

# **WILDFIRE HAZARD MITIGATION AND RESPONSE PLAN**

**A GUIDE**



# FORWARD

Many hazard evaluation systems are available throughout the United States; several are in use throughout Colorado. The Colorado State Forest Service (CSFS) needed a standard evaluation system to provide a uniform basis for mitigation recommendations. To be accepted and utilized, such a system must be easy to understand, simple to apply, not require excessive time and effort, and provide consistent results regardless of who conducts the evaluation.

The following Wildfire Hazard Mitigation Plan is the result of in-depth review of seven existing systems in use from around the nation. This system is not intended to be a stand-alone document. The *NFPA 299*, International Fire Code Institute's *1997 Urban-Wildland Interface Code*, and the National Wildfire Coordinating Group's *Wildland Home Fire Risk Meter* all are part of this CSFS standard. This document is intended as a CSFS standard baseline from which local efforts may be encouraged.

As hazard rating systems were evaluated, it became evident that separate systems were needed: one for the subdivision as a whole and one for the individual home. Further, to bring these together for the local emergency response agency, a Response Plan outline is also provided.

We realize that wildfire hazard mitigation in interface areas of Colorado is not static. New processes emerge frequently; as processes improve, the Colorado State Forest Service standard will be updated to take advantage of improved methods.

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\_\_\_\_\_  
(Name of Subdivision)

\_\_\_\_\_  
(Name of County)

# **WILDFIRE HAZARD MITIGATION AND RESPONSE PLAN**

**PREPARED BY:**

**DATE PREPARED:**

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**I. GENERAL INFORMATION**

**A. Location:**

- 1. County \_\_\_\_\_
- 2. Geographic Area \_\_\_\_\_
- 3. Legal Description \_\_\_\_\_
- 4. USGS Map Quadrangle \_\_\_\_\_
- 5. VOR \_\_\_\_\_ RAD \_\_\_\_\_ Distance \_\_\_\_\_

**B. Ingress/Egress:**

- 1. Routes \_\_\_\_\_
  - a. All weather access \_\_\_\_\_  
(Name) \_\_\_\_\_  
(Name) \_\_\_\_\_  
(Name) \_\_\_\_\_

- \* b. Seasonal access  
(Name) \_\_\_\_\_  
(Name) \_\_\_\_\_

- 2. Directions  
(Describe in both cardinal directions and left/right turns from various roads.)

- a. From (nearest town) \_\_\_\_\_  
go(direction) \_\_\_\_\_ on (Road) \_\_\_\_\_ (#) \_\_\_\_\_  
miles. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- b. From (closest fire station) \_\_\_\_\_  
go (direction) \_\_\_\_\_ on (Road) \_\_\_\_\_  
\_\_\_\_\_ (#) \_\_\_\_\_ miles. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**C. Size and Status:**

- 1. Year Platted \_\_\_\_\_
- 2. Acres \_\_\_\_\_
- 3. Number of :

Filing	Lots	Homes	Permanent Residents

**D. Topographic Features:**

1. Slope

Average \_\_\_\_\_%: Range \_\_\_\_\_% to \_\_\_\_\_%

2. Aspect (predominate) \_\_\_\_\_ (Cardinal Direction)

**E. Home Construction (General):**

Of the (#) \_\_\_\_\_ homes in the subdivision

- a. (No/few/many/most/all) are of wood-frame construction;
- b. No/few/many/most/all have wood decks or porches.
- c. (No/few/many/most/all) have wood shake or shingle roofs.
- d. No/few/many/most/all are visible from the main subdivision roads.

**F. Access (General):**

1. Road System - Of the (#) \_\_\_\_\_ miles of roads within the subdivision:

- a. (Most/all) are constructed of (pavement, gravel, dirt).
- b. (Most/all) will support (#) \_\_\_\_\_ lanes of traffic.
- c. (None/some/all) are loop roads.
- d. None/some/all) are dead-end roads. Of these, (most/all) have (adequate/inadequate) turn-around space available at the end of the road.
- e. Road signs (are/are not) present.

2. Driveways

- a. Individual home driveway width and height clearance is (Adequate/Inadequate) for emergency equipment.
- b. (No/few/many/most/all) individual homeowners have posted their name and address.

