

# **Report to the Governor**

## **Colorado's Wildland Urban Interface**

**May 2001**



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May 25, 2001

The Honorable Bill Owens  
Room 136, State Capitol  
Denver, CO 80203

Dear Governor Owens:

On behalf of the *Interagency Wildland Urban Interface Working Group*, I would like to present our report on improving Colorado's response to wildland fire. This document, and the accompanying recommendations, represents the expertise and leadership of city, county, state, and federal firefighting agencies.

Wildland Urban Interface issues are complex and require a willingness to seek and implement collaborative solutions. The Working Group accepted this challenge and worked diligently over the past six months to examine many aspects of Colorado's approach to wildland fire preparedness, suppression, and mitigation.

The solutions outlined in the accompanying report will require increased state leadership and investment, but I believe we will be rewarded with better overall protection for Colorado's residents and natural resources.

The collaboration represented by this Working Group and their recommendations will help make Colorado a safer place.

Sincerely,

James E. Hubbard  
Working Group Chair and State Forester

### **Working Group**

Jim Hubbard, Director, Colorado State Forest Service, Chairman • Greg Walcher, Director, Department of Natural Resources • Al Dyer, Dean, College of Natural Resources, Colorado State University • Tom Grier, Director, Office of Emergency Management • Suzanne Mercer, Director, Department of Public Safety • Ann Morgan, State Director, USDOJ Bureau of Land Management • Rick Cables, Regional Forester, USDA Forest Service • T. Wright Dickinson, Moffat County Commissioner • Tom Stone, Eagle County Commissioner • Rick Sheehan, Jefferson County Commissioner • Fred Wegener, Park County Sheriff • Larry Donner, Boulder Fire Chief

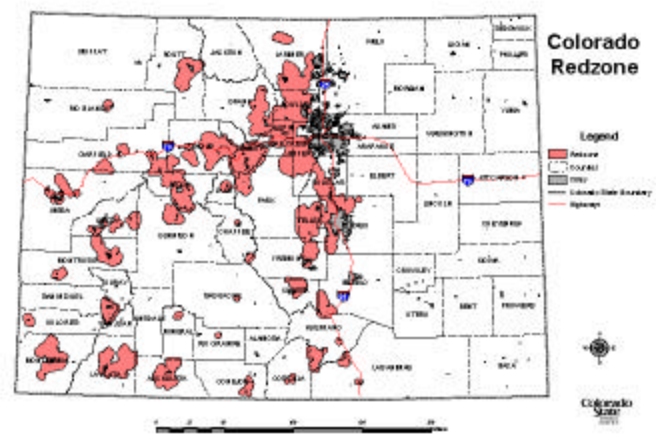
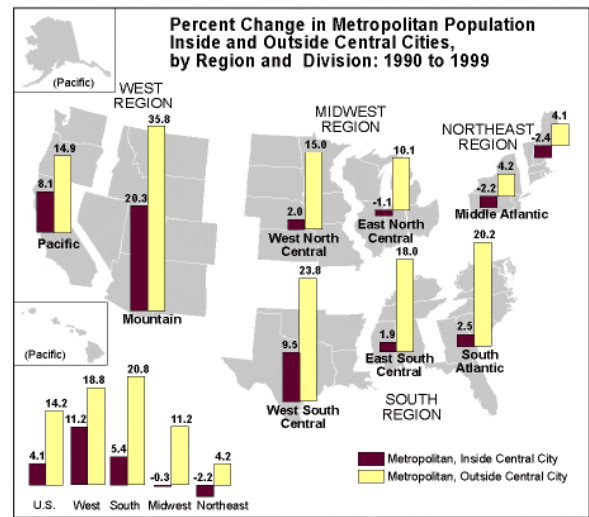
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# Executive Summary

The risk of wildfire in Colorado’s wildland-urban interface poses a daunting challenge to public safety, fiscal responsibility and natural resource integrity in the state. The 2000 fire season brought this challenge to the forefront of public attention when four wildland urban interface fires along Colorado’s Front Range destroyed 74 structures and threatened thousands more, interrupted utility service, and impacted water and air quality. The cost to state coffers for suppressing these fires was a staggering \$10.1 million, contributing to the most expensive wildfire season to date.

