildfires have occurred in the region. The 2020 fire season



resulted in large fires (i.e. Cameron Peak, East Troublesome, Pine Gulch, Grizzly and Calwood fires) that exceeded the Hayman Fire in size.

3. A mix of surface fire and stand-replacing fires in the historic burns (mixed severity fire regime);
4. A striking increase in forest density from 1900-2021.
5. Extended droughts have persisted in the region.
6. Wildfire seasons may extend from March to December.

The extent of the high-severity Hayman Fire in 2002 was unprecedented in the last 700 years, in part because of the dense forest conditions that had developed during the twentieth century, and in part because of the extreme drought and fire weather conditions that existed since 2000. Similar drought conditions contributed to the Waldo Canyon, Black Forest, and Lower North Fork Fires over a decade later.

The community has multiple potential ignition sources that can contribute to wildfire starts in or abutting the community. Some of these are:

- Proximity to major roadways such as Perry Park Road (DC-105).
- High recreation areas surrounding the community with camping, off-road vehicle (ORV) uses in the Pike National Forest accessible by Dakin Road, Jackson Creek Road and Rampart Range Road.
- Residential and commercial areas where sparks can be generated.
- Catalytic converters in contact with grass fuels.
- Above ground electrical distribution systems with vegetation growth underneath.  
Note: Aging infrastructure and high winds caused the Cherokee Fire in 2006.
- Lightning storms are typical occurrences during the summer season.

Low fuel moistures and relative humidity are common in the area, as are periods of high winds. When dry and windy conditions coincide, the stage is set for large wildfires. Human population is also increasing in the area. All recent large fires were caused by humans. Numerous fires are ignited each year by lightning. Except for portions of Florida, Colorado has some of the highest occurrence of lightning in the continental US.

Fires originating in or near communities are the most immediate concern, but fires starting well beyond the boundaries of the planning area can have profound effects upon the communities. Rapid rates of spread and long-distance spotting are the norms for fires in the vicinity. Areas classified as high to moderate fuel loading are at the greatest risk.

Historically, wildfires were typically caused by lightning. Native American use of fire in the area is unknown. Human activities, both accidental and intentional, remain as the highest risk for fire starts. The same roadways that may be critical for evacuation can also be ignition points for wildfire starts. These roadways create exposures from auto accidents, disabled vehicles, cigarettes, and right-of-way maintenance activities. Residential exposures to fire can be from maintenance equipment, barbeque grills,

unsupervised youth, and burning structures. Outdoor burning, improper ash disposal, chimney fires/embers from chimneys, as well as sparks from recreational equipment and chainsaws are other common sources of wildfire starts.

## **Fuel Hazards**

### **Factors Affecting Homes in the Wildland/Urban Interface**

The overall risk to the community from wildland fire is moderate to high. This section will discuss the factors that led to the overall rating. All residences in the community should be considered as being in the Wildland/Urban Interface (WUI). The homes in CWPP Study Area have various risks of being destroyed by a wildfire. The amount of risk depends on the vegetative fuels, topography, weather events, and the construction of the home itself. It is important to understand these conditions and factors to make appropriate decisions about vegetative fuels reductions.

Fire Behavior at any time is dependent on three factors: weather, topography, and fuels.

**Weather:** Weather influences fire behavior as both a long term and transient phenomenon. Long term weather trends such as extended drought increase the possibility of ignition and increase the rate of fire spread. Strong upslope winds are an especially significant weather feature of the Douglas County area. These winds occur year-round, at 30-60 miles per hour, and caused the rapid fire-spread in the Waldo Canyon and Black Forest fires. These winds reverse the normal topographic uphill convective spread of wildfire and present the greatest threat of spreading wildfire both upslope and downslope to private lands in the Perry Park area.

**Topography:** Topography includes the degree of slope and the shape of the terrain. Hot gases rise in front of the fire along the slope face, pre-heating the vegetation above a fire. As slope increases the effect of the preheating and spread increases, and fires may move up to four times faster with flames twice as long as a fire on level ground.

**Fuels:** The two fuel types in a WUI are vegetative and structural. Vegetative fuels consist of living and dead trees, bushes, and grasses. Typically, grasses ignite more easily and burn more quickly but with less intensity than trees. Fires can move quickly through grass and herbaceous vegetation, and these smaller fuels are often the kindling that moves fires to larger size fuels.

The threat of wildfire is exacerbated by deteriorating forest conditions on the Palmer Divide and along the entire western boundary of the study area. Insect outbreaks and high wind events have created heavy fuel loads of both standing dead trees and fallen heavy fuels. Concerted efforts are necessary to address this hazard by creating a wide band of fuels reduction on both public and private lands along this boundary.

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 the fuel moisture content will be. Lower fuel moistures produce higher spread rates and fire intensities.<sup>8</sup>
- 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 map below (Figure 10) shows rate of spread under normal burning conditions.

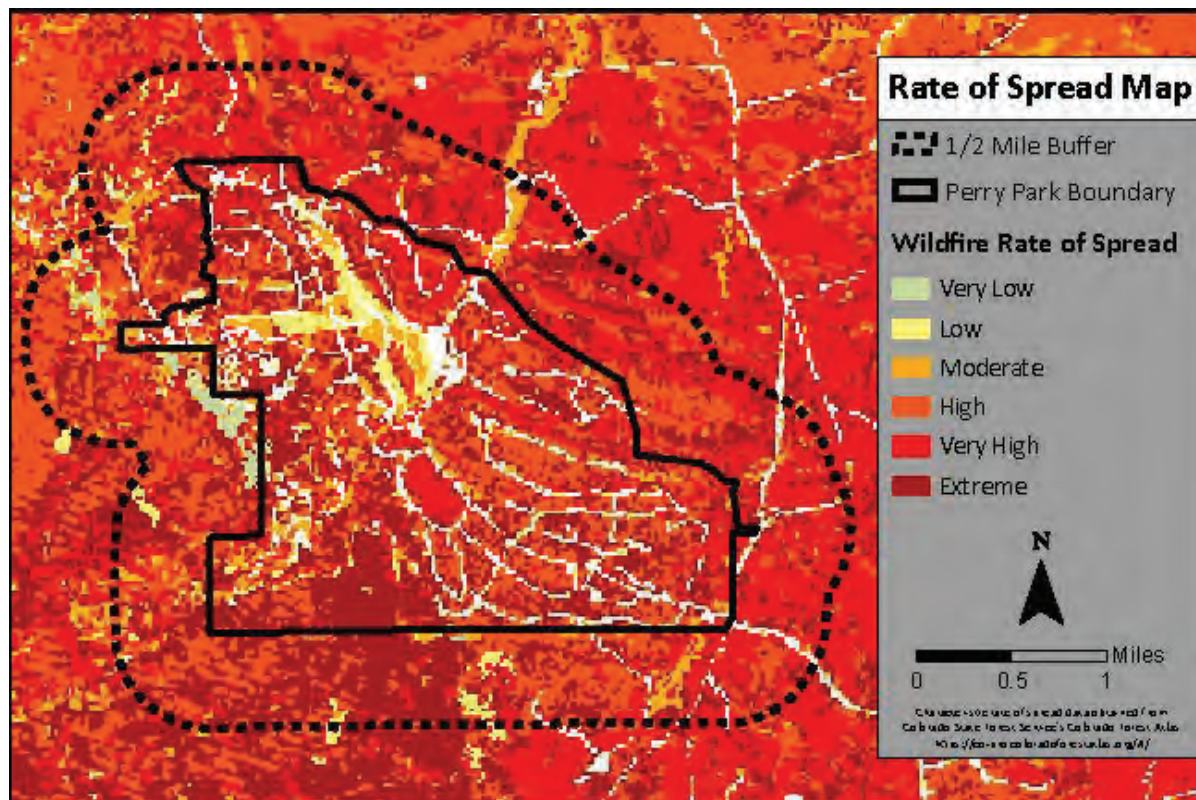


Figure 10. Rate of Wildfire Spread for the Study Area

<sup>8</sup> Detailed weather information is available at the National Weather Service website [www.weather.gov](http://www.weather.gov).

## **How Structures Catch Fire**

There are three ways that a wildfire can transfer itself from natural vegetation, or burning homes, to other homes. These are through radiation, convection, and firebrands.

***Radiation:*** Wildfires can spread to a home by radiating 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—the hot air and gasses rising from the flames--may also ignite a home. This will most likely occur when trees or brush near a structure ignite, and the flames touch a flammable part of the structure.

***Firebrands:*** Firebrands (also called embers) are burning materials that detach from a fire during strong convection drafts in the burning zone. In most cases, the flame front passes quickly, but a shower or “blizzard” of burning embers impinges on the structure for some time before and after the flame front passes. Firebrands are most often the cause of home loss. Firebrands can be carried long distances – more than a mile – by the winds associated with a wildfire. Many homes in the community are particularly vulnerable to firebrands.

**\*\* NOTE\*\*** Over 90% of the homes lost in the Waldo Canyon Fire were from embers carried into neighborhoods by winds in excess of 60 mph. These embers were driven horizontally as a “blizzard”<sup>9</sup>

## **Home Construction and Vulnerability to Wildfire:**

The community is 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 the CWPP. 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 that can result in avoiding home loss. To accomplish this, combustible items such as dead vegetation and debris 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.

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<sup>9</sup> Fire Adapted Communities Assessment of the Waldo Canyon Fire, 2012, Quarles, et al.



Included in this assessment are observations made while visiting the CWPP Study Area. 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. 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 200 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.

The construction materials, location and even the shape of a structure influence its vulnerability to wildfire.<sup>10</sup> It is not the intent of this CWPP to suggest extensive alterations to homes that already exist in the community. Understanding how home construction affects the vulnerability of the structure to a wildfire helps residents plan defensible space projects to compensate for construction differences. When remodeling or home improvement projects are done plans can be made to reduce the ignitability of the buildings.

A renewed focus should be placed on “structural hardening” or ember proofing existing structures. Small openings, greater than 1/8<sup>th</sup> inch, can allow wind driven embers to enter attics, soffits and voids that may have collected fine fuels (1-hour fuels less than ¼ inch in size) over time. Simple methods of filling or covering these voids can include caulking, flashing or fine wire mesh. Where horizontal edges meet vertical edges are most vulnerable to ignition. In some cases, increasing vertical and/or horizontal separation at these interfaces can be used.

New home construction projects should utilize best practices for home site location and incorporate fire-resistant construction methodologies from the conceptual design phase; regardless of the nonexistence of codes or WUI ordinances requiring such actions.

To summarize, all structures in Perry Park are vulnerable to wildfire.

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<sup>10</sup> Slack, Peter, (2000): *Firewise Construction: Design and Materials*. Colorado State Forest Service.



## PRESCRIPTIONS FOR WILDFIRE HAZARD REDUCTION

### Home Ignition Zone, Defensible Space and Fuel Breaks:

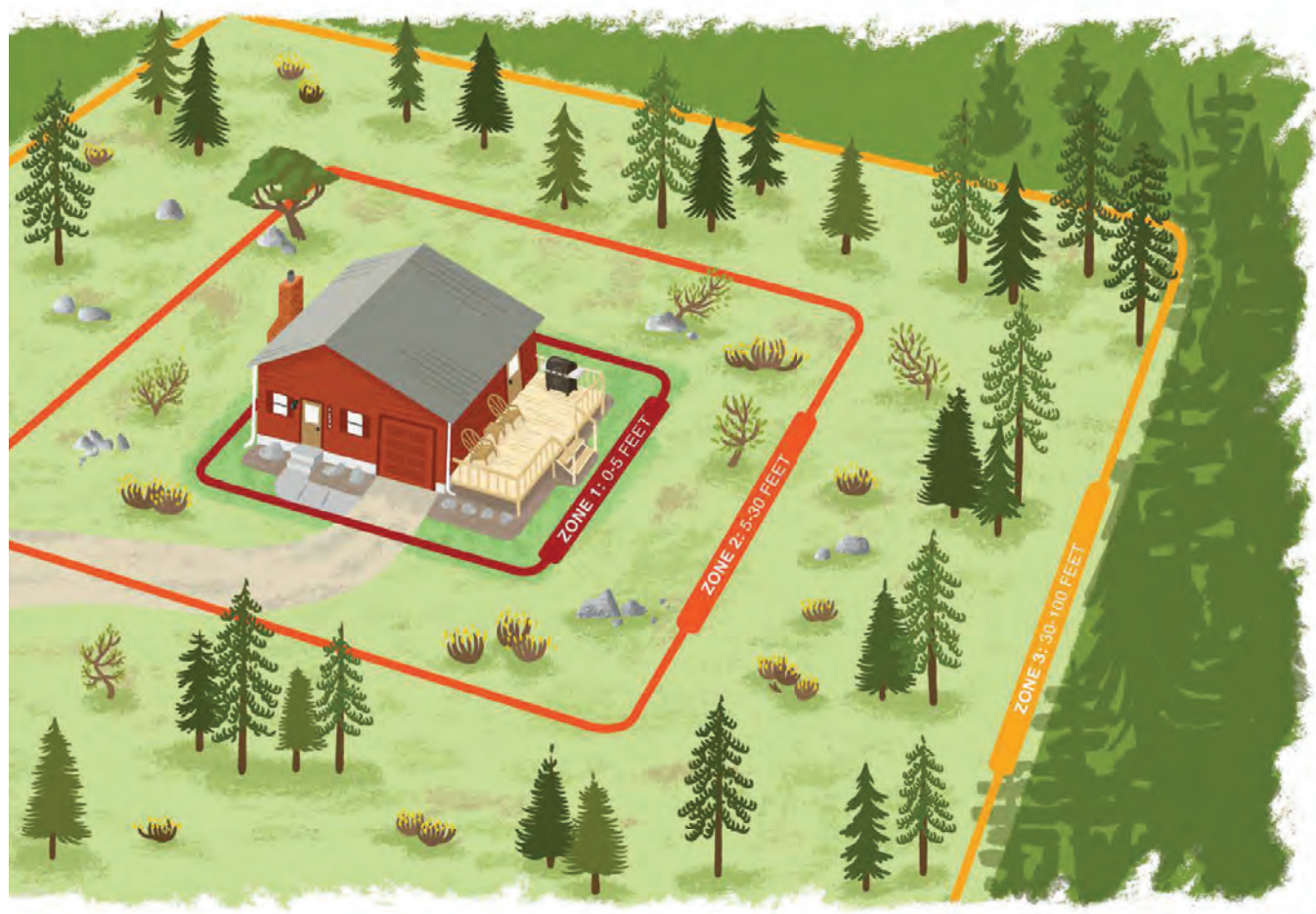


Diagram of Home Ignition Zone (Source: CSFS)

In a broad sense there are two generalized categories of mitigation around structures. First is defensible space thinning in the Home Ignition Zone around structures to increase the chance that the structure will survive a wildfire. Second, is fuel break thinning away from structures to reduce severe fire behavior and give firefighters a safer place to work and possibly halt an approaching wildfire. Both approaches require thinning of the canopy and removal of ladder fuels. The approach will vary depending on the forest conditions existing on the area in question.

### **THE HOME IGNITION ZONE:**

Modification of vegetation around a structure to reduce fire intensity is called defensible space. The term “home ignition zone” (HIZ) is defined as a structure and the surrounding vegetation. A structure’s vulnerability to wildfire depends on the surrounding vegetation, including landscaping, and the structure itself.

**Protecting Homes in the HIZ:** Thinning around homes is different than thinning for fuel breaks. Thinning in the HIZ is designed to protect structures from the heat of wildfires. Defensible space includes both thinning around structures to reduce the heat from burning vegetation and reducing combustibility of the structures to protect them from wind borne embers (firebrands), radiation and convective heat.

Information is available at the Colorado State Forest Service website:

[www.csfs.colostate.edu](http://www.csfs.colostate.edu)

A direct link to the newest Home Ignition Zone guidelines is:

[https://csfs.colostate.edu/media/sites/22/2021/04/2021\\_CSFS\\_HIZGuide\\_Web.pdf](https://csfs.colostate.edu/media/sites/22/2021/04/2021_CSFS_HIZGuide_Web.pdf)

Defensible space is defined as an area around a structure where existing vegetation is modified to slow the rate and intensity of an advancing wildfire. Basically, this is the area where firefighters must have space to work safely. This includes selective removal of trees around structures in two or three concentric management zones. On slopes, increase the width of each zone on the downhill side. Fuels are reduced according to prescriptions for each zone.

**Zone One:** This is the closest zone to a structure and extends 0-5 feet from the outermost 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 the convective heat will not ignite 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. It is best to limit this to one or two trees near a structure. Treat such trees as part of the structure and create 30 feet of space outside the tree.

While it is necessary to remove combustible material in zone one within five feet of foundations and under decks, it is not necessary to do so elsewhere. Needles on the forest floor act as mulch retaining moisture in the soil, reduce erosion, and add organic matter to the soil as they decay. If regeneration of new trees is an objective, however, it is desirable to expose some bare soil since this will promote seed germination and establishment. *Raking up pine needles is not a substitute for thinning and ladder fuel removal.*

**Zone two:** The width of zone two depends on the slope around the house. If the average slope angle is less than 5%, zone two extends out 5-30 feet from zone one. As slopes increase, increase the width of zone two on the downhill side of the house, and increase the spacing between tree crowns.

The main fuels reduction guideline for zone two is to thin the trees to an average spacing of 10-foot crown separation. Clumps of two or three trees may be retained in this zone if the space between the clump and the adjoining trees is at least 30 feet. All

ladder fuels under trees should be removed. The branches of large trees should be pruned to a height of 10 feet above ground, but small trees should have at least two-thirds of the green needles remaining. Leaves and conifer needles should be kept to a minimum in this zone.

Firefighters must be able to escape quickly if conditions suddenly deteriorate. Zone two should extend along both sides of driveways for a width of 30 feet from each edge of the drive. This is important to allow safe access and egress for emergency vehicles. Adequate clearance should be maintained to allow access for large structural fire trucks. Twelve feet of horizontal clearance and 15 feet of vertical clearance should be maintained. At the end of driveways, adequate room for a large fire engine to turn around should be maintained (Figure 11). Recommended dimensions are shown in the detail below.

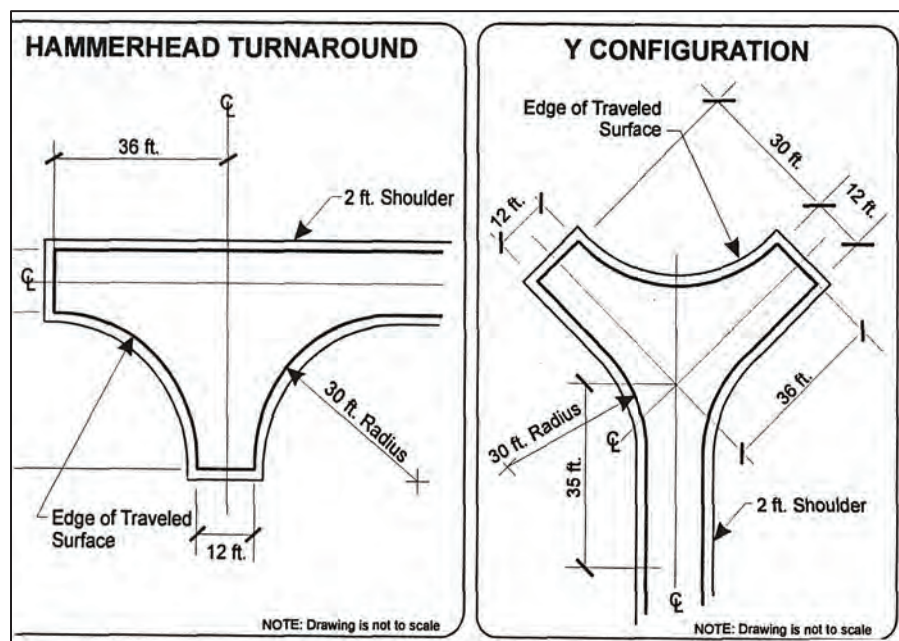


Figure 11. Fire Engine Turn-around Requirements (Source: Boulder County Regs)

Zone three: The guideline for zone three on flat ground is to thin the forest primarily to improve forest health and create at least 10 feet between tree crowns. Tree crown spacing should be increased as slopes increase. Spacing is less critical in this area but spaces should be made in the canopy. A useful rule of thumb is that, generally, a tree's branches should not touch or intermingle with branches of adjacent trees.

Thinning in zone three is often considered an afterthought compared to zones one and two. Thinning in zone three is usually recommended as a form of forest stewardship rather than fire mitigation. Management and thinning in this area are critical to fire mitigation on a community wide basis since it connects the defensible spaces into an integrated whole. Note: Leaves and pine needles should be left in place to protect forest soils as a natural mulch layer to hold in soil moisture and moderate soil



temperatures. Maintain at a depth of 4 to 6 inches and only remove where concentrations exceed 6 inches.

### **Thinning and Fuel Reduction**

Foresters use many methods of thinning depending on the specific objectives of the landowner. Fuel break thinning is most often accomplished by a process called thinning from below. Trees are usually removed or remain based on their height in the canopy.

For simplicity, trees can be divided in four 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 trees generally the same height and diameter, but not overtopped by other trees, including dominants. Intermediate trees occupy the middle level of the canopy but tend to be crowded and of smaller diameter. They are less vigorous with smaller root systems and fewer leaves as the result of crowding by the dominant and co-dominant trees. At the lowest level of the forest canopy are the overtopped trees. These are completely shaded by the dominant and co-dominant trees. The map below (Figure 12) shows areas in and around the community where these practices have already been implemented.