**G. Water Supply:**

1. Ponds/Creeks

Type P/C	#/Name	Status P/I	Helicopter Accessible Y/N	Pump Required Y/N	# Gal/CFS

Key: Type: P = Pond, C = Creek  
Status: P = Permanent, I = Intermittent  
Helicopter/Pump: Y = Yes, N = No  
# (Ponds) = measure in 1000's of gal.  
(Creeks) = measure in cfs

2. Hydrants

#	Type D/P	Data TP & S	GPM Output	Comments

Key: Type: D = Dry, P = Pressurize  
Data: TP = Thread Pattern, S = Size  
GPM: maximum rated output



**H. Utilities:**

1. Telephone service is (below/above) ground. There are (#) \_\_\_\_ (service boxes/utility poles) present.  
Provided by \_\_\_\_\_  
Telephone # \_\_\_\_\_
  
2. Electrical service is (below/above) ground. There are (#) \_\_\_\_ (service boxes/utility poles) present.  
Provided by \_\_\_\_\_  
Telephone # \_\_\_\_\_
  
3. \_\_\_\_ (#/All) homes utilize propane while \_\_\_\_\_ (#/all) homes utilize central natural gas.  
\* Propane provided by \_\_\_\_\_  
Telephone # \_\_\_\_\_  
\* Natural gas provided by \_\_\_\_\_  
Telephone # \_\_\_\_\_
  
4. Individual homes utilize (central water system/ individual wells).  
\* Provided by \_\_\_\_\_  
Telephone # \_\_\_\_\_

**I. Adjacent Property:**

<u>Ownership</u>	<u>Location</u>
_____	_____
_____	_____
_____	_____
_____	_____

**J. Hazard Evaluation:**

1. Subdivision - The subdivision has been rated utilizing the CSFS "Wildfire Hazard Rating Form". A description is found in Appendix 3.  
The result is:

# Points \_\_\_\_\_

Description \_\_\_\_\_ (*Low, Moderate, High, Severe, Extreme*)

2. Individual Lots - All lots have been rated based upon vegetation/slope

utilizing the CSFS "Wildfire Hazard Matrix". A description is found in Appendix 4.

Results are:

Number of Lots			
Low	Moderate	High	Extreme

3. Structures - All structures have been rated utilizing the CSFS "Wildland Home Fire Risk Evaluation System". A description is found in Appendix 5. Results are:

Number of Lots				
Extreme	High	Moderate	Low	Under Construction

## II. MITIGATION RECOMMENDATIONS

### A. Individual Homeowner Actions:

#### 1. Now

- a. **Create** a defensible space around your home and other outbuildings. Dimensions vary depending upon the degree of slope of your property. (See Appendix 7.)
- b. **Remove** trash and other combustible material (ie. hay, lawn furniture, etc.) from the defensible space.
- c. **Mow** grass and weeds to less than 4 inches in height within 10 feet of structures, propane tanks, and utility service boxes.
- d. **Stack** firewood a minimum of 30 feet uphill from structure or on an even contour with structure.
- e. **Remove** trees growing through roof or porch.
- f. **Use** non-combustible roofing material.
- g. **Clean** roof and rain gutters of all debris.
- h. **Remove** any branches within 15 feet of the chimney.

- i. **Utilize** a spark arrester on the chimney.
- j. **Place** screens on foundation and vent eaves.
- k. **Post** name/address signs which are clearly visible from the road.
- l. **Widen** driveway and provide a turn-around space for emergency vehicles.
- m. **Develop** outdoor water supply.
- n. **Practice** a family fire drill and evacuation plan.
- o. **Make** a list of items to take should evacuation be required.

2. When a Fire Occurs

- a. **DO NOT JEOPARDIZE YOUR LIFE!**
- b. **Prepare** to evacuate. Place all valuables in your vehicle, place keys in the ignition, close all windows, and park "heading out".
- c. **Remove** combustible items from around your home. (Includes firewood, lawn furniture, hay bales, etc.)
- d. **Close** or cover outside attic, eave, and basement vents, and window shutters (if present).
- e. **Connect** garden hose to outside spigot. Utilize enough hose to reach the entire house, including the roof.
- f. **Place** a ladder against the house opposite the side of the approaching fire.
- g. **Place** a lawn sprinkler on the roof if it is combustible. Do not turn on the water until the fire is very close.
- h. **Close** all windows, chimney dampers, and doors. Leave exterior doors unlocked.
- i. **Turn** on all exterior lights.
- j. **Shut** off gas at the meter/tank.
- k. **Remove** lace, nylon, or "light" material curtains from all windows. Close all venetian blinds and heavy curtains.
- l. **Move** overstuffed furniture away from all windows and sliding-glass doors.

- m. **Close** the garage door, but leave it unlocked. Disconnect the automatic door opener (if present).

**B. Subdivision/Homeowner Actions: (Suggestions)**

1. In conjunction with (Name)\_\_\_\_\_ **place** and maintain Fire Danger Sign(s) at all Subdivision entrances.
2. **Develop** and maintain Defensible Space around the following:
  - All community-held facilities
  - Natural Gas vent locations
  - Electrical Transformer boxes
  - Telephone Service boxes
  - All utility poles
3. **Encourage** homeowners to develop Defensible Space around individual homes.
4. **Develop** Defensible Space on all Open Space lands.
5. **Sign** all roads. (Letters should be reflective and a minimum of four inches high.)
6. **Encourage** homeowners to sign their driveway with their name/address.
7. **Widen** roads and improve height clearance to facilitate easy access of emergency vehicles.
8. **Develop** alternative water sources.
9. **Notify** all new residents of wildfire hazard and supply each with appropriate hazard mitigation material available through ( Name)\_\_\_\_\_.

