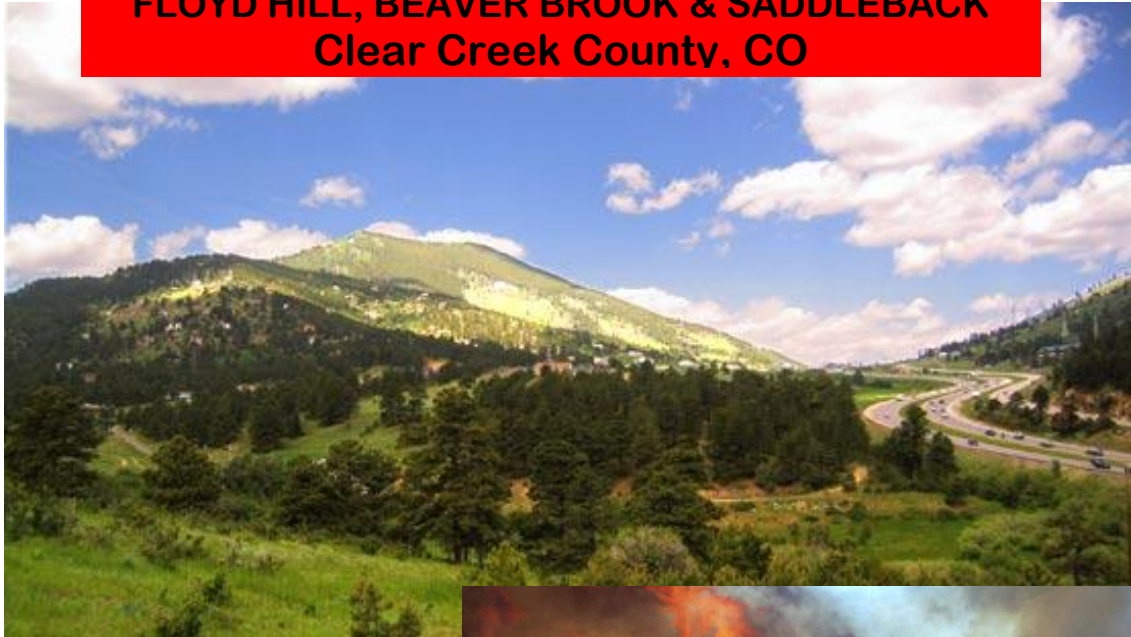


***COMMUNITY WILDFIRE
PROTECTION
IMPLEMENTATION PLAN***

**FLOYD HILL AREA to include
FLOYD HILL, BEAVER BROOK & SADDLEBACK
Clear Creek County, CO**



CWPIP Certification

The Floyd Hill/Saddleback/Beaver Brook Community Wildfire Protection Implementation Plan (CWPIP) was developed in accordance with the guidelines set forth by the Healthy Forests Restoration Act (2003) and the Colorado State Forest Service's Minimum Standards for Community Wildfire Protection Plans (CWPP) (2009).

This plan is under the umbrella of the Clear Creek County CWPP and portions of the Evergreen Fire Protection District CWPP. As such it provides local analysis and implementation recommendations for the Floyd Hill area. The plan:

- was collaboratively developed – residents, interested parties and state and federal land management agencies managing land in the region of Floyd Hill have been consulted;
- identifies and prioritizes areas for hazardous fuels reduction treatments and recommends the types and methods of treatment to reduce the wildfire threat to values at risk in the area;
- recommends measures to reduce the ignitability of structures throughout the plan area.

The following entities mutually reviewed and agree with the contents of this Community Wildfire Protection Implementation Plan:

CWPIP Team Chairman	Date
Clear Creek Fire Authority	Date
Evergreen Fire Protection District	Date
Clear Creek County Office of Emergency Management	Date
Colorado State Forest Service, Golden District	(Reviewed by) Date

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Section 1: COMMUNITY WILDFIRE PROTECTION PLANNING

The Floyd Hill, Saddleback and Beaver Brook Community Wildfire Protection Implementation Plan (CWPIP) provides a coordinated assessment of neighborhood wildfire risks and hazards and outlines specific mitigation treatment recommendations designed to make the community a safer place to live, work and play and enable the community to live with fire as a natural part of the landscape ecosystem. Specifically, it is a strategic plan which provides information and encouragement to homeowners to create defensible space and achieve fire resistant structural integrity. The plan makes recommendations concerning evacuation routes, road corridor mitigation treatments, and fuels treatment projects, in order to achieve risk reduction and improve the area's capability to withstand wildfire.

As most of the area is private land it is extremely important for landowners to take action to create Defensible Space on their land. A later section of the plan demonstrates what can be done while still leaving the area attractive. A landowner does not have to clear cut their property to achieve defensible space against wildfire. But without action the damage to a home or other buildings can be significant.

There are many values at risk for this area. Some of those include life, property, power lines, wildlife, and others.

Once the CWPIP is finalized and adopted, it is the responsibility of the community to move forward and implement the action items. This may require further planning at the project level, acquisition of funds and assistance through grants or other means, or simply motivating individual homeowners. **It should be emphasized that the CWPIP is a living document to be revisited on a regular basis and revised as needed.**

The Team – Local residents and agencies involved in developing this plan:

- Residents of the Floyd Hill, Beaver Brook, Saddleback area
 - Josh Lewis, Team Leader
 - Linda Berteau, Chris Bierman, Mary Cain, Keith Briggs, Jeff Dedisse, Reg Fleming, Sid Friedman, Pete Helseth, Kris Kinzli Lee, Hunter Shriner, Kimberley Steele, and Julie Westland
- Southern Rockies Conservation Alliance: John Chapman, Team Facilitator
- Colorado State Forest Service: Allen Gallamore, Megan Sweeney, Travis Griffin
- US Forest Service: Clear Creek Ranger District; South Zone Office
- Clear Creek Office of Emergency Management: Kathleen Krebs
- Evergreen Fire Rescue: Garry Dejong
- Clear Creek Fire Authority: Kelly Babeon

This CWPIP is not a legal document. There is no legal requirement to implement the recommendations herein. This is the case for CWPPs, also. As stated in the Clear Creek County CWPP treatments on private land may require compliance with county land use codes, building codes, and local covenants. Treatments on public lands will be carried out by appropriate agencies and may be subject to federal, state, and county policies and procedures

such as adherence to the Healthy Forests Restoration Act (HFRA) and National Environmental Policy Act (NEPA).

Decades of aggressive fire suppression in fire-dependent ecosystems, coupled with persistent drought, disease and insect infestation, have all converged to create a threat that is increasingly commanding both national attention and substantial resources. Following a particularly bad fire season in 2000, Congress put forth The *National Fire Plan* and the *Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy*. The intent of these programs was to enable effective response to severe wildland fires and to better address their impact on communities.

In the Healthy Forest Restoration Act (HFRA) in 2003, Congress directed communities in the Wildland/Urban Interface (WUI) to prepare a *Community Wildfire Protection Plan (CWPP)*. Once completed, a CWPP provides statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects.

The HFRA of 2003 provides the impetus for local communities to engage in comprehensive forest and wildfire management planning as well as incentive for public land management agencies to consider these recommendations as they develop their own strategic management plans. The HFRA provides communities with a flexible set of assessment procedures and guidelines that facilitate a collaborative standardized approach to identify wildfire risks and prioritize mitigation actions. A CWPP addresses such factors as:

- Stakeholder collaboration;
- Public agency and local interested party engagement;
- Mapping;
- Risk assessment – fuels, historical ignitions, infrastructure, structural ignitability, local resources, and firefighting capability;
- Hazard reduction recommendations; and
- Strategic action plans.

The Community Wildfire Protection Implementation Plan (CWPIP) for the Floyd Hill area is under the umbrella guidance of the Clear Creek County county-wide CWPP and portions of the CWPP prepared for the Evergreen Fire Protection District. This CWPIP uses existing data and reference where appropriate. Those plans contain detailed information on the area, wildfire history, characteristics and hazards, and evaluations of areas with recommended actions. Readers should consult and become familiar with both of these plans. The Floyd Hill area CWPIP focuses on hazard analysis and mitigation project recommendations to lessen the impact of wildfire. These recommendations will enable the community to seek grant and resource assistance, and deal more directly with residents in education, information and project work. Inclusion of the area in a concurred plan enables residents to qualify for the CO state tax advantage for defensible space work on their properties.

This CWPIP provides wildfire hazard and risk assessments and mitigation recommendations for three select communities situated between 7,500 and 9,000 feet elevation along the I-70 corridor 30 miles west of the greater Denver, Colorado metropolitan area.

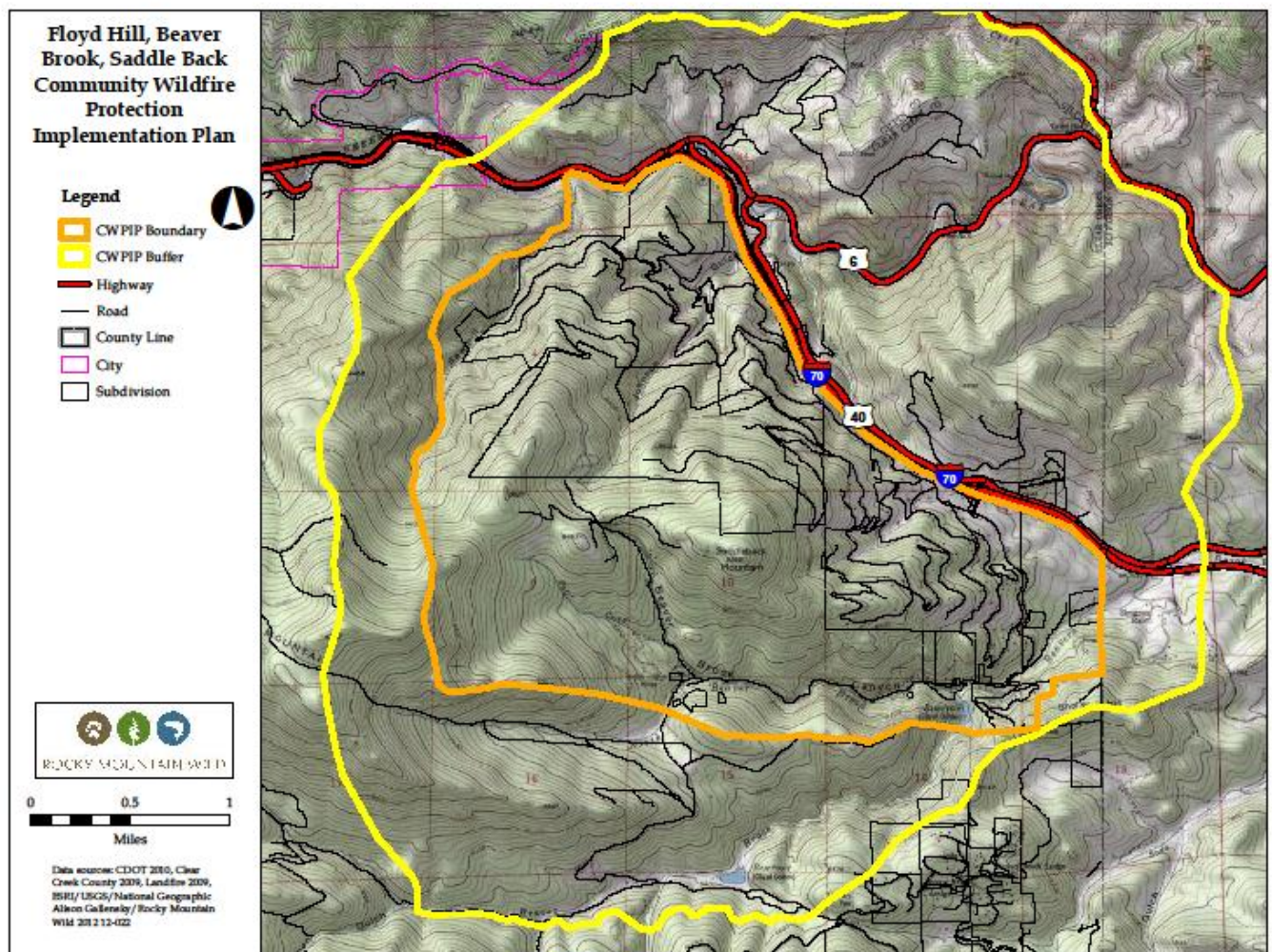
Section 2: THE FLOYD HILL AREA & COMMUNITY RISK ANALYSIS