While these numbers are dramatic, they are not surprising. A century of aggressive fire suppression, combined with cycles of drought and changing land management practices, has left many of Colorado’s forests unnaturally dense and ready to burn.

At the same time, the state’s record-setting growth has driven nearly a million people into the forested foothills of the Front Range and along the West Slope and central mountains – the same landscapes that are at highest risk for large-scale fire. This movement of urban and suburban residents into the wildland-urban interface (WUI) significantly increases the values-at-risk from wildland fire – the most critical of these being human life.



The cost of suppressing unnaturally large and destructive fires in the complicated environment of the WUI has pressed state and local resources beyond their capacity and has revealed complexities that are not adequately addressed by the existing system of interagency wildfire response.

Governor Bill Owens, recognizing the urgent need to more effectively address the WUI situation in Colorado, appointed a diverse working group of local,



state, and federal leaders to explore the current situation, identify opportunities for improvement, and make recommendations for change.

Over a six-month period, the Governor's Interagency Wildland Urban Interface Working Group identified several areas of concern:

- ❑ Wildfire suppression in the interface stretches the capability of response personnel in terms of safety, training, and equipment and challenges the ability of local and state governments to cover related costs. Interface protection also demands a higher level of interagency communication and coordination than currently exists.
- ❑ Mitigation of hazardous fuels in the interface is not occurring on a landscape scale, across ownerships. The implementation of planned mitigation projects is complicated by costs to private landowners, availability of a trained work force, compliance with federal requirements, and the lack of options for utilizing removed materials.
- ❑ Efforts to combat wildfire risk are complicated by a lack of awareness and/or support from local communities and the urban public.

Out of the working group's deliberations came the recognition that, in the wildland-urban interface, failure to prepare, communicate, and respond in an interagency manner could result in devastating consequences.

The time is ripe for the State of Colorado to step forward and provide the kind of leadership and coordination needed to ensure the best possible wildfire protection for its citizens.

## **Recommendations**

The Governor's working group identified a total of 15 recommendations within the categories of preparedness and suppression, hazard mitigation, and public awareness. Those recommendations are summarized as follows:

### **1. Strengthen Local Capacity in Wildland Fire Preparedness, Suppression, and Mitigation.**

- Provide state-supported technical and cost-sharing assistance to counties for the development and implementation of expanded county Fire Management Plans.
- Institute a consistent annual appropriation to provide for wildland-urban interface management needs and for a fuels mitigation cost-sharing program.



- Develop a statewide wildland-urban interface training program for local fire service personnel.
- Establish a mechanism for the state to contribute to the Emergency Fire Fund (EFF).

## **2. Enhance State Leadership and Coordination in Interagency Wildland Fire Response.**

- Coordinate and fund the development and implementation of a statewide, county-by-county wildfire risk assessment.
- Provide statutory clarification of wildland fire roles and responsibilities held by county sheriffs, fire protection districts, and related local response personnel.
- Clarify in the *Colorado Interagency Cooperative Fire Protection Agreement* (Master Agreement) interagency roles and responsibilities for fire protection in the wildland urban interface.
- Provide state-level support for expanded state participation in zone dispatch centers and in the extended attack phase of wildfire suppression.
- Investigate and identify statewide protocols for radio communication across local, state, and federal jurisdictions.
- Coordinate interagency implementation and allocation of funds related to the National Fire Plan, the Ten Year Comprehensive Strategy, and similar efforts.

## **3. Improve Statewide Public Awareness Regarding the Role of Fire in Colorado Landscapes and Tools for Wildland Fire Prevention.**

- Provide state leadership in developing and delivering coordinated interagency wildland fire messages to homeowners, landowners, land management agencies, the general public, and others.
- Encourage the development of a professional outreach and information campaign to targeted audiences within the state.