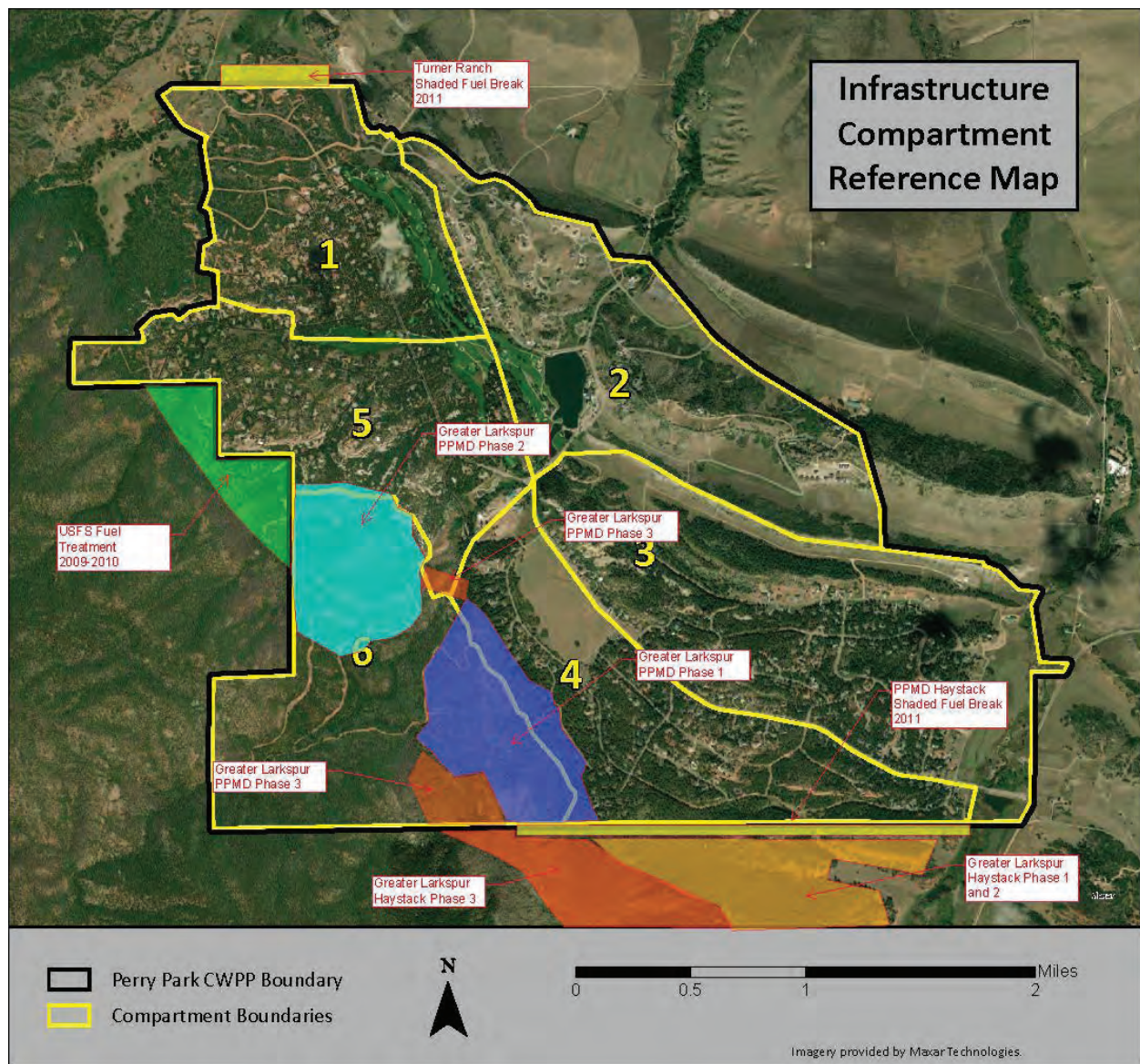
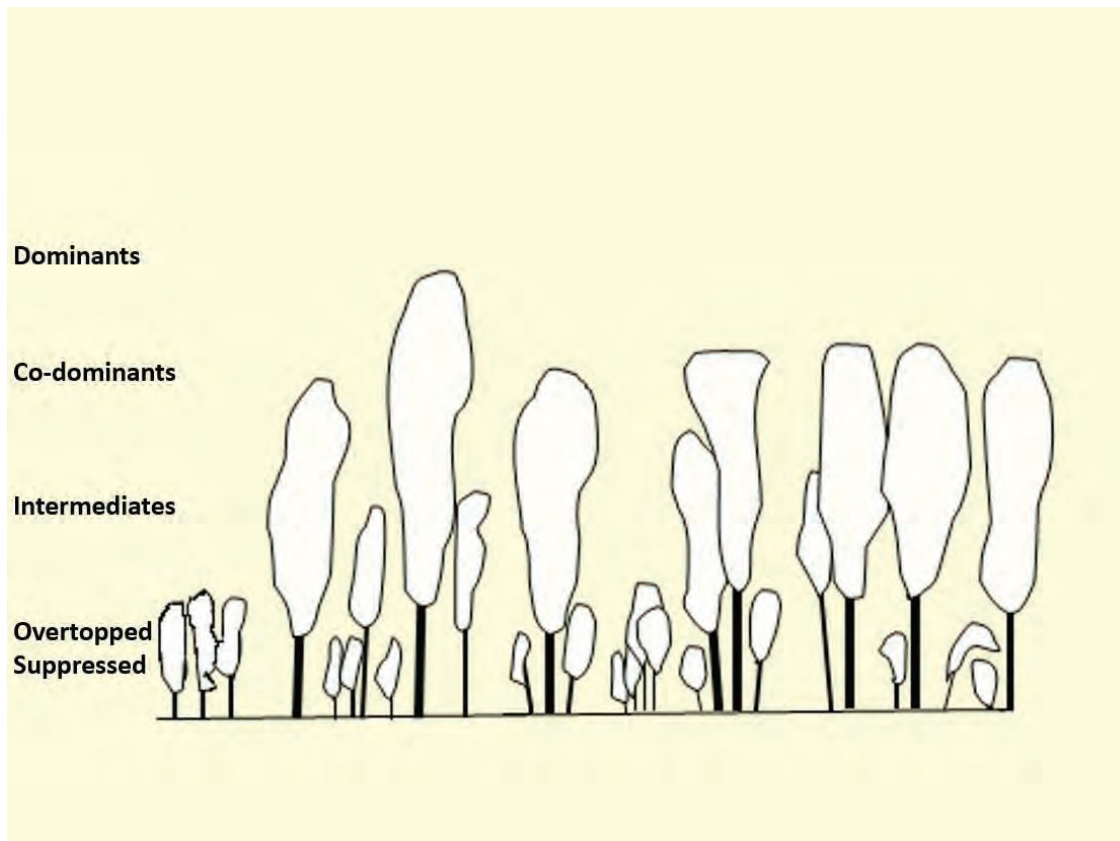


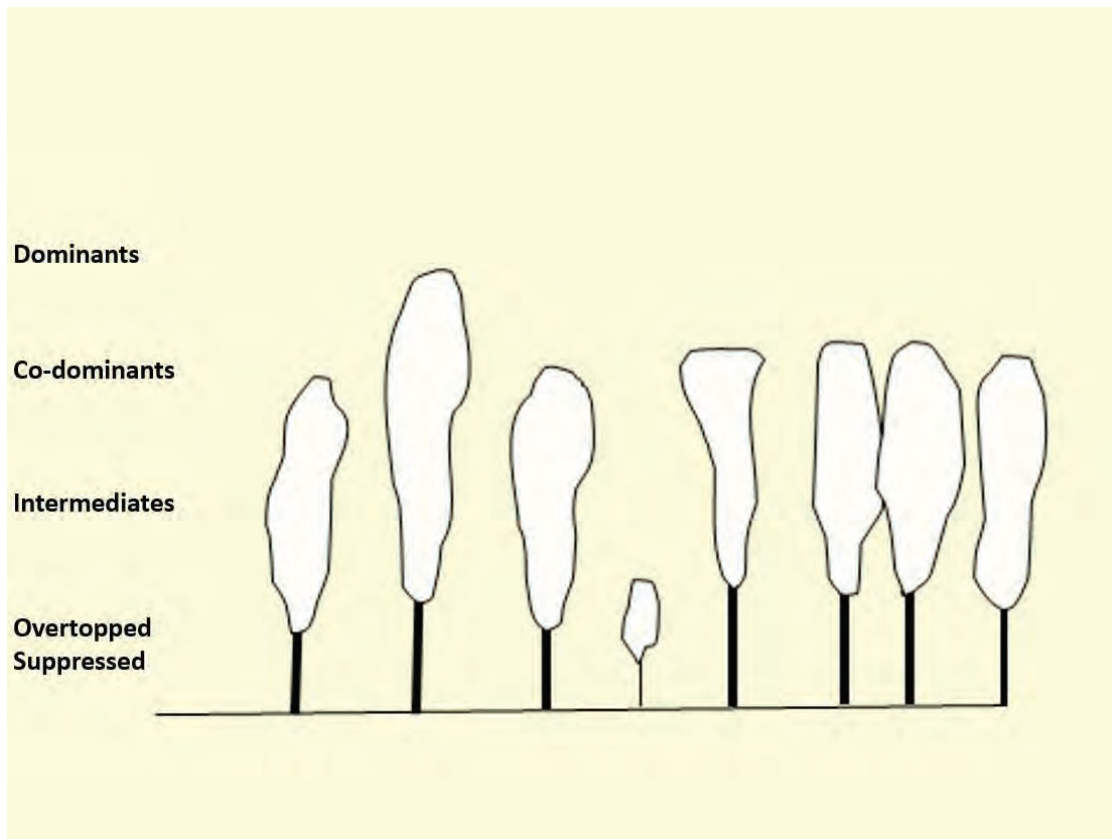
Figure 12. Implemented forestry projects and Planned Forestry Projects





### **Crown Fire Prone Stand Structure**

Thinning from below removes all the overtopped and most of the intermediate trees. It is essential when thinning for fuel breaks to remove ladder fuels and create enough openings in the forest canopy to reduce the crown fire risk. 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 intermediate trees; and 3) eliminates ladder fuels by removing the overtopped trees, shrubs, and pruning lower limbs of remaining trees.



**Stand Structure for Reduced Crown Fire Potential**

### **Open and Parklike Forests- Creating a New Aesthetic**

In the fire-adapted, pre-European forest condition one could ride his or her horse or wagon unimpeded through the original forests. For Perry Park, the William Henry Jackson 1871 photos show this condition. Today's forests are 100% pure unnatural. Below is a series of photos showing a historically "fire adapted" ecosystem in 1871 and forest conditions in 2010. Fire exclusion, especially since 1910, has allowed fuels to build up on the landscape that now burn as "wildfires".



1871 Photo of Perry Park taken from Torrey Pines toward Sentinel Rock (by W. H. Jackson, USGS Expedition)



2010 Photo from Torrey Pines toward Sentinel Rock (photo by P. R. Owens)





“Valley of Bagdad.” Top photo series is from 1871 (WHJ) and lower photo series (R Johnson) from same approximate location. Area is in Pike National Forest, west of Kiowa Drive.

- Perry Park forests evolved with fire as an agent of change and renewal. The community’s goal should be to return fire to its more natural role resulting in less destructive wildfires as part of the national initiative of “Fire Adaption”.
- Fuel volumes that have built up over the last 100+ years in the absence of naturally occurring fires now result in destructive fires that kill all the trees, destroy wildlife habitats and lead to severe post-fire erosion. Reducing and rearranging this fuel volume can help to manage this risk.
- Open and park-like forests: **1)** can burn with minimal tree losses; **2)** Lessen extreme wildfire behavior that is more destructive and often results in home losses; **3)** Firefighting resources can work more safely and effectively in open/parklike fuel conditions/forests; and **4)** Increase and restore diversity in wildlife habitats as part of fire adaption and ecosystem restoration.
- Aerial, mechanical, and human firefighting resources can once again become effective. Example: Slurry bomber drops on un-thinned, dense forests are ineffective because the slurry can never reach its target. Open parklike forests allow the slurry to reach all parts/levels of the burning forest. Same for helicopter water drops.

## Maintenance

Defensible space, fuel break thinning 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 program. 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, and trees bent by heavy winter snows should be removed. Check for any signs of insect activity or disease.

Late summer and fall are the best times to inspect trees for attack by mountain pine beetles. Beetles have finished attacking trees at this time, and there is adequate time to cut and treat the tree before the adult beetles fly the next July.

At five years, check the canopy closure, especially in zones one and two. 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. Young trees in openings with adequate room to grow should remain. These should be at least ten feet from the dripline of overstory trees. 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.

### **Gambel Oak Fuels**

Areas of continuous Gambel oak fuels (aka scrub-oak, oak-brush) should be treated following shrub clump spacing guidelines found in *CSU Publication 6.311 Managing Gambel Oak*. Where possible, these should be re-treated every 3-5 years by re-mowing of oak. The current Gambel oak plant community is in varying stages of decline due to freezing after leaf-out, storm damage and extreme drought. Age of existing stands may also be a factor given its adaption to complete burning of above-ground parts and rapid resprouting after fire. The absence of fire over the past 100+ years has allowed much of this plant community to decline and due to internal decay become more prone to storm breakage.

Oak clumps within HIZs should be pruned to remove ladder fuels and understory vegetation managed to prevent establishment of new ladder fuels. Dead stems should be removed annually.

### **Prairie Fuels**

Prairie fires have the potential to be both deadly and destructive (Example: Marshal Fire 2021). These fuels should be considered as moderate hazard due to their ability to spread rapidly under windy conditions. Ignition potential is high. Containment is often difficult due to spotting; especially if embers are generated by burning structures in the



fire's path. Flame lengths of 9 to 15 feet can be expected. Burning yucca, native shrubs, animal dung, and noxious weeds can also contribute to spotting.

The primary technique for managing prairie fuels is by regular mowing to a maximum height of six inches. Typically, no more than two mowings per year should be necessary for lower density residential areas beyond thirty feet from structures. Areas within thirty feet of structures, including along fences, should be mowed on a more regular basis, and cut to a four-inch height. Widths of mowed buffers should be widened to allow for steep slopes, dry aspects, and prevailing winds. Grazing can also be used as a fuel management tool.

Outbuildings and vehicle storage areas should also be well maintained to prevent losses during fast moving prairie fires (Figure 13).



Figure 13. Prairie Fuels shown along Country Club Drive with high level of maintenance around structures.

### **Riparian Zones**

Flood plain areas, riparian zones, can have high wildfire potential during the fall and winter. Extended droughts can also allow normally wet areas to burn with high intensity. Ember potential can also be high under windy conditions (Figure 14).



Figure 14. Riparian Zone with cattail fuels abutting homes at Gilloon Pond.

Riparian areas should be managed carefully. Any thinning of shrubs or trees should be done by hand and use of heavy equipment should be avoided. Riparian areas may be regulated by the Army Corp of Engineers or Environmental Protection Agency under the Clean Water Act. Before any work is done in riparian areas, a site-specific consultation with a qualified professional is recommended. These areas should be monitored for wildfire risk on a regular basis. Fire starts can move quickly to fences, and then to structures.

### **Open Spaces**

Open areas controlled by governments, homeowner associations or businesses should be mowed annually where adjacent to fences and structures. If the owner does not manage these fuels, abutting owners should ask for permission by the owner to keep it maintained. Typically, no more than two mowing's per year should be required for hazard reduction. Grasses and weeds along fence lines should not exceed six inches in height.

**\*\*NOTE\*\*** Wildfire mitigation publications may recommend different spacing recommendations from those listed in the previous sections. Every situation is different.



You should contact LFPD to receive mitigation recommendations specific to your property.

## **Preparedness to Respond**

### **Larkspur Fire Protection District Stations and Apparatus**

LFPD typically has at least 6 career firefighters/EMTs on duty at all times. A paid staff of 17 career firefighters and 11 part time firefighters is augmented with around 35 trained and certified volunteer firefighters. It is considered a “combination” department. It operates an Advanced Life Support ambulance transport service. Its fleet consists of 3 ambulances; two located at Station 161 in the Town of Larkspur and one located at Station 162 in Perry Park.

From its humble beginnings, the staffing of the Larkspur Fire Protection District has grown from just a handful of citizens to 14 full-time line staff personnel, eight part-time personnel, 32 volunteer personnel, three Command Staff/Administrative personnel, one full-time Administrative Assistant, and one part-time bookkeeper. The District’s well trained staff is capable of mitigating a wide variety of emergency situation ranging from structure fires, wildland fires, and hazardous material incidents to medical emergencies requiring advanced life support and ambulance transport.

- Station 161 is located at 9414 S. Spruce Mountain Rd. in the town of Larkspur and is staffed with 4 firefighters 24/7.
- Station 162 is located at 5672 Red Rock Dr. in the Perry Park Ranch subdivision is staffed with 2 firefighters 24/7.
- Station 164 is located at 15205 Furrow Rd. in the southeast section of the LFPD and is a volunteer firefighter response station.
- Castle Rock Fire Department’s Station 151 is located at 300 Perry St. within the Town of Castle Rock. (Mutual Aid station location)
- Palmer Lake Fire Department is located at 12 S. Valley Rd. within the Town of Palmer Lake. (Mutual Aid station location)
- Jackson 105 Fire Protection District’s Station 143 is located at 4333 W. Greenwood Rd. at the intersection with Perry Park Rd. (Mutual Aid station location)
- Franktown Fire Protection District Station 182 is located at 10650 South Highway 83. (Mutual Aid station location)

At Fire Station 161, there are two fire engines with a 1500 gallons per minute (gpm) pump each and one carries 500 gallons of water and the other 350 gallons of water and a telescoping 75 ft. ladder and aerial master stream. There is also a water tender at Station 161 with a 750 gpm pump and 3500 gallons of water. Also, at Station 161 there are two Type 6 wildland fire engines.

At Fire Station 162, there is one engine with a 1250 gpm pump and 950 gallons of water. Also, at Station 162, there is one water tender with a 250 gpm pump and 3200 gallons of water and one Type 6 wildland fire engine.

At Fire Station 164, there is one engine with a 1500 gpm pump and 500 gallons of water. Also, at Station 164 there is one tactical water tender with six wheel drive and a capacity of 2500 gallons as well as a Type 6 wildland fire engine.

Additionally, the LFPD has automatic aid agreements with the Jackson 105 Fire Protection District which responds to fire events in the northwest section of the LFPD, with the Palmer Lake Fire Department which responds to fire events in the southwest section of the LFPD, with the Franktown Fire Protection District which responds to fire events in the southeast section of the LFPD and with the Castle Rock Fire Department which responds to events in the northeast section of the LFPD. The LFPD is also on automatic aid with the North Group of fire departments within northern El Paso County which respond to fire events in southern portion of the LFPD. In addition, the LFPD has mutual aid agreements in place with all Douglas County fire departments.

### **ISO (Insurance) Information**

ISO stands for Insurance Services Office, and it is a division of Verisk Analytics. ISO provides information to insurance companies, including ratings of the fire protection provided in different areas of the country. This data may be used by insurance companies as one of the factors to determine rates.

Please [contact ISO](#) for its ratings on properties as it is the originating and definitive source for that information. Within the Larkspur Fire Protection District (LFPD) there are, in general, three ISO Public Protection Classification (PPC) ratings; “3”, “3Y” and “10”.

- In general, a property that has a water system with hydrants that meets ISO criteria for adequate fire flow and is within five road miles of an LFPD fire station is usually rated at a PPC 3.
- In general, a property that is within five road miles of an LFPD fire station or a neighboring fire department station with an automatic aid agreement with the LFPD, but is not served by a water system with hydrants that meets ISO criteria for adequate fire flow, is usually rated at PPC 3Y.
- In general, a property that is more than five road miles from an LFPD fire station or a neighboring fire department station with an automatic aid agreement with the LFPD is usually rated at PPC 10.

Perry Park falls within the PPC 3 rating area.

## **Staging Areas**

The LFPD, in cooperation with DCSO-OEM, has identified locations where responding mutual aid fire departments may be staged for assignment in the early stages of a wildland event, or until an Incident Command Post or alternate staging area is established. These locations are dependent on fire location and behavior. These should follow NWCG guidelines for firefighter safety zones and based on all personnel in full Personal Protective Equipment (PPE). Diameters of firefighter safety zones should be adjusted based on surrounding fuel loading.

## **Water Supplies**

Firefighting water supplies are typically available through hydrant systems in the developed portions of Perry Park. The Fire District has mapped these potential water supplies, and established agreements with the surrounding water districts.

Cisterns or hydrants are usually intended for use during structure fires in which, typically, only one house is on fire at any one time. Structural firefighting resources are not required to be mobile. The opposite occurs during a wildland fire in which resources must be mobile and prepared to move quickly out of harm's way.

Water supplies are critical for maintaining lower Insurance Services Organization (ISO) ratings that affect homeowner insurance rates. In unincorporated areas of the county there are currently no requirements for providing water supplies for existing or individual residential uses. However, any new development of four or more homes must have a 30,000 gallon cistern within two miles of every driveway or be on a municipal water system.

The Perry Park Water and Sanitation District currently operates its own water system comprised of wells, tanks, pipelines, water treatment plant and hydrant system.

## **Evacuation Centers**

Evacuation Points and Shelters will be designated at the time of the evacuation need. These will be determined in cooperation with Incident Command/Unified Command and the Emergency Operations Center. Once identified, the information will be disseminated by the Public Information Officer through media and social media channels.

Residents should have a family disaster plan in case of evacuation that includes what to take and where to meet. For more information, refer to the Douglas County Disaster Preparedness Guide at [www.dcsheriff.net](http://www.dcsheriff.net).

## **Douglas County Hazard Mitigation Plan**

The Douglas County Hazard Mitigation Plan (DC-HMP) was updated in 2021 and included Perry Park within the plan. Douglas County also completed a county-wide CWPP that serves as an umbrella document for any localized CWPPs. The county-wide CWPP is currently being updated. The DC-HMP, prepared by Douglas County, describes the structure and guidelines for managing a major emergency or disaster affecting Douglas County and/or the Towns within the County. This plan is part of a larger system of inter-related plans at the local, state and federal levels. They are founded upon the National Response Framework (NRF) and the principles of the National Incident Management Systems (NIMS). The inter-related nature of the plans and incident management system are designed to allow maximum coordination and cooperation between responders from all levels of government. The process, as described by law and regulations, is that the incident is “owned” by the local jurisdiction having authority.

The Douglas County five-year Operating Plan, (OP) is prepared pursuant to the state OP, *Colorado Statewide Wildland Fire Operating Plan* (OP). The *Colorado Statewide Wildland Fire Operating Plan* was prepared pursuant to the *Colorado Statewide Cooperative Wildland Fire Management and Stafford Act Response Agreement*, and as amended. The Purpose of this local operating plan is applicable to all signatory parties (Douglas County, Colorado Division of Fire Prevention and Control, USDA Forest Service Rocky Mountain Region, and USDI Bureau of Land Management) within the State of Colorado. It addresses how signatories will implement cooperation, interagency working relationships and protocols, financial arrangements, and joint fire management activities within Douglas County, Colorado.

### **Inter-jurisdictional Cooperation**

First responders and community leaders recognize that wildland fire does not respect jurisdictional boundaries, and that large fires can only be managed by pooling resources. As a result, LFPD and Douglas County cooperate with several mutual aid agencies in the state and surrounding fire districts.

### **Standardized Command and Control**

All County fire departments use the Incident Command System (ICS) and National Incident Management System (NIMS) as a tool to manage interagency response operations. ICS/NIMS clarify roles and responsibilities in many common situations, such as when one area belongs to two overlapping jurisdictions, or when an area is not part of a fire protection jurisdiction.

### **Mutual Aid**

The Douglas County Sheriff’s Office and Board of County Commissioners (BoCC) participate in the Wildfire Operating Plan (OP) for Douglas County Colorado. The Plan, updated every five years, describes how County agencies coordinate wildfire suppression activities with those of the Colorado Department



of Public Safety (DPS), DFPC, the USDA Forest Service, and the Bureau of Land Management. It outlines rules and procedures for requesting mutual aid, ordering out-of-county resources, radio communications, and air operations.

*The State of Colorado, Department of Public Safety, Intergovernmental Agreement with the Board of County Commissioners for the County of Douglas* requires Douglas County to have a signed County OP to access Emergency Fire Fund (EFF) funds.

### *An Expanding Hierarchy of Resources*

The responsibility for wildfire suppression initially rests with the local fire jurisdiction where the wildfire starts. The Douglas County Sheriff is responsible for suppression of wildfires that occur on unincorporated, non-federal land that is outside a fire protection district. Once the Douglas County Sheriff's Office has assumed responsibility for the wildfire incident, the DCSO shall assume financial responsibility for firefighting efforts and shall assign a local incident management team to provide the command-and-control infrastructure required to manage the wildfire (C.R.S 30-10-513).