2.1 THE PLAN AREA: TOPOGRAPHY AND VEGETATION

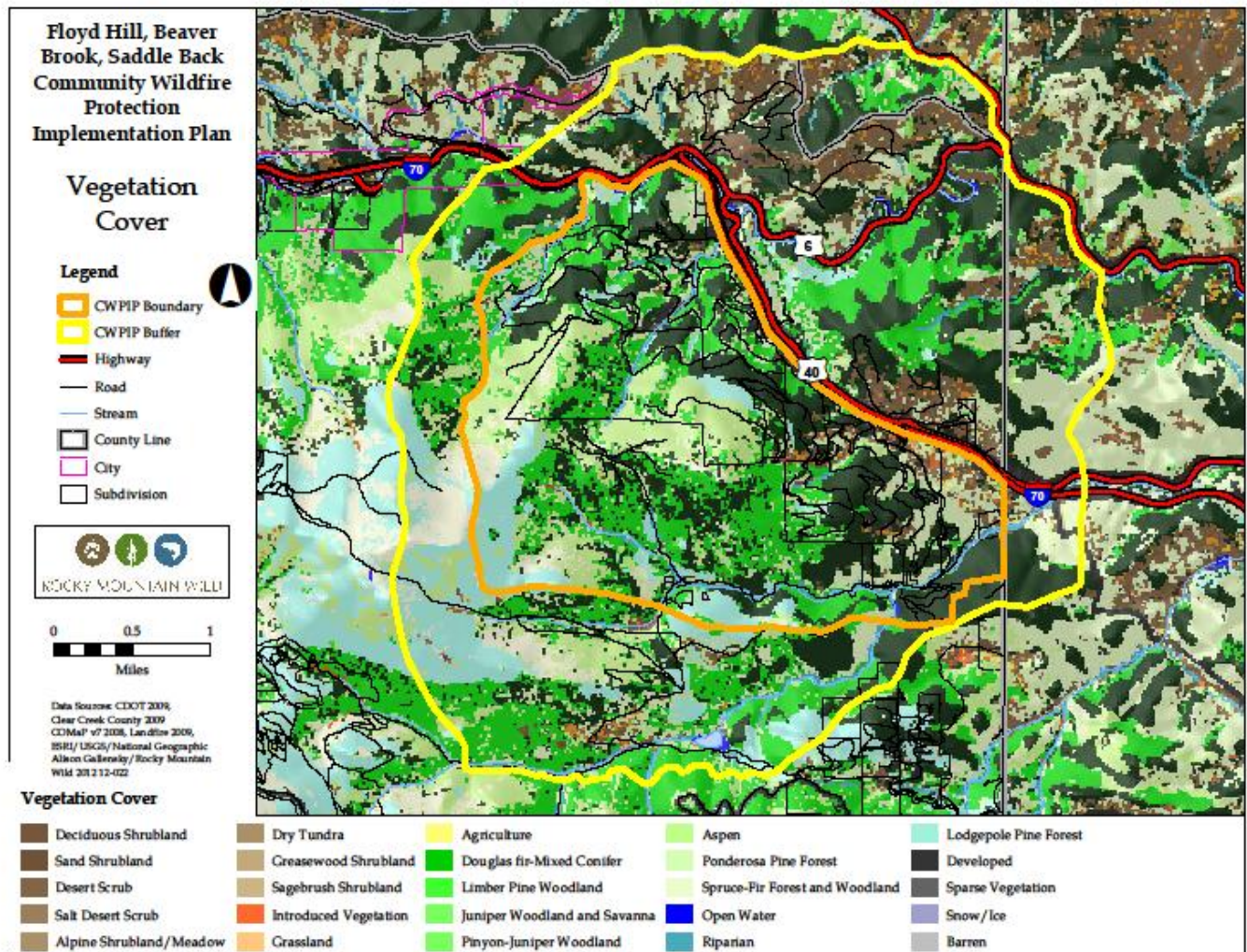
The CWPIP area (See following map) encompasses the Floyd Hill, Beaver Brook and Saddleback (including Grand Preserve) neighborhoods. The area is adjacent to I-70, (exit 248), west of Denver. It occupies an ecosystem niche in the montane system and a small area on Saddleback Mountain and a few other ridge tops within the subalpine system. The plan area includes a buffer zone surrounding the immediate neighborhoods which was considered in plan recommendations. The neighborhood areas of private properties are intermixed with lands under management of the Clear Creek County Open Space Authority. The Arapaho National Forest is adjacent to the south and west. Additional private lands lie to the north and east.

The ***Montane Ecosystem*** occurs at elevations between approximately 5,600 and 9,500 feet. Dry, south-facing slopes of the Montane often have open stands of large ponderosa pines. Spacing of ponderosa pines is somewhat related to available soil moisture. Grasses and shrubs may grow between the widely spaced trees on dry slopes. North aspects of the montane ecosystem retain more soil moisture and support denser stands of conifer that are less drought resistant. The trees may be a mixture of Douglas fir, Lodge pole pine, Ponderosa pine and an occasional Engelmann spruce. Shade-tolerant plants may grow on the forest floor. Montane soils with high moisture content may support groves of quaking aspen. Along streams or the shores of lakes may be found: willows, mountain alder, and water birch. In a few places, blue spruce may grow near streams and sometimes hybridize with Engelmann spruce. Trees common to Clear Creek County's Montane Ecosystem include Ponderosa pine, Douglas fir, Lodge pole pine, and Quaking aspen. Common shrubs include Antelope Bitterbrush, Kinnikinnick, Common Juniper, Holly Grape, Wax Currant, Big Sage, and Rocky Mountain juniper.

The ***Subalpine Ecosystem*** occupies elevations approximately between 9,000 and 11,000 feet. A typical subalpine forest may consist mostly of subalpine fir and Engelmann spruce. However, previously-burned or disrupted areas may contain varying amounts, or even almost pure stands, of lodgepole pine. However once the forest is re-established, plant succession may result in increasing amounts of spruce and Subalpine fir. Limber pine may also be a part of subalpine forests. Trees common to CCC's Subalpine Ecosystem include subalpine fir, Engelmann spruce, and Limber pine.



THE CWPIP AREA AND ITS BOUNDARIES



VEGETATION TYPES IN THE CWPIP AREA

2.2 NEIGHBORHOODS AND HAZARD ASSESSMENTS

Community Risk Analysis Following are the Floyd Hill CWPIP neighborhoods, their physical descriptions and their fire hazard assessments. These descriptions are from the Community Assessment Surveys in the Clear Creek County and Evergreen Fire Protection District CWPPs. These plans should be referred to for overall area hazard analysis and fire history. **All Floyd Hill area neighborhoods are rated Extreme (see hazard chart, Appendix C)**

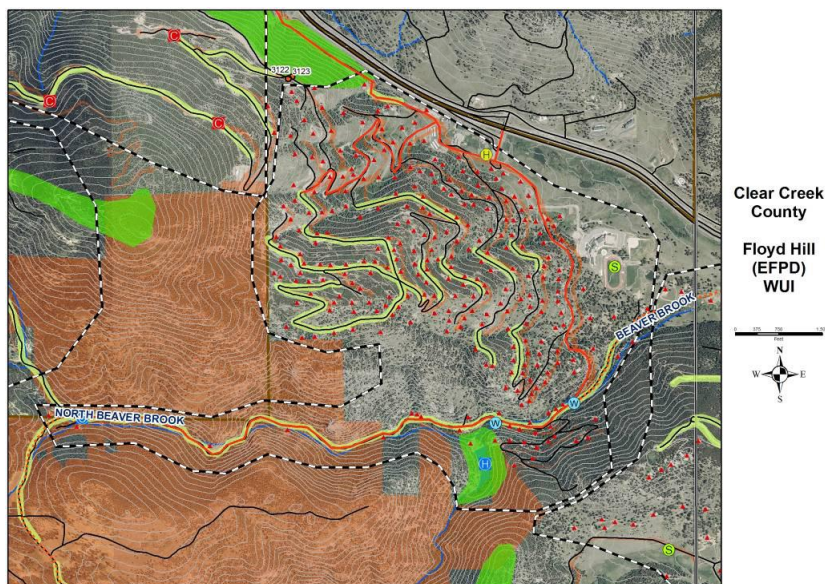
Areas shown in green are recommended areas for mitigation treatment. They involve both public and private land. They were mapped and evaluated by the team and selected treatments recommended. These appear in Section 5 as priority recommendations for implementation.

The Values at Risk identified in the planning area: life and property; transportation and power line corridors; area setting (wildlife and vegetation).

Floyd Hill **EXTREME**



- **Community Design**
236 observed homes. Single access route for main subdivision and Beaver Brook Canyon. Road surface is mixed paved and non-surfaced but generally good with 2-way access throughout, grade is steep at switchbacks. Two +2,000 foot secondary roads with very tight turnarounds. Sinuous road layout. Housing density is moderate with 1 to 5 acre lots. 49% of homes <30 feet and 46% of homes with 30-70 feet defensible space. Construction and roofing materials predominantly flammable. Emergency water supply sources were not observed.
- **Fuels**
Vegetation type is controlled largely by slope aspect with grass, brush and open ponderosa pine stands predominant on south and southeast facing slopes, and heavier stands of mixed conifer, lodge pole pine and Douglas fir on most north facing slopes; vegetation has an upslope linear consistency with meadows forming. FBFM 2, 4, 8, 9, 10



Saddleback **EXTREME**

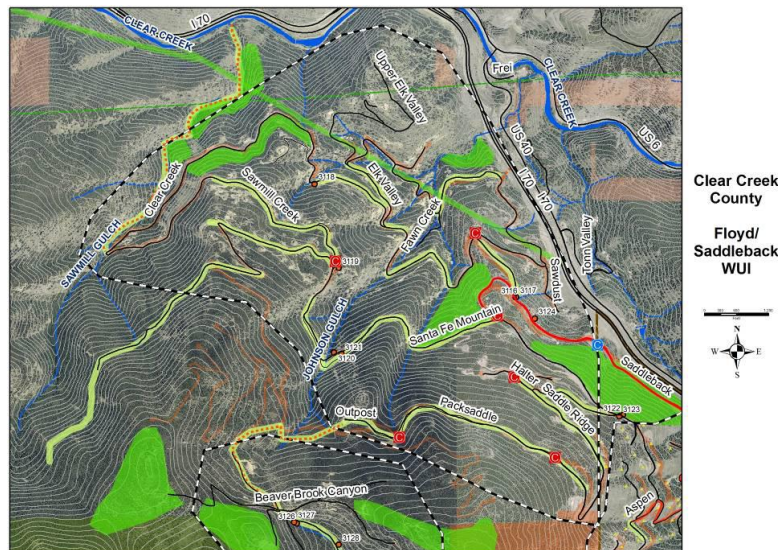


- **Community Design**

151 Addresses. Primary 2 lane access on Saddleback Rd. with paved/compact gravel surfaces that are soft in many places. Many switchbacks hard to navigate. Most secondary roads lead out of neighborhood so community map recommended to emergency responders navigate. One turnaround at neighborhood entrance. Half of the homes observed have <30 feet defensible space. Close to 40% of home sites built within 300 feet of a ~40% slope. Construction and roofing materials predominantly flammable. No emergency water supply observed.

- **Fuels**

Rocky understory with tall grasses including smooth brome and a light litter/slash build-up. Vegetation type is controlled largely by slope aspect with grass, brush and open ponderosa pine stands predominant on south and southeast facing slopes, and heavier stands of mixed conifer, lodge pole pine and Douglas-fir on most north facing slopes; meadows and open forest areas have a rocky understory with tall grasses including smooth brome and a light litter/slash build-up. FBFM 1, 2, 4, 8, 9, 10.



Beaver Brook **EXTREME**

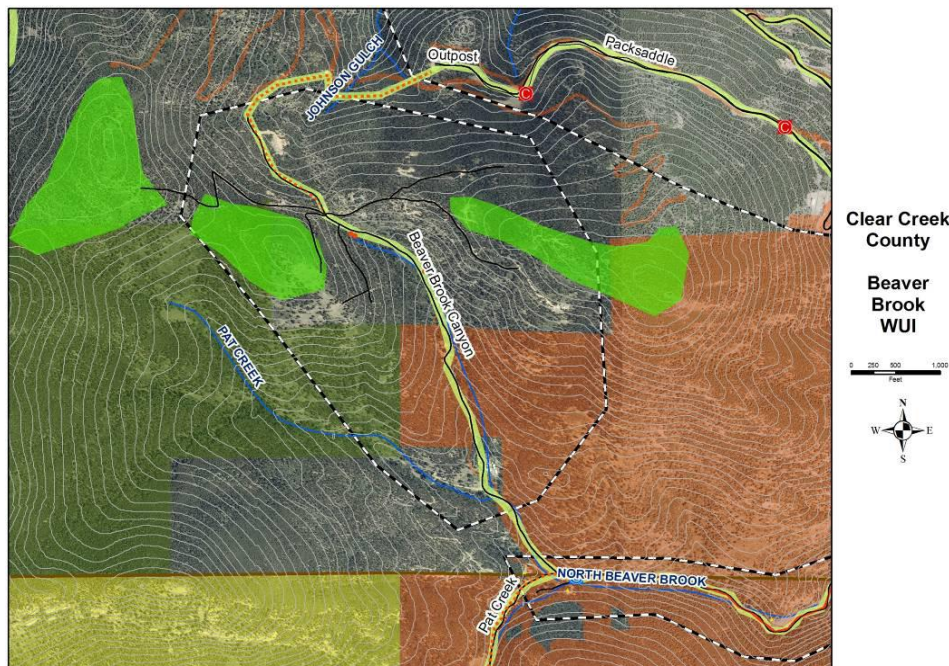


- **Community Design**

17 Addresses. Primary access > four miles, 1½ to single-lane gravel/dirt dead end with no adequate turnarounds. Access follows Beaver Brook Canyon from Floyd Hill then climbs a chimney to a high saddle west of Saddleback Mountain. Most homes are dispersed along the saddle and upper part of the chimney. Predominant construction and roofing materials are flammable. Fuel clearing on many homes was noted between roadway and structure, but all homes backed to forest with little to no fuel break to structure. Grade of road along this approach is steep. No emergency water supply was noted in the area.