# Governor's Wildland-Urban Interface Working Group Report

## Background

The risk of wildfire in Colorado's wildland-urban interface (WUI) poses a daunting challenge to both public safety and fiscal responsibility in the state. The 2000 fire season brought this challenge to the forefront of public attention when four wildland urban interface fires along Colorado's Front Range destroyed 74 structures and threatened thousands more, interrupted utility service, and impacted water and air quality. The cost to state coffers for suppressing these fires was a staggering \$10.1 million, contributing to the most expensive wildfire season to date.

The magnitude and urgency of Colorado's WUI problem is influenced by a number of factors. First, among these, is the state's record-setting growth, particularly in the foothills of the Front Range and along the Western Slope and I-70 corridor. The 2000 Census revealed that Colorado gained nearly 1 million people over the past decade, making the state third in the nation in terms of percentage gained. Of this growth, nearly 80 percent occurred in the ten counties along the Front Range, with the central mountain counties of Park, Eagle and Summit close behind.



The Colorado State Forest Service (CSFS) estimates that approximately 1/4<sup>th</sup> of the state's current population resides within the Red Zone, an area characterized by over 6 million acres of forest land at high risk for large-scale wildland fire. The majority of these residents moved to the mountains from urban and suburban neighborhoods, bringing with them little knowledge of fire's natural role in Colorado's ecosystems or of what they might do to protect themselves and their property.



Low-elevation ponderosa pine, Douglas fir and piñon-juniper woodlands provide the scenic backdrop to much of the state's interface expansion. Unfortunately, these landscapes are also at the highest risk of suffering a catastrophic wildfire. A century of aggressive fire suppression, combined with cycles of drought and changing land management practices, has left many of Colorado's forests unnaturally dense and susceptible to damage from insects, disease, and fire. Thick ladder fuels characterize many of these landscapes, providing an easy route for fire to climb from





the forest floor to the trees' crowns.

Fires in the WUI are particularly dangerous to firefighters because of the complexity involved in suppressing wildfire around homes and communities. Local fire departments, both volunteer and paid, provide initial attack on most of the state's interface fires. These first responders arrive with an inconsistent range of training and equipment and are often unprepared for the combination of wildland and structural firefighting skills required in the interface. Firefighters are further challenged by subdivisions with inadequate access, lack of available water supply, and structures built with highly combustible materials.

Landowners and managers have several tools available to them to begin mitigating the wildfire risk on their property. The most common of these tools are thinning of dense trees and shrubs and the use of controlled, low-intensity fire, known as prescribed burning. Mitigation and risk reduction efforts achieve maximum effectiveness if they are carried out on a large-scale across ownership boundaries.

This kind of action involves bringing together many individuals and agencies, providing them with guidance and incentives to act, and facilitating a governing environment conducive to change. Such action is particularly complicated in western states like Colorado which are characterized by a checkerboard pattern of federal and non-federal land ownership.

### **Working Group / State's Role**

Governor Bill Owens recognized the urgent need for Colorado to respond to the WUI in a manner that would improve the safety of firefighters and residents, enhance protection of valuable natural resources, and ensure responsible allocation of taxpayer funds.

In August of 2000, Gov. Owens issued an Executive Order charging a twelve member working group, consisting of local, state, and federal representatives, with the following mission:

- Assess and make recommendations on fire policies and funding priorities for implementation in the wildland urban interface;
- Assess and make recommendations on how to increase cooperation and coordination in the use of land management practices to mitigate fire danger in the interface;
- Enhance the involvement of diverse stakeholders, professionals, and decision-makers on fire policy matters;
- Focus on awareness programs, land use development policies, cooperation between landowners, local government and developers, and the sharing of knowledge and policies that increase public safety, reduce wildfire hazards, and achieve desired ecological goals in interface areas; and



- Identify barriers to mitigating wildland urban interface fire hazards and recommend solutions to overcome these barriers.