If the fire exceeds the County's capability to control, the Sheriff can request assistance from the Colorado Department of Public Safety, Division of Fire Prevention and Control (DFPC) under terms of the Emergency Fire Fund (EFF) Agreement. When EFF is implemented, DFPC assumes responsibility and authority for all suppression activity until the fire has been controlled and management of the fire has been returned to the county.

### *Public Notification and Warning*

The Sheriff's Office has several methods to notify and warn people who are threatened by an approaching wildfire (all of which are fallible). (See Emergency Evacuation section below.):

- Automated telephone notification (Code Red).
- Local media announcements, including social media.
- **If possible and safe to do so, door-to-door warnings, as resources allow.**

### **Code Red**

Douglas County currently utilizes the Code Red Emergency System. Notification calls, and text messages are not automatically routed to cellular phones, requiring residents with cellular phones to register their cell phones online. The same applies to residents that use Voice-over-internet-protocol (VOIP) telephone service. These phone numbers are typically not automatically included in emergency notifications unless the subscriber has registered the phone number ahead of time. Online registration instructions and links for Code Red or any future notification systems, can be located on the Douglas County website at:

<http://www.douglas.co.us/codered/> Click on the **"Code Red"** tab

Automated calls may be intercepted by calling features, such as automated attendants, call waiting, busy signals and other features which may intercept or reject the call. Adding notification numbers to your telephone's phone book feature will quickly identify general and emergency notification calls, so you can readily distinguish the incoming call as an emergency alert.

The **Douglas County Access and Functional Needs Registry (AFN)** is a database containing information about individuals in Douglas County with functional needs who may require assistance in the event of a disaster. The information may also be used to assist emergency personnel and volunteers in providing assistance. Participation in the AFN Registry is voluntary, but highly encouraged.

To sign up, go to:

<https://www.totalvisibilitysolution.com/DouglasCO/>

DCSO's mission is to assess and plan for hazards and emergencies and work with other public safety and municipal agencies to ensure public welfare. As a pre-planning tool, the AFN Registry should be considered for all people who have special medical needs (e.g., oxygen or life support systems that are dependent upon electrical power) or have physical disabilities that would make it difficult to independently follow public safety directions, such as evacuation, if the need arose. The County will use reasonable effort to protect this information including pursuing legal action to prevent disclosure when deemed necessary by the County. However, the County does not warrant that the information provided will be held confidential under the Colorado Open Records Act. Please do not provide information that you believe would compromise your security.

The Douglas County School District, (DCSD) currently has an emergency notification system used to communicate with parents. Perry Park residents with school age children (K-12) should contact the School District to set up an account and sign up for notifications by logging into the *Infinite Campus Parent Portal* ([campus.dcsdk12.org](https://campus.dcsdk12.org)) and clicking on "More" in the left-hand column. Navigate to "Family Information" and review your contact information. If you see an incorrect phone number or email, please update it in Infinite Campus, or contact the registrar at your child's school to request an update. Parents should have the following numbers:

- **Emergency Notifications (critical communications)**  
**855-695-9448** (you may wish to add this number to your contacts).  
If there is an emergency at your child's school (Lockout, Secure, Evacuation, Shelter, Hold, etc.) the school district will send information to all contacts in their system via phone, text and email.
- **Standard Notifications (lunch balance, event reminders, general communication)** **877-279-4061** (you may wish to add this number to your contacts)

- Students may be at risk if school bus routes are compromised by wildfire. The school district may be asked to keep students at school until the emergency has ended. The **DCSD School Messenger** system may be used to notify parents of the status of their children.

School district and the local emergency services agencies should consider partnering, if not already doing so, to:

- Provide notification to schools with students from impacted areas.
- Train bus drivers on procedures should they encounter a wildfire situation, and awareness of alternate routes to safety, in the absence of direction from law enforcement.
- Pre-determine locations for return of students, whether to the point of origin or evacuation center.
- Utilize existing communication tools for distribution of emergency preparedness information to parents.

### Evacuation and Sheltering

An Incident Commander may recommend evacuation of specific neighborhoods, or closure of certain roads; the authority and responsibility of evacuation lies with the County Sheriff, as detailed in the Douglas County Evacuation, Alert and Warning Plan.

The Douglas County Emergency Operations Center coordinates evacuation and sheltering for displaced persons, as well as their service animals, pets, and livestock.

### **Douglas County Animal Response Team**

The Douglas County Animal Response Team (DCART) provides those in need with assistance in boarding their large, small, and domestic animals during times of evacuation caused by wildland fires and other natural and manmade disasters.

Formed in 2003, a year after the Hayman Fire affected a number of citizens and taxpayers in Douglas County, the DCART was developed to provide shelter, food, and veterinary care for non-commercial evacuated animals during emergency situations.

The DCART is comprised of volunteers from the Denver Dumb Friends League (DDFL) and the Douglas-Elbert County Horse Council.

DDFL assists DCART in the care and sheltering of small companion animals such as dogs, cats, pocket pets, chickens, etc. For more information regarding the DDFL Volunteer Program, please visit <http://ddfl.org/volunteer>. Emergency volunteering with DDFL is only available to existing DDFL volunteers.

The Douglas-Elbert County Horse Council assists DCART in the care and sheltering of large backyard livestock such as horses, llamas, alpacas, goats,

and other non-commercial livestock. For more information regarding DECHC and emergency volunteer opportunities, please visit <http://www.dechc.org>.

High-use recreation centers, such as the Perry Park Country Club, should develop and maintain comprehensive Evacuation Plans; and request a property evaluation by LFPD to identify threats and to assist with mitigation planning. Evacuation planning assistance may be requested and coordinated through the DCSO-OEM. Evacuation plans should be distributed to the emergency response organizations, through the LFPD or DCSO-OEM annually.

A key to the success of any advance planning, is training staff, exercising by performing drills and implementing corrective action(s) to the plan. The first line of defense against the effects of a disaster is personal preparedness. During an emergency, the government and other agencies may not be able to meet your needs. **It is important for all citizens to make their own emergency plans and prepare for their own care and safety in an emergency. Registering on these websites is not a guarantee that emergency officials will be able to assist you in an emergency.**

## **Emergency Evacuation**

**NOTICE TO EVACUATE.** In case of a fire or other emergency, the primary notification to evacuate will be issued by the Douglas County Sheriff by means of a reverse emergency notification system (Code Red). Residents should follow the directions provided. Other notifications may come from local TV and Radio stations and social media.

It is important to note that the fatalities in both the Waldo Canyon and Black Forest Fires were residents who did not evacuate in time. Residents and visitors to the area should have pre-planned evacuation routes.

- Residents should heed evacuation instructions without delay!
- Evacuations Orders may be delayed or undeliverable due to communications failures when critical infrastructure is damaged by fire. Never rely on an automated notification to evacuate.
- If a wildfire is threatening the area, it is not necessary to wait for an evacuation order to leave.
- Facilities with large guest populations should plan on multiple means of transportation for evacuations, as DCSO, LFPD or DCSD may not have buses available at all times.

It is vitally important that residents and guest populations are prepared to evacuate long before a fire or other disaster occurs. Just as fire mitigation should be completed long before a fire threatens, a personal plan for evacuation should be prepared before it is needed. A personal evacuation plan should consist of:



- Pre-planned Evacuation Routes in the absence of direction from law enforcement.
- Papers, photos computer drives, prescriptions and other important items should be stored and ready to take a moment's notice.
- Keep a bag packed with a change of clothes and personal items packed and ready.
- Keep a complete inventory, including photos of home contents, of items in the home stored in a safe location if need to document insurance claims. Be sure that insurance coverage is adequate.
- Have a plan to shelter pets and livestock.
- Have a communication plan for all members of the family to stay in contact.
- Have an agreed upon meeting place, such as a friend's home, for family members in case family members are separated.

Perry Park has two main evacuation routes. These are Red Rock Drive to Perry Park Road (DC-105) and Country Club Drive to Remuda Ranch Parkway. These are shown below (Figure 15):

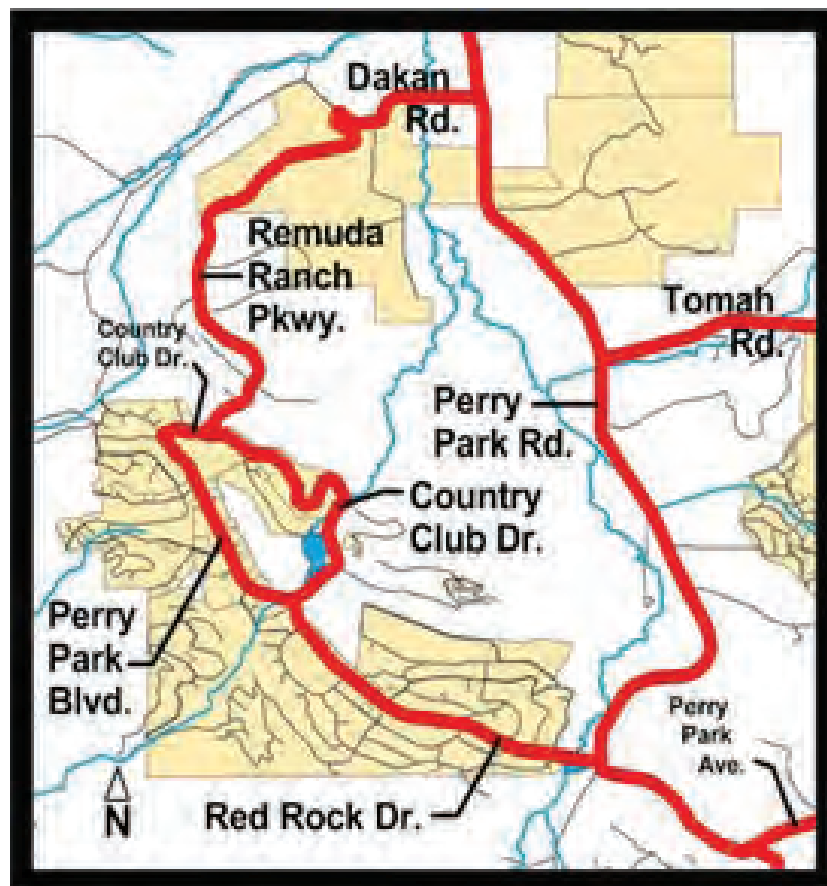


Figure 15. Perry Park Main Evacuation Routes

Additional emergency planning resources are available through the DCSO-OEM web links to the section on “Have a Plan/Build a Kit” at:

<https://www.dcsheiff.net/emergency-preparedness/have-a-plan/>

A more detailed map of the secondary egress at Remuda Ranch Parkway is shown below (Figure 16).

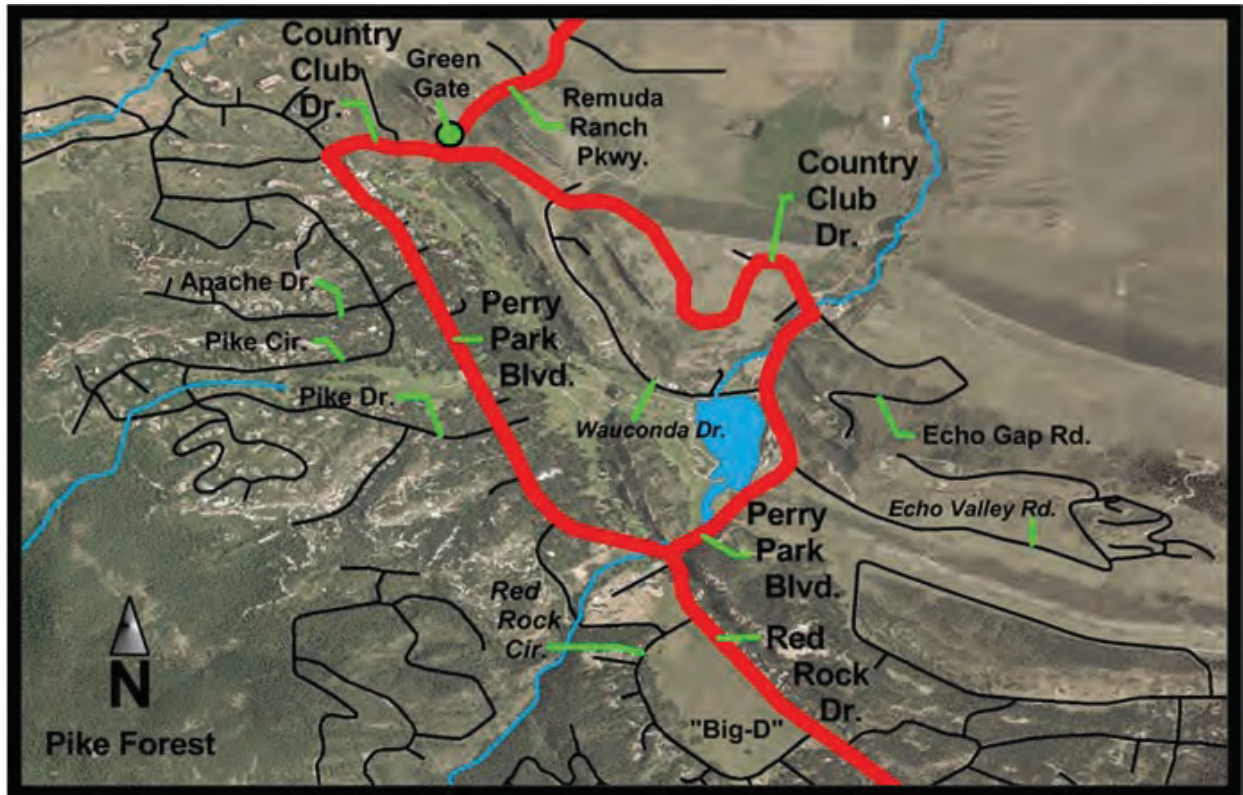


Figure 16. Emergency Egress Routes.

The gate at this location is currently locked but has a series of redundancies for opening that include an LFPD Knox lock, Jackson 105 VFD Knox lock and a DCSO combination lock. If none of these agencies have opened the lock, an evacuee can contact Dispatch at the DCSO by calling 911 or the non-emergency number 303-660-7500, also answered by Dispatch.

A priority project will be treatment of any heavy fuels along Country Club Drive from both directions (east and west ends of Perry Park Blvd.). Semi-annual mowing is also recommended to keep grass fuels away from the travel way.

# IMPLEMENTATION AND MONITORING

## Implementation

A table in Appendix A lists mitigation projects identified, their priority rankings and the lead agency for the projects. In addition to the projects in Appendix A, home sites are rated as high or extreme wildfire hazard and are in critical need of defensible space improvements.

All roads are considered as primary evacuation routes from zones of high fuel volumes (timber), and typically lead to zones of lower fuel volumes (prairies).

Critical Infrastructure is also identified in Appendix A. This includes water and sewer systems, roadways (including bridges, culverts, storm pipes, spillways), electric, phone, natural gas and cable services. All are considered high priorities.

The following are suggested fuel treatments:

- Shaded Fuel Breaks (SFB): Major collector roads are critical for emergency evacuation. These should follow CSFS guidelines where possible.<sup>11</sup> Connection of homeowner HIZ's to SFB areas is recommended.
- Forest Management and HIZ overlap zones: These are on private property, typically in Defensible-space Zones 2 and 3. Ladder fuels should be reduced or removed, and forests thinned to promote forest health. Where possible, the long-range goal should be establishment of an uneven aged forest.

## **Key Intersections**

Road intersections will be critical during a wildfire for:

- Safe egress of residents during evacuation.
- Residents may be required to wait at intersections temporarily while evacuation is staged from areas of greatest wildfire threat.
- Safe ingress of emergency services.
- Staging of fire apparatus and other equipment
- Safe staging by law enforcement personnel who may be directing traffic.

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<sup>11</sup> Fuel Break Guidelines for Forested Subdivisions and Communities. Frank C. Dennis, Colorado State Forest Service.





Fire and smoke impinging on right-of-way during the Black Forest Fire.

### **Compartments and Sub-compartments (PODs)**

The 2007 CWPP was based on a strategy of creating compartments to either contain or exclude wildfire. These can also be called “Potential Operational Delineations” (PODs) used on a larger scale by the USFS for establishing landscape scale mitigation projects. Perry Park’s planning and implementation will continue to develop compartments, but to now break these down into “mini-compartments” or “mini-PODs” at a neighborhood scale. The objective is to create zones of both fire adapted ecosystems and structurally hardened homes.

Six compartments have been defined using natural and manmade barriers to wildfire such as rock formations, golf course, lakes and ponds, riparian areas and zones of low fuel volumes. These should be revisited to identify any gaps containing heavy fuel volumes that may allow wildfire to jump from one compartment to another. Once implementation is completed, neighborhood scale areas should be prioritized to connect home ignition zones that meet the definition of Firewise meaning homes stand a good chance of survival with minimal intervention of the fire services.

### **Monitoring**

Monitoring is an important part of follow-up to the implementation of projects. Healthy Forest Restoration Act (HFRA) instructs participants to establish, where interest is expressed by the communities, a collaborative multiparty monitoring process. This process should address reporting of accomplishments, need for maintenance of treated areas, tracking of burned areas and the positive and negative ecological and social effects of the projects. This can be incorporated into the annual reporting, and/or become a budget line item as an annual reminder to the entire community. In-kind tracking will be one way to gauge levels of participation.

Monitoring of the Perry Park CWPP calls for an annual field review by the partners (participants) of accomplishments and need for maintenance. Based on this review, needed adjustments in the next year's plan should be made, as appropriate.

## **Residential Community Action Plan**

During the CWPP process, the following actions were suggested:

- Provide operational authority to LFPD for use of the emergency water supplies and potential staging areas. This can be in the form of an agreement authorized by the owner or homeowner association board of directors.
- Develop a community evacuation map for distribution to all residents and send to all residents.
- Maintain current evacuation route signs at critical exits from neighborhoods (Figure 17).
- Develop a template for installation and maintenance of community street signs, and mail kiosks to prevent damage by wildfire. All private road signage should be reflective and visible from all directions of travel.<sup>12</sup>
- Provide reflective address markers at entry points of shared driveways, to assist firefighters and deputies with door-to-door evacuation notifications.
- Private road and shared driveways should use metal culverts. Corrugated plastic or PVC culverts are combustible and can burn underneath an egress route. This could lead to civilian or firefighter entrapment. NOTE: An exception to this can be considered if fire rated material is used. A minimum of "B" fire rating is recommended.
- Coordinate with Douglas County and CSFS and/or adjacent landowners on identification and implementation of joint fuel treatment projects along boundaries, open spaces and roads.
- Coordinate with Douglas County Road and Bridge Department to allow for the thinning of trees and/or removal of ladder fuels within and adjacent to rights-of-way, to reduce fire starts along roads and enhance the fire containment qualities of the roadway.
- Implement at least two examples of fuel treatments or forestry projects on private lots or PPMD open spaces.
- For subdivisions with private roads, develop an overall drainage map showing locations of culverts and major drainage swales that might be impacted by post-fire sediment runoff. Erosion control contractors should be contacted to obtain pricing for post-fire mitigation.

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<sup>12</sup> It is recommended to follow Manual of Uniform Traffic Control Devices (MUTCD) requirements for all street signs.

- Implement an educational program, in cooperation with Core Rural Electric Association, Black Hills Energy, Comcast and Century Link for all above ground utilities. Vegetation and fencing placed around utilities should be avoided to prevent damage by wildfire. The same should apply to propane tanks.<sup>13</sup>
- Establish community guidelines for Firewise construction in cooperation with Douglas County Building Department to include Firewise landscaping, and forestry practices, including disposal of woody debris within the community.
- Continue the slash pickup program to allow both initial residential mitigation and necessary maintenance of defensible spaces and home ignition zones.

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<sup>13</sup> Propane tanks are susceptible to “boiling liquid expanding vapor explosion” (BLEVE). Older tanks may not be equipped with proper venting devices and more prone to BLEVE that may pose a risk to firefighters. Property owners should contact their propane provider to ensure updated tank protections are in place.





Figure 17. Evacuation sign on Perry Park Boulevard at Wauconda Drive. The sign is MUTCD compliant.

The following are actions the community can incorporate into its routine budget categories to manage wildfire risks. These are broken down into categories that allow for annual planning and budgeting.

### Seasonal

- Mowing:
  - Roadsides and roadside ditches- Monthly or as warranted by fire danger.
  - Re-inspect all intersection sight distances for cleared sight triangles.

- Clear all grasses and fine fuels 3-5 feet from around street signs, light poles and mailbox kiosks using weed eaters or non-selective herbicides.
- Open Spaces along evacuation routes – Mow roadsides once per year.
  - One mowing mid-summer after wildflower bloom and before grass curing (browning).
  - If last summer rains result in significant grass regrowth, a second mowing may be necessary in the fall after grass curing (to reduce wildfire rate of spread during fall/winter fire season, and allow new, green re-growth in the spring).
- Developed recreation areas and Entry Landscaping:
  - Landscape entrance areas with Firewise plants to illustrate Firewise landscaping principles.
  - Spring cleanup to remove all dead materials (twigs, leaves, needles, etc.).
  - Remove storm damaged trees and branches.
  - Mid-summer re-inspection to again remove fine fuels within 5-10 feet of all combustible materials.
- Education/Awareness:
  - Spring alerts/mailings for:
    - Emergency notification system signups and updates.
    - Family evacuation plans.
    - Home inventories.
    - Home assessments by local fire agencies.
  - Early to mid-Summer:
    - Firewise classes with emphasis on structural ignitability and forest health.
- Implementation
  - Annual slash disposal program.
  - Consider developing a seasonal slash disposal effort.
  - Coordinate/facilitate property-to-property (neighborhood) fuel treatment projects.

## **Annual**

- Renew Firewise Community status:
  - Firewise Day, meeting or special event.
- Coordinate cross-training between all committees (Parks and Open Space and Fire Mitigation, etc.)
- Update annual operating agreements with local fire agencies for emergency use of common areas and water supplies.
- Continue to encourage neighboring property owners to implement lot-to-lot mitigation projects that enhance all home ignition zones (HIZ).
- Review operating plans to determine annual project needs:
  - Apply for grant funding as available.

- Contact all partners to update any wildfire mitigation needs related to critical infrastructure.
  - Core Rural Electric Association- Power line clearance needs along all utility easements.
  - Utility Pole Inspection and Replacement.
  - Right-of-way mowing along public roads.
- Inspect all fuel treatment areas to identify any maintenance needs, such as dead tree removal, storm damage cleanup, or insect/disease control.
- Meet with abutting ownerships to coordinate fuel treatment projects.
- Continue community wide educational programs through classes, meetings, and annual events. Topics may include:
  - Evacuation Planning.
  - **Code Red** Alert and Notification System program signup (target of 100% participation).
  - Forest Health and related topics.
  - Noxious Weed prevention and control.
  - Wildlife habitat restoration.
  - Insurance coverage for “being made whole again” in the event of home loss.
  - Neighborhood Watch, and “phone trees” (cascading phone call plan to ensure all residents are notified).
  - Special Needs Populations.
  - Evacuation Planning for Pets and Livestock.