- **Fuels**

Moderate to heavy Douglas-fir in chimney on approach. Mixed conifer with aspen near and on saddle. More open stands of Ponderosa, Juniper, and scrub on the few south-facing slopes. FBFM 5, 8, 9, 10.



Section 3: WILDLAND FIRE RESPONSE: INFRASTRUCTURE AND CAPABILITIES

A Community Wildfire Protection Implementation Plan needs to address existing protection capabilities and resources on hand for wildfire suppression and protection of life and property. As this plan is an implementation plan under the overall Clear Creek County CWPP those wishing to read detailed information on capabilities should refer to the CWPPs for Clear Creek County (CCC) and the Evergreen Fire Protection District (EFPD) and to the websites for the Clear Creek Fire Authority (CCFA) and for Evergreen Fire Rescue (EFR).

Clear Creek Fire Authority:

Wildland firefighting operations on all private lands in CCC will be the responsibility of the Clear Creek Fire Authority, excluding lands that are in the EFPD. The CCFA shall be responsible for initial attack on any wildland fire within its response jurisdiction. The CCFA is comprised of approximately 60 volunteer firefighters, one full-time paid chief, one full-time paid deputy chief and two part-time paid staff. There are currently two lieutenants, and two captains under the command of the CCFA chief.

CCFA maintains seven stations and is constructing an eighth. It has 21 apparatus units. Station 6 is on Floyd Hill and has an aerial ladder, tanker and an ambulance.

The Clear Creek County Sheriff's Office has developed a Wildland Fire Hand Crew to augment the existing wildfire (and other emergency) response capabilities of CCC. The crew consists of 7 full-time members and 18 volunteer members, and they have three apparatus units.

Evergreen Fire Protection District

Evergreen Fire Rescue (EFR) operates out of 8 fully equipped stations located throughout the district housing 27 pieces of emergency apparatus. Station 7 with fire apparatus is located near the Beaver Brook exit (#248) off of I-70. Evergreen Fire Protection District is comprised of approximately 85 volunteer firefighters, 33 full-time paid staff, and 12 part-time paid staff.

The vast majority of firefighters, over 90 percent, are red-carded as wildland firefighters. This response capability, combined with good quality equipment and apparatus, provides a strong foundation for building a wildland fire suppression organization.

Both Evergreen Fire Rescue and the Clear Creek Fire Authority participate in the Clear Creek County Annual Operating Plan (AOP). The AOP details procedures and resources to be used for wildland fire suppression within Clear Creek County. Participants to the AOP also include USFS, CSFS, and the CCC Sheriff's Office (SO).

The AOP allows CCFA and EFR to do initial attack on wildfires within the Arapaho National Forest that are within two miles of private property within its district.

Section 4: LANDOWNER ACTION; DEFENSIBLE SPACE

Defensible space is an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides *room for firefighters to do their jobs*. **Your house is more likely to survive a wildfire** if grasses, brush, trees and other common forest fuels are managed to reduce a fire's intensity.

You, as residents of the Floyd Hill, Beaver Brook & Saddleback CWPIP area, are the most important component of this plan! Homeowners are often discouraged from completing defensible space because they believe their lot sizes are too small for effective fuel mitigation. **But your actions are truly meaningful** in protecting life, property, and the beauty of the area. Wildfire is a natural part of an ecosystem. The actions you take will determine how fire affects your property.

To quote the Colorado State Forest Service, "Fire is capricious. It can find the weak link in your home's fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor" (Natural Resources Series #6.302, *Creating Wildfire Defensible Space Zones*).

You do not have to clear cut your property! Defensible space can be created in an esthetically pleasing manner that maintains privacy and the natural character of the community, and restores forest health.



Before Defensible Space Treatment



After Defensible Space Treatment

Figure 25: Examples of Defensible Space

The CWPIP cannot mandate a property owner take any action. It is hoped you will see how defensible space can be attractively created and realize when everyone takes action the broader neighborhood landscape is protected. The advantage of the CWPP is that it provides a framework for individuals and neighbors to work together to reduce fire hazard and restore forest

health. Communities with a CWPP are eligible for cost share programs and Colorado State income tax deductions for fuel mitigation expenses.

Research indicates homes with fire resistant roofs and defensible space have an 85 percent chance of surviving a wildfire while homes with neither of these characteristics have a 15 percent survival rate. An effective defensible space consists of flame resistant vegetation (aspen or large diameter trees without lower limbs), low flammability landscaping plants, mowed grass, lack of firewood stacks, and absence of fuel tanks immediately adjacent to structures. Structural ignitability is the fire resistance of materials used in the buildings themselves, and the design of the structure.

Full descriptions of effective actions can be found at the national website www.firewise.org, and in the Colorado State Forest Service publication *Creating Wildfire-Defensible Zones*, on the agency's website at <http://www.csfs.colostate.edu/>. **Consult with a forester; advice is available from the Colorado State Forest Service district office at 1504 Quaker Street, Golden, CO (303-279-9757), and from consulting foresters.**

A Summary of Defensible Space Actions

On larger properties the landowner has the opportunity to mitigate fire hazard over a much larger area. As the area of mitigation increases, the margin of safety increases as well. Take action on the property in three zones; the following zone descriptions are from *Creating Wildfire Defensible Zones*.

Zone 1 is the area of maximum modification and treatment. It consists of an area of 15 feet around the structure in which all flammable vegetation should be removed.

1. Stack firewood at least 30 feet away and uphill from structures.
2. If there is grass keep it well watered and mowed. Do not have shrubs directly beneath windows or next to foundation vents. Trim back tree limbs that overhang the house or encroach on the chimney area. If you have a favorite tree next to the home consider it part of the structure and remove nearby trees to avoid fire spreading into the home.
3. Use rock or bare earth landscaping beneath decks and do not use the area for storage.

Zone 2 is an area of fuel reduction. It is transitional between Zones 1 and 3. The size of this Zone depends on the slope of the ground where the structure is built. Typically, the defensible space should extend *at least* 75 to 125 feet from the structure. Remove stressed, diseased, dead or dying trees and shrubs. Thin and prune the remaining larger trees and shrubs. Remove ladder fuels to 8 feet above ground and thin trees in zones 1 and 2 to space their upper crowns 15' feet apart.

Zone 3 is an area of traditional forest management and is of no particular size. It extends from the edge of your defensible space to your property boundaries. Trees need not be thinned as heavily as in Zone Two, but should be separated enough that they receive sufficient sunlight, water and nutrients.

Mitigation of Structural Ignitability

1. **Most structures *DON'T* ignite from direct flame contact**, but from radiant heat (heat that doesn't warm the intervening air but does warm objects). As a fire burns the heat passes through air and windows to objects inside the home that warm to the point of ignition then smolder for hours. **You have an important role making the house less resistant to radiant heat.** Use non-combustible roofing material and non-combustible siding (Class C or better), and spark arresters on chimneys.
2. **Embers or fire brands also ignite house fires.** During fires the air contains embers and tosses them anywhere, including onto unburned fuels. A wildfire can create spot fires miles downwind. Embers can get stuck in "traps" on roofing, such as beside chimneys or in gutters and start new fires. Clean pine needles out of gutters and off roofing. **Screen attic and foundation vents with fine mesh screening.**
3. **Large windows are a threat** to homes because they allow radiant heat to enter the structure. Remove lacey and other decorative curtains when a fire approaches to prevent radiant heat from igniting them through the glass. Large windows, especially single-pane windows, are vulnerable to breaking from debris blowing in fire-generated winds and embers. Double and triple pane windows are more resistant to heat transfer.

Signing and Evacuation; all Properties:

1. **Homes need visible address signing** at the ends of their driveways. Emergency personnel respond based on street addresses and last names.
2. **Create an evacuation plan – in advance.** Include a meeting place outside your area, and a family member or friend outside of your area who can be a point of contact. Think of the **Four Ps**: Pets, Pills, Papers, and Photos. You may have only a short time to evacuate.
3. If you do leave the house, set a ladder in the driveway and connect garden hoses to spigots so firefighters can use your equipment to help defend your home.

Ready-Set-Go:

Clear Creek County endorses the Ready-Set-Go program (RSG) of wildfire action planning for residents and other property owners. This program assists firefighters to teach individuals who live in high risk wildfire areas and the wildland-urban-interface (WUI) how to best prepare themselves and their properties against fire threats.

The RSG Program stresses that when firefighters encourage residents to take personal responsibility for preparing their property and family for wildland fire, residents become an active part of the solution to the problem of increasing fire losses.

RSG works in complimentary and collaborative fashion with Firewise and other existing wildland fire public education efforts. It amplifies the messages to individuals to better achieve the common goal we all share of fire-adapted communities.

The RSG Program is a three step process that can significantly increase the safety of residents and the safety of responding firefighters. The three steps are:

1) Ready – Preparing for the Fire Threat; Be Ready, Be Firewise. Take personal responsibility and prepare long before the threat of a wildfire so your home is ready in case of a fire.

2) Set – Situational Awareness When a Fire Starts; Pack your vehicle with your emergency items.

3) Go – Leave early! Comply with any evacuation orders and follow evacuation plans early!

The RSG Program provides tools through its website: www.wildlandfireRSG.org.

A more complete description of the program is in Appendix D.

Section 5: IMPLEMENTATION RECOMMENDATIONS

An important and required part of a Community Wildfire Protection Implementation Plan is the recommendation of mitigation projects detailing actions that should be undertaken by the community, landowners, and adjacent land management agencies (county, state and/or federal). Public land projects, when combined with homeowner defensible space and structural protection, collaborate to provide area wide protection.

Wildfire mitigation is defined as the reduction of the probability and negative impacts of wildfire. Mitigation can be accomplished through wildland fuels management, non-fuels mitigation measures, and public outreach. Results are often most effective when these three approaches are pursued by governmental entities, citizen groups, and individuals working together.

Following are sections on how priority zones were selected, and detailing projects selected for the Floyd Hill Implementation Plan. As projects are completed or conditions change additional projects will be added in ongoing action by the CWPIP team.

Following analysis of the data collected during development of the CWPIP (including the CCC CWPP and the EFPD CWPP) the team is recommending a number of projects for initial action. The following pages contain maps and flow charts depicting the recommended mitigation projects. They are collaborative in nature as to priority projects and areas in which to carry out work. They generally follow direction given in the hazard assessments of the Clear Creek County and Evergreen FPD plans.

As much as possible, projects were established to include areas with common features. Among the features considered were forest types, fuel loads, ingress and egress routes, and values.

Consideration was given to a number of factors. These are:

1. **Values at risk:** Life and property are always the first values. Other values as mentioned earlier are: transportation and utility corridors and the natural values of vegetation and wildlife.
2. **Current level of activity:** Experience has shown that wildfire mitigation efforts are most effective when the community is involved. There has already been cooperative activity by landowners within each neighborhood. However there is a definite need for increased efforts to establish defensible space. Therefore, one of the first efforts is to educate landowners to increase awareness of the hazards of wildfire and the positive actions they can take on their properties.
3. **Proximity to public lands priority zone:** The Healthy Forest Restoration Act builds on efforts to restore healthy forest conditions near communities and essential community infrastructure. The Act emphasizes the need for federal agencies to work collaboratively with communities in prioritizing and developing hazardous fuel reduction projects.

5.1 PRIVATE LAND

- **Community Recommendations**
 - CWPIP team works with county and fire authority to provide information and education on wildfire hazards and behavior, defensible space and reduction of structural ignitability and other actions; use materials from FireWise, State Forest Service, and other available materials.
 - Team and community continue to hold work days (chipping and landowner assistance), demonstration days, and other community events to further project accomplishment.
- **Landowner Recommendations:**
 - Landowners will be encouraged to create defensible space and reduce structural ignitability
 - Work to make driveways and approach roads better for ingress/egress (need to meet standards allowing access by fire personnel and equipment).
 - Form community work groups or seek other forms of more advanced assistance to complete projects.
 - Become involved in community CWPP efforts.