The Governor's Interagency Wildland-Urban Interface Working Group met from December 2000 through April 2001 to consider these and other issues central to interface protection in Colorado. The group identified several areas of concern in the state and developed recommendations, contained in this report, on those areas they felt would most benefit from the Governor's leadership.

## **Wildland Fire Preparedness and Suppression**

### **A. Current Status**

Response to wildland fire consists of two equally important components: *preparedness* and *suppression*. Preparedness involves activities such as interagency planning; formation of cooperative agreements; training of personnel; equipment maintenance and positioning; and extensive communication. It means knowing what values are at risk to wildfire and having the resources necessary to combat that risk at all levels.

Wildfire suppression is the mobilization of available resources in response to a wildland fire incident. The first phase of suppression, or initial attack, is generally provided by local fire departments, with back up from state or federal resources depending on where the incident occurs. If a wildfire escapes initial attack and continues burning over an extended period of time, personnel with specialized experience and training are called in to manage the fire. The effective transition of fire management from initial to extended attack is essential to both public and firefighter safety.

Although the concepts of preparedness and suppression appear straightforward, a number of complications can arise in the course of an incident. In Colorado, state statute gives county sheriffs the responsibility for managing wildland fire on non-federal land. The sheriff may transfer this duty to the State Forester if he or she feels an incident has exceeded local capacity.

Many communities have also formed fire protection districts (FPD) to respond to wildland fire within a smaller geographic area. Some of these communities believe the county sheriff only has jurisdiction over wildfires outside of FPDs. Most sheriffs disagree with this interpretation. Sorting out this local debate can be risky in the face of a fire.





Wildfire response in the state is coordinated through either local or interagency dispatch centers that track available personnel and resources and mobilize them to a site as needed. Complications arise when a fire in the interface requires people or resources equipped for both structural and wildland fire protection. Most firefighters are prepared for one or the other scenario, but not both. In addition, when structural personnel are called out for an interface fire, crews from other jurisdictions must be brought in to provide backfill protection in their city or area of protection.

Some consensus on wildfire roles and responsibilities in the state is obtained through a chain of voluntary agreements. The state and federal agencies cooperate via a “master agreement” titled the *Colorado Interagency Cooperative Fire Protection Agreement*. The state also negotiates individual cooperative agreements with each county. Local fire departments may enter into mutual aid agreements, but there is no process in place to collect, track, or coordinate these local arrangements. Some counties and local departments also develop mobilization guides and/or Annual Operating Plans to supplement their fire response strategies. No counties currently have a comprehensive Fire Management Plan to bring all their wildfire-related activities and agreements together.

This series of cooperative agreements functions well until an on-the-ground incident reveals areas of conflict that were not adequately resolved during preseason negotiations. The federal responsibility for interface protection is one such issue, as is the authority of the county sheriff to represent fire protection districts in agreement negotiations.

**Economic Impacts of  
Catastrophic Wildfire**

Fire	Cost (estimates)	Acres
Davis Ranch	\$111,900	125
Bobcat	\$3,330,992	10,599
Hi Meadow	\$5,298,067	10,800
Eldorado	\$1,369,664	1,067

Another area with potential for conflict is the allocation of costs. Wildland-urban interface fires pose new challenges related to cost accountability and responsibility. They can become extraordinarily expensive because of the number and type of suppression resources required, and the values-at-risk. Suppression costs are generally shared by those responsible for the land on which the fire occurs. This distribution of financial responsibility is

much less clear in the interface, where a variety of public and private values are threatened.

The incompatibility of radio equipment and frequencies used by individual fire response entities imposes further limitations on the ability of firefighters, incident managers, and agency leaders to communicate with each other.