**C. Fire Department Actions: (Suggestions)**

1. **Obtain** enough copies of the Wildfire Hazard Evaluation Map to place one in each piece of equipment and in each station.
2. **Conduct** "familiarization" drills within the subdivision once per year.
3. **Ensure** that wildland fire tools are maintained on each piece of equipment.
4. **Develop** and maintain a 10-person wildland fire cache, in addition to the tools on each piece of equipment.
5. **Formalize** agreements for water use from the appropriate owner.

6. **Ensure** each firefighter has wildland Personal Protective Equipment and has received proper and appropriate training.
7. **Familiarize** yourself with the County Wildfire Annual Operating Plan.
8. **Host** periodic "Wildfire Awareness/Hazard Mitigation" meetings within the subdivision.
9. **Encourage** development of alternative water sources and Defensible Space.

**D. Sheriff's Department Actions: (Suggestions)**

1. **Obtain** enough copies of the Wildfire Hazard Evaluation Map to place one in each vehicle and in each station.
2. **Conduct** "familiarization" drills within the subdivision once per year.
3. **Formalize** agreements for water use from the appropriate owner.
4. **Facilitate** acceptance/use of the County Wildfire Annual Operating Plan.
5. **Host** periodic "Wildfire Awareness/Hazard Mitigation" meetings within the subdivision in cooperation with the local Fire Department
6. **Develop/practice** evacuation techniques.

- \* **E. Other: (May include any other Local, State, or Federal agencies, or private companies/organizations, provided they are not adjacent property owners as discussed in Section F below.)**

\* **F. Adjacent Property:**

Ownership

Actions

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### III. RESPONSE PLAN

#### A. Fire Protection Responsibility:

1. Agency

a. Structural (Name)\_\_\_\_\_

b. Wildland

1) Private land (Name)\_\_\_\_\_ by and through the County Sheriff.

2) State land (Name)\_\_\_\_\_ by and through the County Sheriff.

3) Federal land (Name)\_\_\_\_\_

2. Command - The first initial attack Incident Commander (IC) on the scene shall serve as IC until properly relieved.

#### B. General Goals/Objectives:

1. Strategic - (Suggestions)

- a. Ensure the safety of all firefighters, residents and bystanders.
- b. Conservation of property by minimizing damage and protecting all structures and improvements within the fire perimeter.
- c. Stabilize incident and contain fire to specific geographic areas.
- d. Protect exposures threatened by the fire but outside current fire perimeter.
- e. Extinguish fire.
- f. Perform necessary rehabilitation work.

2. Tactical - (Suggestions)

- a. Evacuation or in-place shelter of residents.
- b. Establish traffic control within affected area.
- c. Briefing of personnel on safety and hazards.
- d. Determine Operational Mode --
  - 1) Offensive Mode

- 2) Defensive Mode
- 3) Combination
- e. Determine resource needs and assignments
  - 1) Type and #
    - a) Aircraft
      - (1) Rotor wing
      - (2) Fixed wing
    - b) Mechanized
      - (1) Dozer
      - (2) Road Grader
      - (3) Other
    - c) Hand Crews
    - d) Water/Chemical Delivery Systems
      - (1) Engines
      - (2) Tenders
      - (3) Portable pumps
      - (4) Other
  - 2) Assignment
    - a) Reconnaissance
    - b) Medical
    - c) Suppression
      - (1) Line construction
      - (2) Prepare structures (See Section H)
      - (3) Burn out
      - (4) Other
    - d) Rehabilitation
- f. Manage utilities
  - 1) Water Supplies
  - 2) Electrical
  - 3) Natural Gas & Propane
  - 4) Telephone

**C. Anticipated Problems:**

- 1. Firefighter Safety - (Suggestions)
  - a. Inexperience of crews with wildfire conditions.



- b. Firefighter physical condition and stamina.
- c. Narrow roads and private drives.
- d. Confusion and panic associated with evacuation.
- e. Possible loss of or reduction of water capacity due to high demand on water system.
- f. Limited availability of personnel and resources.
- g. Overhead power lines and utility service boxes.
- h. Septic systems.
- i. Frightened and confused pets.
- j. Hazardous materials, including propane tanks.
- k. Desire of improperly trained/equipped personnel to enter burning structures.