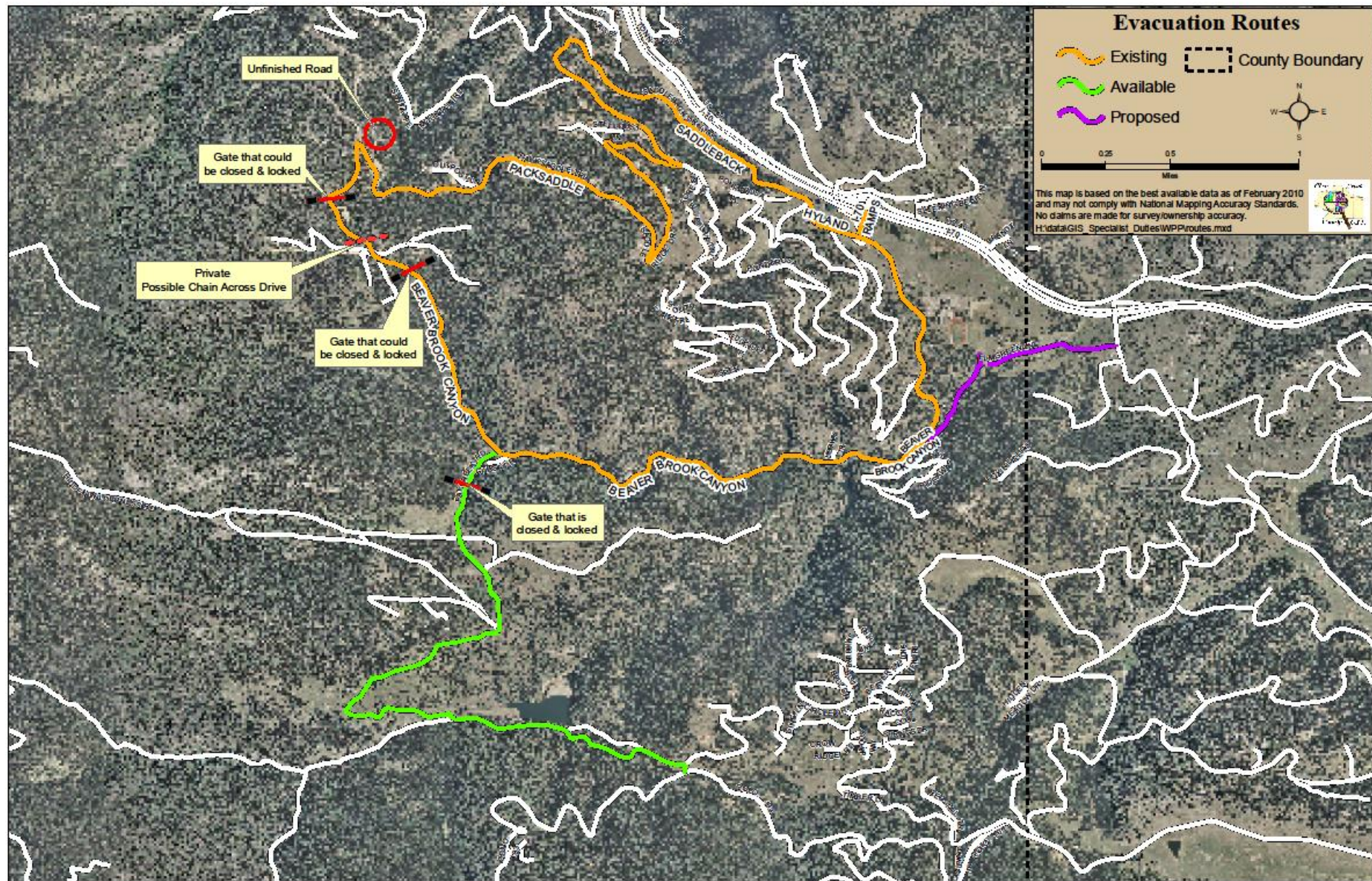
5.2 COMMUNITY EXIT ROUTES AND OVERALL ROAD PROJECTS

Given the nature of the terrain and that most of the area is privately owned, the team identified action to mitigate fire effects along roadways as a critical component of implementation. Creation and maintenance of ingress/egress will enable residents to move safely in the event of an emergency and also enable emergency vehicles and fire engines access to take action on wildfire to save lives, property, and the area itself.

5.2.1 EXIT ROUTES

Exit from the Floyd Hill area during a wildfire event could take place on almost any road in the area. Therefore virtually all roadways are being recommended for roadside thinning as a mitigation measure.

There are several routes which are recommended for improved treatment and/or access provisions to make them available for exit. The following maps depict these areas, followed by descriptions in order of priority. *Some of these areas involve two directions of action: 1) agreement by landowners for access across their properties in event of an emergency (this would be via written agreements and as part of an Emergency Plan); and 2) actual creation and maintenance of the route so it is usable when an emergency occurs.*



Top of Beaver Brook Canyon Road/Packsaddle Trail: 1) public education that the route exists; 2) use by emergency officials under terms of an Emergency Plan. This is the vicinity of the four notations on the left side of the map (above). There is physical continuity connecting these roads. Terrain is fairly steep, but the roads are passable by all types of vehicles. As the notations indicate this is not a public thoroughfare. The Clear Creek Fire Authority is aware of this connection and will utilize it if an emergency scenario dictates doing so. Members of the CWPIP team do not think the majority of Floyd Hill residents are aware of this potential exit route. It requires roadside thinning along its length.

Pat Creek Road: 1) Clear Creek County to follow through with development of the easement agreement with USFS for maintenance and use of the route. 2) Maintenance of route for use by residents and others in the event of an emergency.

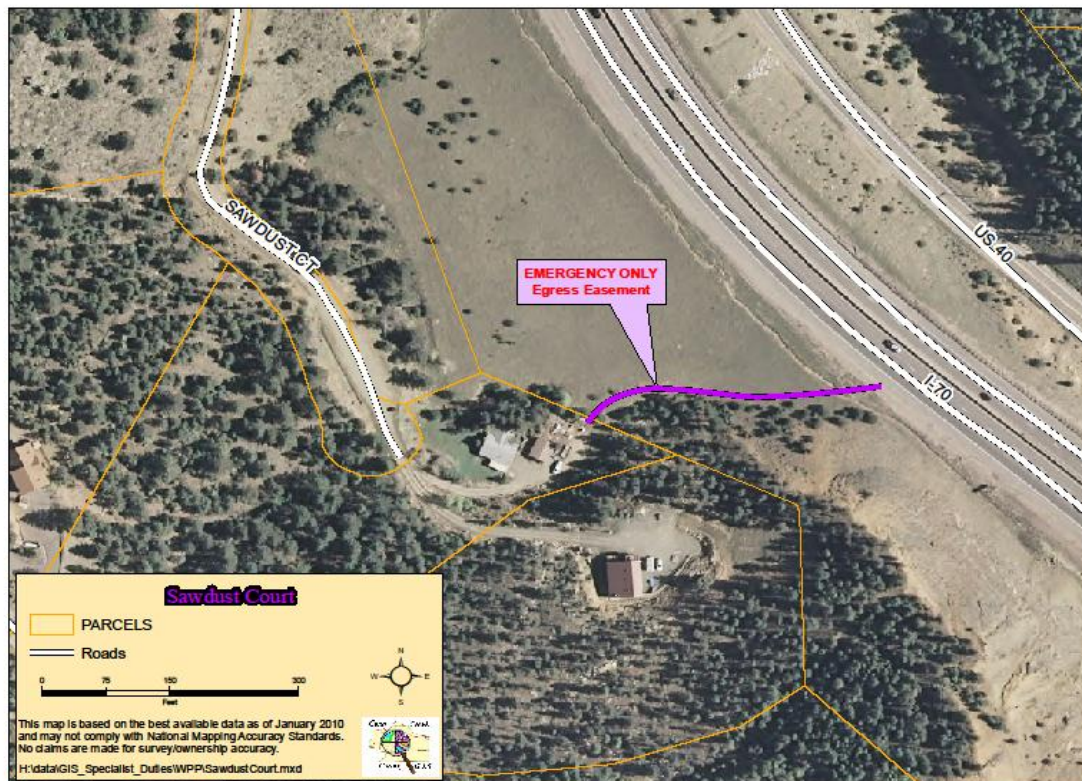
This is just to the right of the map legend. A small parking area and trailhead for hikers to access the non-motorized recreation area known as the Beaver Brook Watershed is located a few hundred feet downhill from Pat Creek Road on Beaver Brook Canyon Road. Signs point the way to follow a public access route from there through a residential area along the privately-maintained Pat Creek Road. This route leads to a locked gate. In the event of emergency, the Fire Department would unlock or knock this gate down. Most medium-clearance vehicles could make it across this 4.3 mile egress route to State Highway 103.

A transfer of ownership of most of the land behind the gate to the US Forest Service occurred in 2009. The Clear Creek County Open Space Commission still manages the area immediately behind and around the gate, but the road soon enters US Forest Service land. The County has an understanding with USFS to place a permanent maintenance and access easement on the whole length of this road, though that work is not yet complete. The Board of County Commissioners has authorized the Road & Bridge Department to improve the road with vehicular egress in mind, but more work is still needed.



Sawdust Court: 1) work with the County Sheriff and CDOT to obtain permit; 2) project by CDOT to make this exit route accessible when determined needed by authorities in charge of an emergency.

This route is shown on the following map. The County owns an emergency egress easement across the private property at the end of this cul-de-sac. It is chained and locked. The rough road that traverses this easement is said to have suffered erosion in a location that's within the CDOT right-of-way for I-70. This route accesses I-70 directly. CDOT will not allow access to the freeway without an on-ramp except in emergency situations.



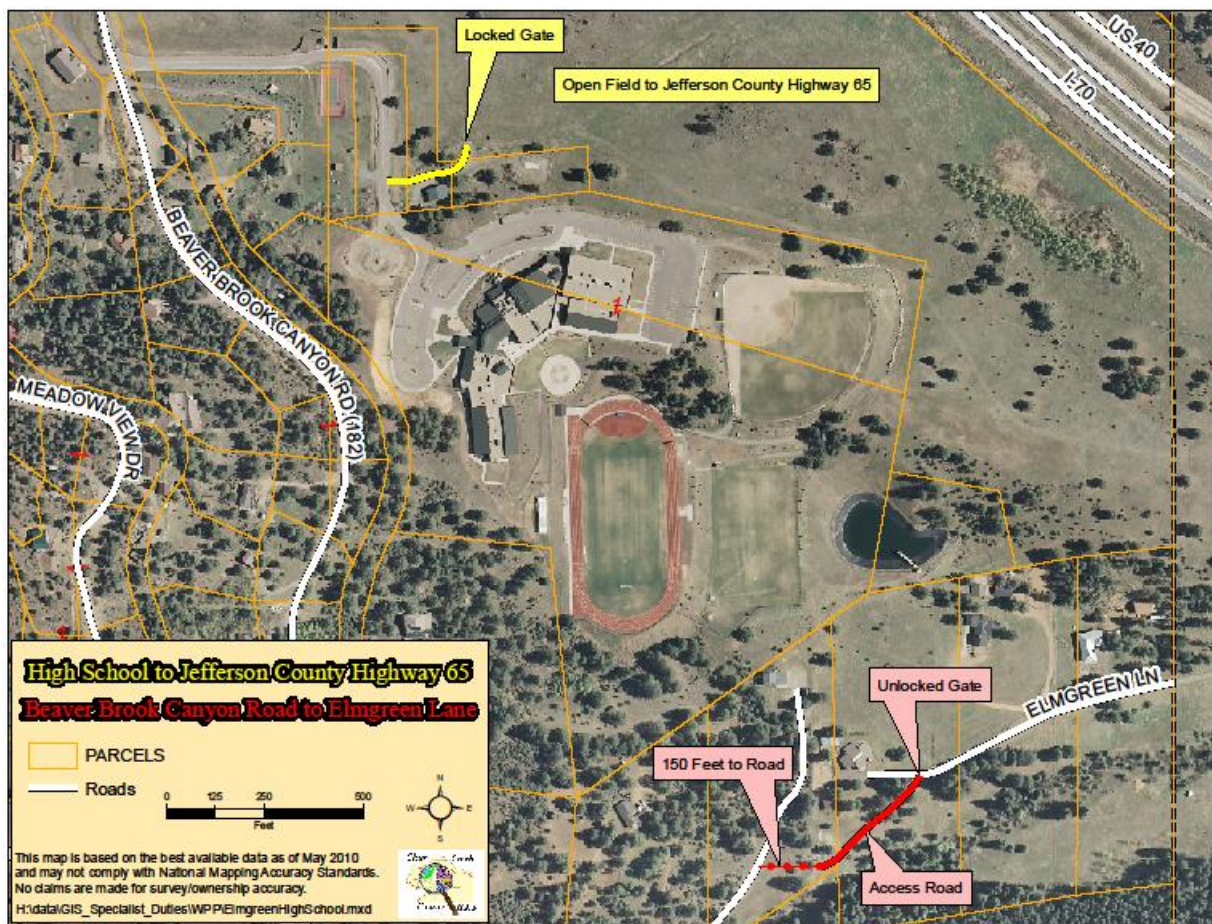
Clear Creek High School to Jefferson County Highway 65: This is shown on the following map and requires; 1) development of an agreement with the Elmgreen family, and 2) creation of a passable route.

The high school is noted as a potential a command center for emergency situations. An agreement with the Elmgreen family would allow residents to drive across the Elmgreen meadow parcel to an exit near the Beaver Brook Pet Center. The Sheriff could open a gate across the high school's driveway from the new playground (beside the school's water treatment facility). This route crosses an open field but most medium-clearance vehicles could make it to Jefferson County Highway 65. **This agreement was obtained in Sept., 2012. See Appendix E.**

Elmgreen Lane to Beaver Brook Canyon Road: This area is just ESE of the High School, also shown on the following map, and requires the CWPIP team to work with appropriate authority to gain agreement with current landowners to have the pasture crossed with a road that connects to the pump house. Fences could be left in place until emergency situations arise. The

school district and an adjacent landowner should also be contacted for permission to cross their land in an emergency.

Going westbound from Elmgreen Lane the Clear Creek School District has an access easement to the pump facility that brings drinking water to the High School. Cars can easily drive from Elmgreen Lane to the pump house. It is only a few hundred feet of pasture from there west to Brook Hollow, but there is a fence in the way. Elmgreen Lane accesses Jefferson County Highway 65, off the map to the right.



5.2.2 THINNING ALONG AREA ROADWAYS

Preceding project recommendations for evacuation routes and some of the following recommendations for fuels treatment areas involve some of the area roadsides. But the general recommendation is made to commence and pursue roadside thinning along all roadways in the Floyd Hill, Beaver Brook, and Saddleback area. The Clear Creek County CWPP states on its page for the Floyd Hill area, *“Develop shaded fuel breaks along all forested secondary community access routes. Anchor shaded fuel breaks to meadows.”*

General criteria to be applied: 1) steep, timbered slopes adjacent to the road; 2) close proximity of timber to the roadway itself (e.g. within 50 feet); 3) roads with only one way in and out.