### **Every Three/Five/Ten Years**

- Inspect all fuel treatments for:
  - Tree crown closure in all areas
    - Shaded Fuel Breaks and D-Space Zone 2: 10 feet between crowns (20 feet between crowns of tree clumps).
    - Forest Health Thinning D-Space Zone 3: 3-5 feet between crowns and/or to allow full sun to tree crowns for optimum tree growth/health.
  - Seedling tree invasion/encroachment
    - Mow or cut seedling and sapling size trees when located within the drip line of mature trees, or not in full sun locations.
    - Where trees establish in open areas, thin out trees to promote full crown development, and reduce crowning potential. Consider removing most encroaching trees from meadows to maintain biological diversity.
    - Prune as necessary to reduce torching potential.



## Recommendations

This section provides recommendations for the many stakeholders who can have an impact on wildfire and public safety.

### Perry Park Metro District

The Board of Directors has responsibility for all open space tracts within Perry Park. It can set a good example for residents. The following is a list of general recommendations. More specific recommendations are included in Appendix A.

- Maintain all PPMD parks and open spaces in a “fire adapted” condition.
- Allow residents to extend their HIZs onto abutting open space with approval of LFPD or qualified wildfire mitigation specialist.
- Obtain grants or other funding sources that may be administered by PPMD for use on private lands within and abutting Perry Park in order to meet objectives of this plan.
- Develop a Five Year Plan as a guide to the PPMD board of directors that should be reviewed annually. This plan should include priorities and estimated costs.
- Adopt wildfire mitigation regulations for all new construction.
- Coordinate with abutting public agencies and private organizations for implementation of joint fuel treatment projects.
- Coordinate with private landowners, both in and abutting the community, for implementation of mutually beneficial fuel treatments and forest restoration projects. CSFS can provide assistance through its ongoing contacts with forest landowners. There are major landowners with forested properties in Zones 1-3 that can have an impact on Perry Park. These are:
  - Windfield LLC
  - Turner Ranch
  - Haystack Ranch
  - Plum Creek Hollow Stables
  - Perry Park Stables owners
- Continue to include wildfire mitigation and maintenance as an annual line item in the PPMD budget.

- Support opportunities to improve cellular communications in Perry Park which could include use of a PPMD property for cell tower or repeater installation.
- Have an annual inspection of all PPMD properties by LFPD to identify any mitigation needs.
- Conduct annual “Clean Up Days” to promote wildfire mitigation, noxious weed control and junk (yard art) removal.
- Continue to promote **Code Red** and **Access and Functional Needs Registry** with a goal of 100% participation by PPMD residents.
- Education is a powerful tool for changing behavior. PPMD has an ongoing wildfire awareness program in place. It is imperative for the PPMD to reach out to existing residents and organizations as an active partner for wildfire mitigation and education.
- Areas within the community with high percentages of undeveloped lots will be a challenge to abutting owners. PPMD should use its resources to reach out to these vacant landowners to reduce fuel volumes. Grant funding should be sought to aid in this effort.

Many of the items listed above can be incorporated into current PPMD operations. Some may require additional financial support. PPMD should set a goal to meet all items within five years.

### **Perry Park Water and Sanitation District (PPWSD)**

PPWSD is the most important agency in Perry Park responsible for all water and sewer services. Its facilities are critical for firefighting and habitability of the community. If damaged or destroyed, evacuated residents may not be able to return to their homes until critical services are repaired. An assessment of its facilities is provided in Appendix C. Many of the recommendations provided are inexpensive and help protect infrastructure from ember blizzards. Examples include:

- Install a five feet wide border of non-combustible material around all structures.
- Harden all combustible structures to prevent ember ignitions.
- Include annual maintenance of vegetative fuels as part of its routine maintenance.
- Investigate alternative funding sources for mitigation upgrades. These will fall into the category of “emergency preparedness” that may not be related to wildfire specifically.
- Identify critical infrastructure that could be affected by post-fire flooding. Facilities in or near drainage areas will be at high risk by mud and debris flows.

## Douglas County

Douglas County is the governmental entity covering unincorporated areas of the county. The following are recommended:

- County Road rights-of-ways (ROW) should be cleared and kept free of invading conifer species. Conifers, ponderosa pines, contributed significantly to fire spread and heat transfer across roadways during the Black Forest and Lower North Fork Fires. Evacuation of civilians and firefighter safety were compromised. Ditch maintenance and mowing practices are also impeded. The one exception to total tree removal is if trees are adequately spaced as part of a “shaded fuel break”<sup>14</sup> extending 150 feet from the ROW edge. This is a public safety issue that should be addressed as it relates to the county’s charge of protection of life, safety, and welfare of its citizens.
- Plastic corrugated culverts are not currently allowed in public ROW due to their susceptibility to total consumption during wildfires. Several instances of firefighter safety being compromised during the wildfire have been reported. In one instance, a fire truck was stuck after a burnt-out culvert collapsed and nearly resulted in burn-over of the engine and crew<sup>15</sup>.
- Douglas County should not allow creation of any private open spaces or lots within any future subdivisions in or abutting Perry Park in which the ecosystem or forest has not been restored to a fire adapted condition. Refer to the *Black Forest Fire Assessment*, and its sections “Cathedral Pines Assessment” and “State School Land Section 16 Assessment”<sup>15</sup> as good examples to follow.
- **Provide all County law enforcement and Road and Bridge personnel with Personal Protective Equipment (PPE), and entrapment avoidance training.**
- **Perform door-to-door evacuations, only if safe to do so, while maintaining life/safety of all first responders as the first priority.**
- **Consider providing NWCG wildland fire training and/or certifications for county personnel and equipment (required for use on state or federal fires).**

## Fire Jurisdictions

Multiple challenges exist. Recommendations are:

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<sup>14</sup> See document “*Fuel Break Guidelines for Forested Subdivisions and Communities*”, Colorado State Forest Service, F. C. Dennis

<sup>15</sup> Black Forest Fire Assessment Report. Pikes Peak Wildfire Prevention Partners, 2014, [www.ppwpp.org](http://www.ppwpp.org)



- Continue to work toward better communication coordination. The Firefighter Survey<sup>15</sup> noted poor radio communications during the Black Forest Fire that placed firefighters at risk. Communications were hampered by irregular terrain that creates “shadowed” areas with little or no coverage.
- Educate elected officials and the public on the continued need for improved water supplies. At the same time, it is critical to stress that cistern water supplies are for structure protection when one structure is on fire at one time, or for containment of smaller wildfires with normal weather conditions. Extreme wildfire behavior threatens hundreds of structures at one time.
- Educate elected officials and the public on the use and limitations of aerial firefighting resources as an effective tool if property owners have managed their fuels. The public must understand that aerial resources are a valuable tool but are not a substitute for inaction by property owners.
- Continue efforts to educate WUI residents on their responsibility to manage their fuels so firefighters can work safely and effectively to protect their lives, properties, and forests.
- Continue and expand the number of home and community assessments.

## **Resident Responsibilities**

Multiple large fires have occurred in this area, resulting in the loss of homes. Additional fires are certain to occur in the future. Residents and property owners should be put on notice that:

- Wildfire mitigation is the responsibility of the property owner who is the sole owner of his/her fuels. An Australian saying bluntly states, “You own the fuel, you own the fire.” A model for homeowner responsibility is shown below.
- Secondary responsibility falls on neighbors who must work together to manage their collective wildfire risks. Property owners who do not mitigate their fuels place their neighbor’s lives, homes and forests at risk.
- Thinning trees to provide good spacing between individual or groups of trees, and pruning dead and lower branches, reduces wildfire risk as well as improve forest health, vigor, growth and aesthetic value.
- Structural hardening against ember ignitions and flames must be done on all structures constructed in wildfire prone environments. This will be critical to maintain access to affordable homeowner insurance.

- Property owners must recognize their responsibility to firefighters by providing a safe working space. Firefighters will attempt to protect all homes, if given a chance. Owners should also be aware that failure to mitigate their structures and native fuels may negate the time and expense invested by those who mitigated their fuels.
- Structure protection by firefighters during an incident is not guaranteed.
- Property owners must learn that traditional firefighting resources are based on one house on fire at one time. Wildfires, especially with extreme burning conditions, place hundreds of homes at risk at one time. Property tax assessments are predicated on the traditional model- not the wildfire model.

Firefighters are trained to understand two important “triangles”. The first is the Fire Triangle representing Fuel, Heat and Oxygen. The second is the Fire Behavior Triangle representing Fuel, Weather and Topography. Homeowners should adopt the triangle shown below (Figure 18) since they are responsible for their vegetative fuels, structural fuels, and maintenance of both.

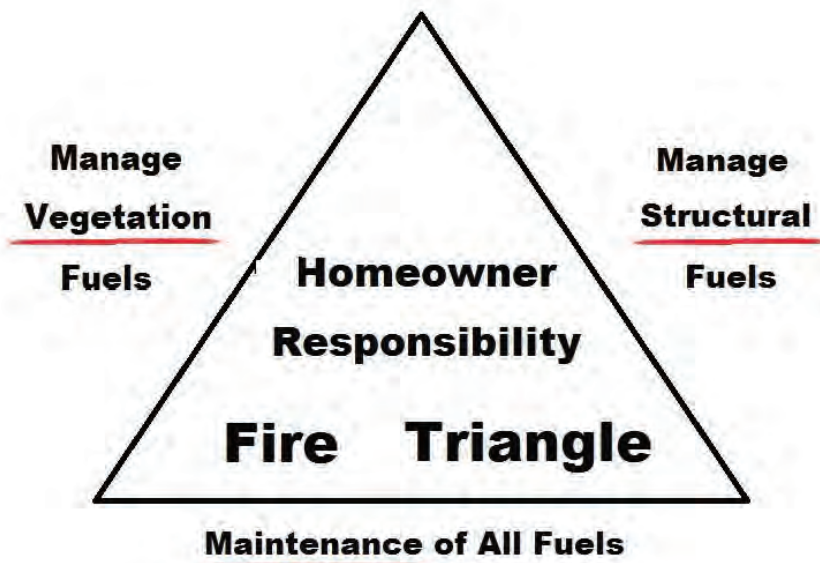


Figure 18. A proposed new Homeowner Fire Triangle<sup>16</sup> in which property owners take personal responsibility for their private property

<sup>16</sup> Based on wildland firefighter “Fire Triangles”. Fire Triangle is fuel, heat and oxygen. Fire Behavior Triangle is fuel, weather and topography. The common element is fuel- the only shared and controllable element.

## Post-fire Preparedness

Post-fire flooding can occur when large areas of forests are severely damaged or destroyed. Heat baked soils can become hydrophobic causing loss of soil stability that often results in severe runoff containing silt, ash and debris. All the agencies listed previously will need to work together to protect habitability of the community. Examples are:

- Major arterial roadways such as Red Rock Drive and Perry Park Boulevard where these cross West Plum Creek and Bear Creek will be at greatest risk.
- Infrastructure and utility lines contained within these drainageways will be at risk.
- Neighborhood impacts to culverts and side streets will be an ongoing maintenance issue from mud flows.
- Mud and debris flows from severely burned hillsides above homes can result in home losses. **NOTE: Losses by flooding are not typically covered by homeowner insurance.** Homeowners may need to acquire insurance through federal flood insurance programs.
- Home protection measures may be required to divert storm flows around homes such as sandbags, concrete diversions, and construction of embankments.
- Severe storm alerts should be monitored for many years after damage occurs. Even today, twenty years after the 2002 Hayman Fire, storm warnings alert the public to potential flooding in the burn area.

## Critical Lessons Learned

No amount of fire engines, firefighters, bulldozers, slurry bombers or helicopters could have stopped the Waldo Canyon or Black Forest Fires. Unmitigated forest fuels combined with up sloping terrain and high winds immediately overwhelmed any attempts at containment. Unfortunately, four residents lost their lives in the ensuing firestorms.

Critical lessons learned were:

- Defensible spaces are critical for insuring firefighter safety and effectiveness.
- Defensible spaces and Home Ignition Zones can be overwhelmed by wildfire from unmitigated adjoining properties.
- Where forest fuels have been treated, tree losses and resource damage are significantly reduced.



- Fire is an ecological process. Fire adapted communities are more resilient and result in reduced risks.
- Structural hardening to prevent ember ignitions is just as important (if not more important) as treatment of surrounding native fuels.
- Unregulated construction in areas prone to extreme wildfire behavior will continue to result in similar disasters.

## Summary

This plan is intended as a guide to help reduce losses from catastrophic wildfire. The CWPP is a living document that allows for flexibility and adaptive management. Adjustments, based on new science and technologies, can be adopted without need for plan modification, so long as the intent of the CWPP is met.

Perry Park is a special area and provides a unique living environment with its mix of forests and prairies. Wildfires are inevitable and a part of the Ponderosa Pine, mixed-conifer and prairie ecosystems. It is not a matter of “if”, but “when” wildfires will occur. It takes a community that is resolved to work together to manage this risk. Responsibility begins with every property owner, supported by community wide mitigation efforts.

# Appendix A

Perry Park Critical and Priority Projects

## Appendix A

The following pages contain projects the Perry Park Metro District, its partners and all private owners should undertake to manage wildfire risks to Perry Park Ranch. These should all be considered high priority projects to complete within the next five years. Any fuels mitigation on ownerships within the ½ mile wide Zone 2 should be included as a priority. Partners may include:

Perry Park Country Club (PPCC)  
 Perry Park Stables (Flavin)  
 Douglas County- (DC)  
 Douglas County Sheriff's Office- DCSO (includes Office of Emergency Mgmt.)  
 Colorado Dept. of Transportation- (CDOT)  
 Larkspur Fire Protection District- (LFPD)  
 Colorado State Forest Service- (CSFS)  
 Perry Park Water and Sanitation District- (PPWSD)  
 USDA Forest Service, Pike National Forest- (USFS)  
 Haystack Ranch- (HR)  
 Turner Ranch- (TR)  
 Windfield Enterprises- (WE)

### Perry Park

Critical Infrastructure	Action	Partnerships
Water System	Implement water system upgrades to include construction of additional storage tanks. See complete list in Appendix C.	PPWSD, PPMD, DC
	Install five feet wide noncombustible border around all buildings and structures.	PPWSD
	Implement defensible space and HIZ fuel treatments around all structures.	PPWSD, abutting owners
	Implement forest fuel treatments around all water tank sites, minimum 300 feet wide.	PPWSD, abutting owners
Sewer System	Install five feet wide noncombustible border around all buildings and structures.	PPWSD
	Mitigate all fuels within 200 feet of all buildings and structures.	PPWSD and abutting owners
Core Electric	Upgrade aging facilities. Maintain line clearances.	

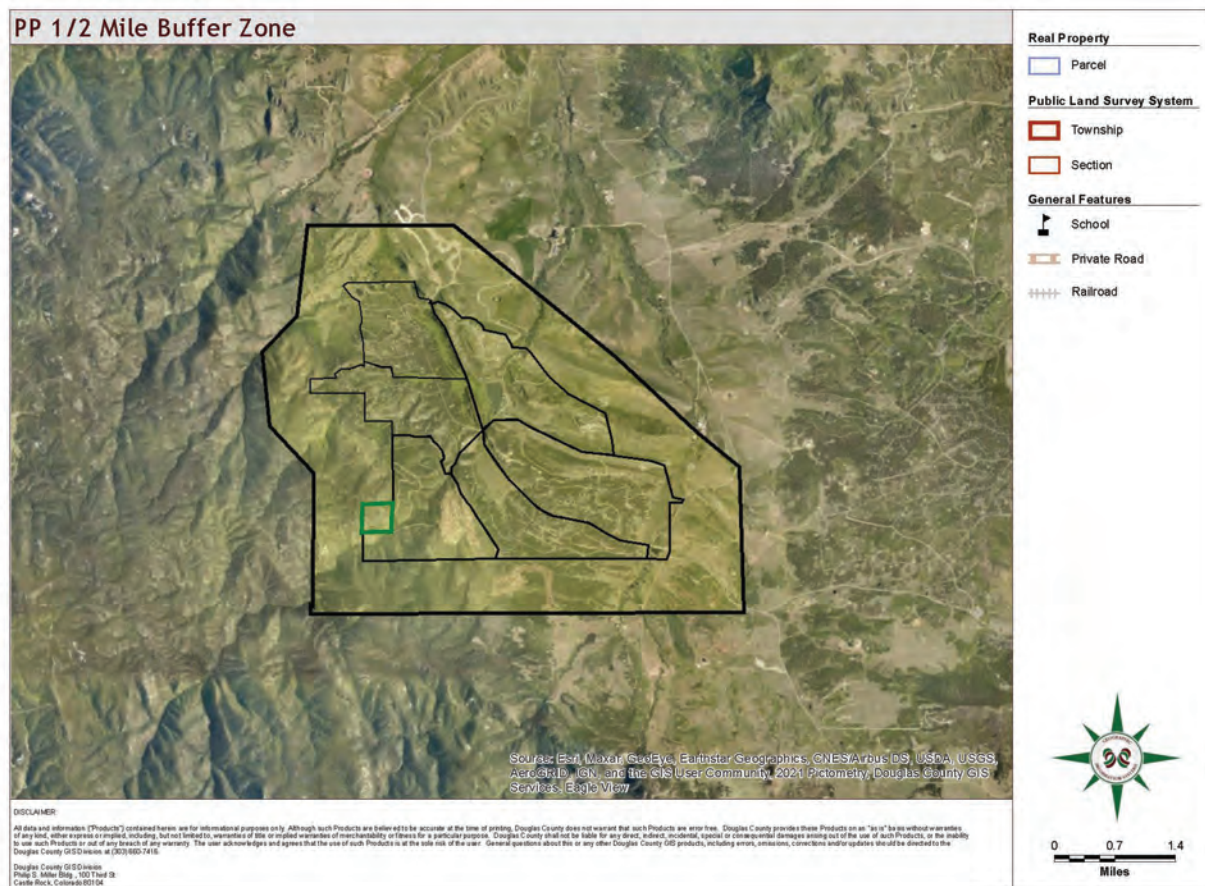
Black Hills Energy	Protect above ground facilities. Educate homeowners on meter protection	
CenturyLink	Upgrade system-wide improvements	
Comcast	Maintain pedestals and provide service to unserved areas.	
Other	Participate in development of additional cell coverage within Perry Park.	
<b>Critical Ingress/Egress Routes</b>		
Remuda Ranch Pkwy.	Maintain gates and consider upgrades for automatic opening system.	DC, DCSO, LFPD
	Investigate potential for secondary emergency routes from new neighborhoods to existing egress routes.	DC, DCSO, LFPD
	Treat all native vegetation to shaded fuel break specifications along all main egress route streets to minimum width of 150 feet, each side.	PPMD, DC
Red Rock Drive	Remove dead/dying trees to increase tree crown separation along main ingress/egress route.	DC, PPMD
<b>All Structures (High Priority)</b>		
	Structural hardening against embers required for all structures in Perry Park.	
	Implement Home Ignition Zones around all structures.	
	Develop “fire adapted” sub-compartments within all compartments by implementing “Potential Operational Delineations (PODs) using zones of low/no fuel volumes as boundaries.	LFPD, PPMD,
	Interconnect HIZs from home to home and to areas of lower fuel volumes (rock formation, golf course, etc.	
<b>Critical Forest Fuel Treatments</b>	All properties treated to mitigate ladder fuels and implement forest restoration with goal of fire adaption.	PPMD, PPWSD, PPCC, Private owners.
	All forest lands and shrublands within ½ mile wide Zone 2 abutting the community.	USFS, PPMD, CSFS
	Compartment and Sub-compartment boundaries (PODs) down to HIZ levels.	LFPD, PPMD



	Manage fuel loading on vacant lots that abut residential areas utilizing grant funds.	PPMD
<b>Annual and ongoing events</b>	Educational programs	LFPD, DCSO, CSFS, PPMD
	Develop a Five Year Plan outlining priorities and potential costs to be updated annually by the PPMD Firewise Committee.	PPMD FWC and PPMD Board
	Maintenance of prairie fuels along egress routes	DC, PPMD
	Maintenance of fuel treatments along egress routes	PPMD
	Apply for grants or other funds to assist with fuel treatments in Zones 1 and 2. This may include distribution and administration of funds.	PPMD, CSFS
	Annual cleanup projects around businesses and residences.	
	Continue slash pickup or other comparable slash removal program	PPMD
	<b>Code Red</b> Signup to receive emergency notifications.	PPMD, DCSO, LFPD
	<b>Access and Functional Needs Registry</b> for those with special needs (homebound, handicapped, infirm, etc.).	PPMD, DCSO, LFPD
<b>Post-fire Planning</b>		
Bear Creek	Begin engineering of crossing point at Perry Park Blvd. to withstand 100+ year flood event.	DC
West Plum Creek	Begin engineering of crossing point at spillway under Red Rock Drive to withstand 100+ year flood event.	DC
All Roads	Analyze all culvert crossings and roadside ditches for ability to withstand post-fire mud flows. Pre-plan for silt/ash cleanup.	DC
Utilities Crossing Major Storm Channels	Plan for emergency repairs. Harden all crossing points if road crossings are upgraded to handle 100+ year events.	DC
All Neighborhoods	Identify areas most prone to post-fire mud and debris flows. Recommend to owners in these areas acquisition of FEMA Flood Insurance.	DC

The following pages contain maps of the project areas described above:

- Major Landowners within half mile wide buffer zone around Perry Park.
- Watershed Compartments
- Compartments 1 to 6
- Past and future forest project areas administered by CSFS



Zone 1 (Perry Park) and Zone 2 (½ mile wildfire impact zone)  
Wildfires occurring in Zone 2 pose an imminent threat to Perry Park.

