Neighborhood Mitigation Plan:
The Canyons

This Neighborhood Mitigation Plan (NMP) is a cooperative effort between The Canyons, the City of Castle Pines, and South Metro Fire Rescue (SMFR). This NMP assesses the hazards and vulnerabilities of this neighborhood, identifies a path for the neighborhood to adapt to the potential for wildfires, improves safety for residents and emergency responders, reduces home-ignition risks from wildfires, and prioritizes projects to address those risks.

Neighborhood Description

In March 2022, The Canyons had approximately 500 homes south of Hess Road and east of Interstate 25. Homes have fire-resistant roofing and exterior siding, but not all decking is fire resistant. The homes themselves represent the most significant values at risk. Residents are a mix of ages. There are no livestock in this growing neighborhood.

The neighborhood currently has a handful of commercial properties. Although most are model homes, the primary commercial structure is The Exchange, a popular coffee house and headquarters for Shea Homes representatives. There are plans for future commercial growth as well as an elementary school.

In terms of property governance, residents belong to The Canyons. Residents also are constituents of the City of Castle Pines and Parker Water and Wastewater District.

Infrastructure

Infrastructure consists of the basic systems that support neighborhoods physically, socially, and economically. Infrastructure includes the following systems: water, roads, electricity, and natural gas.

Water

- Homes in this neighborhood are connected to a water system operated by the Parker Water & Wastewater District (PWWD). The district's assets include wells, a water treatment plant, distribution system, hydrants, and storage at Reuter-Hess Reservoir.
- The neighborhood has fire hydrants that meet or exceed minimum flows for fire protection.

Roads

- There are two paved ingress/egress routes into the neighborhood, but both stem from Hess Road along the northern boundary of The Canyons. In the future, access roads are planned for the neighborhood's southwestern corner and eastern boundary.
- Roads in the neighborhood are paved and wide enough for fire apparatus as long as vehicles are parked along a single side of a roadways. Construction traffic has narrowed many of the roads. They are maintained by the City of Castle Pines.

Electricity

- CORE Electric Cooperative (formerly known as IREA) provides electrical service to the neighborhood. Electrical lines are buried.

Natural Gas

- Xcel provides natural gas service to the neighborhood

This infrastructure is vulnerable to interruption and damage from wildfires. Mitigation recommendations for individual buildings or sites are available from SMFR. Email ReducingRisk@southmetro.org to set an appointment. General mitigation recommendations are listed later in this plan.

Emergency Response

The first-due firefighting resources respond from SMFR Station 36 (421 E. Castle Pines Parkway) and Station 39 (475 W. Happy Canyon Road). SMFR has earned an ISO (Insurance Services Office) Public Protection Classification (PPC) rating of 1 for its entire service area. The rating, which is rare in the United States, represents the best fire protection according to insurance industry criteria and may provide a discount on homeowner's insurance policies to district residents.

The City of Castle Pines contracts with the Douglas County Sheriff's Office, which is based in Castle Rock, for law enforcement.

Douglas County provides emergency management services.

Ecological Context

Topography is one of the key factors that influences wildfire behavior, largely because fire typically burns faster uphill than downhill. Topography contributes to wildfire risk throughout the neighborhood. Homes built above slopes with native vegetation face a higher risk from low-, moderate-, and high-intensity wildfires than other homes.

The vegetation in this neighborhood is a combination of native and exotic tree, shrub, flower, and ground cover species. Unfortunately, many of the plants chosen for landscaping around homes can ignite quickly and produce significant radiant and convective heat. For example, junipers are nicknamed "little green gas cans" by firefighters. Each should be replaced with a fire-resistant ground cover or shrub.

Other plant species that are poor choices for wildfire-prone ecosystems are piñon pine, Pfitzer, cedars, Mugho pine, Austrian pine, arborvitae, and Scotch pine. None of these species nor junipers should be within 30 feet of a structure.