The CWPIP team will collaborate with the Clear Creek Fire Authority to develop a priority listing of roadways for thinning. Following is the listing for the neighborhoods as developed in the Clear Creek County CWPP. Note that some of these are duplicates of actions recommended for evacuation routes.

Floyd Hill

- Shaded fuel breaks along all forested access roads and forested emergency access routes including Upper Beaver Brook Canyon Road
- Road access improvements including switchback widening and turnarounds on South Ponderosa and South Hyland.
- Street signage and home address improvements.

Saddleback

- Develop shaded fuel breaks along all forested secondary community access routes.
- Anchor shaded fuel breaks to meadows.

Beaver Brook

- Develop and maintain shaded fuel break along primary access in Beaver Brook Canyon and Upper Beaver Brook Canyon Road.
- Make driveways as accessible as possible using acceptable width standards so emergency vehicles can turn around to exit the driveway safely.

5.3 FUELS MITIGATION PROJECT AREAS

Both the Evergreen and Clear Creek County CWPPs contained maps of the various neighborhoods in the Floyd Hill complex depicting suggested areas for fuels mitigation treatments. Many of the areas contain private property and are located in very steep terrain where mechanical treatment would not be possible. To enhance the capability to obtain treatment crews/contracts the team selected portions of the areas for recommended treatment.

Wildfire behavior and severity in the planning area are directly related to weather conditions, topography, forest structure, and fuel loads. Because weather conditions and topography cannot be controlled, wildfire risk reduction focuses on vegetation-fuels management. Mitigation objectives include reducing surface fire intensity, reducing the likelihood of crown fire initiation, reducing the likelihood of crown fire propagation, and improving forest health.

Vegetation-fuel treatments are long-term in nature with the goal to improve forest health. Once projects are completed maintenance of defensible space, fire breaks, fuel breaks, and forest health will be on-going into the future.

Following is an overall map of the area showing where the various units are located. Following that are maps of the individual areas, in priority order, with the treatment recommendations shown.

5.3.1 Mitigation Techniques to be applied

5.3.1a Fuel Break

A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

Stand Densities

As stated earlier the Floyd Hill area occupies an ecosystem niche in the montane system and a small area on Saddleback Mountain and a few other ridge tops within the subalpine system. As noted in CSFS publications, crown separation is a more critical factor for fuel breaks than a fixed tree density level. A *minimum* 10-foot spacing between the edges of tree crowns is recommended on level ground. As slope increases, crown spacing should also increase. However, small, isolated groups of trees may be retained for visual diversity. Increase crown spacing around any groups of trees left for aesthetic reasons and to reduce fire intensities and torching potential. In area Parts of the Floyd Hill area have thick and aged stands of lodgepole pine and there is the potential for wind throw if fuel break thinning creates corridors in the forest. In such stands it is recommended that thinning be accomplished by leaving stands of trees separated from adjacent stands to create the desired spacing affect. This will assist these stands to be self supportive when wind events occur.

Fuel break Width/Slope

Percent slope %	Minimum uphill distance (ft.)	Minimum downhill distance (ft.)	Total distance of modified fuels (ft.)
0	150	150	300
10	140	165	303
20	130	180	310
30	120	195	315
40	110	210	320
50	100	225	325
60	100	240	340

***As slope increases, total distance for cut-and-fill for road construction rapily increases, improving fuel break effective width.**

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to15-foot spacing among tree canopies (Figure 5). Conifer trees would be limbed up approximately 10 feet from the ground. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested during the creation of the fuel breaks. Aspen are usually fire resistant and would add to the effectiveness of the fuel breaks. Increased Aspen dominance in

forests stands will improve forest health and aesthetics. Aspen saplings should regenerate from root sprouting in the openings created by harvesting the dead and diseased conifer trees.

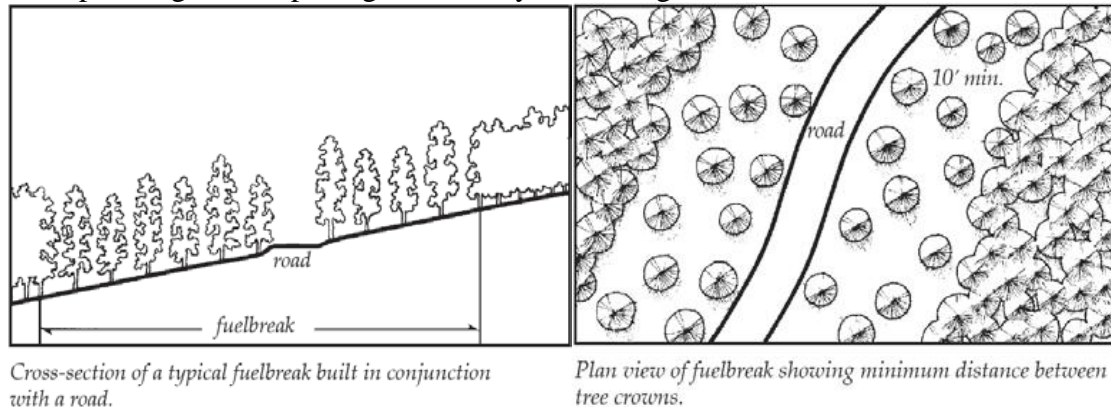


Figure 5. Fuel Break Diagram (Dennis not dated)

Two CSFS publications will be followed in planning and carrying out mitigation in the Floyd Hill area: *Guidelines for Forested Subdivisions and Communities*, (Dennis, not dated); and *Lodgepole Pine Management Guidelines for Land Managers in the Wildland -Urban Interface* (Dennis et al).

Costs of the various mitigation actions will vary. The Clear Creek County CWPP contains the following table of projected costs.

Treatment Alternatives and Costs

Treatment	Estimated Cost	Comments
Machine Mowing	\$90 - \$200 per acre	Appropriate for large, flat grassy areas on relatively flat topography.
Prescribed Fire	\$75 - \$300 per acre	<ul style="list-style-type: none"> • Can be very cost effective. • Ecologically beneficial. • Can be used as training opportunity for firefighters. • Cost varies with complexity. • Carries risk of escape, which may be unacceptable in some WUI areas. • Unreliable scheduling due to weather and smoke management constraints.
Brush Mastication	\$300 - \$500 per acre	<ul style="list-style-type: none"> • Brush species (Gamble oak in particular) tend to resprout vigorously after mechanical treatment. • Follow-up treatments with herbicides, fire, grazing, or further mechanical treatments are typically necessary. • Mastication tends to be less expensive than manual treatment and eliminates disposal issues.
Timber Mastication	\$300 - \$1,200 per acre	<ul style="list-style-type: none"> • Materials up to 10 inches in diameter and slopes up to 30 percent can be treated. • Eliminates disposal issues. • Environmental impacts of residue being left onsite are still under study.
Manual Treatment with Chipping or Pile Burning	\$300 - \$1,200 per acre	<ul style="list-style-type: none"> • Allows for removal of merchantable materials or firewood in timber. • Requires chipping, hauling, and pile burning of slash.
Feller Buncher	\$750 and up per acre	<ul style="list-style-type: none"> • Mechanical treatment on slopes over 30 percent of materials over 10 inches in diameter may require a feller buncher rather than a masticator. • Costs tend to be considerably higher than mastication. • May allow for removal of merchantable material.

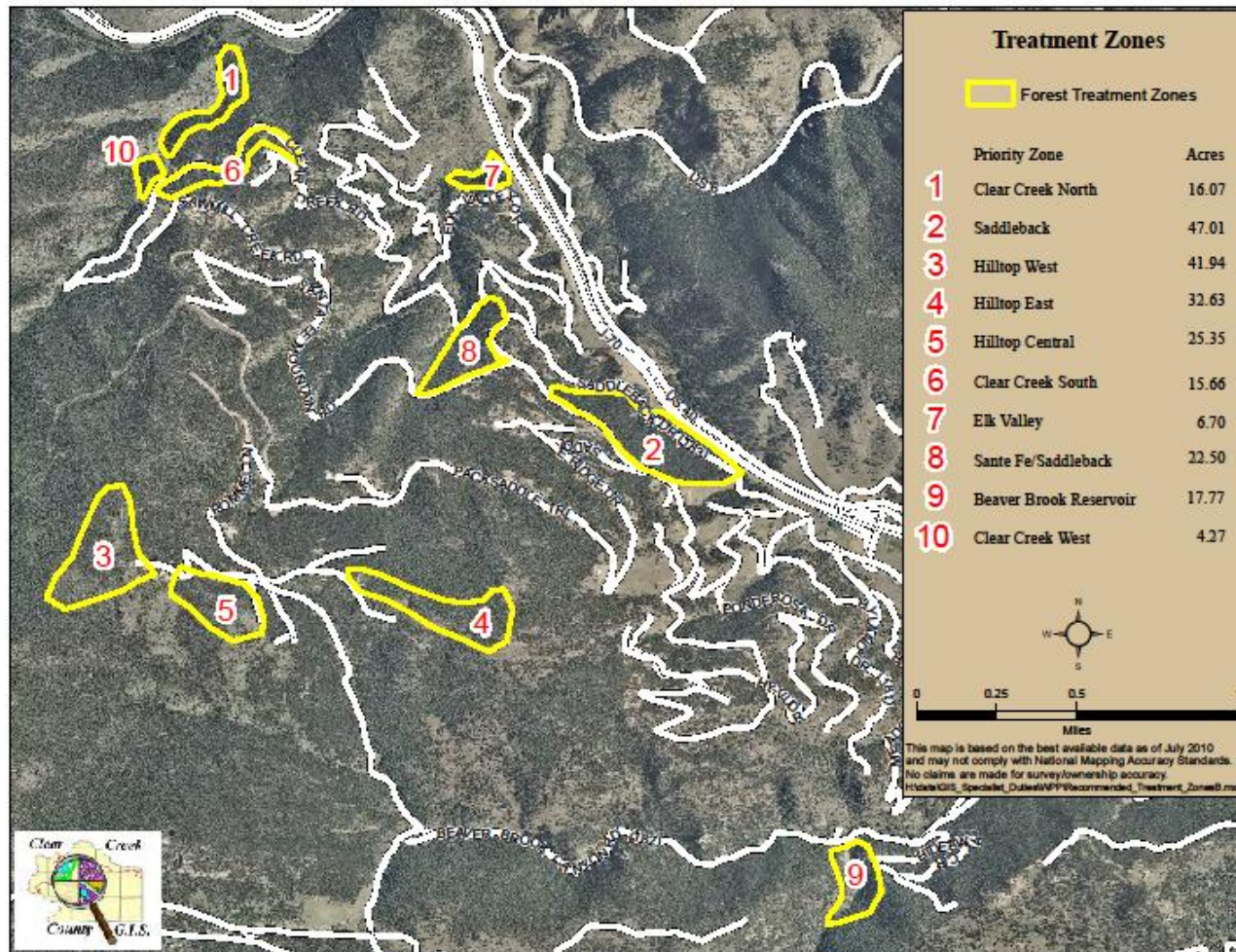
The above cost estimates are several years old. The community CWPIP team should consult with the Colorado State Forest Service for current cost estimates as they move to implement a new priority project.

Most of the treatment in the area will be manual treatment with some chipping. Larger materials will be removed.

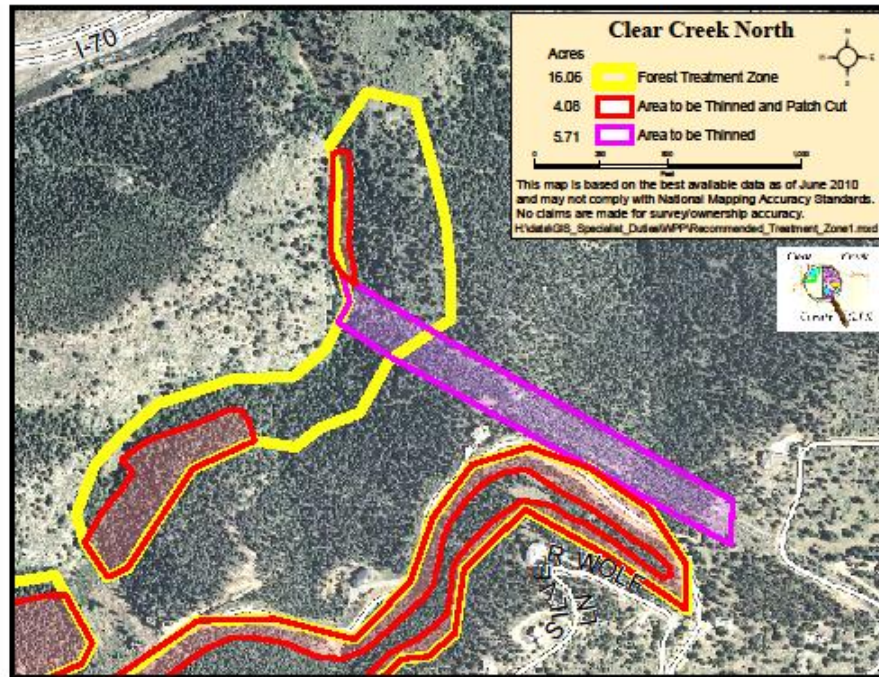
5.3.1b Fire Break

A fire break is an area where vegetation has been removed to bare ground or replaced with non-flammable surface such as asphalt. The purpose of the fire break is to hopefully stop fire progression and improve fire suppression efforts.