### **Zone Definitions:**

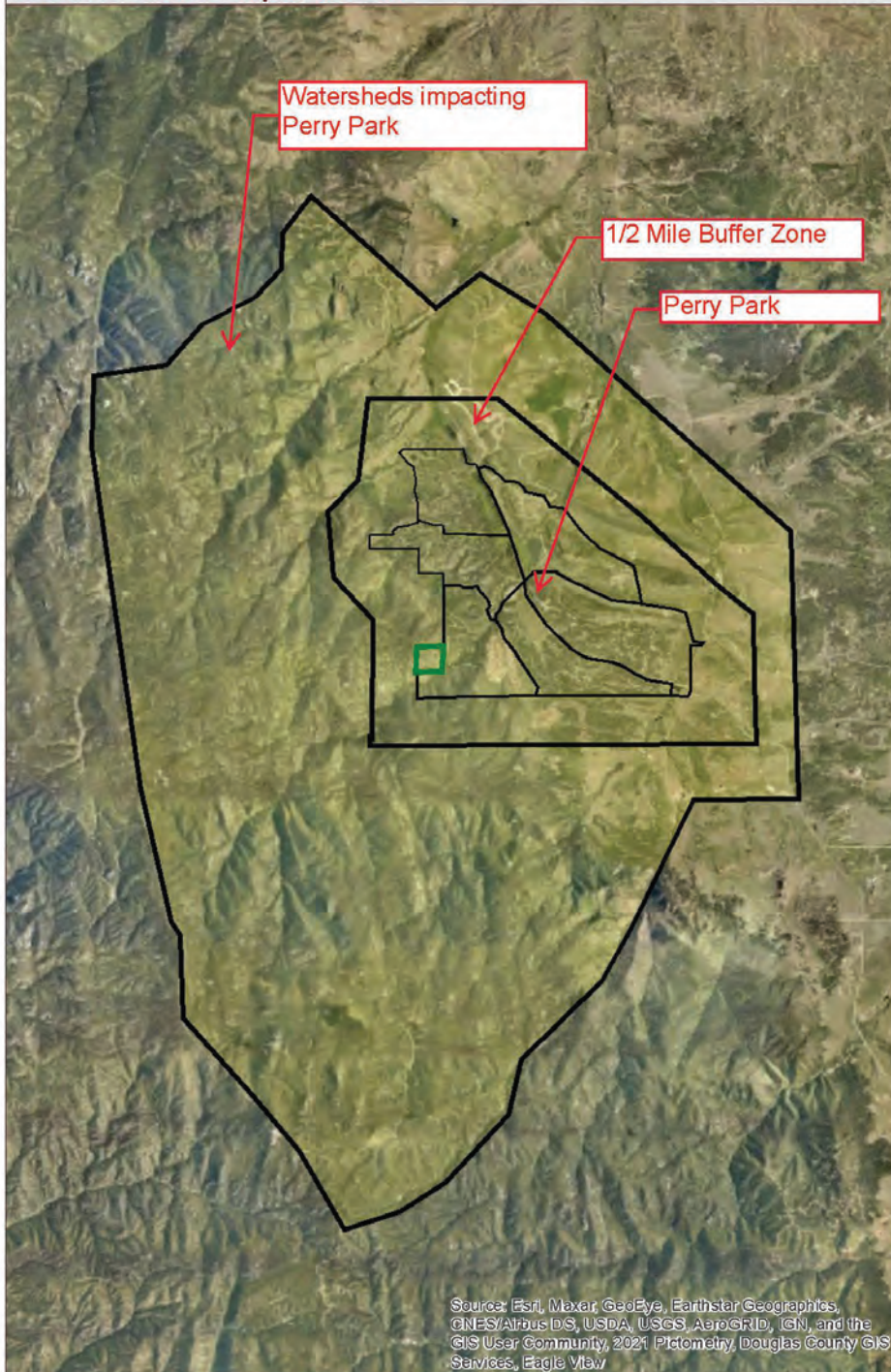
**Zone 1-** Perry Park Community

**Zone 2-** Wildfire in this zone poses an immediate threat to Perry Park. Fuel treatments should be done in this zone to manage wildfire behavior before it reaches the community.

**Zone 3-** Watershed scale fuel treatments necessary to manage wildfire behavior. West boundary is Rampart Range Road. South boundary is Plum Creek headwaters. North boundary is Jackson Creek. East boundary is Perry Park Road (DC-105).



# Watersheds Compartment



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, 2021 Pictometry, Douglas County GIS Services, Eagle View

## DISCLAIMER:

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Douglas County GIS Division  
Philip S. Miller Bldg., 100 Third St.  
Castle Rock, Colorado 80104

## Real Property

Parcel

## Public Land Survey System

Township

Section

## General Features

School

Private Road

Railroad

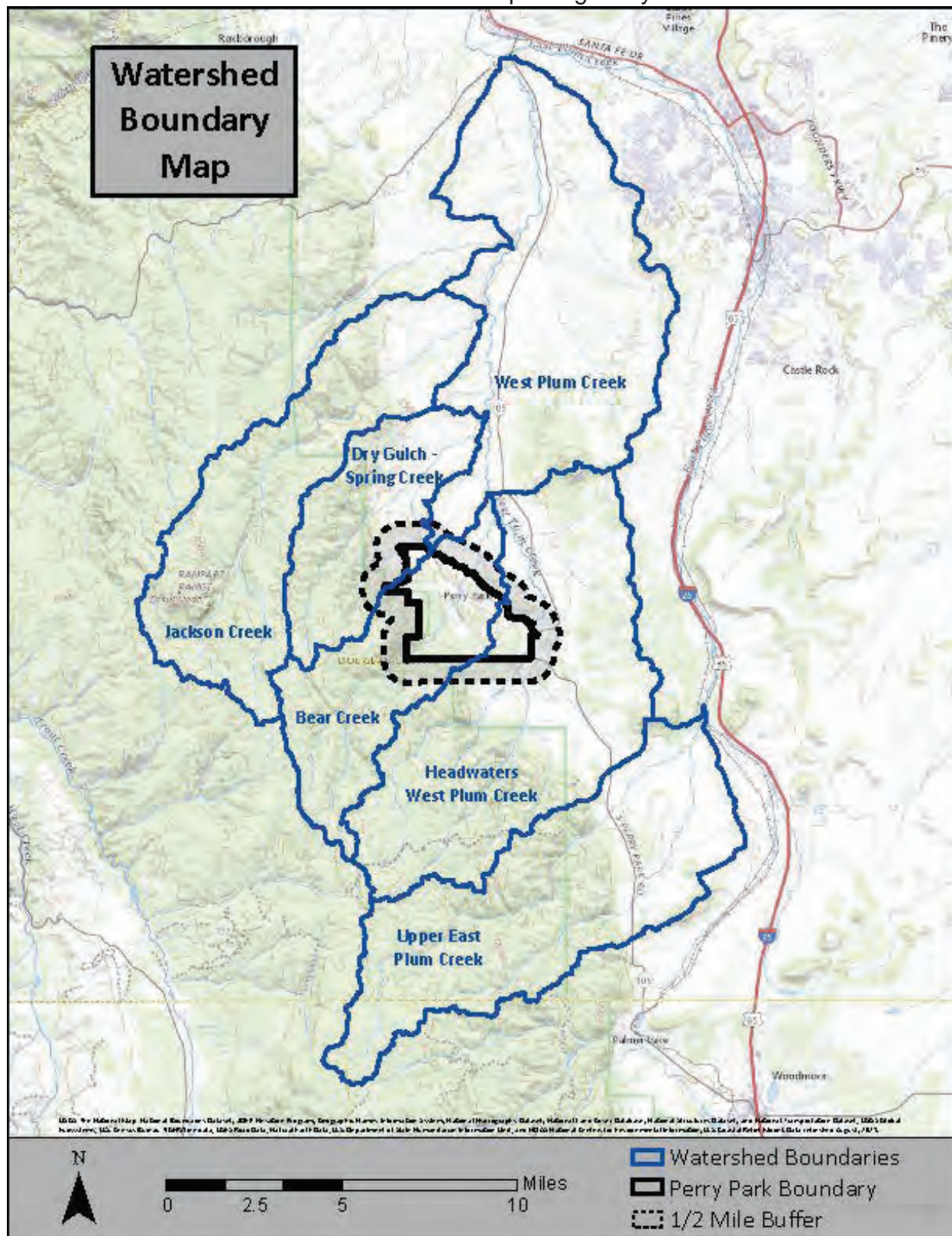
## Watersheds and sub-basins:

- S. Garber Creek
- Jackson Creek
- Watson Park Creek
- Spring Creek/Gulch
- Hog John Gulch
- Bear Creek 2
- Stark Creek
- Gove Creek
- West Plum Creek
- East Plum Creek (Stone Canyon)
- Metz Canyon

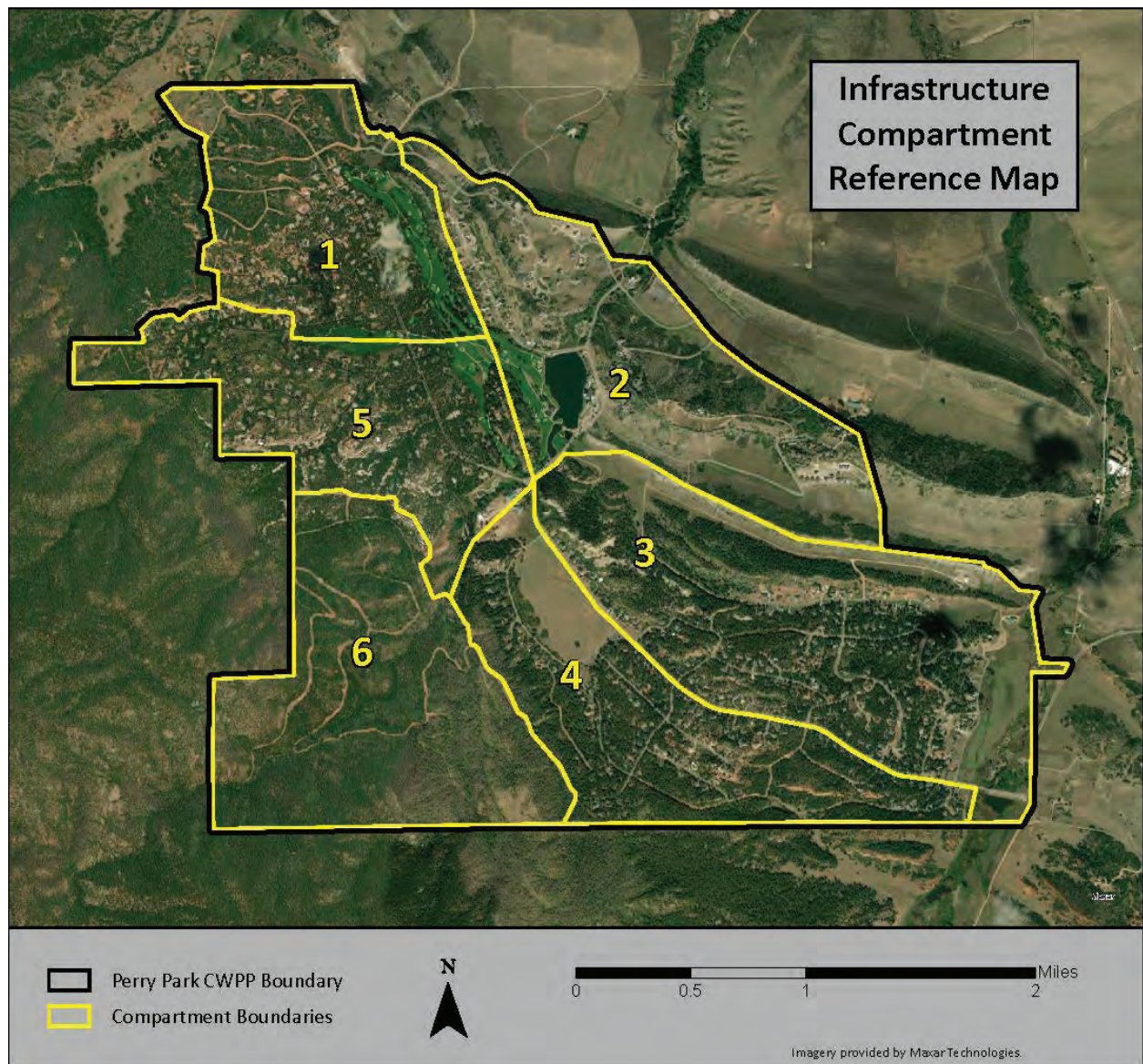




Zones 1-3 showing Zone 1 as Perry Park, Zone 2 as ½ mile wide buffer and Zone 3 as extent of watersheds impacting Perry Park.







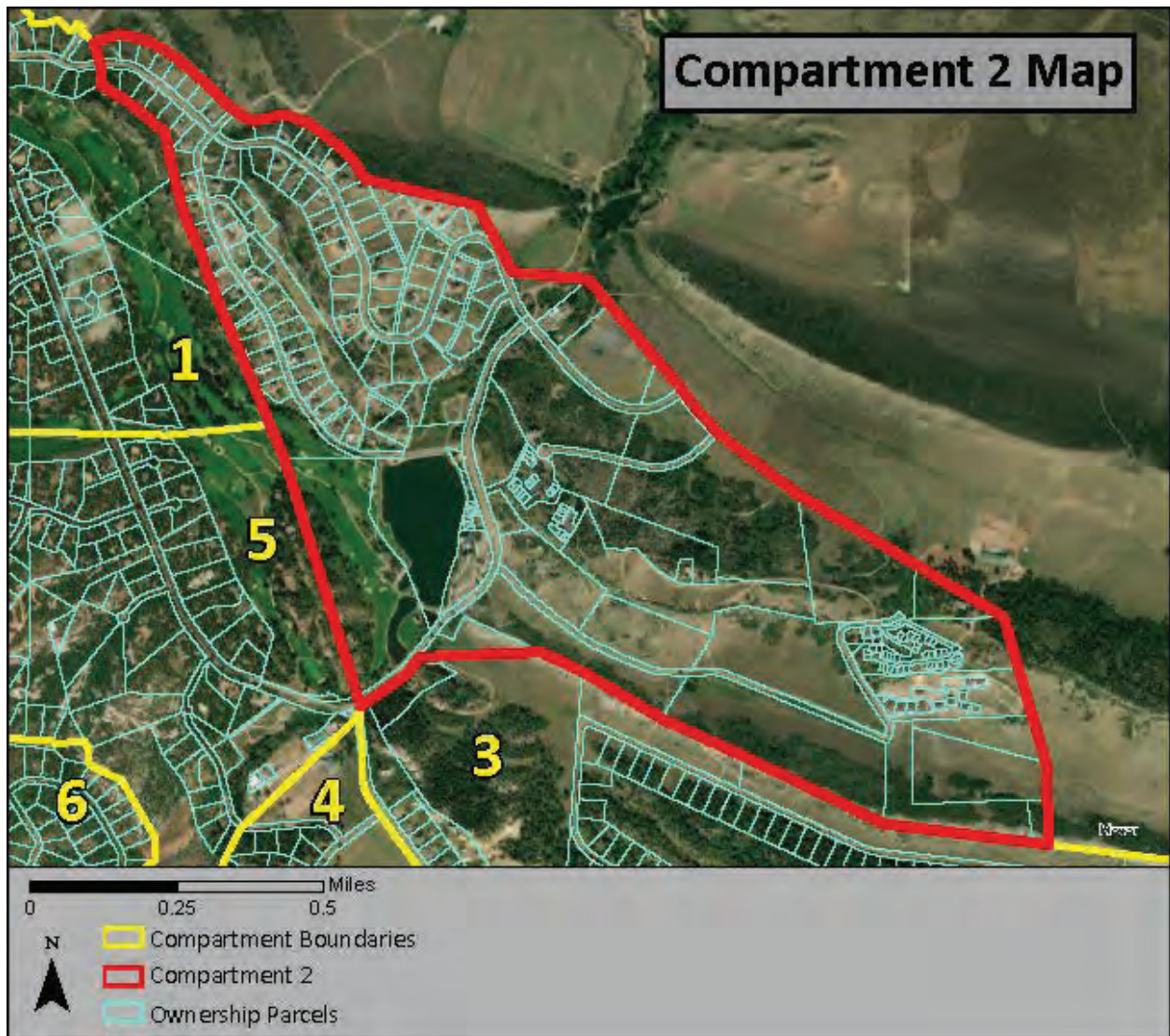
#### Compartments 1-6.

NOTE: Develop all compartment boundaries as "Potential Operational Delineations" (PODs) with objective of excluding or containing wildfire. PODs are intended to allow multiple firefighting strategies based on the severity of the wildfire. All PODs should be based on severe burning conditions and fire approach from 360°.



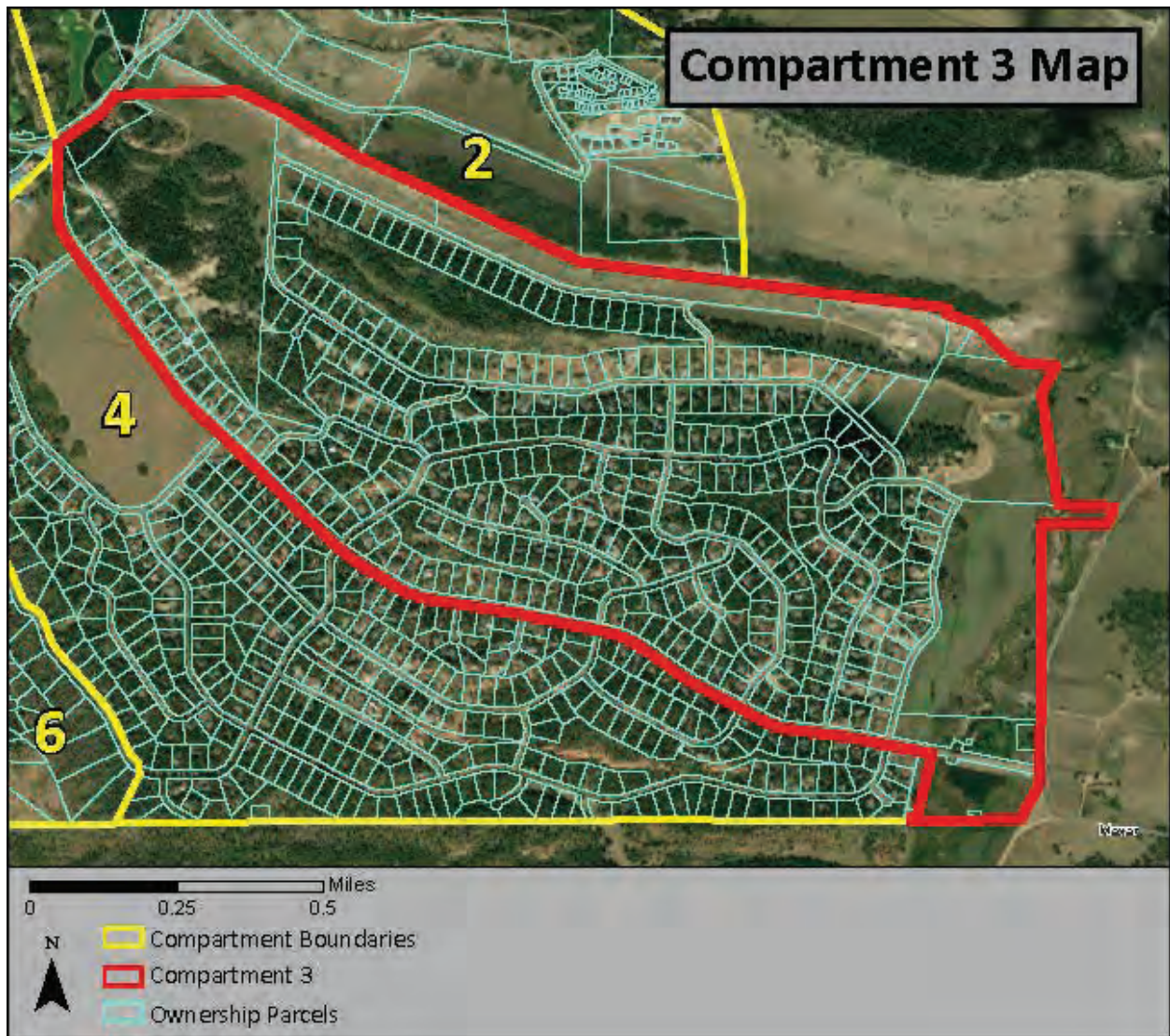


Compartment 1. North Area with west Evacuation Route to Remuda Ranch Parkway via Perry Park Blvd.



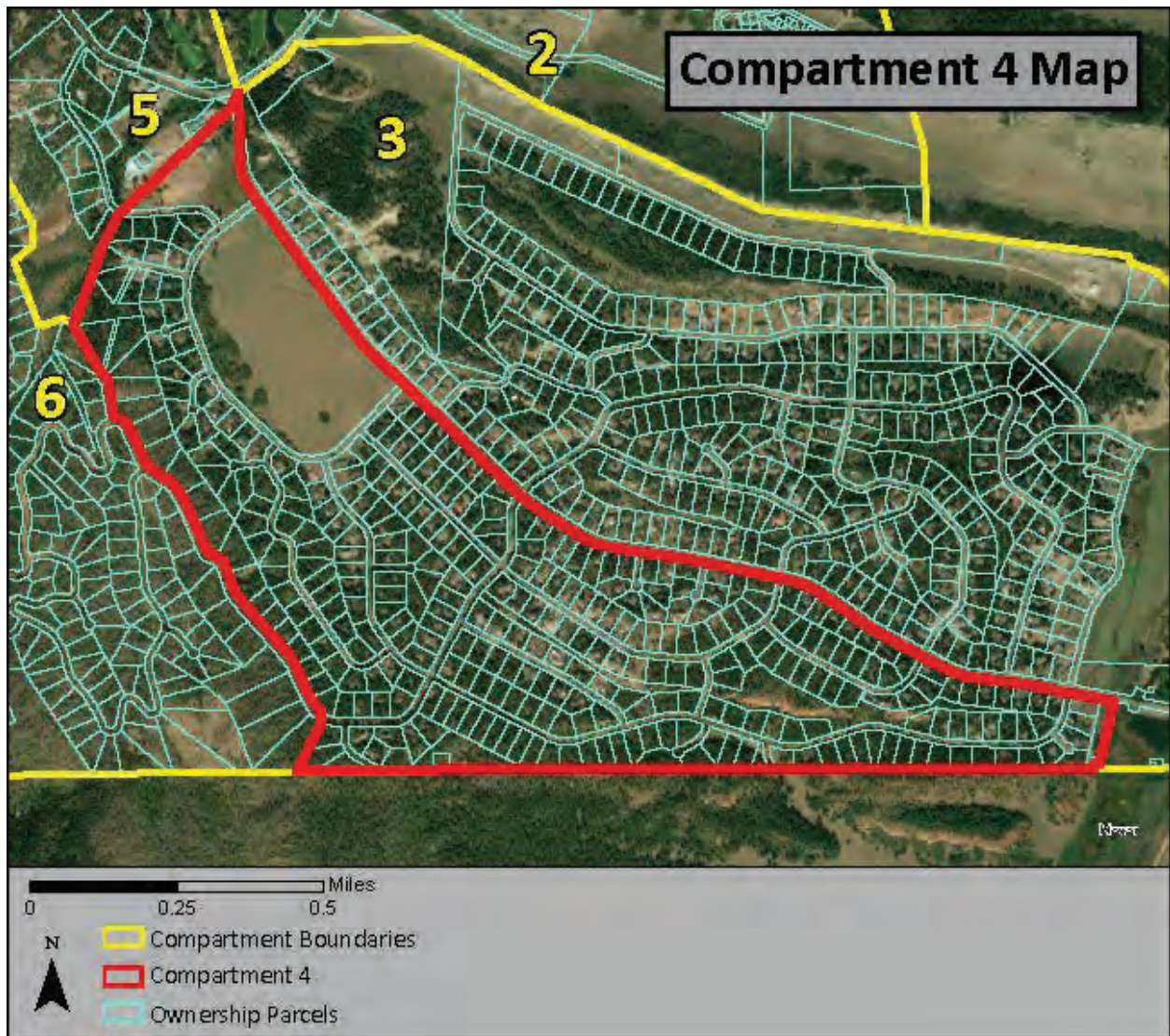
Compartment 2. Northeast area. Includes Country Club Drive (east) Evacuation Route to Remuda Ranch Parkway.