2. Wildland Fire **WATCH OUT** Situations

- a. Failure to adequately scout and size up fire.
- b. Personnel are not familiar enough with terrain to work after dark.
- c. Safety zones and escape routes not identified.
- d. Individuals are unfamiliar with weather and local factors that affect fire behavior.
- e. Personnel are uninformed on strategy, tactics, and hazards of the fire.
- f. Personnel are unclear on instructions or assignments.
- g. Personnel are out of communication with crew members or supervisor.
- h. Line construction is occurring without a safe anchor point.
- i. Line construction is occurring downhill towards the fire.
- j. Resources are attempting a frontal assault on the fire.
- k. There is unburned fuel between firefighters and the fire.
- l. Personnel cannot see the main fire and are not in contact with someone who can.
- m. Personnel are on a hillside where rolling material can ignite fuel below.

- n. The weather is getting hotter and drier.
  - o. The wind is increasing and/or changing direction.
  - p. Personnel are reporting frequent spot fires across line.
  - q. Terrain and fuels make escape to safety zones difficult.
  - r. Personnel feel like taking naps near the fireline.
3. Structural Fire **WATCH OUT** situations
- a. Poor access to the fire.
  - b. Inadequate bridge load limits.
  - c. Garages with closed, locked doors.
  - d. Inadequate water supply.
  - e. Windows are black or smoked over.
  - f. There are septic tanks and leech lines present.
  - g. Structure is burning with puffing rather than steady smoke.
  - h. Construction is wood with shake shingle roof.
  - i. Natural fuels within 30 feet of the structure.
  - j. Known or suspected panicked publics are in the vicinity.
  - k. Windows are bulging and the roof hasn't been vented.
  - l. Additional fuels can be found in open crawl spaces beneath the structure.
  - m. Structure is in or near a chimney or canyon.
  - n. Elevated fuel or propane tanks are present.
4. **LCES**
- a. Place **lookouts** around the fire area to observe fire behavior and warn resources of potential hazards.
  - b. Make sure suppression resources have adequate **communication**.
  - c. Identify **escape routes** and assure all resources can identify these routes at all times.

- d. Identify **safety zones** and assure resources know where they are located.

**D. Expected Fire Behavior** (head fire only):

- 1. General Narrative - Select appropriate narrative based upon Subdivision Fuel Type (as identified on the Wildfire Hazard Rating Form, Appendix 4.)

<u>Fuel Type</u>	<u>Narrative</u>
Models 1,2	Low-moderate intensity, short duration fire, ROS moderate-high, fire spread fairly easy to stop.
Models 5,8,9	Low-moderate intensity, moderate duration fire: flare-ups not uncommon, ROS slow - moderate, short-to-medium range spotting possible (<.25 mile), moderate work required to stop fire spread.
Models 6,7	Moderate-high intensity, short-moderate duration fire: flare-ups frequent, ROS moderate, short-to-medium range spotting possible (<.25 mile), fire spread may be difficult to stop. Models 10,11,12 Medium to high-intensity, moderate-to-long duration fire: flare-ups frequent, ROS moderate, medium-to-long range spotting possible (>.25 mile), fire spread may be difficult to stop.
Models 3,4,13	High intensity, short-to-long duration fire: typically involves entire fuelbed, ROS moderate-fast, spotting possible, fire spread may be difficult to stop.

- 2. For those also utilizing the Wildfire Hazard Area Maps (WHAM), refer to Appendix 10 for expected fire behavior and the vegetation in identified hazard classes.

3. Specific - Determined utilizing BEHAVE (The Fire Behavior Prediction System) and NFFL fuel models.

a. Input data -- (Substitute input data as appropriate.)

	<u>Average Day</u>	<u>Red Flag Day</u>
Date	_____	_____
Time (hrs)	_____	_____
Temperature (F)	80	92
Min. Relative Humidity (%)	18	8
Average Wind Speed (MPH)	6	15
Live Fuel Moisture (%)	100	100
1 Hr. Fuel Moisture (%)	5	2
10 Hr. Fuel Moisture (%)	8	5
100 Hr. Fuel Moisture (%)	14	10
Average slope (%)	___	___
Fuel Model	___	___

b. Outputs

Rate of spread (chains/hr)	_____	
Fireline intensity (Btu/ft/s)	_____	
Average flame length (ft)	_____	
		Response Time
		<u>.3 HOUR</u> <u>1 HOUR</u>
Area (acres)		
Perimeter (ch)		
Max. spotting distance (mi)	_____	
Probability of Ignition (%)	_____	
<i>(Tailor the above response times to typical local capability)</i>		

When developing average day information for your area, assistance may be obtained through the Colorado Climate Center at Colorado State University. Fuel Moisture and Red Flag Day calculations can be obtained from a qualified Fire Behavior Analyst.

4. Fire Characteristics Chart (Projected)  
*Indicate "Average" and "Red Flag" Day for your Area*



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Interagency radio cache may be requested through the local Interagency Dispatch Center.

