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# Case Study: Hayman Fire, Hayman, Colorado

The Hayman Fire is the largest and most devastating wildfire in Colorado's recorded history. The cause of the fire was found to be arson, which was exacerbated by record drought and extreme weather conditions. The fire was reported on June 8, 2002, contained on July 2, 2002, and controlled on July 18, 2002. Four Colorado counties — Douglas, Jefferson, Park, and Teller — were directly affected. It resulted in six indirect fatalities, including five firefighters from Oregon who died in a traffic accident on their way to respond to the fire and one woman who suffered a fatal asthma attack because of smoke inhalation.

The burned area encompassed more than 138,000 acres. In total, 600 structures were lost (133 residences, one commercial building, and 466 outbuildings), causing more than \$42 million in housing losses. A total of 5,340 people were forced to evacuate; at one time, 14,000 were told to stand by for evacuation.



The Hayman Fire burned over 137,000 acres in the summer of 2002. Photo courtesy CUSP.

## Challenges

The Hayman Fire was a challenging natural disaster for many reasons:

- *Environmental conditions.* Record drought and extreme weather conditions made the fire very unpredictable.
- *Scope of the disaster.* The fire burned across four counties, three United States Forest Service (USFS) ranger districts, three Natural Resource Conservation Service (NRCS) office areas, and three state forest service offices, making communication and approvals much more challenging than if the disaster had been in a more confined area.
- *Development.* Many residences and other buildings were lost and threatened and thousands of people were evacuated (some forced and some as a safety precaution).
- *Cost and available resources.* Funding was (and still is) a challenge. With housing costs totaling over \$42 million, individuals alone could not afford the cost of recovery or mitigation.
- *Political environment.* In Colorado, as in most of the western U.S., there is a lack of political will for regulation and government intervention.

A fire code adoption survey conducted in 2007 by the Colorado State Fire Chiefs' Association (CSFCA) revealed that 90.1 percent of jurisdictions had not adopted wildland-urban interface (WUI) codes. The reasons most often cited were "lack of political will or the governing body did not believe it to be necessary" (27 percent) or that there was a "lack of resources to administer or enforce the code" (32.6 percent).

*Source:* Colorado State Fire Chiefs' Association. 2007. *Fire Code Adoption in Colorado*. Available at [www.colofirechiefs.org/documents/CSFCA/2007\\_Fire\\_Code\\_Report.pdf](http://www.colofirechiefs.org/documents/CSFCA/2007_Fire_Code_Report.pdf) ([http://www.colofirechiefs.org/documents/CSFCA/2007\\_Fire\\_Code\\_Report.pdf](http://www.colofirechiefs.org/documents/CSFCA/2007_Fire_Code_Report.pdf)).

## Impacts

### ECONOMIC

Communities in this portion of Colorado rely heavily on strong recreational and natural resource-based economies, such as tourism and ranching, for their livelihoods. These were directly damaged by the fire. Ranchers, for example, lost feed, fencing, and equipment. Although post-fire Burned Area Emergency Assistance funds and Emergency Watershed Protection funds were available from the U.S. Forest Service and the Natural Resources Conservation Service, respectively, they require a cost share and do not fund replacements for things like lost feed, fencing, and equipment. The fire also forced the closing of the Pike National Forest and 11-Mile and Spinney State Parks for much of the busiest tourist season. Local small businesses estimated they lost about 50 percent of their summer season revenue because of these closures.

The fire caused changes in the landscape, increasing the number and severity of floods in the aftermath of the fire and leading to additional economic impacts. For example, Front Range city water providers (Denver and Aurora) spent \$25 million in two years to remove sediment dumped into a reservoir that serves as a source of drinking water. Additionally, heavy rains and flooding after the fire resulted in extensive costs to repair damaged infrastructure. Roads and bridges were washed out, including State Highway 67, which cost \$7 million to rebuild.

### ENVIRONMENTAL

An increase in the number and severity of flooding events has serious environmental impacts as well. Large amounts of sediment and debris threaten the vitality of watersheds and ecosystems. Additionally, the destruction of land at that scale had devastating effects on wildlife habitat. Finally, the debris created issues with hazardous waste disposal.

### SOCIAL/HEALTH

The Hayman Fire forced 5,340 people to evacuate their homes, with 14,000 more posted for possible evacuation. An estimated 350 people lost their homes. Although the impact to victims has not been quantified, the fire undoubtedly took a toll on victims directly affected as well as members of the larger community.