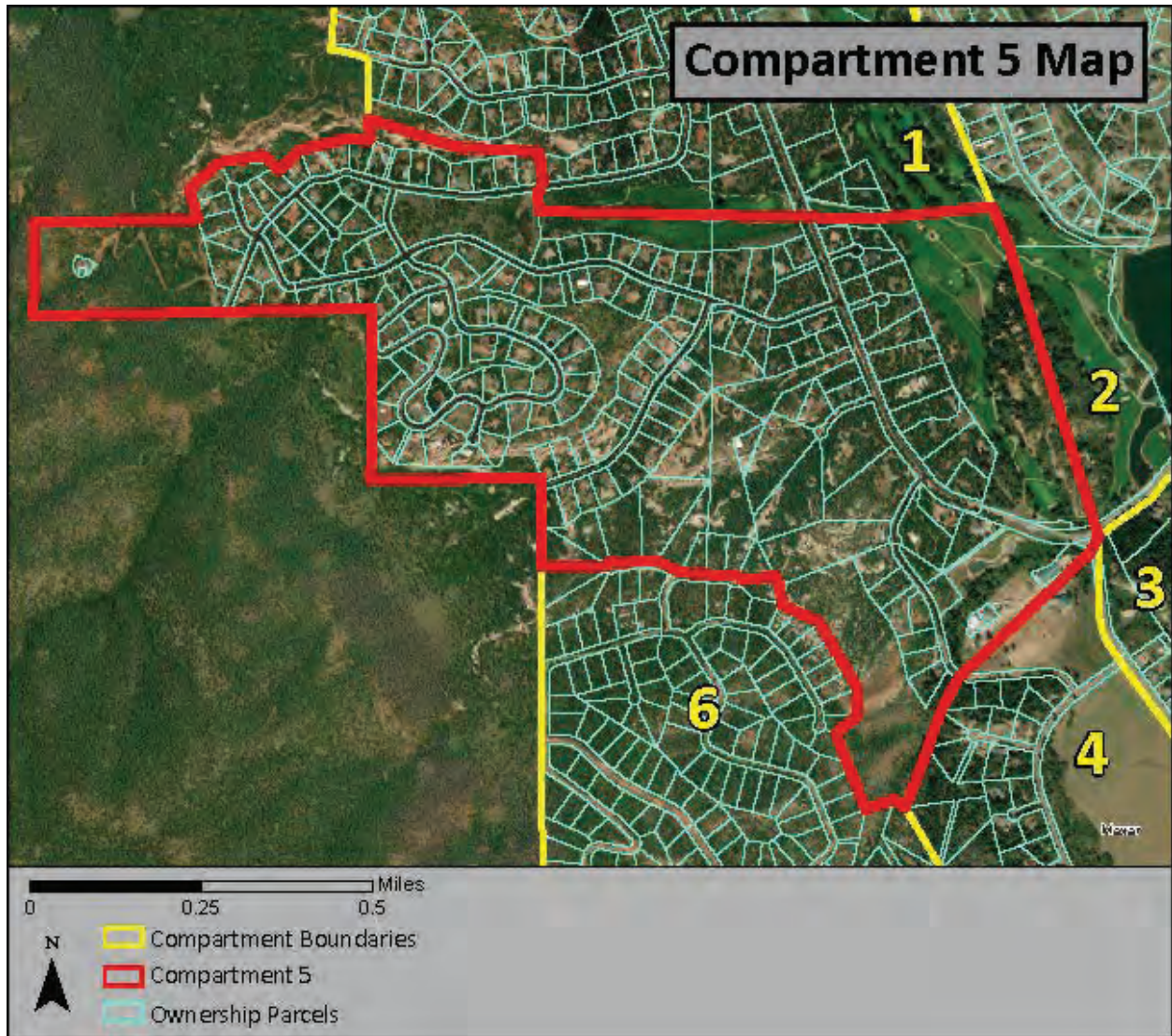
Compartment 3. Eastern Area, North of Red Rock Drive. Includes Red Rock Drive Evacuation Route.



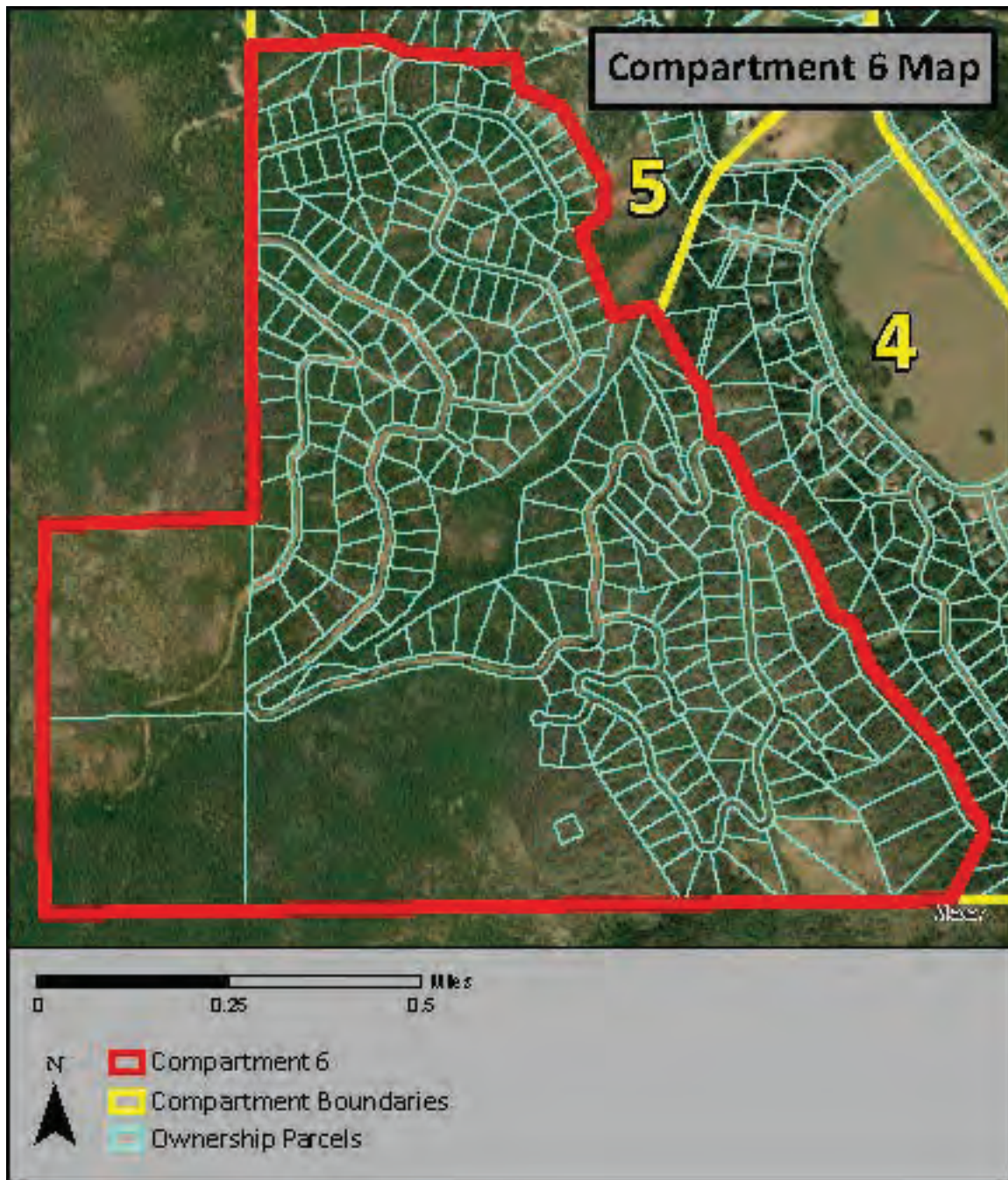


Compartment 4. Southern Area, south of Red Rock Drive with connection to Haystack Ranch. Includes Red Rock Drive Evacuation Route.





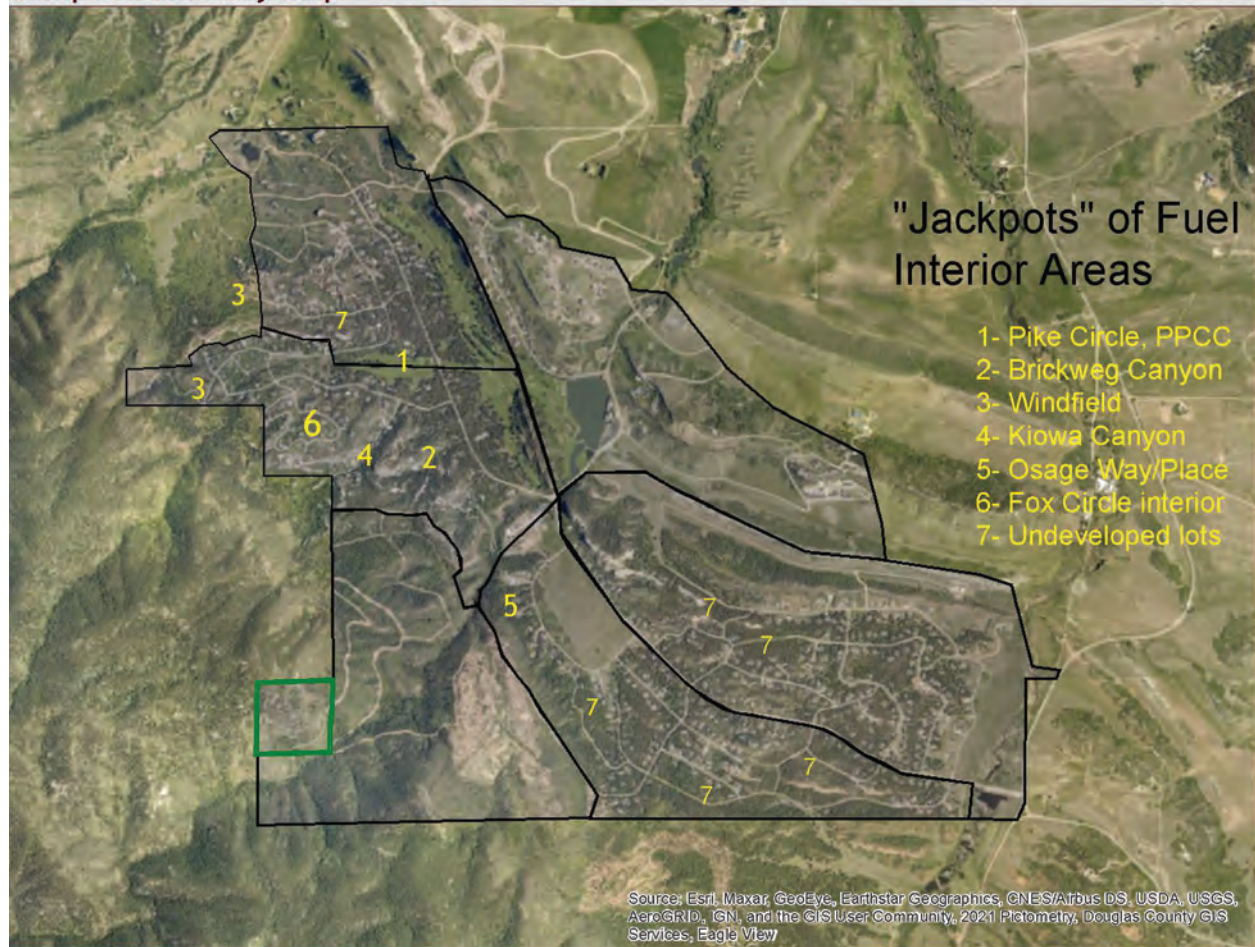
Compartment 5. Central Developed Area with high percentage of buildout. Includes portion of Perry Park Blvd. (west) Evacuation Route.



Compartment 6. Upper Cheyenne Undeveloped lots.

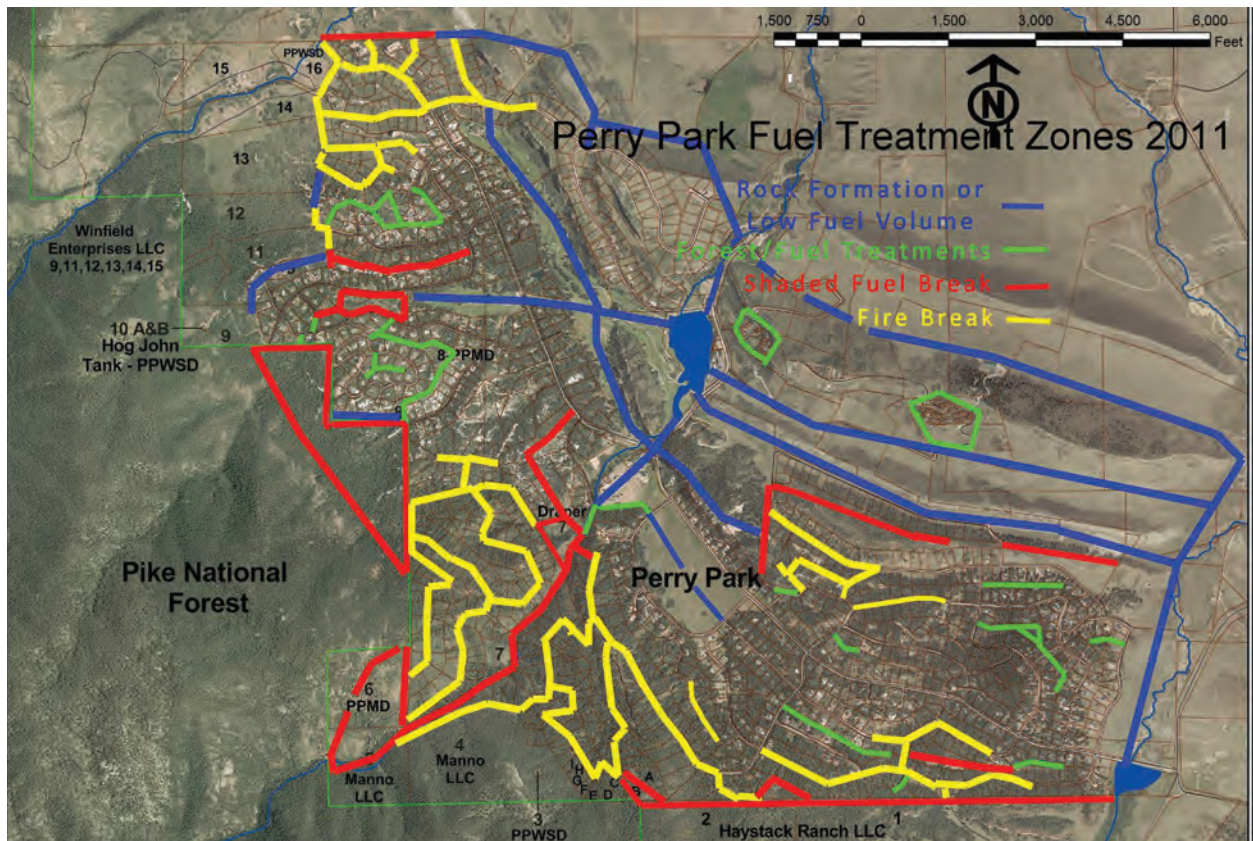


## Compartment Key Map

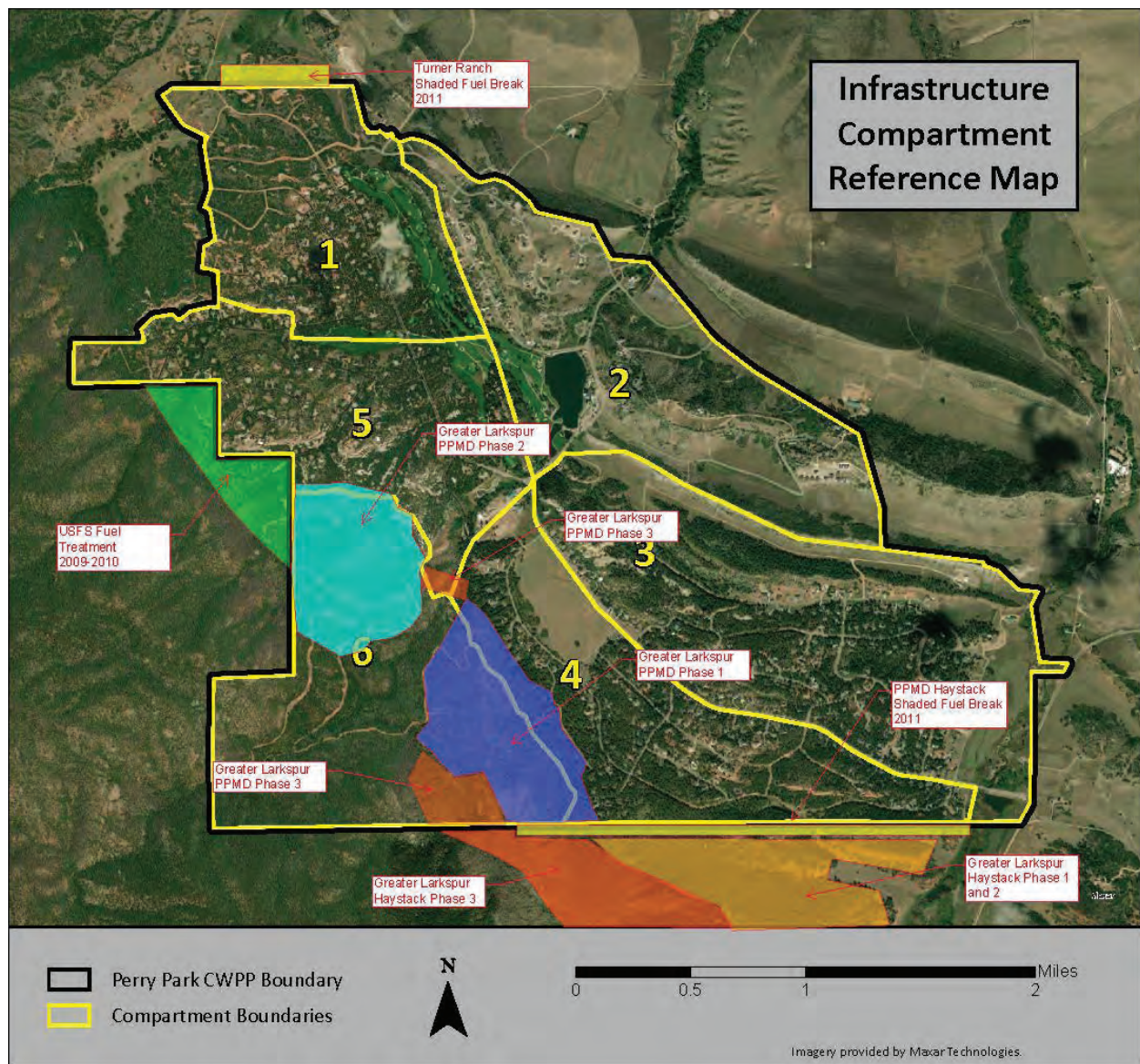


Neighborhoods with abutting large bodies of fuel. Numbers shown are in general vicinity of the “Jackpots” and may include multiple owners.



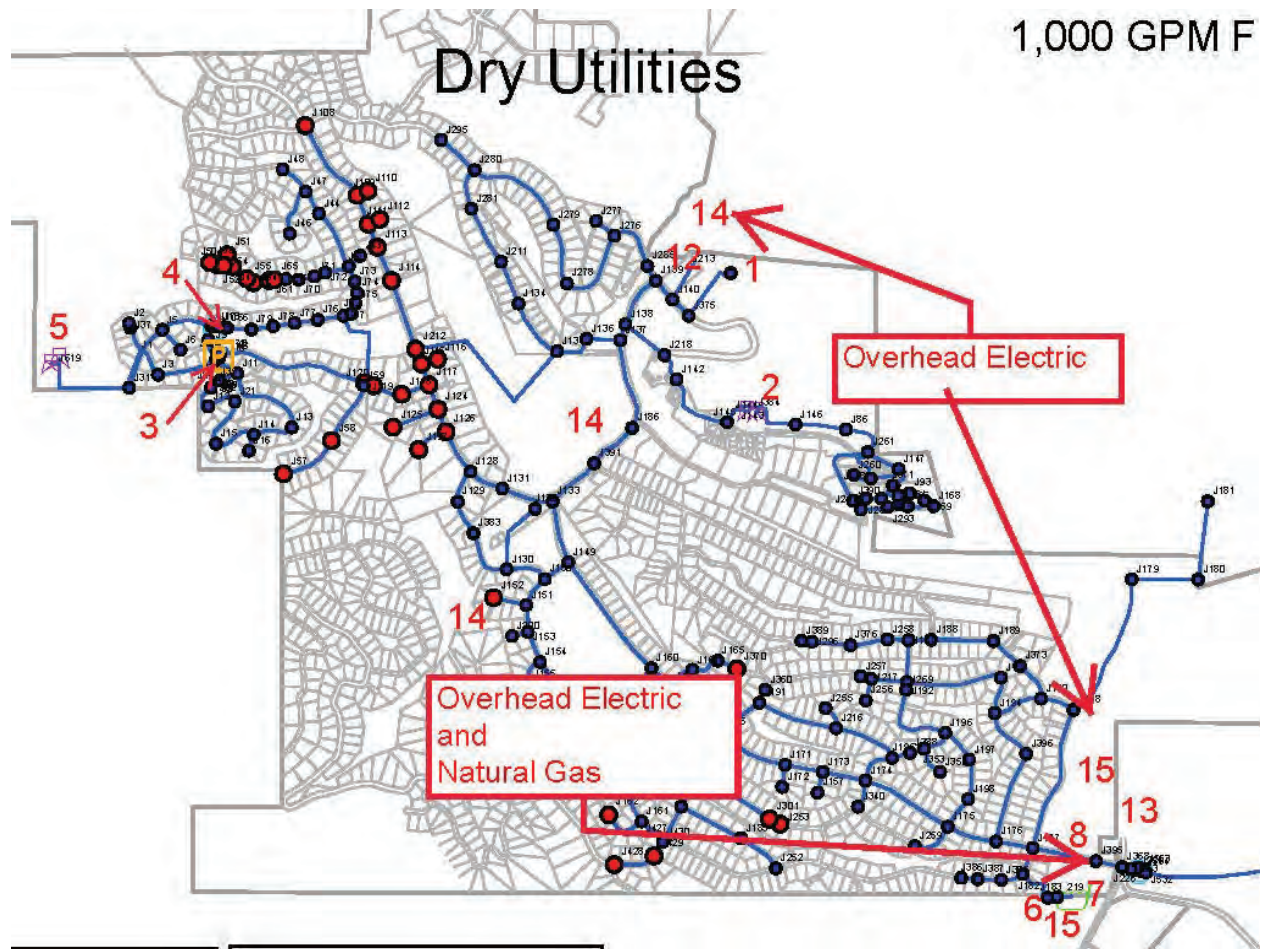


Proposed Compartment Boundaries based on 2012 fuel treatments showing possible connections to zones of lower fuel volumes.