Recommended Fuels Treatment Zones for Floyd Hill CWPIP



Recommended Priority 1 Treatment Zone Clear Creek North



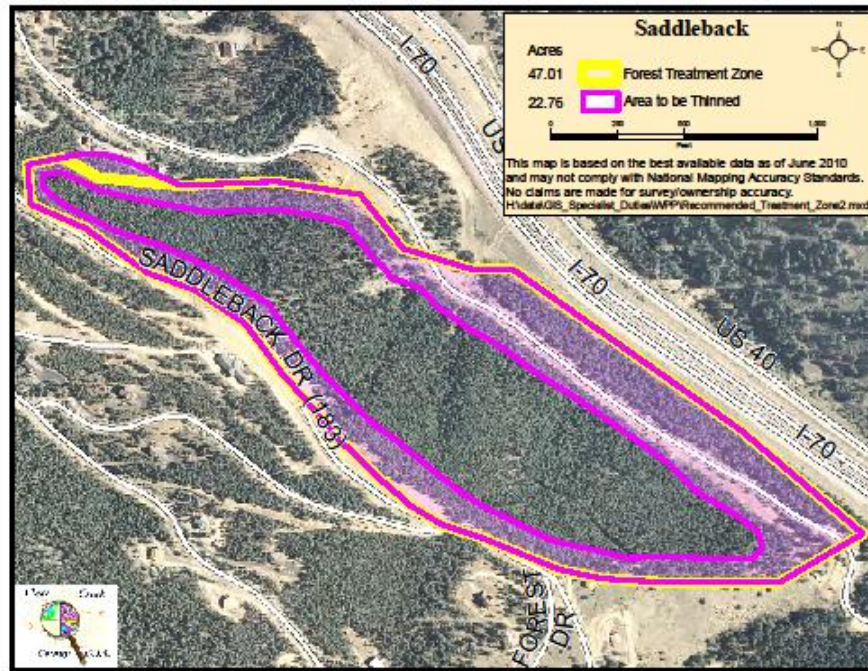
The Clear Creek North zone lies below Clear Creek Road and contains a steep, north facing slope projected for hand thinning and patch cutting. Also included is the stretch of power line north and east of the road for thinning. Due to the power line and the steep slopes which lead southward up into numerous property areas this unit has been given the highest recommendation. The unit totals 16.06 acres, of which 4 acres would be thinned and patch cut and 5.7 acres along the power line would be thinned according to utility company standards.

Vegetation treatments would include treatments such as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, will be thinned so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 2 Treatment Zone Saddleback



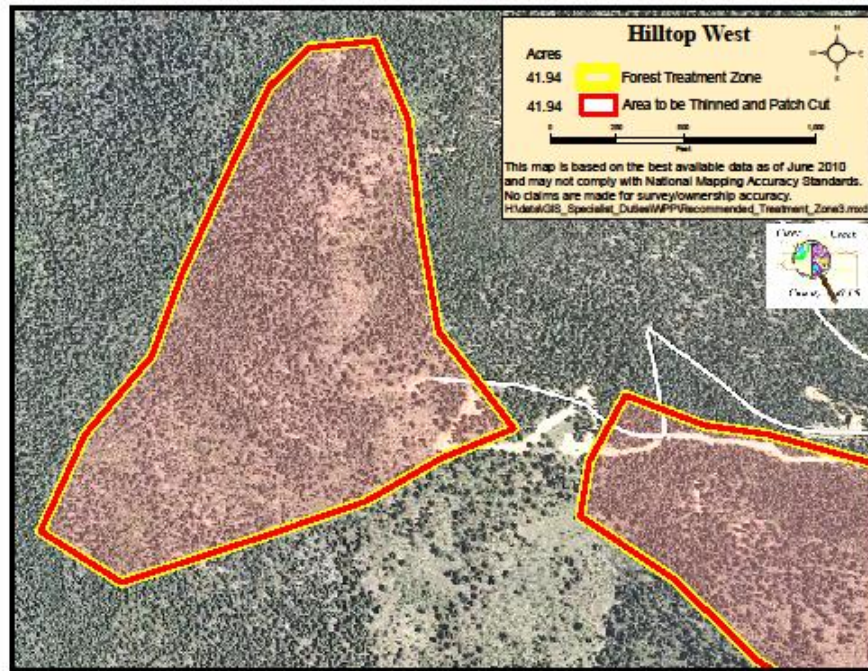
The Saddleback area lies between two legs of Saddleback Road, and is adjacent to I-70 along its ENE flank. The relatively steep slopes lead up into the main portions of the Floyd Hill subdivision. Concern with the potential for man caused fire from ignitions along I-70 give this area the second highest recommendation for treatment. Treatment would be hand crew thinning with some mastication along roadsides as appropriate. Of the 47 acres in the unit 22.7 would be treated.

Vegetation treatments would include reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, will be thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000 per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 3 Treatment Zone Hilltop West



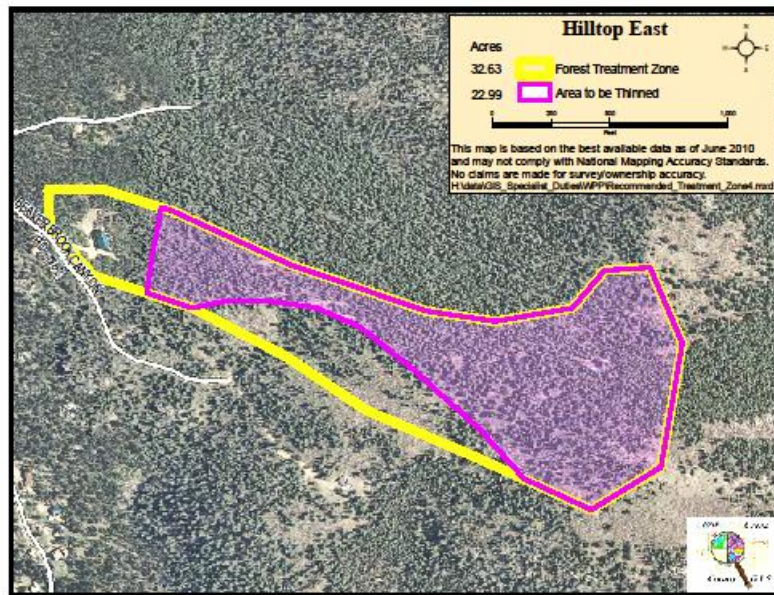
The Hilltop West Zone, along with two units adjacent to the east, is given the third priority for thinning and patch cut treatment. The area(s) lie along the ridge tops leading north and east into major portions of Saddleback and Floyd Hill. With the prevailing summer winds from the southwest the thinning of these areas will help provide protection if fires begin south and west of the ridges and move north and east. Treatment would be accomplished on all 41.9 acres with a combination of hand crew thinning and slash piling, and machine mastication.

Vegetation treatments would include reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 4 Treatment Zone Hilltop East



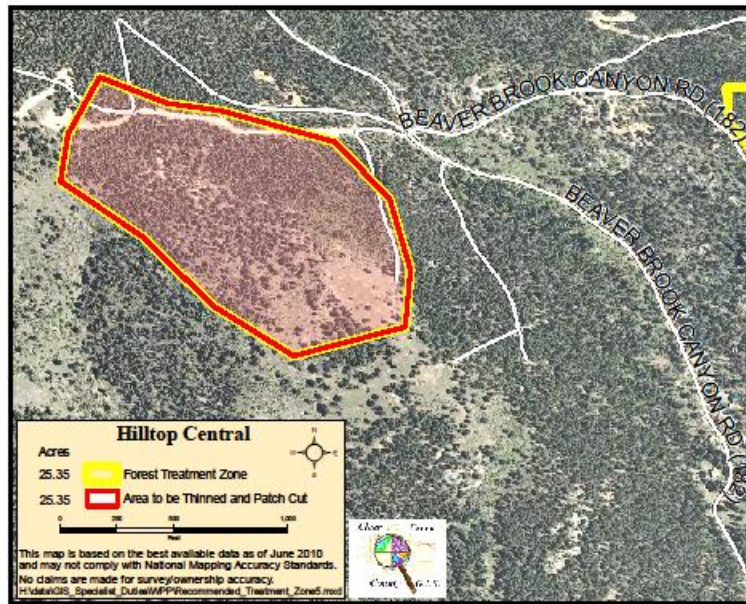
For basically the same reasons for Priority Treat Zone 3, the Hilltop East area is the fourth recommended priority treatment zone. It is linear and has several open areas which, combined with thinning and patch cutting in the remainder of the unit, will help slow a wildfire's progress coming from the southwest. Treatment would be accomplished on 22.9 of the unit's 32.6 acres using a combination of hand crew thinning and slash piling, and machine mastication.

A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs will be thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 5 Treatment Zone Hilltop Central



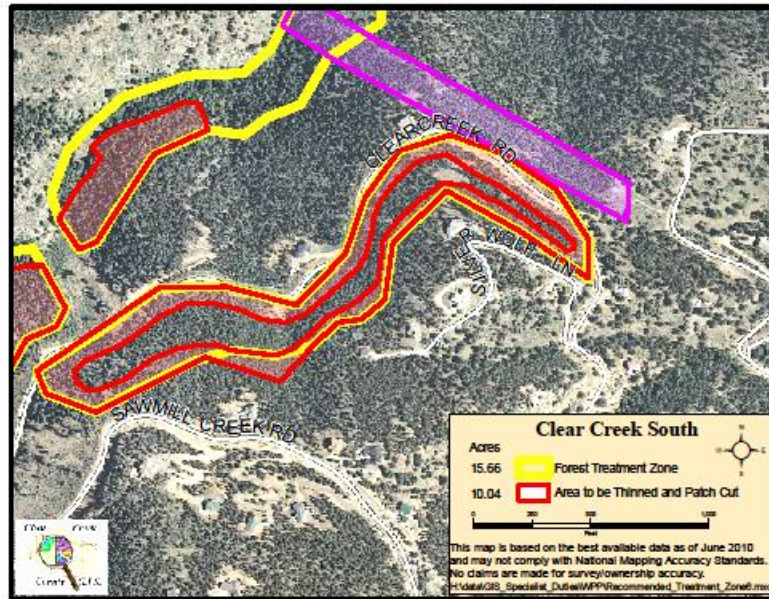
The Hilltop Central Zone is the fifth priority treatment zone. It lies along the same higher areas as priority zones 3 and 4. Again, thinning and patch cutting through this area will help slow advance of a fire from the south and west. Treatment would be a combination of hand crew thinning and slash piling, and machine mastication and would involve all 25.3 acres of the unit.

A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 6 Treatment Zone Clear Creek South



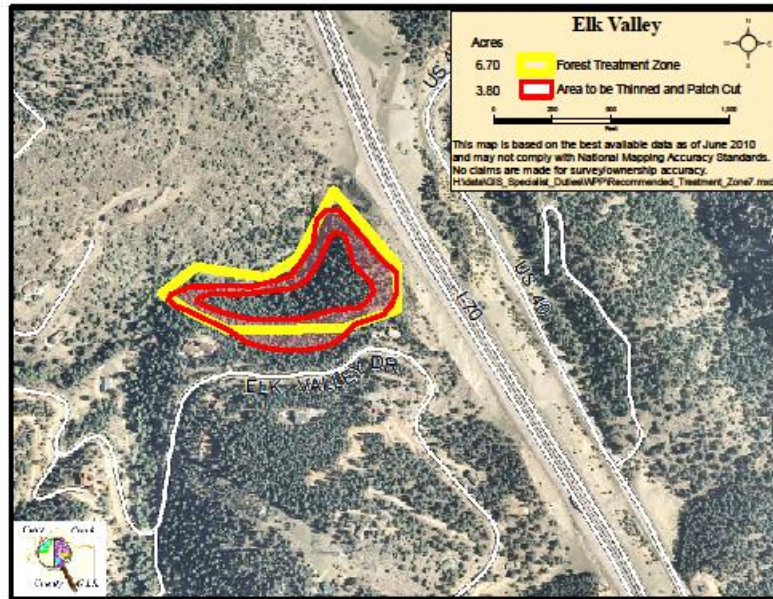
Priority Treatment six is the Clear Creek South Unit, lying between Clear Creek and Sawmill Creek roads. As in the Clear Creek North unit, the terrain between these roads is very steep. To slow fire movement it is recommended the areas adjacent to the road be heavily thinned and patch cut to both increase the fire break effect of the road and to protect properties entwined in the area. Method of treatment would largely be hand crews to thin and pile slash and would involve 10 of the unit's 15.6 acres. There may be some possibility for roadside machine mastication. Treatment along the power line would be a combination of techniques at the design of the power company.