The fire also raised health concerns associated with worsened air and water quality. The State of Colorado's Air Quality Control Division in downtown Denver showed the highest levels of particulates ever measured while the Hayman and other fires were burning during the 2002 fire season. High levels of particulates, even over short periods of time, significantly increase health impacts for susceptible populations including the elderly, young, and those with asthma.

## Pre-Disaster Planning Efforts

Largely as a result of prior fire and flooding events (Buffalo Creek Fire and post-fire flooding in 1996; Hi Meadow Fire in 1998; Snaking and Schoonover Fires in 2002), some planning efforts were in place prior to the Hayman Fire.

After the Buffalo Creek fire in 1996, representatives from 11 government agencies — including forestry officials, local county governments, and water providers — got together for the first time with a facilitator. These groups coalesced to form the Coalition for the Upper South Platte (CUSP (<http://www.uppertsouthplatte.org/fire.html>)). Prior to the Hayman Fire, CUSP had 1.25 full-time employees and little funding. Its initiatives included developing a strategic watershed plan, environmental education programs, implementing small-scale projects, and helping with fire rehabilitation after the Hi Meadow Fire.

In addition to CUSP's efforts, the U.S. Forest Service and Colorado State Forest Service estimate that mitigation was taking place on 400 acres per year across the watershed. Mitigation included forest thinning projects and prescribed fires.

Some jurisdictions, like the City of Woodland Park, had [fire codes or regulations](http://library.municode.com/index.aspx?clientId=13858&stateId=6&stateName=Colorado) (<http://library.municode.com/index.aspx?clientId=13858&stateId=6&stateName=Colorado>) in place at the time of the Hayman Fire. (The link is to current codes.)

## Post-disaster Planning Efforts

Since the Hayman Fire, many new organizations and initiatives have arisen. For example, various nonprofits such as Volunteers for Outdoor Colorado (VOC) have provided volunteers, trained crew leaders, and experienced project coordinators to assist fire victims and recovery organizations like CUSP after the Hayman Fire. Also, the Woodland Park Healthy Forest Initiative (WPHFI) arose to demonstrate community engagement in fire protection and mitigation.



Ten years after the Hayman Fire, restoration work continues. CUSP and partners facilitated this major river restoration/erosion control project in an area heavily impacted through the years by erosion and sedimentation due to the fire. CUSP staff and volunteers plant willows and grass seed around structures built by a renowned river restoration contractor. Photo courtesy CUSP.



Tree trunks are strategically embedded along shorelines of a stream negatively impacted by erosion and sedimentation. These trees change the current, bringing it back to a more natural flow that will excavate deeper pools and disperse sediment. Photo courtesy CUSP.



Volunteers with CUSP plant thousands of willows to mitigate erosion in a river restoration project. Photo courtesy CUSP.

The number of collaborations and partnerships has also increased. There is good involvement from local, state, and federal agencies, and with individual citizens. These collaborations have resulted in a significant increase in the number of property owners who are doing mitigation on their own land and fewer appeals of projects conducted by public entities.

Additionally, relationships formed before the Hayman Fire spurred innovative partnerships in response to it. Organizations including CUSP, Trout Unlimited, the U.S. Forest Service, Colorado Division of Wildlife, Park County, Natural Resource Conservation Service, and the Boy Scouts of America came together to create the Trees for Trout Project, a project that salvages burned trees for use in stream restoration projects. To date, 600 trees have been salvaged for river restoration, and many more have been used in treating hillslopes and drainages.

The federal government also became more involved in pre-disaster planning for wildfires. In 2003, President Bush signed the Healthy Forest Restoration Act (HFRA) into law. HFRA outlined the use of Community Wildfire Protection Plans (CWPPs) to prioritize work by federal land managers and the dispersal of federal funds to states for private-lands mitigation, and Colorado law requires every county to adopt a county-wide community wildfire protection plan (CWPP). Many counties have chosen to develop additional plans at a more detailed level (at the fire district, subdivision, or regional level) as well. In total, CUSP estimates about 60 plans have been developed in the four counties it works with. Additionally, CUSP estimates that at least six communities in the area have achieved certification as a Firewise USA Community, compared to zero prior to the Hayman Fire.

CUSP grew substantially after the Hayman Fire. It currently has 15 full-time employees and 25 total employees (up from 1.25 pre-Hayman). It has expanded its education and outreach activities through development of the Service Learning Program (<http://www.uppersouthplatte.org/fire.html>). It has developed Module Curriculum and coupled it with service projects that have allowed it to accommodate more teachers and students with a small staff. CUSP also continues to work with counties and communities on various planning efforts, including developing countywide all-hazard plans and CWPPs at both the county level and more detailed levels.

Additionally, CUSP took over operations of the Hayman Recovery Assistance Center (<http://www.fs.fed.us/outernet/r2/psicc/hayres/recovery.htm>) (HayRAC), formed by USFS to provide victims, bureaucrats, politicians, the media, and others with a single site to access information. As a result it created a volunteer database and coordinated more than 40,000 hours of volunteer time for fire recovery and rehabilitation between August and November 2002. CUSP fielded thousands of phone calls from fire victims, bureaucrats, academics, the media, donors, and volunteers seeking information, as well as coordinating distribution of supplies and donations for victims and organizing shelters.

CUSP also successfully obtained a \$200,000 Rural Community Assistance Grant from the National Forest Foundation (NFF) and donations from various other sources to help with relief efforts in 2003, as well as seeking and receiving hundreds of thousands of dollars of funding from foundations, businesses, and individuals. This funding helped private landowners (for example, providing livestock owners with feed in the initial weeks after the fire) and facilitated the efforts of a number of working committees that addressed the long-term, collaborative response to the Hayman Fire across public and private lands.

On the local level, communities have adopted and strengthened their plans, codes, and land development regulations. In 2007 Teller County updated its land-use regulations and developed a CWPP. It also adopted a fire code (<http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1144&EditionID=993&cookie%5Ftest=1>) in 2009. Additionally, the county incorporated objectives and policies into its Strategic Plan 2011-2012 (adopted in June 2010). The City of Woodland Park also incorporated wildfire protection into its 2010 Comprehensive Plan.

Today, mitigation is taking place on 12,000 acres per year (up from 400 acres in 2002) across both public and private lands. Restoration is ongoing. CUSP is implementing a \$2 million stream restoration and sediment stabilization project, the Trail Creek Master Plan, in 2012, which is addressing the long-term ecological impacts of the Hayman Fire.

## Successes

Neighboring communities have realized the importance of forming and nurturing organizations like CUSP prior to a disaster. These groups can act as nongovernmental partners across boundaries and can provide assistance and help attract resources. Communities have realized that organizations like this cannot be formed in the heat of the moment after a disaster has struck.



# Opportunities for Improvement

Although many gains have been made since the Hayman Fire, several opportunities exist for further improvement. The recommendations provided below would aid in recovery efforts and reduce the amount of recovery needed.

## LOCAL PLANS, CODES, AND POLICIES

- Prepare CWPPs at a more detailed level than the county-wide level (community or region level, fire district, or subdivision).
- Adopt, update, strengthen, and enforce land use regulations, wildland-urban interface (WUI) codes, building and fire codes, or language in comprehensive plans and strategic plans.
- Develop best practices or regulations for retrofitting existing subdivisions or for renovations in addition to new land development.
- Make recommendations in CWPPs binding and mandatory.

## EDUCATION

- Provide more education at the citizen level. Citizens should be directly involved and accountable for their own properties.
- Take advantage of Firewise (<http://firewise.org/>) resources.

## STATE AND FEDERAL LEVEL

- Take USFS fire suppression money out of their regular operating budget and place it in a separate fund.
- Improve NEPA requirements for quicker response following emergencies.
- Provide funding for collaboratives to cover their basic existence.

*This case study was prepared by Erin Musiol, AICP, senior program development and research associate at the American Planning Association, with Carol Ekarius, executive director of the Coalition for the Upper South Platte.*

## Resources

National Association of Conservation Districts. 2007. *The Phoenix Guide: A handbook for watershed and community wildland fire recovery*. Available at [www.nacdnet.org/resources/reports/phoenix\\_guide.pdf](http://www.nacdnet.org/resources/reports/phoenix_guide.pdf) ([http://www.nacdnet.org/resources/reports/phoenix\\_guide.pdf](http://www.nacdnet.org/resources/reports/phoenix_guide.pdf)).

City of Woodland Park, Colorado. 2010. *Wildland-Urban Interface 2010: Lessons Learned*. Available at [http://city-woodlandpark.org/media/79104/wui\\_dola\\_final\\_12\\_28\\_2010\\_2\\_.pdf](http://city-woodlandpark.org/media/79104/wui_dola_final_12_28_2010_2_.pdf) ([http://city-woodlandpark.org/media/79104/wui\\_dola\\_final\\_12\\_28\\_2010\\_2\\_.pdf](http://city-woodlandpark.org/media/79104/wui_dola_final_12_28_2010_2_.pdf)).

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