Fuel Treatment Projects completed or in progress as of 2022.  
 (Colored areas)





Overall Utility Map  
(Numbers correspond to chart in Appendix C)

# Appendix B

Perry Park Metro District Parcels



# Perry Park Metro District Parcels

Revised 3-7-23

Parcel #	Account #	Owner Name	Situs Street Address	Legal Description	Acres	Mitigated	Maintained	Mitigation Required	Mitigation Compartment
1	R0004618	Gateway 1 (north)		A TRACT IN SW1/4 24 AND THE NW1/4 25-9-68 1 AKA VILLAGE INVESTORS PA REC 172405 3.645 AM/L SUBJECT TO CONSERVATION EASEMENT 01032995 42.955 AM/L TOTAL ACREAGE 46.60 AM/L	46.6	no	no	no	no
2	R0004685	Big D		TRACT A PERRY PARK 5 59.27 AM/L ALL ACRES SUBJECT TO CE 9536469	59.27	yes	yes	yes	yes
3	R0004693	PERRY PARK METRO DIST	Chippewa-Red Rock	TRACT B BLK 3 PERRY PARK 6 2.08 AM/L	2.08	yes	no	yes	yes
4	R0005750	Undeveloped Lot	5139 CHEYENNE DR	LOT 64 BLK 17 PERRY PARK 5 1.756 AM/L	1.756	yes	no	yes	yes
5	R0005768	Undeveloped Lot	4960 CHEYENNE DR	LOT 7 BLK 18 PERRY PARK 5 3.821 AM/L	3.821	yes	no	yes	yes
6	R0005776	Undeveloped Lot	8234 YUMA CIR	LOT 37 BLK 18 PERRY PARK 5 0.945 AM/L	0.945	yes	no	yes	no
7	R0005784	Undeveloped Lot	8059 YUMA CIR	LOT 7 BLK 19 PERRY PARK 5 0.93 AM/L	0.93	yes	no	yes	no
8	R0005792	Undeveloped Lot	8131 YUMA CIR	LOT 13 BLK 19 PERRY PARK 5 1.013 AM/L	1.013	yes	no	yes	no
9	R0005805	Undeveloped Lot	8423 YUMA CIR	LOT 31 BLK 19 PERRY PARK 5 0.949 AM/L	0.949	yes	no	yes	no
10	R0005813	Undeveloped Lot	7534 SEMINOLE DR	LOT 29 BLK 22 PERRY PARK 5 0.95 AM/L	0.95	yes	no	yes	yes
11	R0005821	Undeveloped Lot	5830 SEMINOLE TRL	LOT 38 BLK 22 PERRY PARK 5 0.917 AM/L	0.917	yes	no	yes	yes
12	R0005830	Undeveloped Lot	7615 SEMINOLE DR	LOT 4 BLK 23 PERRY PARK 5 0.949 AM/L	0.949	yes	no	yes	yes
13	R0005856	Undeveloped Lot		LOT 10 BLK 2 INDIAN HEAD 1 0.91 AM/L 312-350	0.91	yes	no	yes	yes
14	R0008150	Undeveloped Lot	Undeveloped Lot	LOT 22 BLK 2 INDIAN HEAD 1 0.90 AM/L 312-350	0.9	yes	no	yes	yes
15	R0008184	Apache-Pike COS	Apache-Pike COS	TRACT A PERRY PARK 2 11.32 AM/L	11.32	yes	no	yes	yes
16	R0008192	Fox to Kiowa COS	Fox to Kiowa COS	TRACT C PERRY PARK 2 16.07 AM/L	16.07	yes	no	yes	yes
17	R0008205	S. Pike at Kiowa	Fox Wy/Kiowa sliver	TRACT D PERRY PARK 2 0.154 AM/L	0.154	no	no	no	no
18	R0008213	Fox Circle interior	Fox Circle Interior	TRACT E PERRY PARK 2 2.029 AM/L	2.029	yes	no	yes	yes
19	R0008221	Fox Wy to S Pike	Fox Wy to S. Pike	TRACT F PERRY PARK 2 1.446 AM/L	1.446	yes	no	yes	yes
20	R0490903			TRACT A PERRY PARK 3 & PART OF VACATED WACOUNDA CT PER 02067963 7.659 AM/L	7.659	no	no	no	no
21	R0008310	PERRY PARK METRO DIST							
22	R0008361	PERRY PARK METRO DIST	Undeveloped Area	TRACT A PERRY PARK 4 5.23 AM/L	5.23	yes	no	yes	yes
23	R0008379	PERRY PARK METRO DIST	Undeveloped Area	TRACT B PERRY PARK 4 6.21 AM/L	6.21	yes	no	yes	yes
24	R0008387	PERRY PARK METRO DIST	Abuts Turner Ranch	TRACT C PERRY PARK 4 2.70 AM/L	2.7	yes	no	yes	yes
24	R0008395	PERRY PARK METRO DIST	Abuts Turner Ranch	TRACT D PERRY PARK 4 4.17 AM/L	4.17	yes	no	yes	yes

25	R0008547	PERRY PARK METRO DIST	8372 QUIVAS RD	TRACT B PERRY PARK 5 11.17 AM/L	11.17	yes	yes	yes	yes
26	R0008555	PERRY PARK METRO DIST	Crow Rd East	TRACT C PERRY PARK 5 0.786 AM/L	0.786	yes	yes	yes	yes
27	R0008563	PERRY PARK METRO DIST	Crow Rd West	TRACT D PERRY PARK 5 0.444 AM/L	0.444	yes	yes	yes	yes
28	R0008571	PERRY PARK METRO DIST	Inca-Cheyenne COS	TRACT E PERRY PARK 5 6.44 AM/L	6.44	yes	yes	yes	yes
29	R0008580	PERRY PARK METRO DIST	Bannock Ct N. COS	TRACT F PERRY PARK 5 1.96 AM/L	1.96	yes	no	yes	yes
30	R0008598	PERRY PARK METRO DIST	Red Rk Dr-Shoshone	TRACT G PERRY PARK 5 5.72 AM/L	5.72	yes	no	yes	yes
31	R0008601	PERRY PARK METRO DIST	Delaware-Crow COS	TRACT H PERRY PARK 5 3.45 AM/L	3.45	yes	no	yes	yes
32	R0008619	PERRY PARK METRO DIST	Bannock Triangle	MOST OF TRACT J PERRY PARK 5 4.35 AM/L	4.35	yes	yes	yes	yes
33	R0008627	PERRY PARK METRO DIST		TRACT L PERRY PARK 5 1.676 AM/L	1.676	yes	no	yes	yes
34	R0008811	PERRY PARK METRO DIST		TRACT A PERRY PARK 6 3.61 AM/L	3.61	yes	no	yes	yes
35	R0009013	PERRY PARK METRO DIST	5019 CHIPPEWA DR	TRACT C BLK 4 PERRY PARK 6 1.26 AM/L	1.26	yes	yes	yes	yes
36	R0009021	PERRY PARK METRO DIST	7694 MOHAWK CT	TRACT D BLK 4 PERRY PARK 6 4.08 AM/L	4.08	yes	yes	yes	yes
37	R0009161	PERRY PARK METRO DIST		TRACT A PERRY PARK 7 12.475 AM/L	12.475	yes	yes	yes	yes
38	R0009195	PERRY PARK METRO DIST		TRACT B PERRY PARK 9 2.28 AM/L	2.28	no	no	no	no
39	R0009241	Wauconda Park	6969 PERRY PARK BLVD Wauconda Park	TRACT A PERRY PARK 9 8.52 AM/L	8.52	no	no	no	no
40	R0009259	Wauconda COS North	Wauconda COS North	TRACT C PERRY PARK 9 9.72 AM/L	9.72	yes	no	yes	yes
41	R0012642	PERRY PARK METRO DIST	M. Laws Dedication	LOT 34 BLK 17 PERRY PARK 5 229-421 1.24 AM/L	1.24	yes	no	yes	yes
42	R0159521	Indian Head 40	Indian Head 40	NW1/4NE1/4 28-9-68 202-267 PAT NO 05-70-0059 AKA A-10 NKA PARCEL A-5 TOTAL ACREAGE 40 AM/L	40	no	no	no	yes
43	R0222527	PERRY PARK METRO DIST	Gilloon Pond	PT OF TRACT B PERRY PARK 2 PARCEL A-7-3 10.179 AM/L	10.179	yes	yes	yes	yes
44	R0222615	PERRY PARK METRO DIST		TRACT H PERRY PARK 2 0.237 AM/L	0.237	yes	no	yes	yes
45	R0602727	PERRY PARK METRO DIST	"School House" tract, Gateway @ 105	TRACT IN E1/2SW1/4NW1/4 25-9-68 1.169 AM/L	1.169	no	no	no	no
46	R0359094	PERRY PARK METRO DIST		AN ISLAND OF OPEN SPACE" BETWEEN LOTS 7 & 8 IN BLOCK 10 PERRY PARK #2 .22 AM/L"	0.22	yes	no	yes	yes
47	R0406452	Undeveloped Lot	8244 YUMA CIR Undeveloped lot	LOT 38 BLK 18 PERRY PARK #5 .976 AM/L REAL PORTION ON 0406450	0.976	yes	no	no	no
48	R0602729	Gateway 2, N. or Red Rock Drive	Gateway 2, N. of Red	TRACT IN SW1/4NW1/4 25-9-68 LYING NORTH OF RED ROCK DR 8.043 AM/L 4.779 ACRES SUBJECT TO CE 01032995 2013021849	8.043	no	no	no	no

			TRACT IN SW1/4NW1/4 25-9-68 LYING SOUTH OF RED ROCK DRIVE ACREAGE 1.969AM/L SUBJECT TO CONSERVATION EASEMENT 01032995 ACRES 9.672AM/L TOTAL ACREAGE 11.641AM/L					
49	R0432633	Gateway3, S of Red Rock	Drive	11.641	no	no	no	no
50	R0014373	Achilles lot dedication	Fox Way, S. Pike	1.161	yes	yes	no	yes

331.785

### Mitigation Explanations

**Mitigated-** Mitigated prior to 2012.

**Maintained-** Maintained since 2012.

**Mitigation Required-** Initial treatment or retreatment required.

**Mitigation Compartment-** Part of neighborhood Compartment (POD) as part of overall protection.

Parks and Community Open Space Types:

1. Active Recreation. Example- Wauconda Park

2. Passive Recreation:

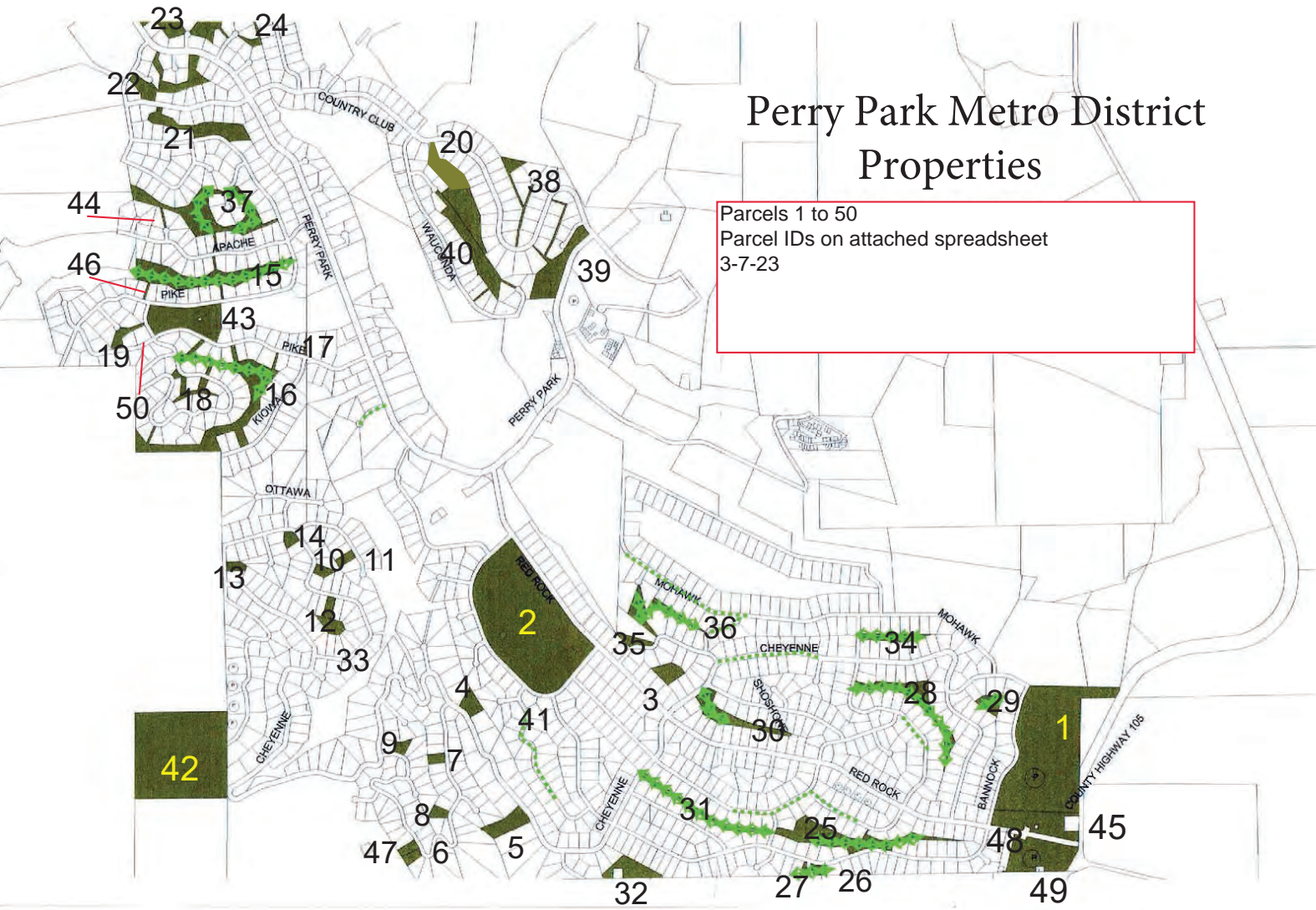
A. Periodic maintenance or mowing. Examples: Gateway COS, Big D COS.

B. Natural area: Little or no maintenance other than periodic wildfire mitigation.



Perry Park Metro District  
Properties

Parcels 1 to 50  
Parcel IDs on attached spreadsheet  
3-7-23



# Appendix C

Perry Park Water and Sanitation District

Wildfire Hazard Assessment

Perry Park Metro District Community Wildfire Protection Plan (CWPP)  
Firewise Assessment of PPWSD Facilities  
May 5, 2022

Observations by  
Keith Worley, Forestree Development LLC, with Will Parker, Semocor, Inc.

Water and sewer services to homes will be a requirement for residential occupancy both during and after a major wildfire impacts the community. Loss of either utility will prevent reoccupation until services are restored. Potable water and sanitary sewer services are necessary to meet critical health and safety codes.

The District currently provides most of the potable water from the eastern portion of the District via the east-west water main that enters the community at Red Rock Drive and Perry Park Road (DC-105). It is not currently reliant on facilities at risk to wildfire. However, as new or upgraded facilities in Perry Park are brought online, these should be hardened against damage or loss to wildfire.

Sanitary sewage treatment occurs at the Wauconda Sewer Plant. All above-ground facilities are at risk of loss to ember ignitions. If lost, it could take months to bring them back online and prevent residents from returning to their homes. These should be “hardened” as soon as possible following recommendations outlined below. Most of the recommendations can be done inexpensively or by minor adjustments to maintenance practices.

The water and sewer system are reliant on electricity. Loss of power is a more short-term issue given the ability of Core Rural Electric to bring the power grid back online in a matter of days. The District’s backup generators can also operate for up to seven days without refueling.

It should be noted water for firefighting during a wildland fire will be severely limited given that multiple homes are threatened at one time. Residents should be aware the District meets minimum fire flow requirements based on one structure on fire at one time (1,000 gallons per minute for two hours). Residents should implement all necessary Firewise practices to minimize reliance on the central water supply.

The following are observations from the field tour of Perry Park Water and Sanitation District facilities to identify any Firewise practices that can be implemented to manage wildfire exposure- primarily from ember blizzards. These are keyed to the attached maps.

Primary fuels are grasses that can be ignited by wind driven embers. Most of these recommendations can be done inexpensively and reduce long-term maintenance costs.



Infrastructure	Map #	Construction Materials	Recommendations
Dakota Well House	1	Wood, metal	Clear all grass fuels at least 5' from building foundation. Keep cleared area free of vegetation with rock, gravel, dirt or other non-combustible material. Provide positive drainage away from foundation.
			Install mesh screens with maximum 1/8 <sup>th</sup> openings. Caulk and paint any exterior openings on structure.
		Overhead Power	Protect poles by weedeating or removing grasses within 5' of poles.
Echo Hills Water Tanks (1 & 2)	2	Tank 1- concrete Tank 2- Metal	Clear all grass fuels at least 5' from building foundation. Keep cleared area free of vegetation with rock, gravel, dirt or other non-combustible material. Provide positive drainage away from foundation. If permissible, remove all conifers within 30' of tanks.
			Remove all trees within fenced area.
		Access drive	Thin out pines and clear Gambel oak 30' feet on both sides of driveway.
Fox Way/South Pike Pump house	3	Metal with wood trim	Clear all grass fuels at least 5' from building foundation. Keep cleared area free of vegetation with rock, gravel, dirt or other non-combustible material. Provide positive drainage away from foundation.
			Prune tree branches within 10' of structure.
			Re-treat Gambel oak clump on south side to remove ladder fuels.
			Install mesh screens with maximum 1/8 <sup>th</sup> openings. Caulk and paint any exterior openings on structure.
			Clean gutter on N. side of building.
Fox Way/Pike Circle PRV	4	Metal, concrete	Install 5' gravel border and keep free of vegetation.
Hog John Water Tanks 1 and 2	5	Metal	Clear all grass fuels at least 5' from tank foundation. Keep cleared area free of vegetation with rock, gravel, dirt or other non-combustible material. Provide positive drainage away from foundation.

			Remove all trees within fenced area.	
			If permissible, remove mature trees within falling distance of tanks.	
			Mitigate fuels 30' on both sides of access drive.	
Glen Grove Water Plant	6	Mixed	Clear all grass fuels at least 5' from building foundation, fences, generator. Keep cleared area free of vegetation with rock, gravel, dirt or other non-combustible material. Provide positive drainage away from foundation.	
		Core Transformer	Clear all grass fuels. Provide 5 inches clearance from bottom of fence to non-combustible surface below.	
		Building	Cover "well" area on west side of wood building to prevent fuels from entering. Remove wood fence at end of well area.	
			Reroof with Class A roofing and install metal flashing above gutter.	
			Install mesh screens with maximum 1/8 <sup>th</sup> openings. Caulk and paint any exterior openings on structure.	
Glen Grove Wellhead	7	Metal, plastic	Install 10' gravel border/apron around all facilities and keep free of vegetation.	
Plum Creek Wellhead	8	Metal, plastic	Install 10' gravel border/apron around all facilities and keep free of vegetation.	
Bannock/ Kalamath Lift Station	9	Wood, metal, plastic, fiberglass	Install road-base or crusher fines within fenced area to provide an "all-weather" surface and keep free of vegetation.	
			Clear all grass fuels. Provide 5 inches clearance from bottom of fence to non-combustible surface below.	
			Keep all vegetation cleared from outside the fence at least 5' wide.	
		Transformer	Install 5' gravel border/apron around all facilities and keep free of vegetation.	
Red Rock Lift Station	10	Wood, metal, plastic, fiberglass	Install road-base or crusher fines within fenced area to provide an "all-weather" surface and keep free of vegetation.	
			Clear all grass fuels. Provide 5 inches clearance from bottom of fence to non-combustible surface below.	

			Keep all vegetation cleared from outside the fence at least 5' wide.	
		Transformer	Install 5' gravel border/apron around all facilities and keep free of vegetation.	
Wastewater Treatment Plant	11	Mixed	Clear all grass fuels at least 5' from building foundation, fences, and generator. Keep cleared area free of vegetation with rock, gravel, dirt, or other non-combustible material. Provide positive drainage away from foundation.	
		Wood fence	Clear all grass fuels. Provide 5 inches clearance from bottom of fence to non-combustible surface below.	
			Keep all vegetation cleared from outside the fence at least 5' wide.	
		Junipers	Remove all junipers at entrance gate along the fence due to overhead powerlines and transformer.	
		Gambel oak	Prune and remove ladder fuels in oak clumps east of fenced area.	
		Storage building	Follow all recommendations per above.	
		Outdoor storage	Areas where materials are stored should be kept free of vegetation. Avoid storage directly against buildings so these areas can be maintained. Consider installation of gravel surfaces in these areas. Keep combustible items (wood, plastic, rubber, etc.) separate from non-combustibles such as man-hole rims.	
Overhead Power Sources	12	North PP	The primary feed into the north side of Perry Park comes through the Paulk property. Coordination with abutting owners and Core Rural Electric Association may be required.	
	13	South PP	Main feeds are from Perry Park Road at two locations. Again, coordination with Core and landowners may be required.	
Post Fire				
Bear Creek Watershed	14	Water and Sewer Mains	Perry Park Blvd. at Red Rock Drive at risk of loss from flooding. Coordinate with DC on crossing points if drainage improvements are upgraded to handle	



			100-year storm events. Investigate potential impacts to Osage Road water main crossing.	
		Siltation	Lake Wauconda loss of water storage capacity.	
		Sewer Plant	Review District documents to determine proximity to 100-year flood plain.	
West Plum Creek Watershed	15	Water Main	Red Rock Drive and East-West water main loss from flooding. Coordinate with DC on crossing points if drainage improvements are upgraded to handle 100-year storm events.	
		Ash Contamination	Alluvial well water quality affected by ash flows from West Plum Creek Watershed.	

Overall, PPWSD facilities are at moderate risk of damage or loss from wildfire. Most of the recommendations listed above are intended to manage “fine” fuels such as grass, weeds, leaves and conifer needles. These are easily ignited by embers blown horizontally ahead of wind driven wildfires. An example of this risk can be viewed at the web site for the **Insurance Institute for Business and Home Safety (IBHS)** at [www.disastersafety.org](http://www.disastersafety.org) under the section on Wildfire. Most of the recommendations given in this assessment are based on their research.

Much of the District’s infrastructure is non-combustible. However, all have some element of vulnerability. For example, concrete and steel water tanks have electrical or telemetry components that could be damaged by fire. Well heads are another example where the well itself is safe, but the electrical supply could be compromised.

Horizontal/vertical edges, especially where structures are in contact with the ground, should be “hardened” using materials that can be easily maintained. Borders or aprons, 5 feet wide, are recommended to provide a non-combustible surface abutting surrounding grassy areas. A wide selection of economical materials such as road-base, crusher fines, gravel, concrete, or dirt, once installed, can be maintained with a non-selective herbicide on an annual basis. NOTE: Do not use rock or gravel more than 1.5 inches in diameter. Larger sized rock, especially river cobble, can easily hold fine fuels that cannot be removed easily by a leaf blower.

Where possible, grading should be done to provide positive drainage away from all improvements. This can help with reducing any ember accumulations against structures.