Gambel oak remains the dominant native vegetation species. Although it is deciduous, it contains a resin that vaporizes quickly in fire situations. Thus, this native plant tends to be volatile throughout the year, especially with current climatic trends toward warmer and drier conditions. Maintaining oak groves in the neighborhood is important to maintaining the character and ecosystem of The Canyons, but homeowners should be careful when planning backyard landscaping particularly upslope of these groves.

Fire History

The homes of The Canyons as well as the entire City of Castle Pines were built within a wildfire-prone ecosystem. Seven wildfires burned a total of nine tenths of an acre within the city boundaries west of I-25 between 2016 and 2020.

Additionally, the City of Castle Pines was threatened by the Cherokee Ranch Fire in October 2003. That wildfire began to the west of the city when high winds toppled a tree onto utility lines. The 1,000-acre wildfire burned eastward toward the city and stopped when a cold front brought lower temperatures and higher relative humidity to the region after sunset. Those conditions helped firefighters contain and extinguish the blaze.

Hazard Identification and Risk Reduction Recommendations

Community risk reduction takes a village; it requires individual actions and collective action to be effective over a longer term. Wildfire hazard identification is based on the following fire behavior concepts:

1. A given fuel (structure or vegetation) can produce a flame length 1 ½ times its height. Thus, a bush that is 12 inches tall can produce a flame length 18 inches in length; a tree that stands 12 feet tall can produce a flame 18 feet long. Shorter fuels produce shorter flames and release less heat.
2. Firefighters are unable to engage directly any flame length greater than four feet because of safety concerns. A direct attack places firefighters along the head or front of a wildfire where they create a handline—a path down to mineral soil—in front of the flames to stop its growth. When flames are longer than four feet, firefighters can use indirect attack techniques such as spraying water from further away or building a handline a distance away and burning out unburned fuels between their line and the fire.

   Flames between four and eight feet in length can be attacked directly with bulldozers and air resources such as air tankers and helicopters. Flames longer than eight feet can be attacked directly by air resources alone.
3. Before a fuel can burn, it must absorb enough heat to cause the remaining water in it to evaporate. The dry part of the fuel then absorbs more heat that causes the solid fuel to break apart into its gaseous state. It's the gaseous state that actually burns. Thus, denser, wetter fuels typically resist ignition longer than lighter, drier fuels.
4. Most deciduous trees and shrubs resist fire because they are full of water. Gambel oak, as noted above, is an exception. The resin inside oak makes it flammable for most of the year.
5. Plants that contain flammable resins, saps and oils are bad choices to have within 30 feet of homes. These "bad" plant species include Gambel oak, juniper, Pfitzer, cedar, arborvitae, Mugho pine, piñon pine, Austrian pine, and bristlecone pine, as well as decorative conifers such as Alberta or Norway spruce. They dry and vaporize quickly, which makes them vulnerable to igniting quickly. They also release significant heat.

6. Most structures ignite from embers: burning chunks of fuels lofted above a fire by the rising column of heated air (a convective column). When those burning chunks of fuel, which can be pea- to grapefruit-sized, land on other flammable fuels such as dead needles, dead leaves, junipers, or combustible deck furniture, they can ignite spot fires. Embers typically find vulnerabilities in the nooks and crannies of buildings.
7. Structures also can ignite from heat radiating laterally from burning fuels such as junipers and other buildings.
8. Ladder fuels are low-hanging branches of trees. If they ignite, they allow flames to "climb" into oak, spruce, and pine canopies. By removing these ladder fuels, flames can stay on the ground where they typically are shorter and firefighters have an opportunity to extinguish them directly.

SMFR personnel conducted surveys of the neighborhood in March 2022 to determine recommendations for the neighborhood collectively as well as for individual property owners. These surveys were done from public roadways. Below are recommendations for property owners based on common hazards.

As recommendations, they will not be enforced by SMFR, but they will reduce the potential for ignitions and improve safety for both residents and firefighters. During a wildfire incident in which homes or other buildings are threatened, firefighters will prioritize structure protection based on what they deem defensible in light of current and expected fire behavior and weather conditions. Ideally, homeowners will conduct mitigation that allows their homes to withstand low- and moderate-intensity wildfires without firefighter intervention.