**G. Structure Defense:**

1. General Guidelines -
  - a. Always stay mobile.
  - b. Back your engine in so you can get out fast.
  - c. Coil a short 1 1/2" charged line with a fog nozzle on your engine for safety and quick knock down.
  - d. Don't make long hose lays....generally no more than 200'.
  - e. Check roads for clear escape routes before the fire hits.
  - f. Triage each structure according to the following:
    - 1) Eliminate the hopeless - Forget those that are impossible to defend or too dangerous to try, and leave those already involved.
    - 2) Ignore the unnecessary - Avoid those needing little or no protection.
    - 3) Deal with the rest - Concentrate on seriously threatened but savable structures.
  - g. Check and mark any hazardous materials (i.e. propane).
  - h. Move wood piles, hay bales, etc. away from structures.
  - i. Close windows, shutters, and doors.
  - j. Coil and charge garden hoses.

- k. Place owner's ladder at a corner of the home least threatened by the fire.
  - l. Leave home lights on inside and out, day and night.
  - m. Build line (hand or wet) and burn-out.
  - n. If a home becomes well involved, **LEAVE IT** and move to one you can save.
  - o. **ALWAYS** wear your personal protective equipment.
  - p. Firefighter safety and survival is always the number one priority.
2. Triage Considerations -
- a. Safety Considerations - review all Watch-out Situations.
  - b. Access Considerations - ingress/egress; turnarounds; fuels tight against R.O.W.; etc.
  - c. Fire behavior - both current and expected.
  - d. Estimated and apparent hazards.
  - e. Types of fuel - including the structures themselves.
  - f. Manpower and equipment resources - on-site, en route, and available.

**H. Locations:**

1. Command Post -  
The following location(s) will be utilized as the preferred Incident Command Post (ICP) location(s):
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
2. Staging Area(s) -  
The staging area(s) for operations within the subdivision is/are designated as:
  - a. Location \_\_\_\_\_
  - b. Designation (Name) \_\_\_\_\_
  - c. Ownership \_\_\_\_\_
3. Safety Zone(s) -  
The safety zone(s) for operations within the subdivision is/are designated as:
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
4. Helispot(s)  
The helispot(s) for operations within the subdivision is/are designated as:
  - a. \_\_\_\_\_



- b. \_\_\_\_\_
- c. \_\_\_\_\_

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5. Other

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**I. Evacuation:**

1. Procedure

- a. The Incident Manager or Incident Command Team in coordination with local authorities is responsible for initiating evacuation planning.
- b. Local government is responsible for assisting in the dissemination of information to local residents.
- c. All public information including that given door to door will be approved by the Incident Commander.
- d. Reoccupation of homes will occur only after the Incident Commander determines it to be reasonable.
- e. The decision to initiate actual evacuation will come at the order of the Incident Commander in coordination with the appropriate jurisdiction/authority required by law to participate/order the evacuation process.

2. Travel Routes

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

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3. Plan - See APPENDIX 9.

## APPENDIX 1

### DEFINITIONS

**CRITICAL FIRE WEATHER** is a set of weather conditions (usually a combination of low relative humidity and wind) whose effects on fire behavior make control difficult and threaten fire fighter safety.

**DEFENSIBLE SPACE** is an area either natural or man-made, where material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

**FIRE CHIEF** is the chief officer or the chief officer's authorized representative of the fire department serving the jurisdiction.

**FIRE HAZARD** is a fuel complex defined by kind, arrangement, volume, condition and location that determines the degree of both ease and suppression difficulty.

**FIRE RESISTIVE CONSTRUCTION** is construction to resist the spread of fire. For descriptions, see the Building Code.

**FIRE WEATHER** is weather conditions favorable to the ignition and rapid spread of fire. In wildfires, this generally includes high temperatures combined with strong winds and low humidity. See "Critical fire weather."

**FUEL BREAK** is an area, strategically located for fighting anticipated fires, where the native vegetation has been permanently modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier fire control and to provide access for fire fighting.

**FUEL, HEAVY**, is fuel consisting of round wood 3-to 8 inches (76 to 203mm) in diameter.

**FUEL, LIGHT**, is fuel consisting of herbaceous plants and round wood less than 1/4 inch (6.4mm) in diameter.

**FUEL-LOADING** is the oven dry weight of fuels in a given area, usually expressed in tons per acre (T/A) (tons/ha) or in pounds per acre (lb/a) (kg/ha). Fuel loading may be referenced to fuel size or timelag categories, and may include surface fuels or total fuels.

**FUEL, MEDIUM** is fuel consisting of round wood 1/4 to 3 inches (6.4 to 76mm) in diameter.

**FUEL MODIFICATION** is a method of modifying fuel load by reducing the amount of nonfire-resistive vegetation or altering the type of vegetation to reduce the fuel load.

**FUEL MOSAIC** is a fuel modification system that provides for the creation of islands and irregular boundaries to reduce the visual and ecological impact of fuel modification.

**ICS MODES** Refer to Appendix 1a for the Colorado mode system.

**GREENBELT** is a fuel break designated for use other than fire protection.

**SLOPE** is the variation of terrain from the horizontal; the number of feet (meters) rise or fall per 100 feet (30 480 mm) measured horizontally, expressed as a percentage.

**URBAN-WILDLAND INTERFACE AREA** is that geographical area where structures and other human development meets or intermingles with wildland or vegetative fuels.

**WILDFIRE** is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

**WILDLAND** is an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities.

*(Add to or delete from this list as may be necessary for your particular situation)*

## COLORADO 4-MODE SYSTEM

**MODES:** The following emergency response modes have been established for the implementation of the ICS in Colorado:

Modes - A numerical classification system of mode 1 to mode 4, used to quickly describe an incident and predetermine necessary dispatch and support actions. Size and complexity of each incident determines its mode class. Principal jurisdictional agency has responsibility for identifying each incident's mode. Incident Commander will ensure that mode is communicated to assisting and cooperating agencies.

**Mode 1:** Routine emergency response. No significant impact on local resources. No alerting of back-up elements is necessary. Normally involves only one agency but may require minimum cooperation or support from another response agency. The supervisor of the initial elements of the principal responding agency will normally act as incident commander (IC) in accordance with that agency's normal procedures. The IC should establish a command post (even if it's only at the hood of a vehicle on which he can place a map and from which he can communicate); so that communications and coordination between the IC and assisting or cooperating agencies can be established. The EOC is not opened. Requirements for additional resources are channeled through the IC.

**Mode 2:** Routine emergency which exceeds the capacities of on scene personnel and equipment, involves multiple response agencies, and requires mutual aid support and preliminary alerting of County and State resources. The ICS is implemented and the Principal Response Agency will designate the IC, who will establish an incident command post (ICP). Decision made whether or not to open the EOC. Requirements for additional resources are channeled through the IC, to the EOC if it is opened, or to each individual agency.

**Mode 3:** Magnitude of the incident exceeds the capabilities of routinely available mutual aid and requires full mobilization of county resources. Principal Response Agency designates IC. ICP is opened. EOC is opened.

**Mode 4:** Situation exceeds available county resources and requires substantial mobilization of out-of county, State and/or Federal resources ICP and EOC open. ICS is fully implemented.

APPENDIX 2

LOCATION MAP

*insert map of local area here*

APPENDIX 3

Wildfire Hazard Rating Form

**COLORADO STATE FOREST SERVICE  
WILDFIRE HAZARD RATING FORM  
- SUBDIVISION -**

CSFS#175  
(6/97)

NAME OF SUBDIVISION \_\_\_\_\_ DATE \_\_\_\_\_  
 COUNTY \_\_\_\_\_ SIZE(AC) \_\_\_\_\_ #LOTS \_\_\_\_\_  
 RATING \_\_\_\_\_ COMMENTS \_\_\_\_\_

**A. SUBDIVISION DESIGN**

- 1. INGRESS/EGRESS:
  - TWO OR MORE ROADS PRIMARY ROADS 1\_\_
  - ONE ROAD 3\_\_
  - ONE-WAY IN, ONE-WAY OUT 5\_\_
- 2. WIDTH OF PRIMARY ROAD:
  - 20 FEET OR MORE 1\_\_
  - 20 FEET OR LESS 3\_\_
- 3. ACCESSIBILITY:
  - ROAD GRADE 5% OR LESS 1\_\_
  - ROAD GRADE 5% OR MORE 3\_\_
- 4. SECONDARY ROAD TERMINUS:
  - LOOP ROADS, CUL-DE-SACS WITH OUTSIDE TURNING RADIUS OF 45 FEET OR GREATER 1\_\_
  - CUL-DE-SAC TURN-AROUND RADIUS IS LESS THAN 45 FEET 2\_\_
  - DEAD-END ROADS 200 FEET OR LESS IN LENGTH 3\_\_
  - DEAD-END ROADS GREATER THAN 200 FEET IN LENGTH 5\_\_
- 5. AVERAGE LOT SIZE:
  - 10 ACRES OR LARGER 1\_\_
  - LARGER THAN 1 ACRE, BUT LESS THAN 10 ACRES 3\_\_
  - 1 ACRE OR LESS 5\_\_
- 6. STREET SIGNS:
  - PRESENT 1\_\_
  - NOT PRESENT 5\_\_

**B. VEGETATION (UWIC DEFINITIONS)**

- 1. FUEL TYPES:
  - LIGHT 1\_\_
  - MEDIUM 5\_\_
  - HEAVY 10\_\_
- 2. DEFENSIBLE SPACE:
  - 70% OR MORE OF SITE 1\_\_
  - 30% OR MORE, BUT LESS THAN 70% OF SITE 3\_\_
  - LESS THAN 30% OF SITE 5\_\_

**C. TOPOGRAPHY**

- 1. PREDOMINANT SLOPE:
  - 8% OR LESS 1\_\_
  - MORE THAN 8%, BUT LESS THAN 20% 4\_\_
  - 20% OR MORE, BUT LESS THAN 30% 7\_\_
  - 30% OR MORE 10\_\_

**D. ROOFING MATERIAL**

- CLASS A RATED 1\_\_
- CLASS B RATED 3\_\_
- CLASS C RATED 5\_\_
- NON-RATED 10\_\_

**E. FIRE PROTECTION - WATER SOURCE**

- 500 GPM HYDRANT WITHIN 1000 FEET 1\_\_
- HYDRANT FARTHER THAN 1,000 FEET OR DRAFT SITE 2\_\_
- WATER SOURCE 20 MINUTE OR LESS, ROUND TRIP 5\_\_
- WATER SOURCE FARTHER THAN 20 MINUTES, AND 45 MINUTES OR LESS ROUND TRIP 7\_\_
- WATER SOURCE FARTHER THAN 45 MINUTES ROUND TRIP 10\_\_

**F. EXISTING BUILDING CONSTRUCTION MATERIALS**

- NONCOMBUSTIBLE SIDING/DECK 1\_\_
- NONCOMBUSTIBLE SIDING/COMBUSTIBLE DECK 5\_\_
- COMBUSTIBLE SIDING AND DECK 10\_\_

**G. UTILITIES (GAS AND/OR ELECTRIC)**

- ALL UNDERGROUND UTILITIES 1\_\_
- ONE UNDERGROUND, ONE ABOVE GROUND 3\_\_
- ALL ABOVE GROUND 5\_\_

**TOTAL FOR SUBDIVISION: \_\_\_\_\_**

**RATING SCALE:**

- MODERATE HAZARD 40 - 59
- HIGH HAZARD 60 - 74
- EXTREME HAZARD 75+

APPENDIX 4

CSFS Wildfire Hazard Matrix  
For  
Individual Lots

FUEL	Slopes %			
Class *	0 - 8%	9 - 20%	21 - 30%	31%+
1	LOW	MODERATE	MODERATE	HIGH
2	MODERATE	HIGH	HIGH	EXTREME
3	MODERATE	HIGH	EXTREME	EXTREME
4	HIGH	EXTREME	EXTREME	EXTREME

\*As described in the NWCG publication *Wildland Home Fire Risk Meter*



## APPENDIX 5

### CSFS Wildland Home Fire Risk Evaluation System

1. Utilize the "Home Fire Risk Meter" to establish a base rating.
2. Utilize the following list of items to assess "penalty points". Each penalty point is one increment on the Hazard Meter.

<u>ITEM</u>	<u># PENALTY POINTS</u>
Wood Deck	1
Stilted construction	1
Wood siding	1
Debris on roof (needles, etc)	1
No vent screens	1
No chimney spark arrester	1
Fuelwood on deck, under porch	2
Branches above roof	2
Tree(s) through deck or roof	2
Non-maintained wooden siding	2
Branches within 10 ft of roof	2
Poor access	2

3. Utilize the following Wildland-Urban Interface Individual Home rating form to record data.

**\_\_\_\_\_ FIRE PROTECTION DISTRICT  
WILDLAND-URBAN INTERFACE  
INDIVIDUAL HOMESITE  
WILDFIRE HAZARD & STRUCTURE TRIAGE RATING**

**COUNTY:** \_\_\_\_\_ **SUBDIVISION:** \_\_\_\_\_ **DATE:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_ **RATED BY:** \_\_\_\_\_

RATE USING: <i>WILDLAND HOME FIRE RISK METER</i>						ADD 1 POINT FOR EACH					
LOT #	OWNER NAME	% SLOPE	VEG TYPE (<100')	ROOF TYPE	PRELIM RATING	WOOD DECK	STILTED HOUSE	WOOD SIDING	ROOF DEBRIS	NO SCREEN ON VENTS	NO SPARK ARRESTOR

ADD 2 POINTS EACH							RECOMMENDATIONS				
FUEL ON OR UNDER DECK	BRANCHES <10" OF ROOF	ROOF/DECK TREE	NON-MTND. WOODEN SIDING	POOR ACCESS	TOTAL CORRECTED POINTS	LOT VEG TYPE	DEFENSE SPACE DIMENSIONS U  D  L  R	PRUNE HEIGHT	DEAD & DOWN	MOW	HAZ-MAT FUELS PRESENT AND TYPE

NFPA OCCUPANCY HAZARD CLASSIFICATION NUMBER: \_\_\_\_\_ NFPA CONSTRUCTION CLASSIFICATION NUMBER: \_\_\_\_\_

STRUCTURE VOLUME: \_\_\_\_\_ VOLUME = (W x L) X (H + 1/2AH) MINIMUM WATER SUPPLY: \_\_\_\_\_  
 MINIMUM WATER SUPPLY = (TOTAL STRUCTURE VOLUME / OCCUPANCY HAZARD CLASS) X CONSTRUCTION CLASS

COMMENTS:

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APPENDIX 6

Individual Lot/Structure Hazard Evaluation Map

*(Insert Map here)*

## APPENDIX 7

### Defensible Space Guidelines

**Definition :** An area either natural or man-made, where material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

**Goal :** To provide an area from which fire suppression personnel can effectively operate during a wildfire.

- Action :**
- a. Thin conifer trees so there is a minimum distance of 10 feet between tree foliage.
  - b. Separate brush clumps from each other by a minimum of 10 feet.
  - c. Prune all tree limbs to a minimum height of 10 feet (pine, fir, spruce) or 4 feet (pinon, juniper), and remove all ground fuel below them.
  - d. Remove dead/downed wood and mow grass/weeds to a height of less than 4 inches.
  - e. Incorporate entire property, subdivision, and adjacent ownerships.

APPENDIX 8

HOMEOWNER STATUS

Emergency Contact - Name: \_\_\_\_\_  
Phone: \_\_\_\_\_

Filing #	Lot #	Name and Address	Phone #	Status
				Full Part

APPENDIX 9

**Wildfire Evacuation Plan**

**Incident:** \_\_\_\_\_ **Subdivision:** \_\_\_\_\_

Date/Time Prepared: \_\_\_\_\_ Who: \_\_\_\_\_

Date/Time Executed: \_\_\_\_\_ Who: \_\_\_\_\_

County Agency (Name) :		Agency Director(Name): _____	
24 hr Phone # :		Night Phone #: _____	
		Pager #: _____	
Number of people to evacuate:			
Adults:	Children:	Handicapped:	Other:
Special instructions:			
Equipment required:			
Evacuation Center:			
Transportation routes (alternates):			
Air to air freq:		Air to ground freq:	
OEM 24 hr #: Other:		Red Cross 24 hr: Other:	
<u>Special instructions:</u>		<u>Special instructions:</u>	
Interagency Dispatch Center phone #:		Other Local Government contact:	
		Wk ph:            Hm ph:	

Special instructions:

Special instructions:

APPENDIX 10  
**FIRE BEHAVIOR VEGETATION  
 CHARACTERIZING  
 FIRE HAZARD CLASSES**

HAZARD CLASS	EXPECTED FIRE BEHAVIOR	VEGETATION (FUELS)
0	None	None (Open water, bare rock, cultivated fields etc.)
X Severe Hazard (Brush)	Flames 5-20' high, of brief duration; high spread rates, at least 40 acres/hr; humans can not safely pass through flames but can occupy burned area within about 15 minutes; short range spotting from blowing embers common.	Dense to moderately dense flammable vegetation <= 10' high, including Gambel Oak, Big Sagebrush, conifer reproduction; abundant litter and/or herbaceous fuel, scattered conifer stand may be present.
A Low Hazard	Flames <= 5' high, higher flareups rare; duration of highest flames brief; fire spread slow to fast, 1-40 acres/hr; humans can usually run through flames without serious injury and can occupy just-burned areas; spotting generally rare short range.	Grass, weeds, brush <= 1' high, dead wood in contact with ground; open conifer stand may be present; includes aspen, cottonwood willow grasslands, brush other than oak, sage or ceanothus.
B Moderate Hazard	intermittent flareups occurring up to many feet above tree tops; short and medium range spotting common; behavior between flareups as in Class-A; passing through fire front sometimes possible but chancy; parts of burned area can be occupied within half hour.	Medium density conifer stands; surface fuel mainly herbage and litter; some patches of reproduction and dead wood; becomes Class-C if slash is present.
C Severe Hazard (Trees)	Flareups higher than tree tops frequent to continuous; spread rates of up to several hundred acres per hour possible; fire front impassable; spotting several hundred yards common, possibly up to 1 mile or more; just burned areas untenable for an >= hour.	Dense conifer stands with any surface fuel; medium density stands with Class-X fuels or much dead wood from blowdown. Insect activity, or logging.

- O Hazard = No Hazard or limited Hazard
- X Hazard = Severe Wildfire Hazard (Brush)
- A Hazard = Low Wildfire Hazard for Grass, Timber and Brush
- B Hazard = Moderate Wildfire Hazard for Grass, Timber and Brush