Regular monitoring of areas, once mitigated, will be required- especially after major winds or on “Red Flag” days to ensure no litter, leaves, tumbleweeds, etc. have accumulated against combustible materials. The leeward sides of fences and inside corners of structures are most prone to debris collections.

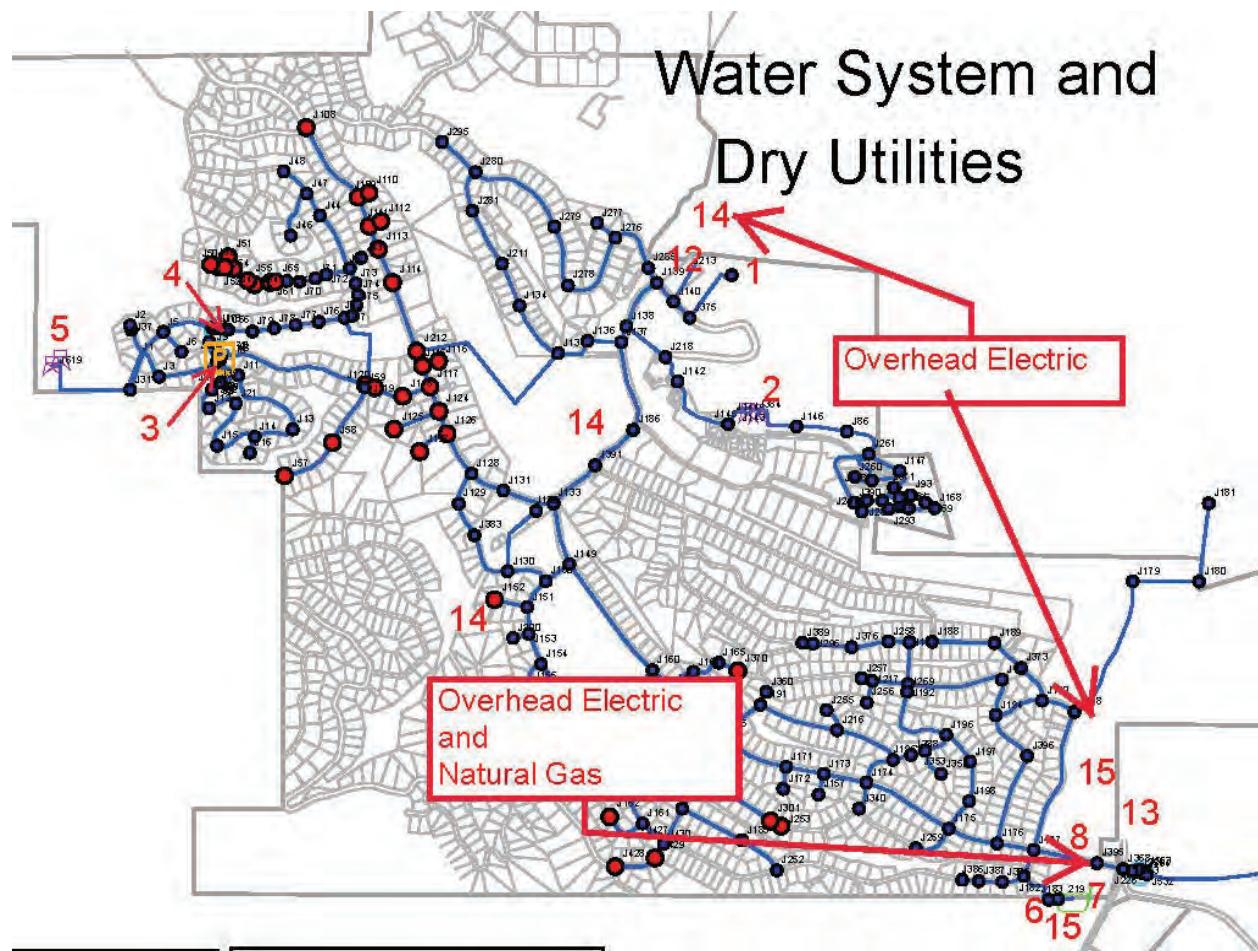
One example of ember-proofing is for the sewer lift stations by installation of an all-weather surface within the entire enclosure that extends 5 feet beyond the exterior of the fence. Raising the bottom edge of the fence by 5 inches will allow embers to blow through with no harm to the fence or facilities. The need for mowing or weed eating these areas will be eliminated.

Electrical power to facilities should also be protected- especially transformers necessary to keep them operational. Transformer concrete pads should be hardened as described above. It would be easy to say this is CREA’s problem. However, given the proximity and importance of these to the District for operation of its facilities, these should be treated as part of the District’s infrastructure and take precedence over no action.

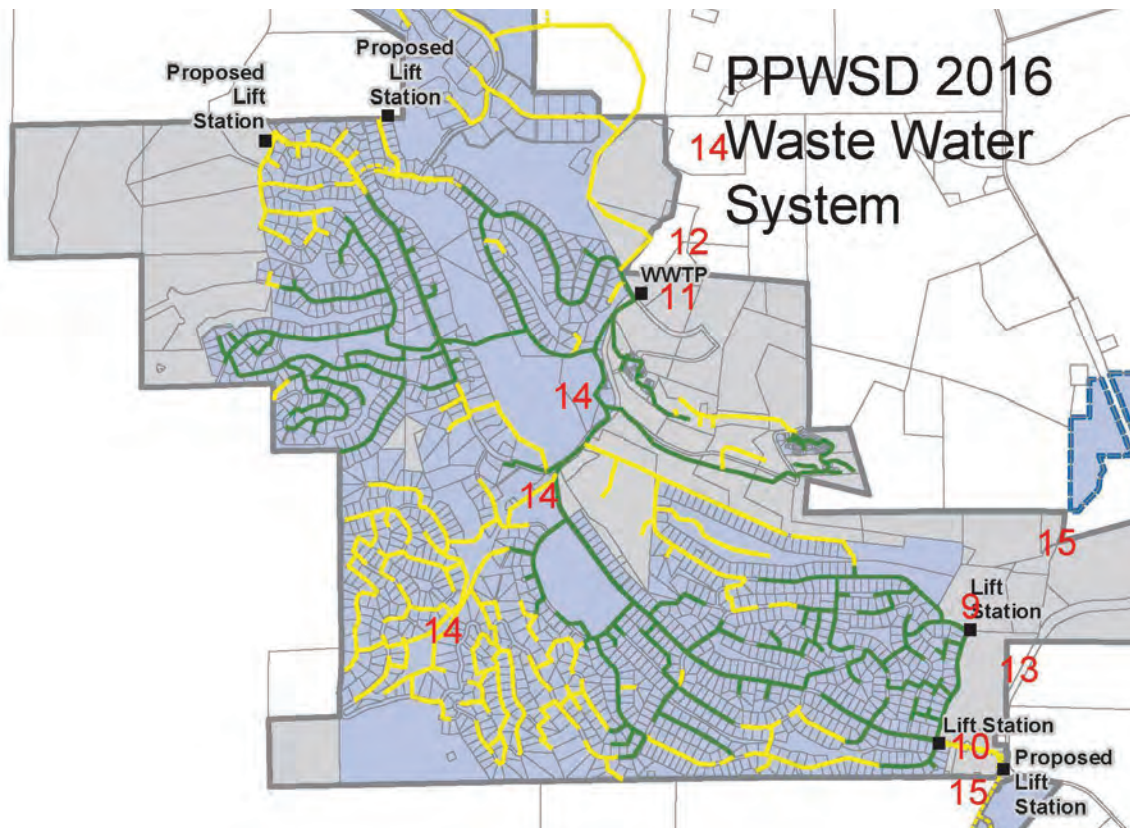
All of the above recommendations should be implemented at PPWSD facilities in the east portion of the District. Much of the water supplied to Perry Park is supplied from this infrastructure via the East-West water line that enters Perry Park at the intersection of Red Rock Drive and Perry Park Road (DC-105).

Post-fire impacts should be studied further. A common occurrence, sometimes for years afterwards, is rapid water runoff with mud and debris flows from burned areas. The primary watershed, Bear Creek, cuts through the middle of Perry Park. Where District water and sewer mains cross the creek could be at risk of damage or loss. Douglas County has dealt with this for many years along Hwy. 67 after the 2002 Hayman Fire. 100-year flood plain maps should be examined for all potential vulnerabilities as the District upgrades older infrastructure.

Lake Wauconda could also be impacted by loss of water storage capacity if post-fire siltation occurs. Denver Water has been dealing with this at its Strontia Springs Reservoir since the 1996 Buffalo Creek Fire. Alluvial wells on West Plum Creek, considered “renewable water”, could see reduced water quality by ash contamination from wildfires within the entire West Plum Creek watershed.







# Appendix D

## Wildfire Mitigation Resources

# Wildfire Information Sources

**Colorado State Forest Service-** [www.csfs.colostate.edu](http://www.csfs.colostate.edu)

**Pikes Peak Wildfire Prevention Partners-** [www.ppwpp.org](http://www.ppwpp.org)

1. Black Forest Fire Assessment Report
2. Black Forest Fire Video

## Emergency Notification

**Code Red-** <http://www.douglas.co.us/codered/>

Douglas County homeowners who do not have Century Link land lines are not in the emergency notification system. Voice-Over-Internet-Phones (VIOP), such as Comcast, and mobile lines are not in the system. These must be registered at the sheriff's office web site listed above.

**Douglas County Access and Functional Needs Registry (AFN)** for residents with special needs during an emergency:

<https://www.totalvisibilitysolution.com/DouglasCO/>

**Firewise Communities-** [www.firewise.org](http://www.firewise.org)

**Ready! Set! Go! (RSG)-** [www.wildlandfirersg.org](http://www.wildlandfirersg.org)

**Insurance Institute for Business and Home Safety (IBHS)**

**Web site:** [www.disastersafety.org](http://www.disastersafety.org)

1. Site has regional guides for retro-fitting homes for wildfire.
2. Wildfire Home Assessment & Checklist
3. View videos of ember ignition lab tests.

**Fire Adapted Communities (FAC)-** [www.fireadapted.org](http://www.fireadapted.org)

## MUST SEE VIDEOS:

- **Wildfire! Preventing Home Ignitions** View at [www.firewise.org](http://www.firewise.org)
- YouTube videos: View at [www.youtube.com](http://www.youtube.com)
  - o Type "Melody Lane Fire" in the browser (see a wildfire in real time destroy 5 homes)
  - o Type "IBHS, Ember" in the browser (see a home ignited by embers in a laboratory setting)



# Appendix E

Acronyms

And

Glossary of Terms

# Appendix E

## Acronyms Used:

**AFN**- Douglas County Access and Functional Needs Registry  
**BHE**- Black Hills Energy  
**BOCC**- DC Board of County Commissioners  
**CDOT**- Colo. Dept. of Transportation  
**CL**- Century Link  
**CREA**- Core Rural Electric Association, formerly IREA  
**CO-WRAP**- Colo. Wildfire Risk Assessment Portal or Colorado Forest Atlas  
**CSFS**- Colorado State Forest Service  
**CWPP**- Community Wildfire Protection Plan  
**DC**- Douglas County Government  
**DCART**- Douglas County Animal Rescue Team  
**DC-HMP**- DC Hazard Mitigation Plan  
**DCSD**- Douglas County School District  
**DCSO**- Douglas County Sheriff's Office  
**DCSO-OEM**- Office of Emergency Management, DCSO  
**DDFL**- Denver Dumb Friends League  
**DECHC**- Douglas-Elbert County Horse Council  
**DFPC**- Colo. Div. of Fire Prevention and Control  
**DPS**- Colo. Department of Public Safety  
**D-Space**- Defensible Space  
**EFF**- Emergency Fire Fund  
**EMT**- Emergency Medical Technician  
**EOC**- Emergency Operations Center, DCSO

**EOP**- Emergency Operating Plan  
**FBO**- Aid to Determining Fuel Models for Estimating Fire Behavior (aka "Anderson")  
**GPM**- Gallons per minute  
**HFRA**- Healthy Forest Restoration Act of 2003  
**HIZ**- Home Ignition Zone  
**ICS**- Incident Command System  
**IREA**- Intermountain Rural Electric Association  
**ISO**- Insurance Services Office  
**LFPD**- Larkspur Fire Protection District, also referred to as the "District"  
**MUTCD**- Manual of Uniform Traffic Control Devices  
**NFDRS**- National Fire Danger Rating System  
**NIMS**- National Incident Management System  
**NRF**- National Response Framework  
**NWCG**- National Wildfire Coordinating Group  
**PPC**- Public Protection Classification  
**PPCC**- Perry Park Country Club  
**PPMD**- Perry Park Metropolitan District  
**PPE**- Personal Protective Equipment  
**PPWSD**- Perry Park Water and Sanitation District  
**ROW**- Right-of-way  
**SFB**- Shaded Fuel Break  
**USDA**- United States Department of Agriculture  
**USDI**- United States Department of Interior  
**USFS**- USDA Forest Service  
**VIOP**- Voice over internet protocol  
**WUI**- Wildland Urban Interface

## Appendix E

### Glossary

**Abiotic Factors:** The non-living components of the environment, such as air, rocks, soil, water, peat, and plant litter.

**Aerial fuels:** Standing and supported live and dead combustibles not in direct contact with the ground and consisting mainly of foliage, twigs, branches, stems, cones, bark, and vines: typically used in reference to the crowns of trees.

**Canopy:** The forest cover of branches and foliage formed by tree crowns.

**Chain:** A measuring tape, often nylon, 50 meters or 75 meters in length, used to measure distances. This term is derived from an old unit of measurement (1 Chain = 66 feet, 80 Chains = 1 mile).

**Chimney:** A topographical feature such as a narrow drainage on a hillside or the upper end of a box canyon that could channel wind, smoke or flames up the slope; acting as a fireplace chimney would to draw smoke and heat upward.

**Class A Roof:** Effective against severe fire test exposures, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a fairly high degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

**Class B Roof:** Effective against moderate fire test exposures, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a moderate degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

**Class C Roof:** Effective against light fire test exposure, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a measurable degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

**Clearcut:** An area of forest land from which all merchantable trees have recently been harvested.

**Climax Forest:** A forest community that represents the final stage of natural forest succession for its locality, i.e. for its environment.

**Coarse Woody Debris (CWD):** Sound and rotting logs and stumps that provide habitat for plants, animals, and insects, and a source of nutrients for soil development.

**Commercial Thinning:** A silviculture treatment that "thins" out an overstocked stand by removing trees that are large enough to be sold as poles or fence posts. It is carried out to improve the health and growth rate of the remaining crop trees.

**Compartment or Sub-compartment:** An area where natural and manmade anchor points are used to contain or exclude wildfire. Long-range plan should be to restore fire adaption. Also see POD.

**Competing Vegetation:** Vegetation that seeks and uses the limited common resources (space, light, water, and nutrients) of a forest site needed by preferred trees for survival and growth.

**Conifer:** Cone-bearing trees having needles or scale-like leaves, usually evergreen, and producing wood known commercially as "softwoods."

**Conservation:** Management of the human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. It includes the preservation, maintenance, sustainable utilization, restoration, and enhancement of the environment.

**Crown fire / Crowning:** A form of extreme wildland fire behavior consisting of fire that advances from top to top of trees or shrubs more or less independent of a surface fire. Crown fires are sometimes classed as running or dependent to distinguish the degree of independence from the surface fire.

**Deciduous:** Perennial plants that are normally leafless for some time during the year.

**Defensible Space:** An area within the perimeter of a parcel, development, neighborhood, or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used herein is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures. In simplest terms, it is adequate space between structures and flammable vegetation which allows firefighters a safe working area from which they can attack an oncoming wildfire. Defensible Space is the best element of fire protection for individual property owners.

**Dripline:** The outer most leaves on a tree defines its dripline and the ground within the dripline is known as the drip zone; also defined as the area defined by the outermost circumference of a tree canopy.

**Deforestation:** The removal of a forest stand where the land is put to a non-forest use.

**Eave Opening:** A vent located in an eave or soffit which allows airflow into the attic and/or walls of a structure.

**Ecosystem:** A functional unit consisting of all the living organisms (plants, animals, microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size a log, pond, field, forest, or the earth's biosphere but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation; for example, forest ecosystem, old-growth ecosystem, or range ecosystem.

**Ember:** See Firebrands

**Ember Outwash:** Firebrands carried by high winds typical of extreme wildfire behavior. Also called ember blizzards. Firebrands behave like wind driven snow and move in a horizontal direction, like snow during a blizzard.

**Escape route:** A preplanned and understood route firefighters take to retreat from an unsafe or fire-threatened area and move to a safety zone or other low-risk area.

**Extreme fire behavior:** A level of fire behavior that ordinarily precludes firefighting methods involving direct attack on the fire. One or more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, sometimes dangerously.

**Felling:** The cutting down of trees.

**Fire Adapted:** Ecological restoration to allow fire to burn at pre-European levels and sizes with minimal catastrophic damage to the natural resources.

**Firebrands:** Flaming or glowing fuels lofted into the air during intense burning by strong upward convection currents. Also referred to as airborne embers. Firebrand movement may be horizontal during wind-driven wildfires.



**Fire break:** A natural or constructed fuel-free barrier used to stop or check fires that may occur, or to provide a control line from which to work.

**Fire front / Flame front:** The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified, the fire front is assumed to be the leading edge of the fire perimeter.

**Fire Dependent:** Requiring one or more fires of varying frequency, timing, severity, and size in order to achieve optimal conditions for population survival or growth.

**Fire Hazard Mitigation:** Various methods by which existing fire hazards can be reduced in a certain area, such as fuel breaks, non-combustible roofing, spark arresters, etc.

**Fire Management:** The activities concerned with the protection of people, property, and forest areas from wildfire and the use of prescribed burning for the attainment of forest management and other land use objectives, all conducted in a manner that considers environmental, social, and economic criteria.

**Fire Suppression:** All activities concerned with controlling and extinguishing a fire following its detection.

**Firewise:** A National Fire Protection Association's (NFPA) program encouraging local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from wildfire risks.

**Forest Fire:** Any wildfire or prescribed burn that is burning in forest, grass, alpine, or tundra vegetation types.

**Forest Type:** A group of forested areas or stands of similar composition (species, age, height, and stocking) which differentiates it from other such groups.

**Fuel:** Any living or dead material that will burn.

**Fuel break:** An existing barrier or change in fuel type (to one that is less flammable than that surrounding it) or a wide strip of land on which the native vegetation has been modified or cleared, that acts as a buffer to fire spread so that fires burning into them can be more readily controlled. Often selected or constructed to protect a high value area from fire.

**Fuel Management:** The act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire in support of land management objectives.

**Fuel reduction zone:** An area similar to a fuel break but not necessarily linear, in which fuels have been reduced or modified to reduce the likelihood of ignition and/or to reduce fire intensity thereby lessening potential damage and resistance to control.

**Home Ignition Zone (HIZ):** An area including the home and its immediate surroundings within which burning fuels could potentially ignite the structure; usually considered to be an area extending out roughly 100 feet from the home. The HIZ is often used to describe the area in which fuel modification measures should be taken to protect the home.

**Ladder Fuels:** Fuels that provide vertical continuity between the surface fuels and crown fuels in a forest stand, thus contributing to crown fires.

**Lines of Effort:** Tasks sets or sets of actions that are linked or coordinated with other task sets to accomplish a larger mission or reach a desired end state. Lines of effort allow leaders and decision makers to direct a variety of separate actions toward a unified result.

**Maximum Density:** The maximum allowable stand density above which stands must be spaced to a target density of well-spaced, acceptable stems to achieve free-growing status.

**National Fire Protection Association (NFPA):** A private, non-profit organization dedicated to reducing fire hazards and improving fire service.

**Pitch Tubes:** A tubular mass of resin that forms on bark surface at bark-beetle entrance holes.

**Potential Operational Delineation (POD):** A preplanned boundary or fire suppression zone established to contain or exclude wildfire. Natural or manmade anchor points are utilized where possible. Also see "Compartment".

**Prescribed Burning:** Controlled application of fire to wildland fuels, in either their natural or modified state, under certain conditions of weather, fuel moisture, soil moisture, etc. as to allow the fire to be confined to a predetermined area and at the same time to produce results to meet planned land management objective.

**Ready, Set, Go (RSG):** A program, managed by the [International Association of Fire Chiefs \(IAFC\)](#), seeking to develop and improve the dialogue between fire departments and residents. The program helps fire departments teach individuals who live in high-risk wildfire areas how to best prepare themselves and their properties against fire threats.

**Regeneration:** The act of renewing tree cover by establishing young trees, naturally or artificially note regeneration usually maintains the same forest type and is done promptly after the previous stand or forest was removed.

**Saddle:** A depression, dip or pass in a ridgeline; significant in wildland firefighting because winds may be funneled through a saddle, causing an increase in wind speed.

**Safety zone:** An area essentially cleared of flammable materials, used by firefighters to escape unsafe or threatening fire conditions. Safety zones are greatly enlarged areas in which firefighters can distance themselves from threatening fire behavior without having to take extraordinary measure to shield themselves from fire/heat.

**Shaded fuel break:** A fuel break built in a timbered area where the trees within the break are thinned and limbed up to reduce crown fire potential, yet retain enough crown canopy to provide shade, thereby making a less favorable microclimate for surface fires.

**Silviculture:** The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands. Silviculture entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.

**Snag:** A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

**Stand:** A continuous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

**Spot Fire / Spotting:** Fires ignited beyond control lines or outside the perimeter of a fire by firebrands landing on/among flammable material. Spot fires/spotting are a form of extreme fire behavior typically resulting from high wind conditions.

**Structure protection:** A defensive strategy in wildland firefighting in which firefighters are assigned to evaluate, prepare and, when possible, defend structures/homes that may be threatened by a wildfire.

**Structure triage:** Evaluating and sorting structures/homes into categories based on their relative likelihood of surviving a wildland fire threat (*defensibility*). Triage decisions are based multiple factors and conditions occurring during an actual fire - weather, fire behavior, home ignition potential, defensible space, presence of escape routes, and availability of firefighting resources, among others - with the goal of doing the most good with the resources available.

**Succession (or Ecological Succession):** The replacement of one plant and/or animal species over time by another in progressive development toward climax vegetation.

**Surface fuels:** Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low-lying live vegetation.

**Survivable space:** A term typically used to describe the area around a structure/home indicating that fuels in the area have been reduced to the point that there is little or no serious fire threat to the structure; the structure has a high probability of surviving a wildland fire without anyone on scene providing active protection.

**Thinning:** A cutting made in an immature crop or stand primarily to accelerate diameter increment, but also, by suitable selection, to improve the average form of the tree that remain.

**Torching:** The burning of the foliage of a single tree or a small group of trees, from the bottom up. Sometimes, also called candling. Torching is an extreme form of fire behavior, similar to but less extreme than crowning in that crowning affects larger numbers, even entire stands of trees.

**USDAFS:** United States Department of Agriculture - Forest Service, what is commonly known as just "The Forest Service"

**Wildland-Urban Interface or Wildland-Urban Intermix (WUI):** The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Although ***Interface*** is the more general, more commonly used term; it technically refers specifically to the area where development and wildlands meet. ***Intermix*** indicates the presence of wildland vegetation/fuels intermingled throughout the developed area.