Vegetation treatments for the fuel break could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 7 Treatment Zone Elk Valley



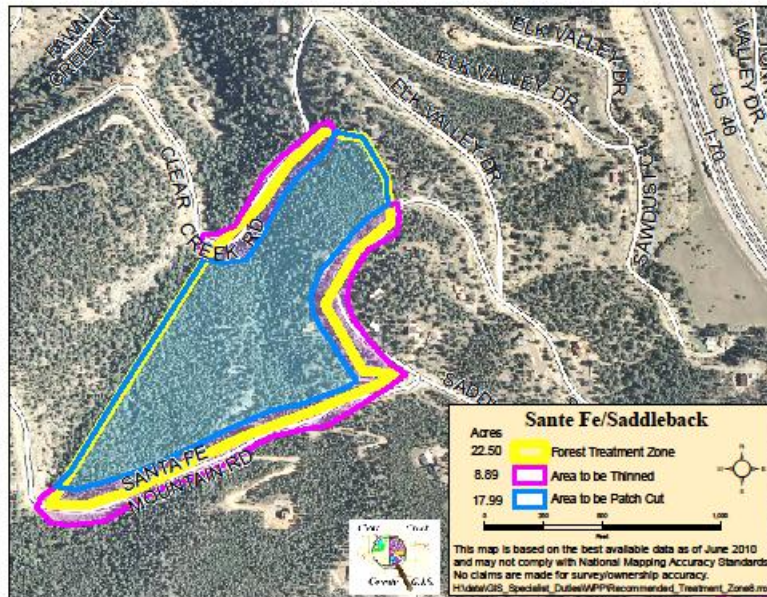
The Elk Valley unit lies adjacent to I-70, but has somewhat greater clear spacing from the Interstate than the Saddleback Unit. For the same concern of man caused ignition from the Interstate causing fire to spread rapidly up the steep slope toward housing this area is the seventh priority. With the steepness of the area treatment would largely be hand crew thinning and piling of slash. Treatment would encompass 3.8 of the unit's 6.7 acres.

A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 8 Treatment Zone Santa Fe/Saddleback



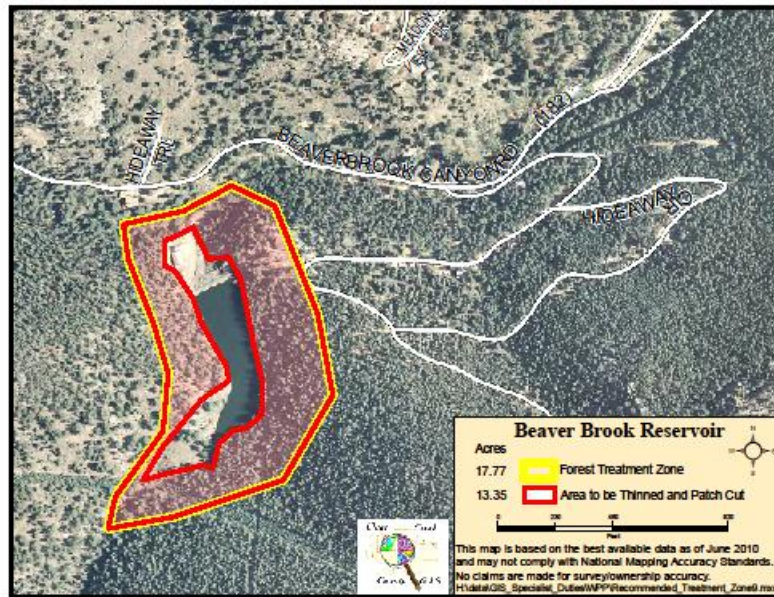
The eighth recommended area is the Santa Fe/Saddleback unit. It is on the steep, north facing slopes above Clear Creek Road on the north and Santa Fe Mountain Road and Saddleback Drive on the south and east. Roadside thinning and interior patch cuts and thinning are recommended to better protect properties in the Floyd Hill area immediately south and east.

A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 9 Treatment Zone Beaver Brook Reservoir



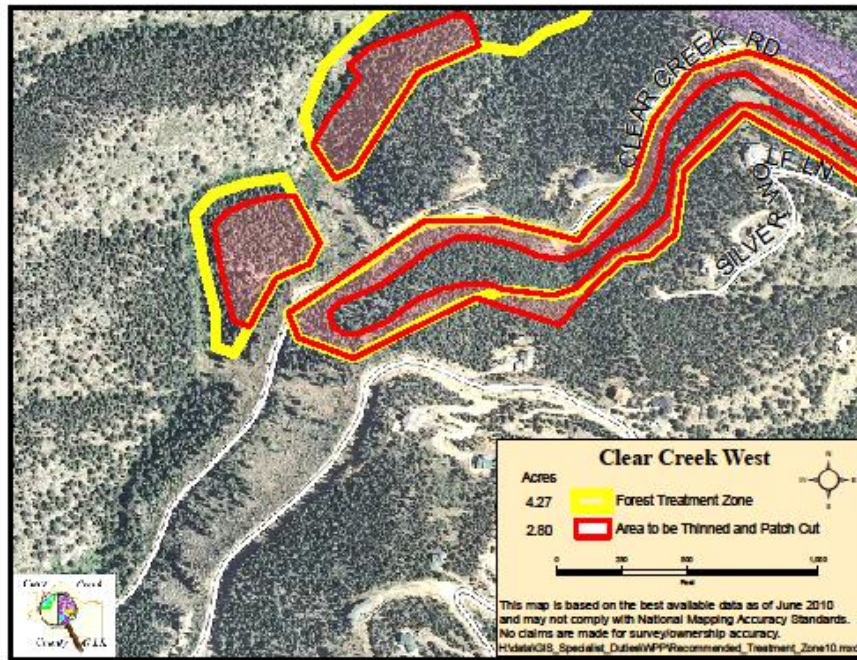
The Beaverbrook Canyon water reservoir is the ninth recommended unit for thinning and patch cutting. These treatments would be beneficial to slow the spread of wildfire through the area, protecting adjacent property and the area immediately surrounding the reservoir to help avoid siltation into the reservoir. Treatment would be accomplished on 13.3 of the unit's 17.8 acres.

A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Recommended Priority 10 Treatment Zone Clear Creek West



The last of the recommended units is the smaller Clear Creek West unit. As is the case of the Clear Creek North and Clear Creek South units the terrain in this unit is north facing and very steep. Thinning and patch cutting by hand crews would aid in slowing the movement of fire south into residential areas of Saddleback. Treatment involves 2.8 of the unit's 4.3 acres.

A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to 15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks.

Mitigation costs would be approximately \$2,000+ per acre. **The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.**

Section 6: IMPLEMENTATION AND FOLLOW UP

Creating and implementing this CWPIP has the potential to significantly reduce possible wildfire effects. This will require the efforts of a committed Floyd Hill/Saddleback/Beaver Brook community CWPIP team with the assistance and cooperation of adjacent agencies (County, State Federal), local interest groups, and the citizens of the area. The effectiveness of this plan will be the result of actions taken over time; *completion of this plan is only the beginning.*

Maintenance and administration of the Community Wildfire Protection Implementation Plan is critical. Accomplishing property defensible space, retrofit of structures to defensible standards, fuels mitigation projects, and completing such objectives as escape routes, additional water sources, and other goals require time, funding and resources. Ongoing community education and demonstration events are needed to demonstrate the necessity of taking personal action. Grant funding, contract crews, and volunteer projects will be spread out over a number of years.

Maintenance of the Plan

The CWPIP is meant to be a “living document” which is updated annually to pursue priority concerns in wildfire hazard mitigation throughout the Floyd Hill area. The overall goal of maintaining the CWPIP is accomplished through:

- 1) Ongoing monitoring of plan accomplishments and effectiveness;
- 2) Adjusting the plan to account for changes in wildfire hazard conditions, response capabilities, technologies and other circumstances;
- 3) Setting goals and selecting projects for the coming year;
- 4) Seeking funding and other project assistance; and
- 5) Facilitating community project days and other events.

The CWPIP team will be an ongoing team as long as the community and planning efforts have need of such direction.

The team shall operate in collaboration with the Clear Creek County Fire Authority and Evergreen Fire Rescue. The CWPIP team will sustain itself through recruitment of new members as needed, and selection of a team chair person from among its members. If direction or assistance is needed to maintain operations the team chair will consult with the fire department chiefs, the Clear Creek County Office of Emergency Management, and the State Forest Service Golden District office to assist with evaluation of the continuing need and assistance in reconstituting a CWPIP management team.

The Floyd Hill area CWPIP committee should establish guidelines for representation and ongoing operation at its first meeting following county and state acceptance of this plan. Following are some guidelines to be considered by the team:

The composition of the CWPIP team should retain professional representation from the HOAs of Floyd Hill, Saddleback and Beaver Brook, Clear Creek County, the area fire departments, Colorado State Forest Service, and the US Forest Service. While these professional groups may not be available for every meeting they should be invited and consulted on a regular basis. Representation from the above noted area neighborhoods are very important and the team should

strive for membership of at least two of the three neighborhoods at any one time. This representation should be on a rotating basis to involve different areas and reduce the impact on participants.

Team meetings should be held at least quarterly (it may be desirable to meet more often as summer approaches each year) to review plan goals, actions and public response. Each year the CWPIP team should conduct a performance review to evaluate accomplishments and problems over the past year. The team will also consider any proposed changes to the CWPIP for the upcoming year and select new or reselect ongoing project goals. The team should consult with the State Forest Service, USFS, the county and fire authorities, and reach out to neighborhood stakeholders during plan review and project development. Timing should be guided by grant submission dates.

The overall CWPIP evaluation, recommended changes, and upcoming project goals should be presented to the public through various media: HOA or other community meetings; local informational outreach methods, Community Wildfire days; and on county and fire department websites.

The CWPIP team contact list should be available on the Clear Creek County website, and the fire department websites so the public can offer ideas at any time for the team to consider.

The CWPIP team, in conjunction with local fire departments, the county and/or other groups, should organize and take part in an annual community open house each spring to keep the public continuously aware of healthy forest restoration and wildfire mitigation needs and opportunities.

The team should develop or participate in demonstration days, chipping days, and other opportunities in area neighborhoods to showcase projects, techniques, and new ideas. Such events contribute greatly to public education and encourage people to become involved.

The CWPIP team should follow up on completed projects, using a monitoring and evaluation format which addresses the following issues:

- 1) Implementation: Track the CWPP project(s) as laid-out for the year and assess the success level of execution;
- 2) Execution of project: What issues occurred that either aided or impeded the project?
- 3) Maintenance Needs and Monitoring: Evaluates, determines and prioritizes areas that have been treated in the past, but are in need of maintenance treatments to maintain effectiveness as originally intended. Lessons learned from monitoring and data collection will be useful for modifying project plans to better meet CWPIP goals and objectives.

Outreach to Subdivisions and Neighborhoods: Neighborhood Ambassadors

The Floyd Hill/Saddleback/Beaver Brook area has a number of neighborhoods scattered in its WUI. The CWPIP team will consider utilizing an approach similar to the **Neighborhood Ambassador Program** in effect in southwest Colorado. This involves reaching out to neighborhoods to recruit an ambassador from each area who will mobilize their neighborhood to

improve wildfire readiness and communicate CWPP actions. In this area having an ambassador from each HOA area may be the best avenue of approach.

The CWPIP should be available on websites of HOAs (where they exist), and the websites of the fire departments (Clear Creek County and Evergreen) and Clear Creek County as well as the site maintained by the Colorado State Forest Service.

APPENDICES

APPENDIX A

Publications and websites

Following is a listing of publications available from the Colorado State Forest Service which provide guidance on a range of mitigation activities which will aid communities in lessening the impact of wildfire. Also listed are several websites which contain information useful in mitigation efforts. *Floyd Hill area residents are encouraged to view these sites which contain a great amount of useful information and action items which can assist in protecting properties from the effects of wildfire.*

Publications

The following publications can be viewed on the State Forest Service website (or linked directly from below). You may also be able obtain some copies from the Golden District office of the State Forest Service.

General Resources

[Wildfire Policy in Transition: Where There's Smoke, There's... Mirrors Presentation on Wildfire Policy in Transition](#)

Resources for Homeowners & Landowners

Clear Creek County CWPP and Evergreen Fire Rescue CWPP:

<http://csfs.colostate.edu/pages/CommunityWildfireProtectionPlans.html> (go down list by county to the plan)

[Creating Wildfire-Defensible Zones](#)

[Fire-Resistant Landscaping](#)

[Forest Home Fire Safety](#)

[FireWise Plant Materials](#)

[Grass Seed Mixes to Reduce Wildfire Hazard](#)

[Are You FireWise? Notebook](#)

[Home Fire Protection](#)

[Living with Fire](#)

[Wildfire & Insurance](#) (

FireWise Construction

[Firewise Construction: Design and Materials by Peter Slack](#)

[Decks](#)

[Roofing Materials](#)

[Siding](#)

[Windows and Glass](#)

Resources for Communities

[Fuel break Guidelines for Forested Subdivisions & Communities](#)
[Preparing a Community Wildfire Protection Plan - Handbook](#)
[Community Guide to Preparing & Implementing a CWPP — 2008](#)
[Community Wildfire Protection Plan Evaluation Guide](#)
[CWPP Minimum Standards REVISED 2009](#)

Post-Fire

[Vegetative Recovery after Wildfire](#)
[Soil Erosion Control after Wildfire](#)
[Insects and Diseases Associated with Forest Fires](#)
["After the Fire" Safety Tips Factsheet](#)

Websites

Colorado State Forest Service: <http://csfs.colostate.edu/>
Clear Creek Fire Authority: <http://www.clearcreekfire.com>
Clear Creek County: <http://www.co.clear-creek.co.us/>
Evergreen Fire Rescue: <http://www.evergreenfirerescue.com>
Firewise: <http://www.firewise.org/>
Arapahoe National Forest: <http://www.fs.fed.us/r2/arnf/index.shtml>
Front Range Roundtable: http://frontrangeroundtable.org/Home_Page.php
Healthy Forest Restoration Act –background and information:
http://en.wikipedia.org/wiki/Healthy_Forests_Initiative
Healthy Forest Restoration Act – official website: <http://www.forestsandrangelands.gov/>

APPENDIX B

Following are the recommendations listed for each area in the Clear Creek County CWPP. Note that many of these are incorporated into the initial recommendations of this CWPIP for the Floyd Hill area. Those not incorporated in this first plan may be added as new objectives as first objectives are accomplished.