Private Property

- Trim branches away from eaves and exterior walls. Trimming these branches will maintain the integrity of those structural components and prevent flames from having a direct route to your home.

- Eliminate fuels under decking.

- Remove dead pine needles and dead leaves from roofing, gutters, gutter screens, and along the base of walls. These piles of dead vegetation are easy fuel for embers.

- Add 1/8-inch mesh to vents to prevent embers from entering ductwork, attics, and eaves. Embers may still enter those vents, but they shouldn't hold enough heat to threaten the home.

- Wood fencing can act like a fuse and lead flames to homes. Minimize vegetation growing along wood fences that connect to homes. Consider replacing wood posts and slats adjacent to homes with composite materials that resist ignition.

- Prune vegetation around utility boxes and fire hydrants.

- Replace junipers and other flammable shrubs and groundcover within 30 feet of buildings with native wildfire-resistant species including the following options:

Fire-Resistant Groundcovers		
Common Name	**Watering**	**Lighting**
Creeping grape holly	Low	Shade
Kinnikinnick	Medium	Either
Mat penstemon	Low	Sun
Mouse ear chickweed	Medium	Partly Shaded
Northern bedstraw	Medium	Shade
Rosy pussytoes	Medium	Partly Shaded
Small-leaf pussytoes	Medium	Partly Shaded

Fire-Resistant Low Shrubs		
Common Name	**Watering**	**Lighting**
Adam's needle	Medium	Partly Shaded
Antelope bitterbrush	Low	Sun
Apache Plume	Low	Sun
Banana/broad-leaf yucca	Very Low	Partly Shaded
Bog birch	High	Partly Shaded
Buckbrush/Mtn. Lilac	Medium	Sun
Golden currant	Low	Filtered
Little-leaf mockorange	Medium	Sun
Little-leaf mtn. mahogany	Very Low	Sun
Mountain ninebark	Low	Sun
Native wild rose	Medium	Partly Shaded
Ocean spray/rock spirea	Low	Partly Shaded
Rabbitbrush	Very Low	Sun
Redtwig dogwood	High	Either
Shrubby cinquefoil	Medium	Partly Shaded
Spanish bayonet	Very Low	Partly Shaded
True mtn. mahogany	Low	Sun
Wax flower	Medium	Either
Western sand cherry	Low	Sun

Fire-Resistant Large Shrubs and Trees		
Common Name	**Watering**	**Lighting**
American wild plum	Medium	Partly Shaded
Aspen	Medium	Sun
Boulder raspberry, thimbleberry	Medium	Partly Shaded
Filbert, beaked hazelnut	High	Partly Shaded

Hawthorn	Medium	Sun
Mountain mahogany	Low	Sun
Peachleaf willow	High	Partly Shaded
Pin/fire/wild/red cherry	Medium	Partly Shaded
Ponderosa pine	Low	Sun
River birch	High	Partly Shaded
Rocky Mountain maple	Medium	Partly Shaded
Saskatoon alder-leaf serviceberry	Medium	Partly Shaded
Silver buffaloberry	Medium	Partly Shaded
Tall ninebark	Medium	Partly Shaded
Thinleaf alder	High	Partly Shaded
Utah serviceberry	Low	Sun
Wasatch maple	Medium	Partly Shaded
Western chokecherry	Medium	Partly Shaded
Western mountain ash	Medium	Partly Shaded

Residents can request a personalized free home wildfire risk assessment of their properties by emailing ReducingRisk@southmetro.org. These assessments typically last 20-30 minutes.

Open Space/Parks
Properties adjacent to open space face additional risks from the proximity of vegetation managed less often than that on adjacent private property. The impact of open space mitigation is leveraged with backyard mitigation and vice versa.

The following recommendations from SMFR, which are available in the 2022 Neighborhood Mitigation Planning Guide, apply to these open space areas.

- Cut back Gambel oak along the fence and property lines. The oak-less width between remaining oak trees/shrubs and fence lines should be at least 1 ½ times the remaining oaks' height.

- Within the remaining oak groves throughout open space thin at least 20% of stems and trunks and remove ladder fuels (low-hanging branches) within six feet of the ground.

- Mow grasses along backyard property lines. A mow strip at least six feet wide (the width of a typical commercial mower deck) will provide a speed bump as wildfires burn from taller grasses into mowed grasses, lowering flame intensity and reducing speed of spread.

SMFR will provide specific prescriptions for each open space tract as requested by the land management entity.

There are several options for treating Gambel oak including outright removal, top-kill with mastication and follow-up mowing/trimming new growth, removing ladder fuels,

thinning a percentage of stems from groves, restricting the height of oak, and clumping oak into groves. This work can be performed mechanically, chemically, manually, or with goats.

Infrastructure

- Maintain three feet of clearance around fire hydrants. Mow grasses during the growing season, trim or remove larger vegetation, and clear snow when necessary.
- Mitigation around utility infrastructure should emulate that of residential buildings or fire hydrants.

Evacuations

It's essential that residents of this neighborhood prepare for evacuations generated by wildfires or other emergencies. The goal of an evacuation is to move civilians safely and quickly out of the way of impending hazards, but poor preparation can result in confusion, injuries, and deaths.

SMFR utilizes messaging and materials from the national Ready, Set, Go campaign to empower residents of its fire district to evacuate safely. The complete guide is available at no cost at www.southmetro.org and www.wildlandfirersg.org. SMFR also can provide presentations on evacuation preparedness.

Residents should register for Douglas County's reverse emergency notification system called Code Red to receive emergency information such as pre-evacuation and evacuation notices. Register land lines and cell phones by following the links to the system at dcsheriff.net.

One way to prepare for an evacuation is to practice. Families should give themselves 30 minutes to assemble a go-kit and load their vehicle(s). They also should practice driving to their designated family meeting place, preferably in a different zip code. Families also can use that evacuation drill to practice their communications plan of notifying a family member or friend in a different zip code or region of their status and asking that person to contact other family members.

Risk Reduction Priorities

Based on this analysis, SMFR offers the following recommendations for The Canyons:

Priority	General Project	Timeline	Guidance
1	Conduct mitigation on private property based on recommendations above. Open space mitigation is more effective with private property mitigation.	2022	Residents are encouraged to contact SMFR for a free, in-person home wildfire risk assessment to create a written plan as required by local and state regulations. Email Einar.Jensen@southmetro.org to schedule an assessment.

2	Open Space Mitigation	2022	See above
3	Conduct an evacuation drill	2022	Collaborate with SMFR and DCSO to practice evacuating the neighborhood.
4	Provide multiple educational opportunities for large and small groups of residents.		See below

Additionally, SMFR recommends that The Canyons hosts opportunities (in-person and/or virtual) to educate residents about wildfire risk and preparedness utilizing resources such as those from the Ready, Set, Go project and personnel from SMFR, Colorado State Forest Service, Douglas County, and/or other entities. These subject matter experts can attend meetings and community events, contribute to newsletters and websites, and conduct property risk assessments when requested by residents.

Risk Reduction Resources

SMFR recognizes that wildfire mitigation can be expensive. The following programs may assist homeowners or the HOAs with some of those costs:

- As individuals conduct wildfire mitigation on personal property, a percentage of expenses may be subtracted from state taxable income. The details are outlined in §39-22-104(4)(n), Colorado Revised Statutes and www.taxcolorado.com, but the quick version is that the mitigation applies to vegetation rather than structural changes. The total amount of the subtraction may not exceed $2,500.

- The Douglas County Soil Conservation District may have grants or cost-sharing programs for mitigation projects. Check this website for information: https://douglasconserves.org/grants/

- The City of Castle Pines is an essential partner. In the future, it may have funding to assist with grant matching, resources for cost-sharing, and personnel who can write letters of support for projects.

- SMFR personnel are available to write letters of support for projects and provide prescriptions for open space mitigation.

SMFR recommends that this neighborhood mitigation plan be updated regularly to track achievements and adjust priorities.