Limited financial assistance is available for counties and local fire departments to help defray both suppression and preparedness costs. The CSFS, for example,



administers a federal Volunteer Fire Assistance cost-sharing program that helps local firefighters obtain badly needed training and equipment. Requests for this assistance usually far exceed available dollars.

Counties provide for fire suppression costs that exceed local capacity through the Emergency Fire Fund (EFF). Participating counties pay an annual assessment to the fund, which covers the expenses of a member county once they have depleted their available suppression budget. The EFF is not adequate to cope with interface suppression costs and can be quickly depleted in a bad fire year. If the EFF is fully expended, additional costs are often covered by the State Emergency Disaster Fund or through an Executive Order.

Currently, no direct state assistance is available to strengthen local fire planning or preparedness efforts.

## **B. Recommendations**

### **□ Improve Wildland Fire Response Capability at the Local Level**

- Provide state-level technical and cost-sharing assistance to counties for the development and implementation of county Fire Management Plans.
- Require all relevant entities within a county, including fire departments and fire protection districts, to sign an Annual Operating Plan (AOP).



### **□ Clarify Roles and Responsibilities Related to WUI Response**

- Provide statutory clarification regarding the fire protection responsibilities delegated to county sheriffs versus those held by local fire protection districts.
- Amend the statewide master agreement to include a clarification of interagency roles and responsibilities in the WUI.
- Provide statutory clarification regarding the

state's responsibility for reimbursing local suppression costs once the EFF is expended.

### **□ Enhance Statewide Tracking and Mobilization of Resources**

- Expand state involvement in zone dispatch centers.
- Clarify, in county Fire Management Plans, a process for backfilling of local firefighting personnel and resources that have been dispatched out of their jurisdiction.



## **Hazard Mitigation**

### **A. Current Status**

Fire needs oxygen, heat and fuel to spread across the landscape. The easiest of these factors to influence is the amount and distribution of vegetative fuels. The primary tools used by land managers to reduce hazardous fuels in the interface are thinning and removal of dense trees and shrubs and the use of controlled, low-intensity fire, known as prescribed burning. The USDA Forest Service estimates that every dollar invested in prevention and mitigation activities can save up to \$7 in future wildfire suppression costs.

Limited fuel mitigation projects have been implemented in Colorado by local, state, and federal land management agencies as well as private individuals. Boulder, Jefferson, Larimer, Summit, and Clear Creek Counties, for example, have wildfire mitigation programs that range from fuels reduction and prescribed burning on county-owned lands to assisting private landowners with similar actions on their own property. Some local governments have also adopted defensible space and emergency access requirements for new development in the interface.



The CSFS also works with local government, other state agencies, the federal government and private individuals to plan and implement risk reduction projects across jurisdictional boundaries.

Unfortunately, the majority of hazard mitigation projects in Colorado are contained within specific ownership or jurisdictional boundaries. The isolated nature of these projects means that wildfire risk is not reduced on a scale large enough to provide meaningful protection across a landscape. A homeowner's creation of defensible space will be less effective in the face of a raging fire if his or her neighbors have not taken complimentary action. Likewise, fuel reduction on non-federal land adjacent to a National Forest or Park will not provide the best level of protection if that reduction is not extended over the federal boundary.

The planning and implementation of cross-boundary projects requires the cooperation of a number of landowners. Several obstacles can frustrate these collaborative efforts, including:

- The lack of financial assistance to private landowners to help them participate in a large-scale project that will result in greater public than personal benefit;
- The time-consuming consultation and public-involvement processes required of federal land managers;



- The absence of local or community incentives to encourage defensible space and fire safe development; and



- The lack of a trained and available workforce to carry out fuel reduction on a large number of acres.

The effectiveness of hazard mitigation in Colorado is also limited by the lack of a consistent statewide assessment of wildfire risk. The state's Red Zone map identifies high-risk areas through a combination of data on population, number of structures, vegetative fuel type, and history of fire starts. While useful, this map is ultimately limited by the accuracy, extent and scale of the data on which it is based. Federal land management agencies have also assessed selected portions of their land, but these efforts are generally focused on wildfire risks outside the WUI zone. No system or protocol exists to consistently assess, map and

develop a response to WUI fire risk across the state.