Floyd Hill

- Improve defensible space where needed and reduce structural ignitability through phased building improvements or new construction.
- Shaded fuel breaks along all forested access roads and forested emergency access routes including Upper Beaver Brook Canyon Rd.
- Road access improvements including switchback widening and turnarounds on S. Ponderosa and S. Hyland.
- Street signage and home addressing improvements.
- Emergency access W. Beaver Brook Canyon to Santa Fe Mt. Rd. and E. Beaver Brook Canyon to Elmgreen Rd., high school to Elmgreen Rd., out-of-district with Clear Creek County-Sawmill Creek Rd to I-70 corridor.
- Potential Forest treatment areas west of WUI on saddles between Saddleback Mtn and Santa Fe.
- Local school ideal for area evacuation enter, ICP, emergency water source location.
- Community training for “shelter-in-place.”

Saddleback

- Improve defensible space where needed and reduce structural ignitability through phased building improvements or new construction.
- Develop shaded fuel breaks along all forested secondary community access routes.
- Anchor shaded fuel breaks to meadows.
- Improve and maintain existing right-of-way fuel breaks along utility corridors.
- Potential strategic forest treatment zones identified in areas of dense timber and downed timber in understory within the community.
- Potential secondary evacuation/emergency access routes are identified along Sawmill Gulch and at Elk Valley.
- Cisterns noted throughout the community but recommend emergency water supply, either hydrant or cistern installed at primary entrance to the community on lower Saddleback Road.

Beaver Brook

- Improve defensible space where needed and reduce structural ignitability through phased building improvements or new construction.
- Develop and maintain shaded fuel break along primary access in Beaver Brook Canyon and Upper Beaver Brook Canyon Road.
- Secondary evacuation route development along from Beaver Brook Canyon to Evergreen in Evergreen FPD, or along Pat Creek to Old Squaw Pass Rd.

- Improve emergency access with a turnaround at the upper intersection of driveways. Reword: Make driveways as accessible as possible. Width standards, residential end of the driveway.
- Consider development of a community safety zone for shelter-in-place in case of entrapment.
- Emergency water supply cistern installation recommended near Pat Creek and North Beaver Brook. (Evergreen may know more about water rights, CCC says they don't have permissions.)
 - Create pre-suppression plan for mutual aid with Evergreen FPD.

APPENDIX C

Below is the Appendix from the Clear Creek County CWPP which shows each community in the county and how they rated when evaluated for wildfire hazard.

You will note that thirteen of the 48 communities were rated “Extreme” in the hazard assessment, including all three of the Floyd Hill CWPIP communities.

Clear Creek County CWPP

Appendix D – Community Wildfire Hazard and Risk Assessments

Community Survey Summaries and Hazard Ratings

	Means of Access				Vegetation	Topography	Other Factors			Construction	Fire Protection			Score	Survey Hazard Rating						
	Highways/Trails (7)	Road Width (4)	Road Condition (7)	Fire Service Access (5)	Street Signs/Addresses (5)	Vegetation/Fuels (25)	Defensible Space (25)	Slope with 300' or steeper (10)	Topography affecting fire behavior (5)	Ignition Potential (5)	Fire Weather Potential (5)	Density of Structures (5)	Utilities (5)			Roofing (25)	Construction (15)	Setback from slope >30% (5)	Water Availability (10)	Emergency Resources (25)	Fixed Fire Protection (5)
CLEAR CREEK COUNTY WUI																					
Alvarado	2	2	0	2	1	7	7	4	2	2	2	1	1	1	15	1	5	1	4	67	MODERATE
Bakerville	0	2	2	5	3	9	22	1	3	4	2	2	2	5	3	15	1	5	1	90	HIGH
Bard Creek	7	2	2	3	0	10	10	2	4	16	2	3	5	3	15	1	5	3	5	87	HIGH
Beaver Brook	7	3	5	5	5	10	21	7	5	4	3	0	5	3	15	4	5	3	5	116	EXTREME
Bendemeer Valley, etc. EFPD	0	3	4	4	0	8	21	3	4	4	4	2	5	3	14	2	5	3	5	94	HIGH
Berthoud Falls	1	3	2	4	5	10	15	4	3	16	2	4	1	2	15	1	5	3	5	90	HIGH
Black Eagle	3	4	6	5	4	5	7	7	4	15	3	1	5	3	15	4	5	3	5	96	HIGH
Blue Valley	2	3	5	3	3	15	18	6	5	3	3	3	5	3	15	5	5	3	5	112	EXTREME
Brook Forest EFPD	7	4	5	5	2	18	20	5	5	4	3	3	5	3	15	4	5	1	5	119	EXTREME
Chicago Creek	7	3	2	5	0	8	20	7	5	3	2	4	5	3	15	3	5	3	5	105	HIGH
Echo Hills EFPD	7	3	4	5	3	18	21	7	5	4	3	3	5	4	15	4	5	3	5	124	EXTREME
Empire	1	1	1	1	1	5	1	5	2	4	2	5	3	3	15	1	0	3	4	58	MODERATE
Evergreen West EFPD	3	2	2	3	0	13	20	7	5	4	4	2	5	10	13	4	3	3	5	108	HIGH
Fall River	7	2	2	5	0	10	10	6	5	4	2	4	5	3	15	5	5	3	5	100	HIGH
Floyd Hill EFPD	7	3	4	5	3	12	21	7	5	3	3	4	5	3	13	5	5	3	4	115	EXTREME
Floyd/Saddleback	7	1	5	4	3	12	20	7	5	5	3	3	5	3	15	5	5	3	4	115	EXTREME
French Springs EFPD	7	2	2	4	0	10	21	3	3	4	4	2	5	2	14	2	5	3	5	98	HIGH
Georgetown	3	2	1	1	1	7	1	3	2	4	2	5	3	3	15	1	0	1	4	55	MODERATE
Hefferman Gulch	7	4	5	5	4	10	25	7	5	3	2	4	5	3	15	4	5	3	5	121	EXTREME
Henderson Mine	7	0	2	0	0	15	1	8	5	2	2	0	0	0	0	1	1	1	1	45	MODERATE
Herman Gulch	7	3	4	5	3	10	25	7	4	5	2	3	5	3	15	5	5	3	5	119	EXTREME
Hidden Valley	7	2	5	2	2	8	18	3	4	5	3	4	3	3	15	2	5	1	5	97	HIGH
Idaho Springs	1	1	2	1	1	5	1	2	2	4	3	5	3	3	15	1	0	1	4	55	MODERATE
Little Bear	5	3	5	4	4	10	10	6	5	3	3	1	5	3	15	5	5	3	5	102	HIGH
Lower 103	1	0	2	0	2	7	12	4	3	4	3	5	5	7	15	5	5	1	4	85	HIGH
Lower Fall River	1	3	2	4	3	7	12	4	4	5	3	5	5	2	15	4	5	1	5	90	HIGH
Lower Mill Creek	7	2	2	5	3	8	12	6	4	5	3	4	5	2	13	4	5	1	5	98	HIGH
Lower Soda Creek	1	0	2	2	2	6	6	7	2	3	3	4	3	3	13	2	5	1	5	70	MODERATE
Middle 103	1	0	0	0	2	6	15	8	4	3	3	5	5	3	15	5	5	2	5	87	HIGH
Montane Park	7	4	2	5	3	9	20	7	5	5	3	4	1	3	13	4	1	1	5	102	HIGH
Morrison Lane	7	2	2	5	5	10	25	2	2	5	2	1	3	1	15	3	5	3	5	103	HIGH
Peaceful Valley	7	3	5	3	5	7	18	1	3	4	2	1	5	3	15	1	5	3	5	96	HIGH
Pine Slope	1	3	4	3	3	6	12	4	2	4	3	4	3	3	15	2	5	1	5	83	HIGH
Pine Valley Estates EFPD	0	3	4	4	4	9	15	3	2	4	4	3	5	3	15	2	5	3	5	93	HIGH
Silver Lakes	0	2	2	3	2	6	8	2	2	3	3	5	3	3	12	2	1	1	4	64	MODERATE
Silver Plume	1	3	2	2	1	5	3	3	2	2	5	3	3	15	1	0	1	4	61	MODERATE	
Silver Valley	0	2	2	2	1	10	20	4	2	5	2	5	1	2	15	2	5	1	5	86	HIGH
Soda Creek	7	3	5	5	3	10	9	5	3	3	3	1	5	5	14	4	5	2	5	97	HIGH
South Spring	5	3	5	5	3	12	14	7	5	5	3	1	5	10	15	4	5	2	5	114	EXTREME
Squaw Mountain	7	2	5	4	4	14	18	6	5	3	3	1	5	3	14	5	5	3	5	114	EXTREME
Stevens Gulch	7	4	7	5	4	18	15	8	5	2	2	0	5	3	15	2	5	3	5	115	EXTREME
St Marys/Alice	7	3	5	5	5	17	15	8	5	2	2	4	5	3	15	5	10	3	4	123	EXTREME
Trail Creek	7	3	5	5	3	12	20	7	5	5	3	1	5	2	15	4	5	3	5	115	EXTREME
Upper Fall River	7	2	2	2	3	8	12	3	4	3	2	2	5	3	15	2	5	3	5	88	HIGH
Upper Mill Creek	7	3	5	3	1	10	20	5	5	3	2	5	5	3	15	3	5	3	5	108	HIGH
Ute Creek	7	3	5	5	2	10	18	6	5	4	3	1	5	2	15	5	5	3	5	105	HIGH
Virginia Canyon	1	2	2	1	2	6	10	6	5	5	3	3	5	3	12	5	5	1	5	84	HIGH
York Gulch	3	3	5	5	3	8	12	5	5	4	3	1	5	3	10	4	5	3	5	92	HIGH

APPENDIX D

Wildfire Action Planning - The Ready, Set, Go! Program (RSG): www.wildlandfireRSG.org.

This program assists firefighters to teach individuals who live in high risk wildfire areas and the wildland-urban-interface (WUI) how to best prepare themselves and their properties against fire threats. The RSG Program stresses that when firefighters encourage residents to take personal responsibility for preparing their property and family for wildland fire, residents become an active part of the solution to the problem of increasing fire losses.

RSG works in complimentary and collaborative fashion with Firewise and other existing wildland fire public education efforts. It amplifies the messages to individuals to better achieve the common goal we all share of fire-adapted communities.

The RSG Program is a three step process that can significantly increase the safety of residents and the safety of responding firefighters. The RSG Program provides the implementation guidance; background knowledge; and presentation tools to assist fire departments in delivering the program message.

It is easy to remember and is easy to implement:

- Ready – Preparing for the Fire Threat: Be Ready, Be Firewise. Take personal responsibility and prepare long before the threat of a wildfire so your home is ready in case of a fire. Create defensible space by clearing brush away from your home. Use fire-resistant landscaping and harden your home with fire-safe construction measures. Assemble emergency supplies and belongings in a safe spot. Make sure all residents residing within the home are on the same page, plan escape routes. For more information about how to be Ready for wildland fires, go to Firewise.org.
- Set – Situational Awareness When a Fire Starts: Pack your vehicle with your emergency items. Stay aware of the latest news from local media and your local fire department for updated information on the fire.
- Go – Leave early! Comply with any evacuation orders and follow evacuation plans early! Your Action Plan makes you prepared and firefighters are now able to maneuver and ensure you and your family's safety.

The RSG Program provides tools through its website, www.wildlandfireRSG.org for fire departments that join the program to better understand preparedness techniques; help in identifying local partners and audiences; useful outreach models and presentation tools; and general background on wildland fire activity. These are especially designed to assist small volunteer and rural fire departments that are often strapped for time and resources.

The program was developed for national rollout by the International Association of Fire Chiefs (IAFC), with support from the U.S. Forest Service, the U.S. Fire Administration (USFA), the

U.S. Department of the Interior, the Firewise Communities Program and the Insurance Institute
for Business & Home Safety (IBHS).

APPENDIX E

Since completion of the CWPIP a major step forward in providing completion of plan objectives and accomplishment of evacuation priorities has taken place. A Grant of Easement date September 6, 2012 between Clear Creek County and ESRE Properties II, Inc. conveyed the route described on P. 24 of this plan, titled: **“Clear Creek High School to Jefferson County Highway 65.”**

The pertinent paragraph of the grant details the purpose of the grant as for emergency access and evacuation”

The easement hereby granted is solely for the use, construction, and maintenance of a vehicular emergency access and evacuation route between Elmgreen Lane and Jefferson County Road 65 and property adjacent to Beaver Brook Drive in Clear Creek County, including the construction of knock-down gates or gates operable by emergency service providers, such access to be used only in the event of an emergency, as determined in the judgment of emergency service providers with jurisdiction in the Floyd Hill and Beaver Brook communities (for example, Clear Creek County Sheriff, Clear Creek County Office of Emergency Management, Evergreen Fire Protection District), for ingress/egress for emergency services providers and emergency evacuation/egress for the general public.

A map of the access/evacuation route is below:

