

Wilderness Streams

Community Wildfire Protection Plan



TABLE OF CONTENTS

I.	Definition of the Wildland Urban Interface.....	4
A.	Location... ..	5
B.	Ingress/Egress	5
1.	Routes	5
2.	Directions.....	5
C.	Road map of Subdivision.....	6
D.	Wildland Urban Interface Map.....	7
E.	Wildfire Hazard Map.....	8
II.	Structure/Lot Wildfire Hazard Evaluation/Fire Behavior.....	9
A.	Structure/Lot Wildfire Hazard Evaluation.....	9
B.	Expected Fire Behavior.....	9
III.	Community Values to be Protected	11
IV.	Reducing Structure Ignitability.....	12
A.	House Site Location.....	12
B.	Roof	12
C.	Siding/Walls.....	12
D.	Foundation	12
E.	Windows.....	12
V.	Defensible Space.....	13
A.	Defensible Space Zones.....	13
B.	Steps to Determine Recommended Size of Defensible Space.....	13
C.	Other Areas of Consideration	16
VI.	Community Preparedness	16
A.	Before Wildfire Emergency	16
1.	Individual Homeowner Actions.....	16
2.	Subdivision/Homeowner Actions	17
3.	Fire Department Actions.....	18
4.	Sheriff's Department Actions.....	18
B.	During a Wildfire Emergency "Response Plan"	19
1.	Fire Protection Responsibility.....	19
2.	Alarm Response	19
3.	Access	20
4.	Water Supply Table and Map	20
5.	Locations.....	22
a.	Command Post.....	22
b.	Staging Area.....	22
c.	Safety Zone(s).....	22
d.	Helispot(s).....	22
6.	Evacuation.....	22
a.	Procedure	22
b.	Escape Route during Emergency	22
7.	Radio Frequencies.....	22
8.	Adjacent Property	23
9.	General Goals/Objectives	23
10.	Anticipated Problems.....	24

VII. Vegetation Management	25
A. Tree Species Overview	25
B. Management Overview	28
C. General Fuel Break Prescription According to Vegetative Type	29
D. Areas of Concern	31
E. Vegetation Management Map.....	36
F. Cost/Grants	37
Appendices	
1. Definitions.....	38
2. Defensible Space Guidelines	40
3. Common Aspen Diseases	42
4. Common Conifer Diseases	43
5. Common Conifer Diseases and Fungus.....	47
6. Department of Agriculture Grant Table.....	48
Signature Pages	50
CSFS CWPP Database Tracking Sheet.....	51

I. Definition of Wildland Urban Interface

Wildland Urban Interface is an area where structures are built in close proximity of naturally flammable vegetation. Wilderness Streams subdivision is a classic representation of that specific situation. Wilderness Streams subdivision is located in the central Rocky Mountains. The forest within and outside of the subdivision is dense and overcrowded. The sage in the area is also dense and wildfire receptive. This creates the situation where if a wildfire emergency was to occur, the likelihood of potential loss of property and life are high. A collaborative effort of forest management and organization between residents and adjoining neighbors is the only solution.

The wildfire hazard for Wilderness Streams subdivision comes from internal sources. The forest inside the subdivision is overstocked and infested with insects and diseases. There are dense pockets of dead trees due to the Balsam Bark Beetle and Armillaria root rot. There is also an abundance of ladder fuels throughout the subdivision. This puts the responsibility of wildfire safety on the subdivision. Residents must take a proactive approach to wildfire safety through forest management. The most important thing any Wilderness Streams resident can do for the health of their forest is to promote species diversity.

Defensible space is a key part of wildfire safety in the Wilderness Streams subdivision. Variable mitigation efforts by the residents of the Ohio Creek drainage area, puts the responsibility of wildfire safety with each individual landowner. Individual landowners must take ownership and manage their forest.

The Wildland Urban Interface map illustrates the boundaries of the interface. The WUI is represented by an orange line and covers an area of 7,900+ acres. The WUI boundaries are based upon wildfire potential. The boundary encompasses the area that has the highest potential to spread a wildfire into Wilderness Streams subdivision. Cross boundary efforts are essential for wildfire prevention. Fire is capricious and will always find a defenses weakest link. Fire does not respect human boundaries but rather mitigated fuels and natural barriers (less flammable vegetation, rock outcrop etc.). Residents are encouraged to work with both the Colorado State forest Service and public land managers in strengthening their wildfire defense through cross boundary treatments.

There are several areas of concern within the subdivision. The main threat is the north part of the main subdivision. County road 730 runs along the north edge and has a high potential for ignitions due to heavy tourist and agricultural traffic. The fuel type adjacent to the road is flashy which responds to humidity and combusts rapidly. The flashy fuels lead into heavy fuels with lots of dead and downed timber and a high density of structures. The second area of concern is the south edge of the subdivision. It is located in a valley or chimney that contains primarily flashy fuels with shrubs on the adjacent hillside leading into the subdivision. The chimney extends down into the agricultural portion of the Ohio Creek drainage. The potential for an agricultural related wildfire getting into the subdivision through this area is high.

A. Location

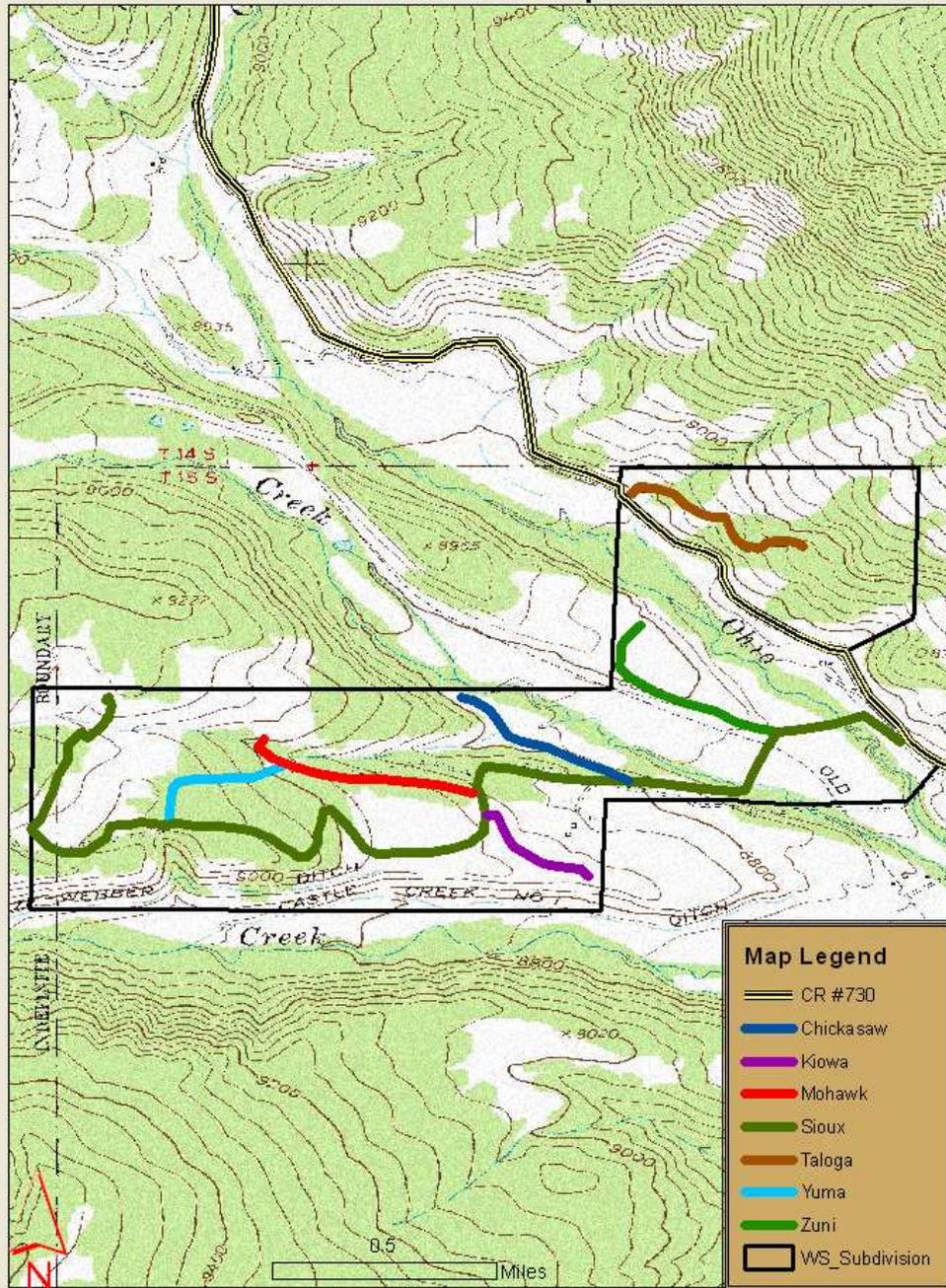
1. County: Gunnison, Colorado
2. Geographic Area: North-East of Gunnison along Ohio creek
3. Legal Description R87W, 15S, Sections 01,02 NMPM
4. USGS Map Quadrangles: Mt. Axtell

B. Ingress/Egress

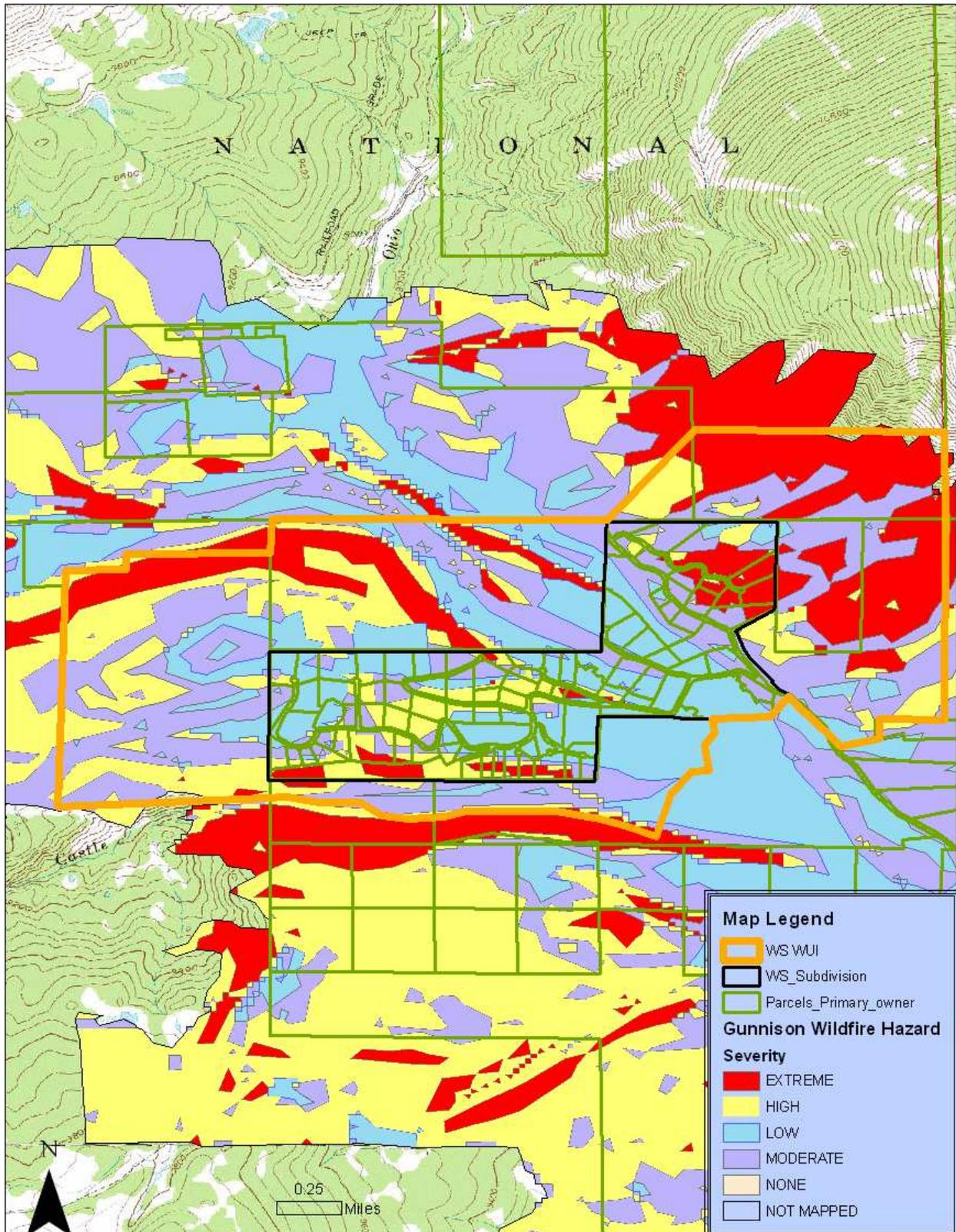
1. Routes: Hwy 135 north to County Rd 730 West
2. Directions: From Gunnison, North to CR 730 (Ohio Creek Rd) and then go west 3 miles (approx.) past the junction of 730 (Ohio Creek Rd) and Carbon Creek Rd (737)

C. Wilderness Streams Road Map

WS Road Map



E. Wilderness Streams Wildfire Hazard Map



II. Structure/Lot Wildfire Hazard Evaluation/ Fire Behavior

A. Structure/Lot Wildfire Hazard Evaluation

1. Subdivision - The subdivision has been rated utilizing the CSFS "Wildfire Hazard Rating Form".

The results are:

Points 67

Description High (*Moderate, High, Extreme*)

2. 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 Structures			
Extreme	High	Moderate	Low
0	20	15	25

B. Expected Fire Behavior (head fire only):

Aspen Stands

Fires are low to moderate in intensity except when they consume pockets of dry grass, sage -brush or conifer. Typically fires are of short duration. Rate of spread is moderate to high but fairly easy to stop.

Conifer Stands

Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Fire is of high intensity and can be of short or long duration, Rate of Spread is moderate to fast.

Douglas fir Timber

These fuels respond quickly to changes in weather. They will dry or absorb moisture rapidly. Increases in wind speed or slope will cause fire to increase in flame height and intensity. Fire behavior can range from low when burning conditions are marginal to extreme during hot, dry weather.

1. Specific - Determined utilizing BEHAVE (The Fire Behavior Prediction System) and NFFL fuel models.
 - a. Input data. 30 percent slope was used to show the fire behavior that could be expected on the more steep slopes in the Subdivision. The Extreme rated lots at the south end of the subdivision (see Appendix 6)

are located on steep slopes of 20 percent. Extreme rated lots on the West side of the subdivision are located above slopes exceeding 50 percent.

	Average Day	Red Flag Day
Date	7-31	7-31
Time (hrs)	1500	1500
Temperature (F)	65	75
Min. Relative Humidity (%)	18	10
Average Wind Speed (MPH)	6	15
Live Fuel Moisture (%)	150	100
1 Hr. Fuel Moisture (%)	5	2
10 Hr. Fuel Moisture (%)	8	5
100 Hr. Fuel Moisture (%)	14	10
Average slope (%)	30	30
Fuel Model	10	10

b. Outputs

1) Average Day

	AVERAGE DAY	
Rate of spread (chains/hr)	9.4	
Fireline intensity (Btu/ft/s)	100	
Average flame length (ft)	5.3	

	Response Time	
	.3 HOUR	1 HOUR
Area (acres)	.6	6.5
Perimeter (ft)	660	2310
Estimated spotting distance (mi)	.2	

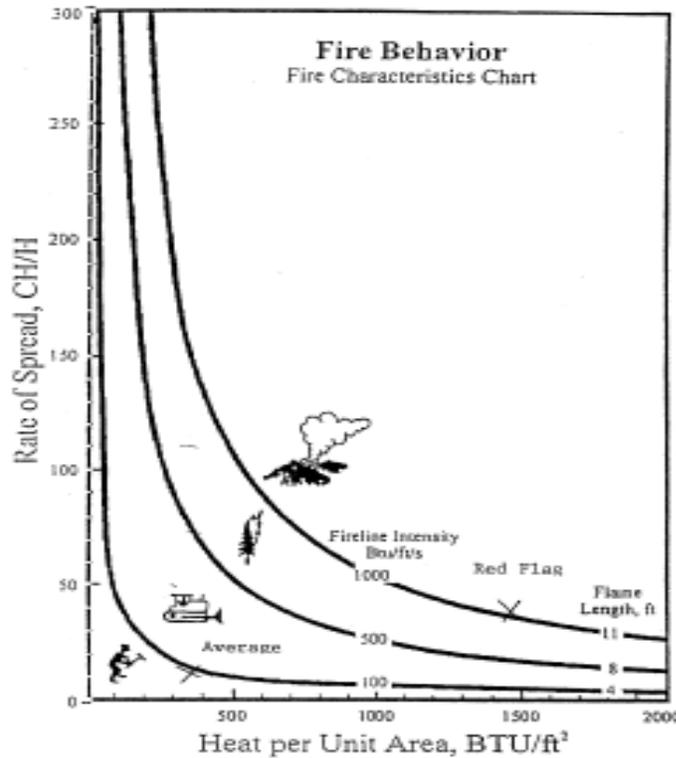
2) Red Flag Day

	RED FLAG DAY	
Rate of spread (chains/hr)	49	
Fireline intensity (Btu/ft/s)	746	
Average flame length (ft)	12.5	

	Response Time	
	.3 HOUR	1 HOUR
Area (acres)	10	117
Perimeter (ft)	3498	11748
Estimated spotting distance (mi)	.4	

2. Fire Characteristics Chart (Projected)

This chart shows the BTU per square foot at increasing rates of spread. Rates of spread are graphed in chains per hour. One chain equals 66 feet. The Average Day and Red Flag Day Fire Behavior are plotted on the chart.



III. Community Values to be Protected

This section addresses the essential community values that can be destroyed due to a wildfire. The highest priority for protection is human life. The community preparedness section (CPS) on [pg 17](#) has a wealth of information to help residents become safer both before and during a wildfire emergency. Part 2 of the CPS on [pg 19](#) has a response plan. The response plan, under section E on [pg 22](#), designates locations of command post, staging areas, safety zones and heli-spots. Under [section F # 1](#) of the CPS response plan on [pg 22](#) is the evacuation procedure. Section 2 on [pg 22](#) has the specific evacuation travel routes. Please refer to the road maps on [pgs 7](#).

The highest value is the residential structures. The first step in protecting structures is to refer to the Defensible Space section of the CWPP on [pg 13](#). This topic is further illustrated in appendix 2 on [pgs 40](#). Subtitle a. of section A of part 1 under the CPS ([pg 17](#)) covers actions homeowners should take prior to a wildfire emergency. These steps will help ensure the protection of structures.

The second community value to be protected is a series of improvements made to the subdivision. The first is the electronic gate that guards the entrance. This can be protected by clearing brush at least 15' feet away from the gate. Grass should be mowed and raked upon curing in fall.

The next improvement that should be protected is the historic cattle corral. This improvement can be protected by implementing defensible space according to the guide located on page 12.

IV. Reducing Structural Ignitability

A wildfire is capricious and will always find the weakest link in your defense. The goal of this section is to help residents make decisions in building materials and home maintenance, making their structures more fire resistant.

A. House Site Location

The first step in structure protection, for someone building a new home, is choosing a building site. When determining where a structure will be built, the developer and owner should consider how the native vegetation and topography variations affect wildfire behavior.

B. Roof

The second building standard that should be considered is the roofing material. One of a structures most vulnerable area is the roof, which is due to the amount of surface area. The roof can be continually inundated with flying firebrands.

C. Siding/Walls

The third consideration to look at while building or remodeling is the siding and walls. Use construction materials that are fire resistant or non-combustible whenever possible. Use a minimum of a class 3 flame spreading siding material. The best materials are brick or stucco type products. The walls should be constructed of fire resistive materials from the ground to the roof overhang.

D. Foundation

The fourth consideration is the foundation. The area is often the first area to come in contact with a spreading wildfire. Construct a closed foundation with concrete block, cement wall, or use other fire resistive materials.

E. Windows

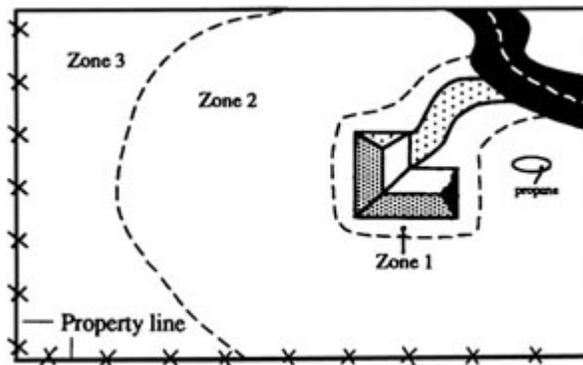
The fifth consideration is the window area and is often overlooked as a hazard. Radiant heat can pass through them and set fire to curtains or furniture. Minimize the size and number of windows on the side of the house that is likely to be exposed to

wildfire. Consider size and materials for windows, choose double pane glass for reducing the amount of radiant heat; plastic skylights can melt rapidly.

V. Defensible Space

Two factors have emerged as the primary determinates of a structure's ability to survive wildfire. These are the structure's roofing material and the quality of the defensible space surrounding it. Defensible space is an area around a structure where fuels have been mitigated to slow the spread of a wildfire. It also reduces the chances of a structure fire becoming a wildfire. Creating a defensible space involves developing a series of management zones in which different treatment methods are used depending upon the fuel type present. An example is found in the diagram below.

A. Defensible Space Zones



Zone 1: This area receives the most modification and treatment. It consists of an area 15 feet around structure in which flammable vegetation is removed. These 15 feet are measured from the outside edge of the home's eaves.

Zone 2: This area receives a fuel reduction treatment. The size of the area is determined by the average slope of the property. Within this zone continuity and arrangement of vegetation is modified. Remove stressed, diseased, dead or dying trees and shrubs. In the event of a crown fire reaching this zone, fuel will be broken up in such a way that the fire returns to the ground.

Zone 3: This area receives a traditional forest management treatment. The area starts from the end of zone 2 and ends at the landowner's property boundary. Landowners should contact the Colorado State Forest Service (970-641-6852) for assistance in managing this zone.

B. Steps to Determine Recommended Size of Defensible Space

The size of your defensible space is determined by the average slope of your property. A proper defensible space size can be determined using the three step process below.

1. 3 steps

Step 1. Determine average % slope of property (appendix 2b, pg 51)

Step 2. Determine size of zone 2 using provided graph in sec. 2, pg 15

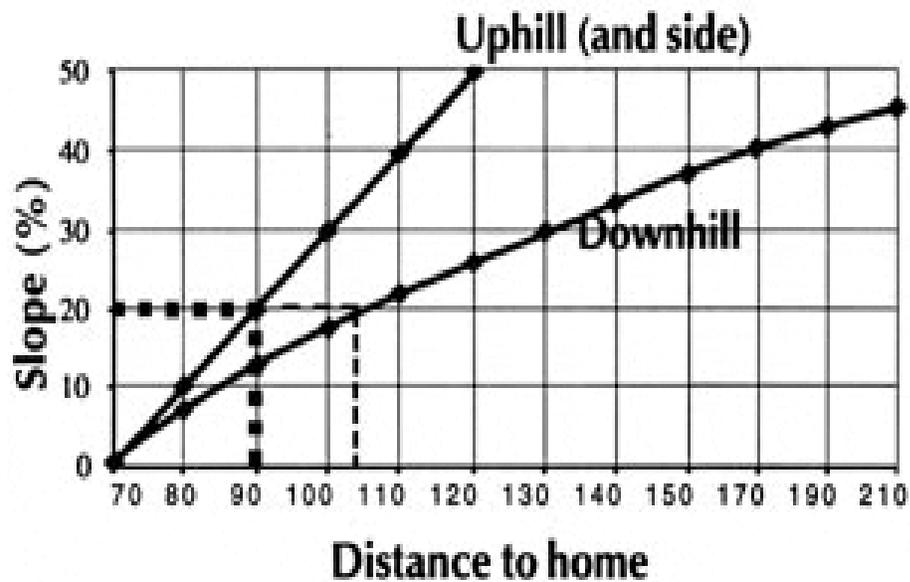
Step 3. Determine fuel type and appropriate mitigation recommendation in sec. 3, pg 15

Remember: Zone 1 is always 15 feet wide measured from the outside eaves and zone 3 extends from the end of zone 2 to the property boundary.

2. Zone 2 graph

This graph illustrates the recommended size of zone 2.

Directions: Find the property's average slope on left side of graph. Then follow that line over until it intersects with either the uphill or downhill line. Follow the point of intersection down to the bottom series of numbers. This number is the measurement from the eaves of the structure to the far edge of zone 2.



3. Fuel Types and Mitigation Recommendations for Defensible Space

Note: The subdivision has made a stump dump available to its residents thinning slash..

a. Aspen with Vegetative Understory

- 1) Zone 1: Remove all **flammable** vegetation 15 feet out from the eaves.
- 2) Zone 2: The vegetation in the understory should be mowed to a minimum height of 4 inches. This should be maintained throughout the year with periodic mowing.

- 3) Zone 3: Monitor for insect and disease. Refer to **appendix # 3** for information regarding common Aspen disease problems.
- b. Mixed Conifer (fir, spruce)
- 1) Zone 1: Remove all **flammable** vegetation 15 feet out from the eaves.
 - 2) Zone 2: The mixed conifer fuel type has a higher wildfire danger than Aspen due to its volatile needles. It requires significant fuel modification in order to reduce the wildfire danger. The idea for this fuel type in this zone is to break up the continuity, thus reducing the chances of a crown fire. Trees should be thinned to 10-12 foot spacing between stems. All residual trees should be pruned up 10 feet from ground level. Remove or evenly distribute all slash.
 - 3) Zone 3: This is an area of traditional forest management. The same prescription as zone 2 can be followed. With less attention paid to detail. Slash can be lopped and scattered up to a depth of 8 inches. *Close attention should be paid to slash density when lopping and scattering. This type of fuel can carry a wildfire long distances to a more receptive fuel type. Trees do not have to be limbed up. This area should be monitored for insect and disease problems.

Precaution: If your trees or home site are susceptible to wind throw and the trees have never been thinned, reduce the amount of trees removed in the first year. Engelmann spruce, Lodgepole Pine and Sub-alpine fir are especially prone to wind throw. Some good indicators of wind sensitive areas: 1) blown down trees 2) large root ball holes 3) ridge tops. If you have a wind sensitive area gradually remove the trees over a 6 year period. Remove more trees every 3 years until you have reached the recommended spacing. Only remove 1/3 of the large trees from a wind sensitive stand per entry.

- c. Sage
- 1) Zone 1: Remove all **flammable** vegetation 15 feet out from the eaves.
 - 2) Zone 2: This fuel is considered “flashy” due to its rapid response to changes in weather. It dries and absorbs moisture swiftly. The sage in zone 2 should be mowed to a height of 6 inches. Follow d-space size guidelines for conifer type fuels.
 - 3) Zone 3: Break up the continuity of the fuel by creating large islands of sage with treated vegetation strips in between

These are just general guidelines. Landowners are encouraged to contact their local Colorado State Forest Service office (970)641-6852 for guidance with a handout called “Creating Wildfire Defensible Zones” (603.2) The Colorado State Forest Service can

also assist landowners in finding a contractor that does fuels mitigation work.

C. Other Areas of Consideration

1. To prevent sparks from entering your home through vents; cover attics, soffit and floor vents with wire mesh no larger than 1/8 of an inch.
2. Prevent combustible materials and debris from accumulating beneath patio deck or elevated porches: screen under or box in areas below ground level.
3. Landscape with fire resistive plants
4. Incorporate walkways and retaining walls as man made fuel breaks
5. Clean gutters, eaves and roofs regularly.
6. Stack firewood and place propane tank at least 30 feet from structure and on uphill side on the contour of the structure.

VI. Community Preparedness

This section of the CWPP addresses what the subdivision residents and emergency response crews can do before and during a wildfire emergency situation. It will be broken up into two sections, **before** and **during**. The “**before**” section will explain what residents, HOA, local fire and sheriffs departments can do to lessen the danger of a wildfire emergency. The “**during**” section addresses what these same people can do in the event of a wildfire emergency. A response plan is found in this section that lays out the predetermined logistical planning.

A. Before a Wildfire Emergency

Wildfire awareness has been increasing over the years in the area.

The town has hosted the Colorado State Forest Service at meeting to discuss wildfire prevention and safety. Many residents have done fuel reduction projects on their properties. These types of collaborative efforts and the ones listed below are essential to a wildfire safe community. Residents are encouraged to continue working with their government agencies in making their community a safer one.

The items below are things individual landowners, the entire town, the volunteer fire department, and the sheriff’s office can do to help prevent and prepare for wildfire situations. People involved should use this section as a check off list for their own residences and agencies.

1. Individual Homeowner Actions
 - a. **Create** a defensible space around your home and other outbuildings. Dimensions vary depending upon the degree of slope of your property.

Defensible space means providing room for firefighters to protect a building (See defensible space sec. pg 13.)

- 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. Subdivision/Homeowner Actions
- a. In conjunction with the Gunnison Basin Wildfire Council, **place** and maintain Fire Danger Sign(s) at all Subdivision entrances.
 - b. **Develop** and maintain Defensible Space around the following:
 - 1) All community-held facilities
 - 2) Propane and gasoline tanks
 - c. **Encourage** homeowners to develop Defensible Space around individual homes.
 - d. **Maintain** a well thinned forest on all Open Space lands.

- e. **Sign** all roads. (Letters should be reflective and a minimum of four inches high.)
 - f. **Encourage** homeowners to sign their driveway with their name/address.
 - g. **Widen** roads and improve height clearance to facilitate easy access of emergency vehicles.
 - h. **Maintain** dry-hydrant in main lake.
 - i. **Notify** all new residents of wildfire hazard and supply each with appropriate hazard mitigation material available through the Gunnison Basin Wildfire Council.
3. Fire Department Actions
- a. **Obtain** a copy of the CWPP
 - b. **Be** available for "familiarization" drills within the subdivision once per year.
 - c. **Ensure** that wildland fire tools are maintained on each piece of equipment.
 - d. **Develop** and maintain a 10-person wildland fire cache, in addition to the tools on each piece of equipment.
 - e. **Formalize** agreements for water use with the appropriate owner.
 - f. **Ensure** on a regular basis that each firefighter has wildland Personal Protective Equipment and has received proper and appropriate training.
 - g. **Familiarize** yourself with the County Wildfire Annual Operating Plan.
 - h. **Be** available for periodic "Wildfire Awareness/Hazard Mitigation" meetings within the subdivision.
 - i. **Encourage** development of alternative water sources and Defensible Space.
4. Sheriff's Department Actions
- a. **Obtain** enough copies of the Wildfire Hazard Evaluation Map to place one in each vehicle and in each station.
 - b. **Conduct** "familiarization" drills within the subdivision once per year.
 - c. **Formalize** agreements for water use from the appropriate owner.

- d. **Facilitate** acceptance/use of the County Wildfire Annual Operating Plan.
- e. With CSFS, **host** periodic "Wildfire Awareness/Hazard Mitigation" meetings within the subdivision in cooperation with the local Fire Department.
- f. **Develop/practice** evacuation techniques.

B. During a Wildfire Emergency

This section addresses what residents and emergency response crews should do in the event of a wildfire emergency. The intent is to make an emergency situation operate efficiently and with minimal surprises. By having specific areas and responsibilities delegated an offensive plan can be put into action rapidly. A response plan has been developed to facilitate this rapid and efficient response.

RESPONSE PLAN

1. Fire Protection Responsibility

- a. Agency
 - 1) Structural: Gunnison Fire Protection District
 - 2) Wildland
 - a) Private land: Gunnison County.
By and through the County Sheriff.
 - b) Federal land: Bureau of Land Management.
- b. Command - The first initial attack Incident Commander (IC) on the scene shall serve as IC until properly relieved.

2. Alarm Response: These are equipment that are likely to respond. Actual response will depend on nature of situation and current commitments.

Response Agency	Station	Description Of Equipment	Response Time
GCFPD	Gunnison	2000 Gal. Tanker	90 minutes
GCFPD	Gunnison	Class one pumper	90 minutes
GCFPD	Gunnison	Brush fire unit	90 minutes
GCFPD	Gunnison	Brush fire unit	90 minutes
USFS	Gunnison	Type 6 Engine	90 minutes
USFS	Gunnison	Type 6 Engine	90 minutes

3. Access

a. Road System

- 1) Most are constructed of asphalt.
- 2) Some will support two lanes of traffic.
- 3) Some are loop roads.
- 4) Some are dead-end roads.
- 5) Road signs are present.

b. Driveways:

- 1) Individual home driveway width and height clearance is inadequate for emergency equipment.
- 2) Some individual homeowners have posted their name and address.

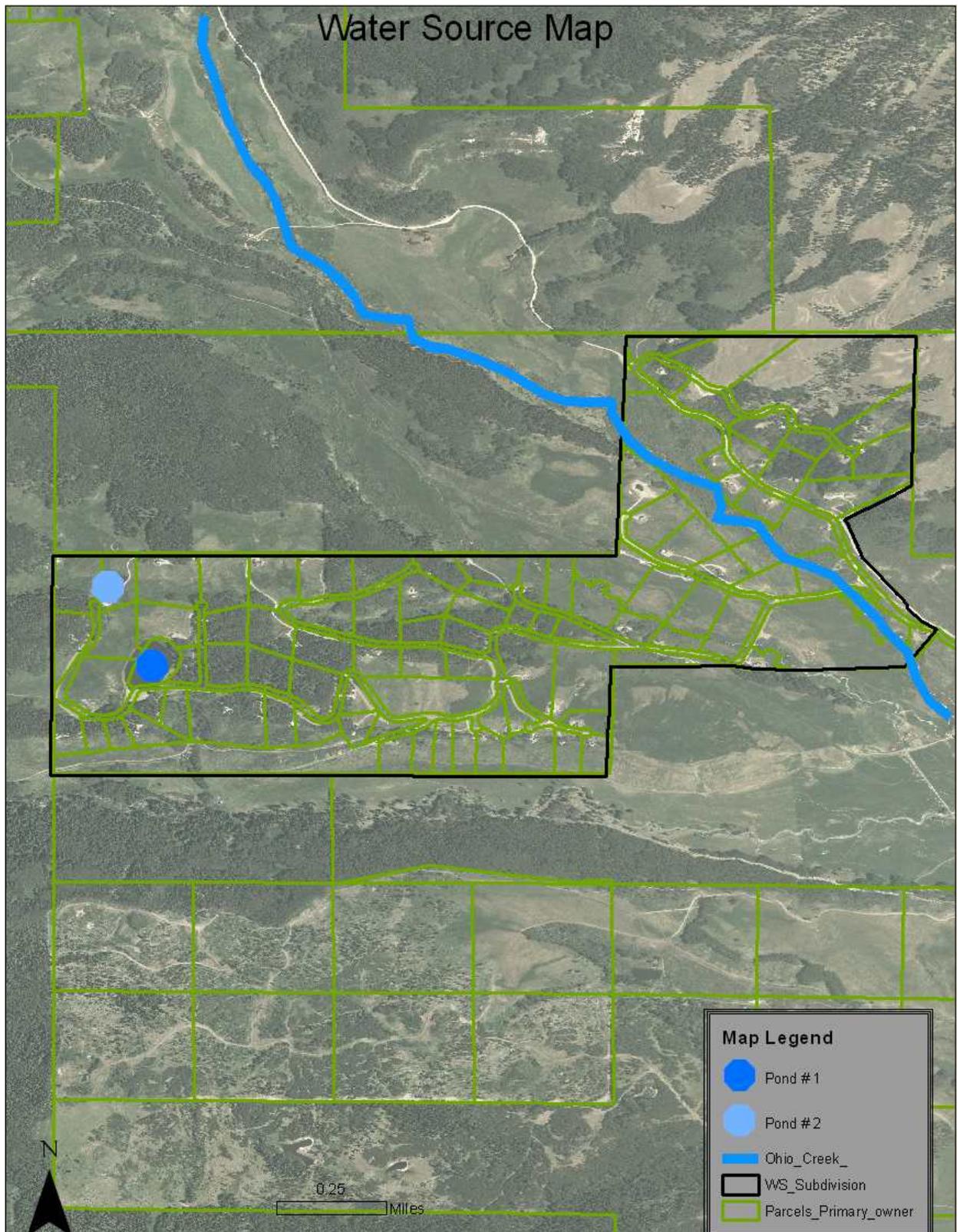
4. Water Supply (Water supply Pg 21)

a. Ponds/Creeks/Lakes/Rivers

Type P/C	#/Name	Status P/I	Helicopter Accessible Y/N	Pump Required Y/N	Water Capacity When Full
C	Ohio Creek	P	N	Y	Continual Flow
P	Sub. Pond 1	P	Y	Y	10,000+
P	Sub. Pond 2	P	Y	Y	5,000+

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

b. Wilderness Streams Water Source Map



5. Locations: (logistics map appendix # 4 pg 53)
 - a. Command Post - The following location(s) are recommended Incident Command Post (ICP) location(s):
 - 1) Horse corral
 - 2) Mail boxes
 - b. Staging Area(s) - The recommended staging area for operations within the subdivision is/are designated as:
 - 1) Field Adjacent to horse corral
 - 2) Field at junction of CR 730/737
 - c. Safety Zone(s) - The recommended safety zone(s) for operations within the subdivision is/are designated as:
 - 1) Areas not in fire's path
 - 2) Forest Service entrance parking lot
 - d. Helispot(s) - The recommended helispot(s) for operations within the subdivision is/are designated as:
 - 1) Field west of horse corral by subdivision entrance
 - 2) Central meadow along Kiowa Rd
6. Evacuation (WSS road maps pgs 6)
 - a. Procedure
 - 1) The Incident Commander or Incident Command Team in coordination with local authorities is responsible for initiating evacuation planning.
 - 2) Local government is responsible for assisting in the dissemination of information to local residents.
 - 3) All public information including that given door to door will be approved by the Incident Commander.
 - 4) Reoccupation of homes will occur only after the Incident Commander determines it to be reasonable
 - 5) 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.
 - b. Escape Route during Emergency (refer to WSS Road Maps on Pg 6)
 - 1) Evacuations will use County Road 730 to junction of 730 and 737
7. Radio Frequencies
 - a. Tactical Frequency - Each agency's normal operational frequency. It shall be used for communications on scene within the response agency.

- b. Operational Frequency - 154.280 (FERN); to be used in passing tactical orders from the Operations Chief or Incident Commander. A second channel may be operated on 154.145 (GCFPD).
- c. Command Frequency – TBD: to be used to coordinate activities; pass data to ICP, as a back-up for the operational frequency, and for entry communications between ICP and responding agencies.
- d. Interagency radio cache may be requested through the local Interagency Dispatch Center.

8. Adjacent Property:

Ownership	Phone
BLM	(970) 641-0471
USFS	(970) 641-0471

9. General Goals/Objectives:

- a. Strategic
 - 1) Ensure the safety of all firefighters, residents and bystanders.
 - 2) Conservation of property by minimizing damage and protecting all structures and improvements within the fire perimeter.
 - 3) Stabilize incident and contain fire to specific geographic areas.
 - 4) Protect exposures threatened by the fire but outside current fire perimeter.
 - 5) Extinguish fire.
 - 6) Perform necessary rehabilitation work.
- b. Tactical
 - 1) Evacuation or in-place shelter of residents.
 - 2) Establish traffic control within affected area.
 - 3) Briefing of personnel on safety and hazards.
 - 4) Determine Operational Mode --
 - a) Offensive Mode
 - b) Defensive Mode
 - c) Combination
 - 5) Determine resource needs and assignments
 - a) Type and #
 - (1) Aircraft
 - (a) Rotor wing
 - (b) Fixed wing
 - (2) Mechanized
 - (a) Dozer
 - (b) Road Grader

- (c) Other
- (3) Hand Crews
- (4) Water/Chemical Delivery Systems
 - (a) Engines
 - (b) Tenders
 - (c) Portable pumps
 - (d) Other
- b) Assignment
 - (1) Reconnaissance
 - (2) Medical
 - (3) Suppression
 - (a) Line construction
 - (b) Prepare structures (See Section H)
 - (c) Burn out
 - (d) Other
 - (4) Rehabilitation
- 6) Manage utilities
 - a) Water Supplies
 - b) Electrical
 - c) Natural Gas & Propane
 - d) Telephone

10. Anticipated Problems:

a. Firefighter Safety -

- 1) Inexperience of crews with Extreme wildfire behavior.
- 2) Narrow roads and private drives.
- 3) Confusion and panic associated with evacuation.
- 4) Limited availability of personnel and resources.
- 5) Overhead power lines and utility service boxes.
- 6) Septic systems.
- 7) Frightened and confused pets.
- 8) Hazardous materials, including propane and gasoline tanks.

b. Wildland Fire WATCH OUT Situations

- 1) Failure to adequately scout and size up fire.
- 2) Personnel are not familiar enough with terrain to work after dark.
- 3) Safety zones and escape routes not identified.
- 4) Individuals are unfamiliar with weather and local factors that affect fire behavior.
- 5) Personnel are uninformed on strategy, tactics, and hazards of the fire.
- 6) Personnel are unclear on instructions or assignments.
- 7) Personnel are out of communication with crew members or supervisor.
- 8) Line construction is occurring without a safe anchor point.
- 9) Line construction is occurring downhill towards the fire.

- 10) Resources are attempting a frontal assault on the fire.
- 11) There is unburned fuel between firefighters and the fire.
- 12) Personnel cannot see the main fire and are not in contact with someone who can.
- 13) Personnel are on a hillside where rolling material can ignite fuel below.
- 14) The weather is getting hotter and drier.
- 15) The wind is increasing and/or changing direction.
- 16) Personnel are reporting frequent spot fires across line.
- 17) Terrain and fuels make escape to safety zones difficult.
- 18) Personnel feel like taking naps near the fire-line.

c. Structural Fire WATCH OUT situations

- 1) Poor access to the fire.
- 2) Inadequate bridge load limits.
- 3) Garages with closed, locked doors.
- 4) Inadequate water supply.
- 5) Windows are black or smoked over.
- 6) There are septic tanks and leech lines present.
- 7) Structure is burning with puffing rather than steady smoke.
- 8) Construction is wood with shake shingle roof.
- 9) Natural fuels within 30 feet of the structure.
- 10) Known or suspected panicked residents or visitors are in the vicinity.
- 11) Windows are bulging and the roof hasn't been vented.
- 12) Additional fuels can be found in open crawl spaces beneath the structure.
- 13) Structure is in or near a chimney or canyon.
- 14) Elevated fuel or propane tanks are present.

d. LCES

- 1) Place lookouts around the fire area to observe fire behavior and warn resources of potential hazards.
- 2) Make sure suppression resources have adequate communication.
- 3) Identify escape routes and assure all resources can identify these routes at all times.
- 4) Identify safety zones and assure resources know where they are located.

VII. Vegetation Management

A. Tree Species Overview

Lodgepole Pine is a common species of conifer in the Ohio Creek drainage area. It is well adapted to the high mountain slopes of the Colorado Rockies. This species

occupies drier sites on a mountain and is known for its long slender trunk and high thin crown. The average mature size is 24 inches in diameter and 70 feet tall.

This is a highly fire dependent species of conifer. Many of the Lodgepole Pine in this area have serotinous cones. This variety requires the heat of a fire to release the seed by melting the resinous coating around the cone. This species is very dangerous in the wildland urban interface. The stands are very dense with lots of ladder fuels caused by its' prolific seeding. This species' growth and stand characteristics are designed to produce a stand replacing crown fire.

Lodgepole Pine is an important species for cover and habitat. Lodgepole Pine forests cover an extensive area that serves as deer and elk summer ranges. Although these forest typically have sparse understories due to overstocking, they provide important cover for ungulates that forage in associated non forested communities.

This species has been extensively attacked in the Colorado Rockies by the Mountain Pine Beetle, which has moved down from northern Colorado and into the central part of the state. Recently the Mountain Pine Beetle has moved south into Buena Vista, which is just on the other side of Gunnison County. A proactive approach to this insect is the best preventive measure. Thinning stands and keeping a diverse age class is the best management tool for prevention. This type of management also promotes better wildfire safety.

Douglas fir is a prevalent species in the Ohio Creek drainage. This species occupies many of the shaded and moist areas. It has a elevation range of 6,000-9,000 feet. Douglas fir is a wind-firm species due to its deep root system. This species has a high wildlife food value. Small animals rely upon this nut crop for food. Deer have been known to browse this species in harsh times.

Many of the Douglas fir stands in and around Wilderness Streams are over mature. Over mature trees are highly susceptible to Douglas fir bark beetles due to their low vigor. Bark beetles can build up population in weaker trees and then move onto healthier ones. Many of these stands and others are overstocked as well and contain an abundance of ladder fuels. This makes these particular stands susceptible to crown fires. In both cases, proper management is the solution. Dead, dying, diseased and over mature trees should be removed in order to promote a vigorous stand. In the case of an overstocked forest a thinning from below of the smaller trees is warranted. This will allow the residual stand of trees to be vigorous through increased sunlight, nutrients, and water.

Spruce, both Engelmann and Blue, are found in the Wilderness Streams area. Both are considered to have a high wildlife value. Generally, Engelmann is found higher up on a slope and Blue tends to be found in lower elevation draws and riparian areas. Both species have similar growth characteristics. Spruce prefers wetter areas than Douglas fir and north facing slopes. Its elevation range is 8,000 to 11,000. This species is generally not wind firm and is subject to blow over if thinned to heavy. Close attention to thinning prescriptions was paid while thinning on ridge tops.

Sub-alpine fir has similar growth characteristics as spruce. Generally these two species are found growing together. Sub-alpine fir has a fair wildlife value; its elevation range is 8,000 to 11,000 feet and prefers north facing slopes. This species is not considered wind-firm, and the same precautions used for spruce are applied to this species. Sub-alpine fir is a very common species in Wilderness Streams. Due to the root disease *Armillaria ostoyae* this species is in decline. The root disease weakens the tree causing high susceptibility to Western Balsam Bark Beetle. The two attackers kill the tree in unison.

Aspen is the final majority tree species found in the Wilderness Streams area. The leaves of aspen do not contain the volatile chemicals found in conifers. The lack of volatile chemicals makes them less likely to form crown fires. This makes aspen a very desirable species in a WUI setting. Wildfire mitigation in this species requires mowing the vegetation in the understory to a height of 6-8 inches near homes. However if conifer have begun to heavily invade the stand, thinning of the understory trees might be necessary in order to protect the integrity of the moderate wildfire risk trait of the species.

The aspen of the Ohio Creek area can be categorized into two sub-categories, High country Aspen (+9,000), Low country Aspen (-9,000). Each sub-category occupies sites that differ ecologically from one another. The sites have different amounts of water, nutrients and sun exposure. These factors make each stand grow uniquely.

The High country Aspen (9,000' + elevation) in Ohio Creek area are present because there was a disturbance in the forest, probably wildfire. These aspen occupy sites that are productive and have adequate amounts of precipitation. Aspen in these sites achieve large diameters. Many of these stands are however over mature and show signs of decline and are in need of regenerating management.

The Low country Aspen, occupy sites below 9,000'. These aspen mainly grow in the low lying areas of the sage. These areas collect additional moisture allowing the aspen to survive. Aspen stands of this type are regionally showing signs of decline (fungus, low crown ratios). Several factors are believed to be the cause. The region has been in a drought trend which has put increased pressure on the minimal amounts of water available in these delicate ecosystems. Sage is out competing aspen and grasses for water and is dominating sites. This has put an even greater constraint on the dwindling water supply. Sage is able to utilize its tap root and drought resistance traits to have an advantage over other plants. It has moved into areas that have historically been aspen and grass dominated. This encroachment has put an imbalance in the regular processes of these ecosystems. Many of these aspen stands are also in need of regeneration due to age. Aspen live 80-100 years and then begin to decline. When a stand is not regenerated through disturbance, the central root system begins to die. Once the central root system dies, the aspen stand will not regenerate.

In a WUI setting, aspen becomes a valuable part of a communities overall wildfire defensiveness due to its moderate wildfire risk rating. Aspen forests, like the rest of the Ohio Creek valley ecosystem is constantly changing. As aspen matures it requires change or disturbance in order to survive. Many of the aspen stands in Wilderness

Streams are in a stage of over maturity and decline. The best way to ensure the survival and long term health of aspen in Wilderness Streams is through management. A mosaic across the landscape which incorporates regenerating patch cuts is the goal of a managed forest.

Sage with a grass component is the final vegetative cover found in the Ohio Creek drainage. This vegetative type is found on sunny, semi-dry and desert like areas and grows in dense groups. Both sage and grass respond rapidly to changes in relative humidity. Sage leaves contain volatile chemicals. Which combust very easy and increase its wildfire danger. The continuity of this fuel should be broken up. The goal is to create islands of fuel with breaks of treated fuel in between.

The Gunnison valley has been in a drought pattern for several years. This lack of precipitation, coupled with years of wildfire suppression, has allowed the sage to dominate many sites and shade out native grasses. Wildlife depends on these grasses in order to survive. In the past frequent low intensity wildfires would thin out the sage in a mosaic pattern of burned and unburned areas. This same pattern can be mimicked with the use of machinery and achieve the same goals.

B. Management Overview

The forests in the Wilderness Streams are in declining health. This is due to lack of fire and management, which has created overstocking, over-mature timber that is insect and disease susceptible. The most prevalent disease is the *Armillaria ostoyae* which has caused groups of 3-4 trees to brown up and die. Below is a general overview of the management prescriptions for vegetative cover types found in the Wilderness Streams. The objective is to reduce fuel and prevent crown fires. Thinning will be from below, with an average spacing of 10-12 feet between stems. Variability is based upon species traits and slope position. Selection criterion for removal is listed in descending order: dead, diseased, and poor form. All residual trees within defensible space and fuel breaks are to be pruned up six feet from ground level to prevent ladder fuel issues.

In pre-settlement times, low intensity ground fires would periodically burn through the area. The low intensity ground fires thinned the forest by scorching and killing seedlings and saplings. These forests had significantly lower stocking than the current forests. Correctly stocked forests are better able to defend themselves from wildfire and insect and disease. When too many trees compete for the same limited amount of nutrients and sunlight, an unnatural weak forest grows. Overstocked forests are also highly susceptible to crown fires, due to the ladder fuel effect. The ladder fuel effect is created when large amounts of trees are allowed to grow in the understory of a forest. The understory trees allow a ground fire to climb up low lying branches and into the crowns of big trees. Forest management is the solution to better forest health and reduced fuels.

Age is a second factor in the declining health of the area's trees. Each specific species of tree has a biological maturity that plays a major role in a forest's health. Once trees meet their biological age of maturity they begin to decline. Over- mature trees are

more susceptible to insects and diseases due to their low vigor. By removing over mature trees a younger and more vigorous stand of trees can replace them.

Most of the high to extreme wildfire risk areas can be described as dense conifer stands (Douglas fir & Sub-alpine fir) with young conifers growing in the shade of mature trees. These conditions are due to the succession of forests in the Rocky Mountains. Succession is a term used to describe how an ecosystem is forever changing. The ecosystem in Wilderness Streams has relied upon fire in the past to implement change. Since the settlement of the area regular fires have been excluded from this ecosystem causing stagnation. This has caused a stagnation of the ecosystem. A forest ecosystem like the one in Wilderness Streams is continually changing. The change is not sudden but spread out over decades and perhaps centuries. The change involves stand composition, structure and biomass.

Aspen should be promoted in WUI areas due to its low wildfire risk. Promoting and preserving aspen stands requires management. Many of the aspen stands in the Ohio Creek drainage have reached or surpassed their biological maturity. Aspen live 80-100 years and then the stand begins to show signs of decline. (fungus, low crown ratios). Aspen stands exist through a network of stems connected by an extensive root system. Once aspen stands reach their biological maturity and are not regenerated through disturbance, the central root system begins to die and the potential to lose the species from the site increases. Conifer begins to invade the understory of the maturing aspen and eventually the aspen is shaded out or dies from old age and the conifer takes over the site and thus increasing the wildfire potential of a once moderate risk.

The best long-term protection to the threats of insects, disease, and wildfire is for Wilderness Streams residents to manage their forests through thinning and promotion of diversity. This will provide “Defensible Space” for fire fighters to protect structures. It will also increase the health of the forest on individual properties. Defensible space guidelines can be found on [pg 13](#).

C. Fuel Breaks

A fuel break is a strip of land in which the fuels have been modified in order to slow the spread of a wildfire. They are most effective when anchored. Examples of fuel break anchor points are rivers, creeks, rock outcrops or less flammable vegetation. It is of varying widths based upon fuel and % slope. Several factors determine the need for a subdivision to install fuel breaks. They are high/extreme wildfire hazard areas, steep slopes, crowning potential, heavy continuous fuels and ignition sources

The stand is thinned and remaining trees are pruned to remove ladder fuels. Brush, heavy ground fuels, snags, and dead trees are disposed of and an open park like appearance is established. The idea is to separate the crowns in order to stop a crown fire. The ground fuels and ladder fuels are mitigated to keep the fire on the ground and prevent it from returning to the crowns. Crown fires consume fuels rapidly and pose the greatest threat of life and property loss.

Sage dominated sites can be treated with various sage reduction machines (ie. Fecon Bullhog, brush hog). The equipment depends upon the topography and size of vegetation. Sites with ground in excess of 30% slope generally cannot be treated with a brush hog or other similar machines that are pulled behind a tractor. Sites with vegetation in excess of 4" dbh will require a Fecon Bullhog or similar machine. The sage is treated to a maximum height of 6 inches. These areas need to be retreated every 10 years.

1. General Fuel Break Prescription according to vegetative type

The table below shows the recommended size of a mixed conifer fuel break according to % slope. The section also gives specific prescriptions according to vegetative type.

a. Fuel Break Size for Mixed Conifer Fuel Break

% slope	Uphill distance	Downhill distance	Total width
10	140	165	303
30	120	195	315
60	100	240	340

b. Prescriptions

Note: CSFS has a list of contractors available for projects. Subdivisions are encouraged to work with CSFS in designing projects and obtain a copy of the CSFS handout Fuel Break Guidelines for Forested Subdivisions and Communities.

Crown separation is the key factor in a successful fuel break. A **minimum** of 10 feet between the edges of tree crowns is recommended. As slope increases crown spacing should also increase. All residual trees should be pruned up 10 feet from ground level. Slash should be removed or lopped and scattered evenly throughout the area.

Precaution: If your trees are susceptible to wind throw and the trees have never been thinned, reduce the amount of trees removed in the first year. Start with a spacing of diameter plus five between stems. Some good indicators of wind sensitive areas: 1) blown down trees 2) large root ball holes 3) ridge tops. If you have a wind sensitive area gradually remove the trees over a 6 year period. Remove more trees every 3 years until you have reached the recommended spacing. Follow the diameter plus five spacing recommendation each year for wind sensitive areas.

2. Fuel Break for Sage

a. Prescription

Mow vegetation to a maximum height of 8 inches. This type of vegetation is best mitigated with a masticator or similar brush mower. Follow size recommendations in the above table

D. Areas of Concern – Prioritized Fuel Treatment
(refer to vegetation management map on pg ?)

This section identifies the worst areas for wildfire hazard in the subdivision. These areas have the highest potential for loss of life and property. Other areas in the subdivision are also in need of mitigation. Residents should refer to the hazard map (Pg?) and determine the wildfire hazard rating of their lot.

Precaution: If your trees or home site are susceptible to wind throw and the trees have never been thinned, reduce the amount of trees removed in the first year. Engelmann spruce, Lodgepole Pine and Sub-alpine fir are especially prone to wind throw. Some good indicators of wind sensitive areas: 1) blown down trees 2) large root ball holes 3) ridge tops. If you have a wind sensitive area gradually remove the trees over a 6 year period. Remove more trees every 3 years until you have reached the recommended spacing. Only remove 1/3 of the large trees from a wind sensitive stand per entry.

1. Aspen is the dominate species of this area with a medium encroachment of conifer. The aspen overstory is healthy and the root system is intact. The conifer encroachment is reducing the integrity of the stand as a natural fuel break. The current conifer has enough stocking to carry an independent crown fire.

The area is the first defense against a wildfire from CR 730. The fuels adjacent to CR 730 are flashy and receptive. The county road is frequented by tourist and farm implements, which increases its probability as an ignition source. A wildfire can travel fast in flashy fuels and could burn rapidly into this area. The heavy ladder fuels will allow a fire to get in the crowns of trees, causing rapid spreading and spotting from fire brands. The fire brands can travel up to a quarter mile or more ahead of the main fire, depending upon wind conditions. If the fire brands land in a receptive fuel bed a new fire will ignite and the process will continue.

Prescriptions

- a. Remove all conifer, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
- b. Thin conifer to a 12 x 12 spacing, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove

2. This area is located at the end of Chickasaw road, along the main subdivision meadow. It is a healthy aspen stand that has lost its' integrity as a natural fuel break due to conifer encroachment. The overstory and root system of the aspen clone is healthy and intact. This stand is part of the first line of defense from a wildfire coming from CR 730. Although the conifer is not large, it still has enough density to carry an independent crown fire. A wildfire in this area has the potential to burn into the interior of the subdivision.

Prescriptions

- a. Aspen (options for areas with 70% or more aspen cover)
 - 1) Remove all conifer, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
 - 2) Thin conifer to a 12 x 12 spacing, Slash options: a. pile and burn, b. chip on site, c. lop and scatter d. remove
 - 3) Remove 80% of conifer 8" or less
3. This area is located at the end of Mohawk trail, along the main subdivision meadow. The timber types for the area are mixed conifer (DF, SAF, spruce spp, LPP) and aspen. The aspen is peppered throughout the area where sunlight allows. The aspen need full sunlight in order to regenerate and thrive.

The area is the first line of defense against a wildfire from CR 730. The fuels adjacent to CR 730 are flashy and receptive. The county road is frequented by tourist and farm implements, which increases its probability as an ignition source. A wildfire can travel fast in flashy fuels and could burn rapidly into this area. The heavy ladder fuels will allow a fire to get in the crowns of trees, causing rapid spreading and spotting from fire brands. The fire brands can travel up to a quarter mile or more ahead of the main fire, depending upon wind conditions. If the fire brands land in a receptive fuel bed, a new fire will ignite and the process will continue.

Prescriptions

- a. Mixed Conifer: Remove all dead, dying, and diseased. Remove 1/3 of the overstory (include any dead dying or diseased removed as part of 1/3- {wind throw}) Remove 80% of trees 8" or less with preservation preference given to Douglas fir and spruce spp. Prune up all residual trees 6 feet from ground level. Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
- b. Aspen (options for areas with 70% or more aspen cover)
 - 1) Remove all conifer, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
 - 2) Thin conifer to a 12 x 12 spacing, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove

4. This area is located below the first half of Mohawk trail. The density of structures in this area is high. A few have done defensible space around their structures but more work is needed not only to protect structures but also reduce the overall wildfire hazard of the area. The timber types in the area are mixed conifer (DF, SAF, spruce spp, LPP) and aspen. The area is overstocked due to the prolific seeding of Sub-alpine fir and lack of fire disturbance. Because of the overstocking the area is highly susceptible to insect and disease infestations and wildfire. The Sub-alpine fir has a heavy infestation of both Western Balsam Bark Beetle and Armillaria ostoyae root rot. This has caused large pockets of mature to over mature dead Sub-alpine fir, which has increased the wildfire danger of the area significantly. This disease will continue to attack the Sub-alpine fir and cause widespread mortality and increased wildfire danger. The fungus is attacking seedling to mature sized trees. The Douglas fir and Lodgepole pine are very healthy and resistant to the WBBB and Armillaria. The DF, LPP, and aspen should be promoted by removing Sub-alpine fir.

The area also contains a chimney that runs from the meadow up through the area and into denser timber. Chimneys cause extreme fire behavior by funneling hot air in front of the fire and preheating fuel. Wildfires burn rapidly and unpredictable in this type of terrain and fuel.

Aspen is peppered throughout the area and is a remnant of the previous forest type. The aspen clone in the area is healthy and intact. Aspen should be promoted as a natural fuel break through patch cuts and conifer thinning in spaces that it occupies. Aspen requires full sunlight in order to regenerate; thinning increases sunlight penetration to the forest floor. This species is good to promote in the wildland urban interface due to its characteristic as a natural fuel break.

Prescriptions

- a. Mixed Conifer: Remove all dead, dying, and diseased. Remove 1/3 of the overstory (include any dead dying or diseased removed as part of 1/3- {wind throw}) Remove 80% of trees 8" or less with preservation preference given to Douglas fir and spruce spp. Prune up all residual trees 6 feet from ground level. Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
 - b. Aspen (options for areas with 70% or more aspen cover)
 - 1) Remove all conifer, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
 - 2) Thin conifer to a 12 x 12 spacing, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
5. This area is located between Sioux and Mohawk. There is a high density of structures in this area and some have done defensible space. A few landowners

have done mitigation beyond the defensible space. More defensible space work and forest thinning is needed to reduce the overall wildfire hazard of the area. This area contains the unhealthiest portion of the forest in the subdivision. The area is overstocked from Sub-alpine fir's prolific seeding and lack of fire disturbance. *Armillaria ostoyae* and WBBB have been causing mortality throughout the stand for years. High densities of ladder fuels are found throughout the area. The crown fire potential of this area is high due to mortality and ladder fuels.

Aspen is peppered throughout the area and is a remnant of the previous forest type. The aspen clone in the area is healthy and intact. Aspen should be promoted through patch cuts and conifer thinning in spaces that it occupies. Aspen requires full sunlight in order to regenerate; thinning increases sunlight penetration to the forest floor. This species is good to promote in the wildland urban interface due to its characteristic as a natural fuel break.

The promotion of diversity in this area cannot be stressed enough. The *Armillaria* and WBBB will continue to infect and cause mortality in the Subalpine fir. Forest management is the solution for improved forest health a reduced wildfire danger.

Prescriptions

- a. Mixed Conifer: Remove all dead, dying, and diseased. Remove 1/3 of the overstory (include any dead dying or diseased removed as part of 1/3- {wind throw}) Remove 80% of trees 8" or less with preservation preference given to Douglas fir and spruce spp. Prune up all residual trees 6 feet from ground level. Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
- b. Aspen (options for areas with 70% or more aspen cover)
 - 1) Remove all conifer, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
 - 2) Thin conifer to a 12 x 12 spacing, Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
6. Area 6 is located in the south west corner of the subdivision and includes US Forest Service land. The predominate timber types are mixed conifer (DF, Spruce spp, SAF, LPP) and aspen. There is some sign of *Armillaria ostoyae* (browning tops and mycelium) in the area. The stand is overstocked due to Subalpine-fir's prolific seeding and lack of fire disturbance. The overstocking makes the area susceptible to insect and disease infestations and wildfire.

This area is the first line of defense from a wildfire out of the south west. South west is the predominate wind direction of the region and fires tend to follow wind directions. The identified area does cover some federal land however the majority of the fuel mitigation responsibility is on the subdivision.

Prescriptions

- a. Mixed Conifer: Remove all dead, dying, and diseased. Remove 1/3 of the overstory (include any dead dying or diseased removed as part of 1/3- {wind throw}) Remove 80% of trees 8" or less with preservation preference given to Douglas fir and spruce spp. Prune up all residual trees 6 feet from ground level. Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
 - b. Aspen: thin conifer in areas that have aspen sprouts or advanced regeneration to allow sunlight penetration through the forest canopy.
7. This area is located in the North West corner of the subdivision and extends off of the subdivision boundary and onto US Forest Service Land. The predominate timber types are mixed conifer (DF, SAF, spruce spp, LPP) and aspen. The stand is overstocked due to Subalpine-fir's prolific seeding and lack of fire disturbance. The overstocking makes the area susceptible to insect and disease infestations and wildfire. Implementing forest management in this area could prevent the onset of future forest health problems and wildfire.

Prescriptions

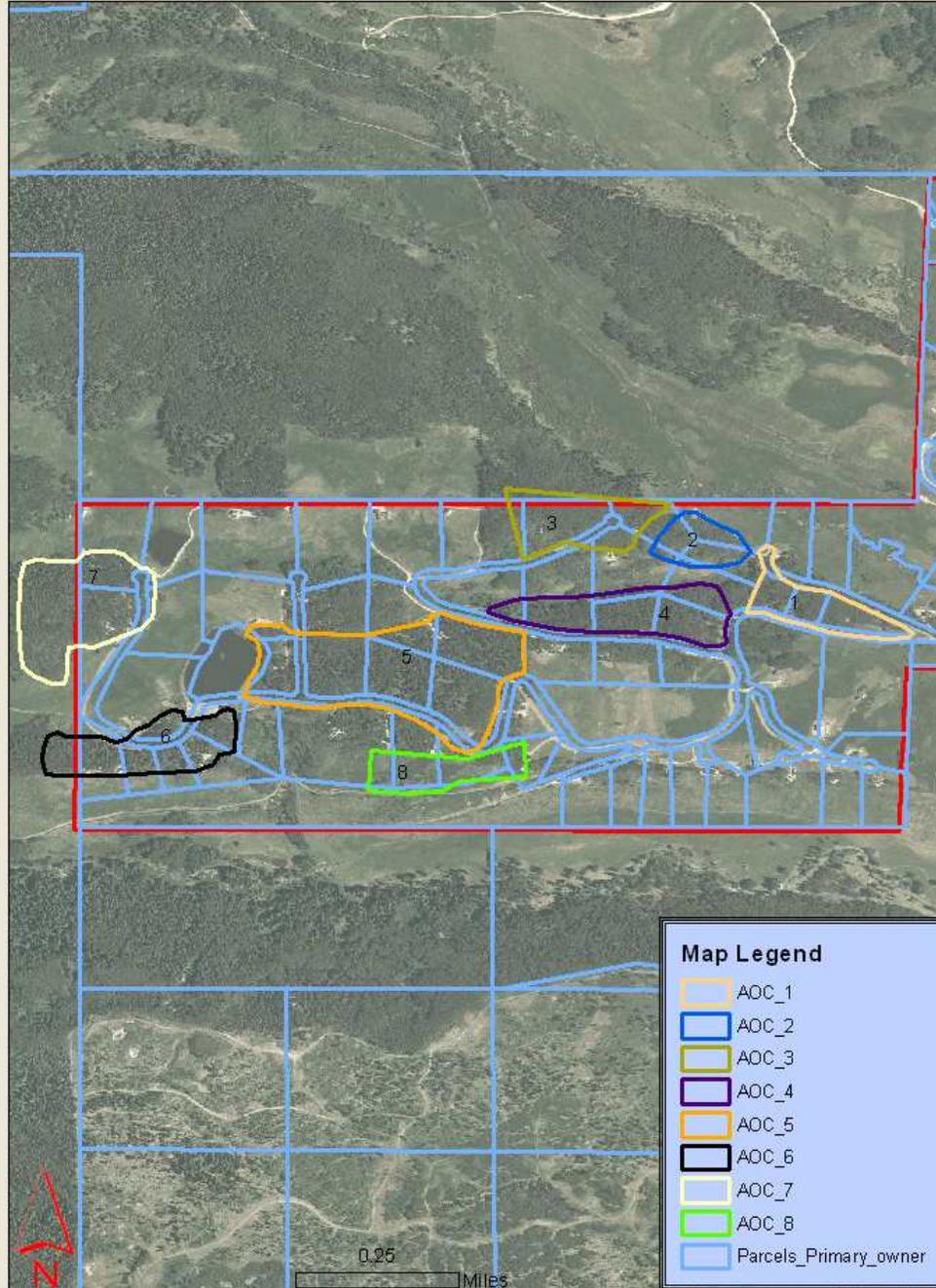
- a. Mixed Conifer: Remove all dead, dying, and diseased. Remove 1/3 of the overstory (include any dead dying or diseased removed as part of 1/3- {wind throw}) Remove 80% of trees 8" or less with preservation preference given to Douglas fir and spruce spp. Prune up all residual trees 6 feet from ground level. Slash options: a. pile and burn, b. chip on site, c. lop and scatter, d. remove
 - b. Aspen: thin conifer in areas that have aspen sprouts or advanced regeneration to allow sunlight penetration through the forest canopy.
8. Area of concern 9 is located along the southern boundary of the subdivision above the Castle Creek drainage. The vegetative type is mainly dense Gamble Oak and sage brush. In the event of a grass fire in the agricultural fields below the drainage, wildfire would burn up the drainage igniting the oak and sage brush. The wildfire then has the potential to burn into the interior of the subdivision and ignite heavier fuels in more populated areas. This area is key for the protection of the southern border of the subdivision.

Prescriptions

- a. Brush: This fuel should be broken up into islands of treated and untreated fuels. Spacing between islands should be 2.5 x the height of the vegetation. Maximum diameter of the clumps should be 2 x the height of the vegetation.

E. Vegetation Management Map

WS Vegetation Mang. Map



F. Cost/Grants (Agricultural Grant Table Section Appendix 5 on pg 44)

Vegetation management is a costly procedure in the Gunnison valley. The average cost of small acreage timber fuels mitigation in the area has been \$1800/acre. There are cost saving using a mechanized equipment verses a hand crew. However, steep slopes (40+% slope), and large amounts of slash can limit the use of heavy machinery. Most material removed from fuels mitigation projects is less than marketable, due to the small diameter of the wood removed. Generally during a fuels mitigation project the larger trees are not taken. The smaller diameter and suppressed understory trees are removed. Industries are not in place to utilize small diameter material. Most material is masticated on site or piled and burned.

Due to the high cost associated with fuels mitigation, funding for large acreage mitigation projects needs to come from multiple sources. The first two sources are from within the subdivision, homeowner dues and volunteer hours. The third source of funding is grants. One of the two main programs that residents should try to take advantage of is offered through the Department of Agriculture. They are the Wildlife Habitat Incentives Program (WHIP) and Environmental Quality Incentives program (EQIP). Specifically the programs are offered through the Natural Resource Conservation Service cost share program. Wilderness Streams subdivision is unique because it has agricultural status which opens it to this program. These programs can not only fund forest management projects but also projects related to cattle production and noxious weeds. Cost share rates can be higher with these federal programs.

The second is Western States Wildland Urban Interface Competitive grant (WSWUICG). The WSWUICG is a 50/50 type grant that comes from federal appropriations and is distributed through the state and private forestry branch of the USFS. These programs can be applied for through the local Colorado State Forest Service office. Competition is high and funds are not guaranteed for every applicant.

APPENDIX 1 DEFINITIONS

Basil Area Factor (BAF) is a method used to take a sampling of the volume in a given area. A prism is used that bends the light displacing portions of the tree bole. Each specific prism has a factor amount (10, 20, 40 ect.) which limits the amount of light bent. By looking at trees in a given area the prism show which trees to tally for a given sampling rate.

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 human-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 ACritical 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 beaks 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.

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.

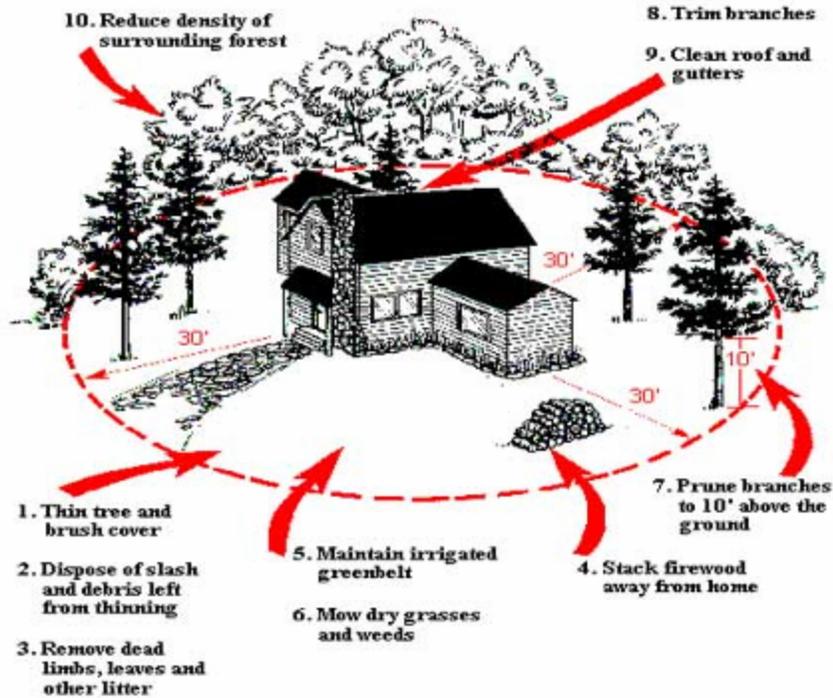
APPENDIX 2 DEFENSIBLE SPACE GUIDELINES

Definition: An area either natural or human-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.

2A - Additional Defensible Space Information

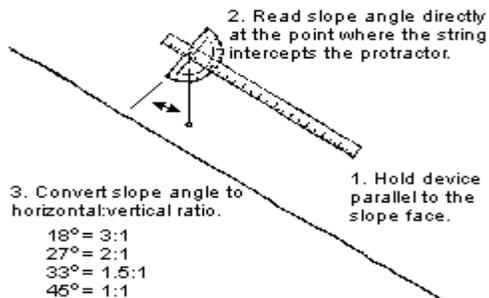


2b - You can create a simple tool out of household materials to help you determine your slope.

Materials:

- Protractor
- String
- Weight (heavy washer or something similar)
- Yard or meter stick
- Scientific calculator

Tie the weight to one end of the string. Use the other end of the string to secure the protractor to the yardstick as the diagram indicates. Disregard step 3, instead take the slope angle in degrees and multiply it by tangent (using a scientific calculator), then multiply that number by 100 to get % slope.



APPENDIX 3

Common Aspen Disease found in the Ohio Creek drainage

Cankers

Canker diseases are among the primary agents in Aspen mortality. The canker is a symptom of fungus. Generally it is an area of dark black discoloration with irregular folds of growth or areas of orange ooze. The fungus enters the tree through a wound and invades the inner bark and cambium. This is very important to remember when working around Aspen trees.

1. Sooty-bark canker: Description: Considered the most serious, for it tends to occur on larger trees (100+ yrs) and kills within 3-10 years. Young cankers first appear on the bark as sunken oval areas. The bark killed each year by the fungus is readily apparent and begins to slough after 2-3 years. The dead inner bark crumbles to soot like residue. The outer bark sloughs faster in the central portion giving the tree a barber pole appearance.

2. *Cryptosphaeria* canker: Description: This fungus causes branch, sprout, and sapling mortality; trunk cankers; and discoloration. The cankers are long and narrow, spiraling around the tree like a snake, hence the common name "snake canker. Small trees may be killed within a year after infection. Large trees may have cankers that girdle branches and enlarge onto trunk. Bark near edges usually becomes discolored light brown to orange. The dead, black, stringy, soot like bark adheres tightly to the sapwood and contains scattered lens shaped, light colored areas.

3. *Cytospora* canker: Description: This fungus is weakly parasitic and normally attacks stressed trees. This canker is the most common one found. It is generally found with other more aggressive fungus. Small branches and twigs can be killed without the formation of a distinct canker. Trunk cankers usually have an irregular outline, with sunken, orange discolored areas with orange ooze. The first indication of infection is the orange discoloration of the bark caused by wounds. After infection the inner bark turns dark brown and the sapwood underneath light brown. The dead bark falls off of the tree in large pieces after 2-3 years.

Aspen Heart Rot

This fungus produces a fruiting body called conks at branch stubs or wounds on the bole of the tree. Sporulation begins in late winter or early spring and can continue throughout the summer and fall when moist weather prevails. Airborne spores typically infect dead branch stubs and fresh wounds. This is again important to remember when working around aspen especially in damp weather. Fungal growth results in a yellow-white rot with brown or black zone lines traversing decayed wood. The fruiting body or conks are hoofed shaped with gray, or brown upper surface and tan to white lower pore. The presence of conks is indicative of significant stem decay.

1. *Phellinus tremulae*: Description: Produces perennial fruiting bodies or conk. The conk is a hoofed shaped fungus with orange and black coloration. The presence of the conk is indicative of significant stem decay. Trees with fruiting bodies should be monitored closely especially around structures, due to their unsoundness.

APPENDIX 4
Common conifer insects found in the Ohio Creek Drainage

Bark Beetle

Bark beetles are the most destructive insects in the western coniferous forest. Adult bark beetles bore through the outer bark to the inner cambial layer, where they channel out galleries in which to lay eggs. Larvae hatch in these galleries and may excavate additional channels as they feed. As bark beetles carve out galleries they introduce blue-stain fungi. This fungus grows in the wood interfering with the tree's water transport system. Tree deterioration and eventual mortality result from two factors. 1) tree girdling caused by gallery excavation 2) spread of blue stain fungi. Infested trees can be recognized at a distance by fading foliage high in the tree, initially a light green, changing to a light straw color in a few weeks, and eventually to a yellowish brown. Close inspection may show a fine red-brown dust in the bark crevices and at the base of the tree trunk. Cream to dark red pitch tubes, resin mixed with boring dust, 1/4-1/2 inches in diameter, are an indication of a successful bark beetle attack. In some cases where the number of attacking beetles is low, the tree may have sufficient resin available to eject the attacking beetle by extruding resin at the attack site (pitching out). Pitch tubes of whitish resin 3/4" long. The "pitching out tube" is void of boring dust, because the beetle was unsuccessful.

Bark beetles are a natural part of the ecosystem. In the area, beetles are found in endemic levels. The beetles attack weak and suppressed trees. The best preventative approach is a proactive one. This involves managing the forest through thinning. Thinning improves the vigor of the residual stand. Vigorous trees have a better chance of not attracting beetles and also defending themselves during attacks.

Signs of successful attack

- (1) Red boring dust found in crevices or base of tree
- (2) Fading in the entire tree
- (3) Pitch Flow
- (4) Galleries under bark in a pattern

A. Current insect threats

1. Western Spruce Budworm (WSBW)

Douglas fir, the preferred host of WSBW, exists as multiple canopied trees of various ages and heights on the southern end of the property. The distribution of various tree heights within an overcrowded forest, creates an easy ladder for WSBW larvae dispersal. While in the larval stage, WSBW can only move from tree to tree by dropping from a silken thread. Dense trees, with interconnected branches extending the entire length of a tree, create an ideal habitat for WSBW.

A major infestation 8 years ago, that was throughout Douglas-fir stands in portions of Gunnison, Saguache and Hinsdale counties.

Widespread outbreaks can cause top-killing and loss in tree growth. Particularly hard-hit are the smaller, understory trees. The insect may kill a tree over several years, but the aesthetic damage done yearly is highly significant.

WSBW has a one year life cycle in Colorado. Adult emergence usually lasts from late June through early August.

Females lay their eggs (approximately 150 in all) in masses on the underside of conifer needles.

First-stage larvae hatch about 10 days after eggs are laid. These larvae do not feed but search for crevices under bark scales or lichens. Here, they spin silken shelters called "hibernaculae". The young larvae remain dormant in their hibernaculae throughout the winter and are very difficult to detect.

In late April or May, larvae leave the shelters of their hibernaculae to search for food. They migrate to the foliage of conifer trees where they mine (feed inside) older needles. In a week or two, they enter developing buds, a habit from which they derive their name. After the buds break and new needles begin to lengthen, budworm larvae do the bulk of their damage. They loosely web the foliage, and feed in high numbers until most or all of the new growth is destroyed.

Larvae mature throughout five additional stages over a 30 to 40 day period after spring feeding begins.

Mature larvae pupate in feeding webs or on foliage. Pupation takes a week to 20 days, and adult emergence from the pupal stage, in late June through early August, completes the budworm's life cycle.

When viewing infested areas from a distance, trees appear light reddish-brown, singed (current damage) or gray (old damage).

WSBW are important because they have the potential to consume all new growth produced by host trees. In addition to foliage, however, they commonly feed on coniferous flowers and cones.

2. Douglas-Fir Beetle (DFB)

DFB is usually not able to attack and kill healthy Douglas fir trees. Populations of these insects have been noted in other areas of Colorado to rapidly build and cause mortality of weakened Douglas fir trees which survived WSBW.

This beetle has a one-year life cycle in Colorado, beginning in late summer when eggs are laid beneath the bark by parent beetles.

Each female lays about 75 eggs in a vertical gallery. Soon these eggs hatch into larvae which feed outward from the central gallery. The larvae overwinter in the infested tree. Transformation (pupal stage) into the adult stage occurs in early summer.

Emergence of new adults begins in mid-July and may continue through September. However, the majority of beetles exit trees during the first two weeks of August.

Upon emerging, adult beetles (the size of a match-head) attack live trees, boring beneath the bark and depositing eggs. Once eggs are laid, the adults die and the cycle starts over.

A key part of this cycle is the beetle's role in transmitting blue-stain fungi. Spores of these fungi contaminate the bodies of all DFB and are introduced into trees during attack. If attacks are successful, the blue-stained fungus acts together to disrupt the tree's water transport system. Rapid tree death is the result.

3. Mountain Pine Beetle (MPB)

The insect is very similar to the Douglas-Fir beetle described above: life cycle, preferred host conditions, identification, and resulting damage are nearly identical. The main difference in the two insects is MPB prefers to attack Ponderosa pine.

This insect has not recently been active on the property; however there is high potential in area for future attacks. This insect is active in Buena Vista, CO, just on the other side of the divide.

The MPB prefers trees weakened by overcrowded conditions, advanced age and damage caused by lightning, porcupines, and etcetera. The best prevention against MPB losses is to retain healthy Ponderosa pine. During outbreak periods, the removal of damaged trees is recommended. For long term forest health, thinning of the scattered pockets of overcrowded Ponderosa pine is recommended.

4. Western Balsam Bark Beetle (WBBB)

WBBB is the most conspicuous in a long list of bark beetles that attack western conifers. This beetle is the most widespread of the bark beetles in Gunnison County. Trees are often attacked in groups and have a dark red appearance after death for about 3 years. This insect is often

associated with Armillaria root disease. The disease weakens the tree and then the beetle moves in for the kill. Its primary host is Subalpine fir that are >90 years of age and >10 inches in diameter at breast height.

The main flight begins in late May or June. Pioneering males make a nuptial chamber and then release pheromones that attract both male and female beetles. Males are polygamous and mate with 3-7 females. The beetle has a two year life cycle. Attacked trees generally turn a yellow/red within a year.

APPENDIX 5
Common Conifer Disease and Fungus

1. *Armillaria* Root Disease (*Armillaria ostoyae*)

Host: Primary host is Sub-alpine, grand, white, and red. All conifer may be attacked, particularly at ages less than 30 years.

Distribution: Range of host west of continental divide

Damage: This is the most common root disease fungus in the region. It kills the cambium of the roots and root collar, girdling and killing the tree. Cause mortality in groups and scattered, individual trees. Infected trees are often attacked by bark beetles (Western Balsam Bark Beetle).

Identification: Trees infected with *Armillaria* have typical root disease symptoms (dead spots, poor growth, falling before death). Resinous often is extensive on and throughout the bark and root collar. The most diagnostic feature is the thick mycelium in the cambium of roots and root collar. Seedlings can be pulled from ground due to root decay. The mycelium is found throughout the infected area both on trees and the forest floor. The flowering portion (mushroom) is rarely seen, but are found at the base of infected trees in late summer.

Treatment: Remove host and infected tree and promote diversity

2. Spruce Broom Rust (*Chrysomyxa arctostaphyli* Diet.)

Host: Spruce spp

Distribution: West of continental divide

Damage: Reduced tree growth, top kill, wood decay, tree death

Identification: Broom rust occurs on branches or main bole of spruce trees. During spring and summer the brooms have a yellow or orange appearance in a giant ball shape. In midsummer, the yellow spores that erupt from the needles add to the color. The needles are shed in fall giving the infected area a dead appearance.

Treatment: Since broom rust does not normally kill spruce trees, one management option is to take no action. In addition, witches brooms offer refuge for many birds and small mammals, perhaps a desirable feature for some landowners. The infected areas can be cut away and the slash burned.

APPENDIX 6 Department of Agriculture Grant Chart

The two page document is continued on the next two pages (lines up side by side)

Chart: Farm Bill Programs

	Farm Bill Program	Description	Types of Activities	Agency	States Eligible
Working Lands Conservation	Environmental Quality Incentives Program (EQIP)	Financial and technical assistance incentives to promote agricultural production, forest management, and environmental quality as compatible goals; optimize environmental benefits; and help farmers and ranchers meet environmental regulations	State Conservationist identifies priority resource concerns with advice of State Technical Committee	NRCS	All
	Wildlife Habitat Incentive Program (WHIP)	Assistance to develop and improve wildlife habitat, including threatened and endangered species; can focus program on special areas, habitats, or species	State Conservationist identifies priority resource concerns with advice from the State Technical Committee	NRCS	All
	Conservation Stewardship Program (CSP)	Encourages producers to undertake additional conservation activities or improve, maintain, and manage existing conservation activities	State Conservationist will rank and select applications (activities) based on national, state, and local criteria.	NRCS	All
Conservation Easement/ Reserve	Healthy Forests Reserve Program (HFRP)	Restoring and enhancing forest ecosystems for threatened/endangered species, biodiversity, or carbon sequestration; State Conservationist submits proposals to the Chief of NRCS for funding selection	Restoration, protection, enhancement, maintenance, and management of habitat and forest ecosystem functions and values	NRCS	AK, ME, MN, MS, GA, IN, OK, OR
	Wetlands Reserve Program (WRP)	Opportunity to receive financial incentives to restore, protect, and enhance wetlands in exchange for retiring marginal land from agriculture	Restore, improve, and protect wetland functions and values	NRCS	All
	Farm and Ranch Lands Protection Program (FRPP)	Help farmers and ranchers preserve their agricultural land; provide matching funds to state, tribal, and local governments and NGOs to purchase conservation easements	State Conservationist identifies priority resource concerns with advice of State Technical Committee	NRCS	All
	Conservation Reserve Program (CRP)	Helps agricultural producers safeguard environmentally sensitive land; CRP is for conversion of marginal cropland to long-term conservation cover, either grass or trees	Includes, but not limited to, tree planting, permanent wildlife habitat establishment, and wetland restoration; management activities can include tree thinning	FSA	All
	Conservation Reserve Enhancement Program (CREP)	Special initiative within CRP to address agricultural resource problems; targeting priority environmental needs and providing additional incentives for conservation; voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water	Filter strips and forested buffers; develop and restore wetlands	FSA	All, though since it is a partnership between tribal, federal, state governments, and sometimes private groups and they identify an agriculture-related issue, this can determine the specific geographic areas and practices
	Forest Legacy Program	Grants to states to protect important forest areas	A nationally competitive federal program in partnership with states to protect environmentally sensitive forest lands; entirely volunteer; designed to encourage protection of privately owned forestlands	USFS	All
	Wood Energy	Biomass Crop Assistance Program (BCAP)	Assistance for establishment, production, harvest, storage and transport of renewable biomass	Establishment, production, harvest, storage, or transport of renewable biomass	FSA
Emergency Programs	Emergency Forest Restoration Program	Available to NIPF owners to restore landscapes damaged by fire, drought, flood and other natural disasters; Funding subject to appropriation	Payments for emergency measures to NIPF landowners to restore landscapes damaged by fire, drought, flood, and other natural disasters	FSA	All, where there is a natural disaster that has damaged NIPF land, as determined by the Secretary of Agriculture

Forestland Eligible	Length of Agreement	Easements	Payments	Forest Landowner's Obligations	Applications Due
Nonindustrial private forest (NIPF) land	More than 1 year, less than 10 years		Up to 75% of the cost of the conservation practice or 100% of estimate income forgone by producer to implement particular conservation practices; no more than \$300,000 over six years	Develop and implement a forest management plan; assist with cost and establishment of conservation practices	Continuous sign up
NIPF and tribal land; government land not eligible	More than 1 year, less than 10 years		Up to 75% of wildlife habitat development practices	Develop and implement a forest management plan that includes the development of wildlife habitat; assist with installation costs	
Meet "stewardship threshold" for at least one resource concern and address one additional priority resource concern; up to 10% of enrolled acreage may be in NIPF land	5 years		May not exceed \$200,000 for all contracts entered into during a five-year period	Develop and implement a forest management plan that includes installing or maintaining conservation practices	Interim final rules expected in 2009
All private forestlands that have an HFRP restoration plan	Permanent or 30-year easements; 30-year contracts (tribal lands only); restoration cost-share agreements	Permanent or 30 years	10-year contracts: 50% of the average costs; 30-year easement/contracts: may receive 75% of market value of enrolled land; permanent easements: may receive up to 100% of market value of enrolled land	For easements, the owner shall cooperate in the restoration, protection, enhancement, maintenance, and management of the land in accordance with the easement or contract	
Includes floodplain forest; must have owned land for more than seven years; government land is not eligible; wetland must be restorable and suitable for wildlife benefits	Permanent or 30-year easements, 30-year contracts (tribal lands only), restoration cost share agreements	Permanent or 30 years	Permanent: up to 100% of the cost of acquisition and restoration; 30-year easements: up to 75% of the cost of acquisition and restoration; 30-year contracts (tribal lands only): up to 75% of restoration and contract payment equal to 30-year easement acquisition cost; restoration cost-share agreement: up to 75% of restoration cost	Develop and implement a wetland restoration plan that includes the restoration and maintenance of wetlands that will include management of forestland; if necessary, assist with the cost of restoration	
NIPF land eligible if it contributes to economic viability of agricultural operation or serves as buffer to protect an agricultural operation from development; forest management plan required if forestland is 10+ acres or 10% of area; easement areas must be less than 2/3 forestland	Permanent	Permanent	NRCS may provide up to 50% of the fair market value of the conservation easement	Develop and implement a forest management plan and comply with terms of the easement	
Eligible land is agricultural land meeting cropland definitions, including having been cropped four out of the six years previous to the passage of the Farm Bill	10-15 years		50% cost share	Develop and implement a forest management plan for the conversion of cropland to a less-intensive use; also assist with the cost, establishment, and maintenance of conservation practices	Continuous sign up
Mainly riparian buffers and wetland restoration	10-15 years		Federal annual rental rate plus cost share of up to 50% of the eligible cost to install the practice	Develop and implement a forest management plan for the conversion of cropland to a less-intensive use; also assist with the cost, establishment, and maintenance of conservation practices	
Private forestland within a state-defined Forest Legacy Area	Permanent	Yes, fee simple purchases also allowed	Federal government may fund up to 75% of project costs, with at least 25% coming from private, state, or local sources	To qualify, landowners prepare a multiple resource management plan as part of the conservation easement acquisition	States determine projects to include in the national competition each fiscal year
NIPF land eligible with a forest stewardship plan; producer contracts with USDA	15 years	N/A	Up to 75% of the cost of site preparation and tree planting	Compliance with highly erodible land and wetlands requirements; forest stewardship plan; site preparation or tree planting	To be determined; program under development
NIPF land; tree cover must have been on the land immediately before the natural disaster	N/A	N/A	Up to 75% of the cost of the emergency measures	25% cost share; carry out emergency measures	To be determined; program subject to appropriations