## **B. Recommendations**

### **□ Establish a Statewide Wildland Fire Risk Assessment**

- Facilitate the development of consistent risk assessment data and mapping in each county.
- Provide technical assistance to counties in the application of risk assessment data.

### **□ Increase County-Level Fire Mitigation Plans**

- Assist counties in using risk assessments to prioritize areas for hazard mitigation.
- Encourage counties and local governments to develop and implement programs that promote defensible space and the use of fire-resistant building and landscaping materials.
- Provide state-funded cost-sharing assistance to private landowners within county prioritized areas for fuel reduction on their lands.
- Convene a state-level dialogue with insurance industry representatives regarding the role of insurance carriers in reducing risks associated with homes in the WUI.



- **Encourage Community Solutions to Workforce and Utilization Challenges**
  - Assist counties in identifying opportunities for local economic benefit through the use of local workers and the development of uses for vegetative material removed in hazard reduction projects.

## **Public Awareness**

### **A. Current Status**

The public's level of awareness regarding the causes and impacts of wildland fire can have a tremendous influence on the ultimate success of both suppression and mitigation efforts. If a local community understands and supports the need to reduce hazardous fuels, for example, projects are more likely to go forward in a timely and successful manner.



Support from local residents and government leaders can also facilitate increased individual and community action such as: creating defensible space around homes and structures; ensuring safe access for fire apparatus; establishing, training, and/or equipping of local fire departments; installing dry hydrants in subdivisions; or promoting the use of fire resistant building materials. All of these actions increase the chances that firefighters can safely control a wildland fire through initial attack and thereby limit damage to property and resources.

The need for public awareness extends beyond local communities to Colorado's urban area, for whom the wildland-urban interface is primarily a recreation zone. Actions taken to reduce wildfire risk on public lands, whether federal or non-federal, must have general concurrence and support from the public. It is also important for the public to understand that although mitigation efforts such as prescribed burning may have short-term impacts on visibility and air quality, they are designed to prevent the large-scale impacts that can result from a catastrophic wildland fire.

Many land management, fire protection, and/or disaster preparedness agencies in Colorado deliver some kind of fire awareness message. These education programs are not generally coordinated between agencies or levels of government, however, and have the potential to generate more confusion than understanding.

The Firewise program, which is aimed at interface homeowners and communities, is an example of a successful, standardized program that could be delivered consistently across the state. A similar kind of program or message is needed for city dwellers and recreational users of wildland and WUI areas.



## **B. Recommendations**

- **Increase Consistent Use of Firewise Program Across Government Entities**
  - Provide state lead in coordinating the use of Firewise among Land management agencies and government entities at all levels.
  
- **Implement a Professional Marketing Effort to Targeted Audiences Regarding the Role of Fire in Colorado's Forests**
  - Provide state seed money and seek matching funds for projects through new and existing partners.

### **Next Steps**

The time is ripe for the State of Colorado to step forward and provide the kind of leadership and coordination needed to ensure the best possible wildfire protection for its citizens. Through their deliberations, the Governor's Interagency Wildland Urban Interface Working Group determined that, with regard to the interface, failure to effectively prepare, communicate and respond to wildland fire in an interagency manner could result in devastating – and unacceptable -- consequences. The recommendations in this report are intended to help the state avoid such a result.

Due to the urgent nature of the interface situation, the Working Group advises that the Governor begin immediately to pursue implementation of this report. Many recommendations need further development and will require the active involvement of local, state, and federal agencies, as well as individual landowners and the public at large.

Fire in the WUI threatens lives, livelihoods, and valuable natural resources. The State of Colorado must act quickly and effectively to mitigate this threat.





## **Glossary**

**Annual Operating Plan:** An annually updated document authorized by the appropriate officials for implementing the Interagency Cooperative Fire Protection Agreement in their respective areas of responsibilities.

**Backfill** (a.k.a. Move-up and Cover): Identifies a relocation of fire suppression resources from their established location to a temporary location to provide fire protection coverage for an initial attack response area.

**Cooperator:** Organized fire forces of other agencies, paid or volunteers, public or private, at the local, municipal, state, or federal level.

**County:** Employees, elected officials, and appointed officers of a county.

**Emergency Fire Fund (EFF):** A fund established and maintained through voluntary participation by counties, governed by a task force of county commissioners, sheriffs, and fire chiefs, administered and managed by the Colorado State Forest Service. EFF is funded by annual assessments to the participating counties. The fund provides financial assistance to participating counties at times when qualifying wildfires exceed the counties capacity.

**Defensible Space:** An area around homes or structures, either man-made or natural, where the vegetation is modified and maintained to slow the rate and intensity of an advancing wildland fire. Provides room for firefighters to work and helps protect the forest from becoming involved should a structure fire occur.

**Dry Hydrant:** A non-pressurized hydrant that provides a water source to firefighters. Requires equipment capable of drafting from the hydrant.

**Fire Management:** Activities and programs that include: the use of fire as a resource management tool, and protection of values from unwanted, uncontrolled wildfire.

**Fire Management Plan:** Statement, for a specific area, of fire policy, objective, and prescribed action; may include maps, charts, tables, and statistical data.

**Fuels:** combustible plant material, both living and dead, and combustible construction material that is capable of burning in a wildland situation.

**ICS (Incident Command System):** The common emergency incident management system used on any incident or event and tailored to fit the specific management needs of the incident/event. Includes "Colorado Incident Command System" at the local level.



**Initial Attack Forces:** Wildfire suppression resources of agencies initially dispatched to a fire in accordance with a pre-existing annual operating plan or mobilization guide.

**Initial Attack Zone:** An identified area in which predetermined resources would normally be the initial resource to respond to an incident.

**Ladder Fuels:** Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

**Mitigation:** Actions taken that lessen the risk to people, property, and resources from wildfire.

**Mutual Aid:** Assistance provided by a Supporting Agency at no cost to the Protecting Agency. Mutual aid is limited to those initial attack resources or move-up and cover assignments that have been determined to be appropriate and as each may be able to furnish and are documented in Annual Operating Plans. Sometimes called Reciprocal Fire Protection.

**Preparedness:** Activities before fire occurrence to ensure effective suppression action. Includes training, planning, procuring and maintaining equipment, development of fire defense improvements, and maintaining cooperative arrangements with other agencies.

**Prescribed Fire:** The planned and/or permitted use of fire to accomplish specific land management objectives.

**Prevention:** Activities directed at reducing the number of human-caused fires, including such items as public education, law enforcement, dissemination of information, engineering, and the reduction of hazards.

**Protection Boundaries:** Mutually agreed upon boundaries which identify areas of direct fire protection responsibility and are shown on maps in the annual operating plans.

**Resources:** All personnel, items of equipment and aircraft available for assignment of tasks.

**Structure Protection:** Protecting a structure from an advancing wildfire is usually through treatment or removal of fuels from around a structure but may include application of retardants, foams, cooling agents, wraps, etc. to the exterior of a structure. Specific direction for an incident comes from the agency administrator or line officer.



**Suppression:** All the work of confining and extinguishing a fire beginning with its discovery through the conclusion of the incident.

**Thinning:** A cultural treatment made to reduce stand density

**Values-at-Risk:** Includes property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.

**Wildfire:** Uncontrolled fire burning in forest, brush, prairie, or cropland fuels, or conflagrations involving such fuels and structures.

**Wildland:** Lands with few or no permanent improvements.

**Wildland Fire:** Any non-structural fire that occurs on wildland.

**Wildland Urban Interface (WUI):** Defined as the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

